

# **Oracle® Process Manufacturing**

Process Execution User's Guide

Release 11*i*

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Oracle Process Manufacturing Process Execution User's Guide, Release 11i

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# Send Us Your Comments

## **Oracle Process Manufacturing Process Execution User's Guide, Release 11i**

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Oracle welcomes your comments and suggestions on the quality and usefulness of this document. Your input is an important part of the information used for revision.

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# Preface

Welcome to the Oracle Process Manufacturing Process Execution User's Guide, Release 11i.

This guide assumes you have a working knowledge of the following:

- The principles and customary practices of your business area.
- Oracle Process Manufacturing.

If you have never used Oracle Process Manufacturing, Oracle suggests you attend one or more of the Oracle Applications training classes available through Oracle University.

- Oracle Self-Service Web Applications.

To learn more about Oracle Self-Service Web Applications, read the *Oracle Self-Service Web Applications Implementation Manual*.

- The Oracle Applications graphical user interface.

To learn more about the Oracle Applications graphical user interface, read the *Oracle Applications User's Guide*.

See [Other Information Sources](#) for more information about Oracle Applications product information.

## How To Use This Guide

The Oracle Process Manufacturing Process Execution User's Guide contains the information you need to understand and use the Oracle Process Manufacturing Process Execution application. This guide contains eight chapters, five appendixes, and a glossary:

- Chapter 1, Understanding Process Execution, presents the fundamental tasks, responsibilities, and process flows required to produce a product. Navigation procedures are discussed.
- Chapter 2, Setting Up, discusses all the setup requirements in other applications. This chapter explains the seamless interfacing of Process Execution with the Product Development application.
- Chapter 3, Firm Planned Orders, shows how firm planned orders are created, modified, rerouted, rescheduled, and changed. The chapter discusses how to display and scale material details in the firm planned order. It also presents the Use Leadtime Entered indicator.
- Chapter 4, Batch Creation, provides the fundamentals of batch creation and assignment of batch status. This chapter discusses how to find a batch, create a batch or firm planned order, and how to select appropriate validity rules for a batch. The chapter presents discussions about rerouting and editing batches. The process of finding and editing batch material details is presented. Additional discussions of batch steps, batch step dependencies, and step activities provide an overview of the process. In depth discussions cover the editing of batch step resources, adding or modify process parameters, associating of batch steps to inventory items, and how to use the theoretical yield calculation. Batch scaling and firm planned order scaling processes are discussed. The chapter includes discussions of batch rescheduling and using minimum transfer quantities.
- Chapter 5, Batch Material Allocation, provides a basic understanding of the batch material allocation process, including how to edit whole batch and batch line allocations. Procedures are presented to determine unallocated item and manage inventory shortages. You are shown how to pick specific lots and locations for use in batch production.
- Chapter 6, Batch Production, presents the procedures for releasing and unreleasing a batch. The chapter covers the fundamentals for incremental backflushing. The process of editing batch steps and resource transactions is covered with a discussion of how to record batch operation work in process. The basics of activity factors and charges are provided. The fundamentals of

activity factors are presented with individual tasks to edit resource transactions and to record batch operation work in process.

- Chapter 7, *Batch Completion*, discusses how to complete a batch, revert a completed batch to work in process, close a batch and reopen it.
- Chapter 8, *Inquiries*, demonstrates how to run and interpret inquiries for a production schedule, work in process, material variances, batch step variances, resource variances, and resource usage.
- Chapter 9, *Reports*, discusses how to run several preformatted reports that assist in the picking of production batch materials, ticketing of materials to be used in production, evaluating scheduled batch and firm planned order production activities, assessing variances in actual and calculated batch yield, and evaluating unusual usage cost variances.
- Chapter 10, *Process Execution Workbench*, discusses how to view summary information about batches and firm planned orders. The chapter shows how the workbench provides access to information about batches and firm planned orders through a navigator.
- Chapter 11, *Production Scheduler Workbench*, offers the fundamentals of how to use the Production Scheduler Workbench.
- Appendix A, *Process Execution Navigator Paths*, describes how to navigate to each window.
- Appendix B, *Process Execution Profile Options*, describes profile options.
- Appendix C, *Oracle E-Records Events in Process Execution*, describes e-records and e-signatures used in Process Execution.
- Appendix D, *Sales Order Reservations*, provides references to topics and user's guide that describe the integration between order taking and fulfillment as performed in Oracle Order Management and OPM Process Execution (also known as OPM Production).
- A Glossary provides definitions of terms that are used in this guide.

## **Documentation Accessibility**

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the Oracle Accessibility Program Web site at <http://www.oracle.com/accessibility/>

### **Accessibility of Code Examples in Documentation**

JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

### **Accessibility of Links to External Web Sites in Documentation**

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

## Other Information Sources

You can choose from many sources of information, including documentation, training, and support services, to increase your knowledge and understanding of Oracle Process Manufacturing.

If this guide refers you to other Oracle Applications documentation, use only the Release 11*i* versions of those guides.

### Online Documentation

All Oracle Applications documentation is available online (HTML or PDF).

- **PDF Documentation**- See the Online Documentation CD for current PDF documentation for your product with each release. This Documentation CD is also available on Oracle*MetaLink* and is updated frequently.
- **Online Help** - You can refer to Oracle Applications Help for current HTML online help for your product. Oracle provides patchable online help, which you can apply to your system for updated implementation and end user documentation. No system downtime is required to apply online help.
- **Release Content Document** - See the Release Content Document for descriptions of new features available by release. The Release Content Document is available on Oracle*MetaLink*.
- **About document** - Refer to the About document for information about your release, including feature updates, installation information, and new documentation or documentation patches that you can download. The About document is available on Oracle*MetaLink*.

### Related Guides

Oracle Process Manufacturing shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other guides when you set up and use Oracle Process Manufacturing.

You can read the guides online by choosing Library from the expandable menu on your HTML help window, by reading from the Oracle Applications Document Library CD included in your media pack, or by using a Web browser with a URL that your system administrator provides.

If you require printed guides, you can purchase them from the Oracle Store at <http://oraclestore.oracle.com>.

## Guides Related to All Products

### **Oracle Applications User's Guide**

This guide explains how to enter data, query, run reports, and navigate using the graphical user interface (GUI). This guide also includes information on setting user profiles, as well as running and reviewing reports and concurrent processes.

You can access this user's guide online by choosing "Getting Started with Oracle Applications" from any Oracle Applications help file.

## Guides Related to This Product

### **Accounting Setup User's Guide**

The OPM Accounting Setup application is where users set up global accounting attributes about the way financial data will be collected by OPM. These attributes include such things as account keys, financial calendars, and account segments. Since OPM is closely integrated with Oracle General Ledger (GL), much of the attributes are defined in the Oracle GL instead of OPM, and therefore, the windows are display only within OPM. The *Oracle Process Manufacturing Accounting Setup User's Guide* describes how to setup and use this application.

### **Cost Management User's Guide**

The OPM Cost Management application is used by cost accountants to capture and review the manufacturing costs incurred in their process manufacturing businesses. The *Oracle Process Manufacturing Cost Management User's Guide* describes how to setup and use this application.

### **Manufacturing Accounting Controller User's Guide**

The Manufacturing Accounting Controller application is where users define the impact of manufacturing events on financials. For example, event RCPT (Inventory Receipts) results in a debit to inventory, a credit to accrued accounts payable, a debit or a credit to purchase price variance, etc. These impacts are predefined in the Manufacturing Accounting Controller application so users may begin using OPM to collect financial data out-of-the-box, however, they may also be adjusted per your business needs. The *Oracle Process Manufacturing Manufacturing Accounting Controller User's Guide* describes how to setup and use this application.

## **Oracle Financials Integration User's Guide**

Since OPM is closely integrated with Oracle General Ledger, financial data that is collected about the manufacturing processes must be transferred to the Oracle Financials applications. The OPM Oracle Financials Integration application is where users define how that data is transferred. For example, users define whether data is transferred real time or batched and transferred at intervals. The *Oracle Process Manufacturing Oracle Financials Integration User's Guide* describes how to setup and use this application.

## **Inventory Management User's Guide**

The OPM Inventory Management application is where data about the items purchased for, consumed during, and created as a result of the manufacturing process are tracked. The *Oracle Process Manufacturing Inventory Management User's Guide* includes information to help you effectively work with the Oracle Process Manufacturing Inventory application.

## **Physical Inventory User's Guide**

Performing physical inventory count is the most accurate way to get an accounting of all material quantities purchased, manufactured, and sold, and update your onhand quantities accordingly. The OPM Physical Inventory application automates and enables the physical inventory process. The *Oracle Process Manufacturing Physical Inventory User's Guide* describes how to setup and use this application.

## **Order Fulfillment User's Guide**

The OPM Order Fulfillment application automates sales order entry to reduce order cycle time. Order Fulfillment enables order entry personnel to inform customers of scheduled delivery dates and pricing. The *Oracle Process Manufacturing Order Fulfillment User's Guide* describes how to setup and use this application.

## **Purchase Management User's Guide**

OPM Purchase Management and Oracle Purchasing combine to provide an integrated solution for Process Manufacturing. Purchase orders are entered in Oracle Purchasing and received in OPM. Then, the receipts entered in OPM are sent to Oracle Purchasing. The *Oracle Process Manufacturing Purchase Management User's Guide* describes how to setup and use this integrated solution.

## **Using Oracle Order Management with Process Inventory Guide**

Oracle Process Manufacturing and Oracle Order Management combine to provide an integrated solution for process manufacturers. The manufacturing process is tracked and handled within Oracle Process Manufacturing, while sales orders are taken and tracked in Oracle Order Management. Process attributes, such as dual UOM and lot control, are enabled depending on the inventory organization for the item on the sales order. Order Management accepts orders entered through Oracle Customer Relationship Management (CRM). Within CRM, orders can originate from TeleSales, Sales Online, and iStore, and are booked in Order Management, making the CRM suite of products available to Process customers, through Order Management. The *Oracle Order Management User's Guide* and *Using Oracle Order Management with Process Inventory Guide* describes how to setup and use this integrated solution.

## **Process Execution User's Guide**

The OPM Process Execution application lets you track firm planned orders and production batches from incoming materials through finished goods. Seamlessly integrated to the Product Development application, Process Execution lets you convert firm planned orders to single or multiple production batches, allocate ingredients, record actual ingredient usage, and then complete and close production batches. Production inquiries and preformatted reports help you optimize inventory costs while maintaining a high level of customer satisfaction with on-time delivery of high quality products. The *OPM Process Execution User's Guide* presents overviews of the tasks and responsibilities for the Production Supervisor and the Production Operator. It provides prerequisite setup in other applications, and details the windows, features, and functionality of the OPM Process Execution application.

## **Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing**

Oracle Process Manufacturing and Oracle Advanced Planning and Scheduling (APS) combine to provide a solution for process manufacturers that can help increase planning efficiency. This solution provides for constraint-based planning, performance management, materials management by exception, mixed mode manufacturing that enables you to choose the best method to produce each of your products, and combine all of these methods within the same plant/company. The *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing User's Guide* describes how to setup and use this application.

## **MPS/MRP and Forecasting User's Guide**

The Oracle Process Manufacturing Material Requirements Planning (MRP) application provides long-term "views" of material demands and projected supply actions to satisfy those demands. The Master Production Scheduling (MPS) application lets you shorten that view to a much narrower and immediate time horizon, and see the immediate effects of demand and supply actions. The *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide* describes how to setup and use this application.

## **Capacity Planning User's Guide**

The OPM Capacity Planning User's Guide describes the setup required to use OPM with the Oracle Applications Advanced Supply Chain Planning solutions. In addition, Resource setup, used by the OPM Production Execution and New Product Development applications, is also described.

## **Using Oracle Process Manufacturing with Oracle Manufacturing Scheduling**

Oracle Process Manufacturing integrates with Oracle Manufacturing Scheduling to manage and utilize resources and materials. Through the Process Manufacturing application, you set up manufacturing, inventory, procurement and sales order data. Through the Manufacturing Scheduling application, you can optimize the schedule based on resource and component constraints and user predefined priorities. Using different optimization objectives, you can tailor Manufacturing Scheduling to meet your needs.

Using Oracle Manufacturing Scheduling helps you improve productivity and efficiency on your shop floor. By optimally scheduling shop floor jobs, and being able to quickly react to unplanned constraints, you can lower manufacturing costs, increase resource utilization and efficiency, and increase customer satisfaction through improved on-time delivery. The *Using Oracle Process Manufacturing with Oracle Manufacturing Scheduling User's Guide* describes how to setup and use this integrated solution.

## **Product Development User's Guide**

The Oracle Process Manufacturing Product Development application provides features to manage formula and laboratory work within the process manufacturing operation. It lets you manage multiple laboratory organizations and support varying product lines throughout the organization. You can characterize and simulate the technical properties of ingredients and their effects on formulas. You can optimize formulations before beginning expensive laboratory test batches. Product Development coordinates each development function and enables a rapid,

enterprise-wide implementation of new products in your plants. The *Oracle Process Manufacturing Product Development User's Guide* describes how to setup and use this application.

### **Quality Management User's Guide**

The Oracle Process Manufacturing Quality Management application provides features to test material sampled from inventory, production, or receipts from external suppliers. The application lets you enter specifications and control their use throughout the enterprise. Customized workflows and electronic record keeping automate plans for sampling, testing, and result processing. You can compare specifications to assist in regrading items, and match customer specifications. Aggregate test results and print statistical assessments on quality certificates. Several preformatted reports and inquiries help manage quality testing and reporting. The *Oracle Process Manufacturing Quality Management User's Guide* describes how to set up and use this application.

### **Implementation Guide**

The *Oracle Process Manufacturing Implementation Guide* offers information on setup. That is, those tasks you must complete following the initial installation of the Oracle Process Manufacturing software. Any tasks that must be completed in order to use the system out-of-the-box are included in this manual.

### **System Administration User's Guide**

Much of the System Administration duties are performed at the Oracle Applications level, and are therefore described in the *Oracle Applications System Administrator's Guide*. The *Oracle Process Manufacturing System Administration User's Guide* provides information on the few tasks that are specific to OPM. It offers information on performing OPM file purge and archive, and maintaining such things as responsibilities, units of measure, and organizations.

### **API User's Guides**

Public Application Programming Interfaces (APIs) are available for use with different areas of the Oracle Process Manufacturing application. APIs make it possible to pass information into and out of the application, bypassing the user interface. Use of these APIs is documented in individual manuals such as the *Oracle Process Manufacturing Inventory API User's Guide*, *Oracle Process Manufacturing Process Execution API User's Guide*, *Oracle Process Manufacturing Product Development Formula API User's Guide*, *Oracle Process Manufacturing Product Development Recipe API User's Guide*, *Oracle Process Manufacturing Quality Management API User's Guide*,

and the *Oracle Process Manufacturing Cost Management API User's Guide*. Additional API User's Guides are periodically added as additional public APIs are made available.

# Installation and System Administration

## Oracle Applications Concepts

This guide provides an introduction to the concepts, features, technology stack, architecture, and terminology for Oracle Applications Release 11*i*. It provides a useful first book to read before an installation of Oracle Applications. This guide also introduces the concepts behind Applications-wide features such as Business Intelligence (BIS), languages and character sets, and Self-Service Web Applications.

## Installing Oracle Applications

This guide provides instructions for managing the installation of Oracle Applications products. In Release 11*i*, much of the installation process is handled using Oracle Rapid Install, which minimizes the time to install Oracle Applications and the Oracle technology stack by automating many of the required steps. This guide contains instructions for using Oracle Rapid Install and lists the tasks you need to perform to finish your installation. You should use this guide in conjunction with individual product user guides and implementation guides.

## Upgrading Oracle Applications

Refer to this guide if you are upgrading your Oracle Applications Release 10.7 or Release 11.0 products to Release 11*i*. This guide describes the upgrade process and lists database and product-specific upgrade tasks. You must be either at Release 10.7 (NCA, SmartClient, or character mode) or Release 11.0, to upgrade to Release 11*i*. You cannot upgrade to Release 11*i* directly from releases prior to 10.7.

## “About” Document

For information about implementation and user documentation, instructions for applying patches, new and changed setup steps, and descriptions of software updates, refer to the “About” document for your product. “About” documents are available on *OracleMetaLink* for most products starting with Release 11.5.8.

## Maintaining Oracle Applications

Use this guide to help you run the various AD utilities, such as AutoUpgrade, AutoPatch, AD Administration, AD Controller, AD Relink, License Manager, and others. It contains how-to steps, screenshots, and other information that you need to run the AD utilities. This guide also provides information on maintaining the Oracle applications file system and database.

### **Oracle Applications System Administrator's Guide**

This guide provides planning and reference information for the Oracle Applications System Administrator. It contains information on how to define security, customize menus and online help, and manage concurrent processing.

### **Oracle Alert User's Guide**

This guide explains how to define periodic and event alerts to monitor the status of your Oracle Applications data.

### **Oracle Applications Developer's Guide**

This guide contains the coding standards followed by the Oracle Applications development staff and describes the Oracle Application Object Library components that are needed to implement the Oracle Applications user interface described in the *Oracle Applications User Interface Standards for Forms-Based Products*. This manual also provides information to help you build your custom Oracle Forms Developer forms so that the forms integrate with Oracle Applications.

### **Oracle Applications User Interface Standards for Forms-Based Products**

This guide contains the user interface (UI) standards followed by the Oracle Applications development staff. It describes the UI for the Oracle Applications products and how to apply this UI to the design of an application built by using Oracle Forms.

## **Other Implementation Documentation**

### **Oracle Applications Product Update Notes**

Use this guide as a reference for upgrading an installation of Oracle Applications. It provides a history of the changes to individual Oracle Applications products between Release 11.0 and Release 11*i*. It includes new features, enhancements, and changes made to database objects, profile options, and seed data for this interval.

### **Oracle Workflow Administrator's Guide**

This guide explains how to complete the setup steps necessary for any Oracle Applications product that includes workflow-enabled processes, as well as how to monitor the progress of runtime workflow processes.

## **Oracle Workflow Developer's Guide**

This guide explains how to define new workflow business processes and customize existing Oracle Applications-embedded workflow processes. It also describes how to define and customize business events and event subscriptions.

## **Oracle Workflow User's Guide**

This guide describes how Oracle Applications users can view and respond to workflow notifications and monitor the progress of their workflow processes.

## **Oracle Workflow API Reference**

This guide describes the APIs provided for developers and administrators to access Oracle Workflow.

## **Oracle Applications Flexfields Guide**

This guide provides flexfields planning, setup and reference information for the Oracle Process Manufacturing implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This guide also provides information on creating custom reports on flexfields data.

## **Oracle eTechnical Reference Manuals**

Each eTechnical Reference Manual (eTRM) contains database diagrams and a detailed description of database tables, forms, reports, and programs for a specific Oracle Applications product. This information helps you convert data from your existing applications, integrate Oracle Applications data with non-Oracle applications, and write custom reports for Oracle Applications products. Oracle eTRM is available on Oracle *Metalink*

## **Oracle Applications Message Manual**

This manual describes all Oracle Applications messages. This manual is available in HTML format on the documentation CD-ROM for Release 11*i*.

# Training and Support

## Training

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# Understanding Process Execution

This topic provides the fundamentals of Process Execution. It presents the basic tasks, responsibilities, and process flow required to produce a product. You are given a basic understanding of navigation and workbenches.

The following topics are covered:

- [About this Guide](#)
- [About Process Execution](#)
- [Tasks and Responsibilities](#)
- [Process Flow](#)
- [Understanding Navigation](#)

## About this Guide

The purpose of this guide is to provide reference information for end-level users of the OPM Process Execution application. It presents:

- Overviews of tasks and responsibilities in process execution.
- Prerequisite setup in other applications, including OPM System Administration, OPM Inventory Control, OPM Process Planning Applications, and OPM Product Development.
- Advice on setting up responsibilities, and menu selections available to the Production Supervisor and Production Operator.
- General discussions about firm planned orders, including procedures to create them and find them once they are created. Procedures are provided for editing a firm planned order, using the shop calendar, selecting validity rules for it, and rescheduling the order. The topic discusses how to convert the firm planned order to a batch, how to display material details in the order, and how to scale the firm planned order.
- General discussions about batches, including procedures to create and find them once they are created. Procedures are provided for editing a batch, using the shop calendar, finding and editing batch material details, finding and editing batch steps, editing batch step dependencies, editing batch step activities, rescheduling a batch, and terminating a batch. Procedures for editing resource details and associating batch steps with items are provided. Discussions of batch scaling and firm planned order scaling are included.
- General discussions of batch allocations. Procedures are provided for editing batch line allocations, determining unallocated items and managing inventory shortages. The procedure for picking lots and locations is provided.
- Procedures for releasing a batch and unreleasing a batch. Discussions of and procedures for incremental backflushing are provided. Procedures for recording batch production, editing resource transactions and recording batch operation work in process are included.
- Discussion of batch completion, including the procedure for completing a batch. Procedures are provided for reverting a batch to work in process, closing a batch, and reopening a closed batch.
- Procedures to run and interpret inquiries for a production schedule, work in process, material variances, batch step variances, resource variances, and resource usage.

- Several preformatted reports, including: Batch Pick List, Batch Ticket, Production Activity, Batch Yield Variance, and Material Usage and Substitution Variance.
- Process Execution Workbench, for summary information about batches and planned orders by batch, firm planned order, plant, product, and status.
- Production Scheduler Workbench, for a basic understanding of the bucketed load for a selected set of plant resources, continuous resource loading, and a chart of activities to assist in the rescheduling of batches and firm planned orders. You can change plant assignments, adjust bucket sizes, and filter batches and firm planned orders. You can also reschedule batches and firm planned orders, or batch steps from the navigator, by using the resize option, or by using the drag-and-drop option. You can use the shop calendar to reschedule batches and firm planned orders.

Depending on your system security profile, it is possible that you do not have access to all of the windows and functions described in this guide. If you do not see a menu option described, and you need to access it, then contact your system administrator.

## About Process Execution

Increasing productivity while minimizing labor and operational costs is key to successful product profitability. Oracle Process Manufacturing Process Execution responds to the need for an efficient production environment by providing a seamless coordination of human and material resources within the process manufacturing environment. The application helps businesses respond quickly to changing customer requirements while maintaining or enhancing product margins.

Competitive urgencies are on the rise as plants ready themselves to meet the challenge of e-Business. The e-Business accelerates the need for real time visibility of shop floor activities. Managers must understand how labor is being utilized in their facilities so that they can identify the impact of unplanned overtime on overall profitability. All cost variances must be accessible to Production Supervisors and upper managers so that they can take immediate corrective action.

### **Drive Product Costs Below the Competition**

There are three requirements for businesses to offer products at a lower cost than their competitors:

- Inflation adjusted product costs must decrease.
- Logistics costs must decrease.
- Manufacturers need to know true cost and profit for each product.

Each requirement needs to be analyzed thoroughly before change is implemented, since cutting costs can damage product quality.

### **Use Cost Control Oriented Data**

In order to identify the cost of an activity, a continuing analysis of planned and actual time to manufacture finished goods must be traced throughout the production process. The Process Execution application generates this cost control oriented data that is needed for critical decision making in the plant. Manufacturers use this information to track the financial impact of improvements to production processes. As part of total quality initiatives, production facilities are able to document improvements based on planned and actual times required for a manufacturing process. As a management decision-making tool, cost analysis provides the financial support data to help managers meet the need to offer products at a lower cost than their competitors.

### **Optimize Inventory Costs While Maintaining Customer Satisfaction**

The dynamics between on-time delivery and the cost of inventory requires careful planning to maintain high customer satisfaction. The Process Execution application keeps inventory current with thorough allocation procedures and incremental backflushing. Material and resource usage inquiries help managers evaluate production and inventory variances. Oracle Process Planning Applications assist in the management of onhand inventory quantities to reduce physical inventory and cycle counting. In order to optimize inventory carrying costs, managers need to identify the cost of putting away stock receipts and moving material within a warehouse, including how much time is spent in these non-value added activities. Process Execution helps operations managers increase productivity while minimizing labor and material costs to continuously improve product profits while maintaining a high level of customer satisfaction.

## Tasks and Responsibilities

Efficient production is the result of coordinating and optimizing the availability of human and material resources within production facility. Effective information transfer is key to the success. Each job role must collaborate at various points throughout the production cycle.

The following is representative of the work breakdown structure required to produce a production batch. It lists most of the key tasks and the job titles responsible for those tasks:

- Create a batch.
  - Clerk
  - Production Operator
  - Planner
  - Production Supervisor
- Scale a batch.
  - Production Operator
  - Planner
  - Production Supervisor
- Allocate lots and locations from which ingredients are consumed.
  - Production Operator
  - Production Supervisor
- Start a batch.
  - Production Operator
  - Production Supervisor
- Start a batch step.
  - Production Operator
  - Production Supervisor
- Scale a work in process batch.
  - Production Operator
  - Production Supervisor

- Complete a batch step.
  - Production Operator
- Complete a batch.
  - Clerk
  - Production Operator
  - Production Supervisor
- Close a batch.
  - Production Supervisor

### **Accessing Windows**

The Production Supervisor has access to all windows and functions in this application. The Production Operator has access to fewer windows depending on the implementation. Contact the System Administrator to add window access to this responsibility.

## Process Flow

The Oracle Process Manufacturing Process Execution application records production batch information. This process can begin with a firm planned order or a production schedule requirement. The process can also begin in response to the requirement to reprocess materials that do not meet expected quality specifications. The application enables you to:

- Plan the production schedule with information from process planning applications.
- Create firm planned orders.
- Convert firm planned orders into single or multiple production batches.
- Schedule production batches.
- Allocate ingredients for batch production.
- Record actual ingredient usage.
- Record actual resource usage.
- Complete and close production batches.
- Record actual product production quantities.
- Analyze variances in actual production quantities used as compared to planned quantities.

The Process Execution application provides a seamless integration of the work breakdown structure outlined in the "Tasks and Responsibilities" topic. The Process Execution process flow consists of the following steps in each of the applications listed. Prerequisite Setup is required before the remaining steps are completed.

The Product Development application provides all tasks required for creation of formulas, operations, routings, and recipes. Process Execution begins with the requirement to produce material from a recipe created Product Development using a specific validity rule.

### Prerequisite Setup

Prerequisite setup must be completed for each of the following applications:

- OPM System Administration
  - Set up required profile options as described in *Oracle Process Manufacturing Implementation Guide* and *Oracle Inventory User's Guide*. Required.

- Set up unit of measure types, units of measure, plants, and document ordering.
- OPM Inventory Control
  - Set up the inventory calendar and items.
  - Set up warehouses.
  - Optionally, set up item lot and subplot control with unit of measure conversions, location control, inventory types and categories, allocation classes, allocation parameters, warehouse rules, and production rules.
- OPM Process Planning Applications
  - Set up Plant Warehouse relationships.
  - Optionally, set up Resources.
  - Optionally, set up Plant Resources.
- OPM Product Development
  - Set up Formulas.
  - Optionally, set up Operations.
  - Optionally, set up Routings.
  - Set up Recipes with Validity Rules.

### **Creating Planned Production Orders**

OPM Process Planning applications are able to create planned production orders. Production orders are recommendations to manufacture products. Planned orders are controlled by individual material requirement planning applications available to OPM, such as the Advanced Planning and Scheduling application. If demand causes the planning application to recommend that an order is changed or canceled, then the planning application can recommend, resize, reschedule, or delete the requirement. Detailed discussions of the planning applications are outside the scope of this documentation.

There is no requirement to run a planning application to create planned orders to manufacture products in the Process Execution application. This is an optional step. However, planning applications assist in the optimization of production operations and must be considered as a tool to streamline production efficiencies.

### **Creating Firm Planned Orders**

A Firm Planned Order represents an intent to manufacture a product. Firm planned orders are not controlled by planning applications. The planning application does not change or delete firm planned orders, and as a result, they are treated as firm orders. You can change the start date, completion date, and required date on a firm planned order.

There are two ways to create a firm planned order:

- Approve the requirement in the planning application that interfaces to Process Execution.
- Enter the firm planned order directly on the Create Batch/Firm Planned Order window.

Enter firm planned orders for master production schedule items that are finished goods or saleable items. There is no need to enter a firm planned order to manufacture products. This is an optional step.

### **Creating Batches**

Creating a batch is the same as scheduling a batch. There are three ways to create a batch:

- The batch is created from a MRP planned order.
- The batch is converted from a firm planned order.
- The batch is created directly on the Create Batch/Firm Planned Order window.

When you create a batch, the status changes to Pending.

### **Allocating Ingredients**

If any of the ingredients in the batch are lot or location controlled, then you must enter lots and locations for ingredients required to make the batch. You can set up ingredients to be allocated automatically or manually in the Inventory Control application. You must allocate ingredients before you indicate that the ingredients are actually consumed.

### **Timing Ingredient Allocation**

You determine when to allocate ingredients. You can allocate material before releasing a batch while the batch has a status of Pending. You can also allocate material after a batch is released while it has a status of WIP. However, you must allocate material before it can be consumed.

**Allocating a batch before releasing** Specify the material to be used in the batch. The advantage to allocating material before the batch is released is that you can print a Pick List to provide lot and location information to production resources responsible for staging material for the production run. The Process Execution application can allocate ingredients automatically if appropriate allocation classes are set up.

**Allocating a batch after releasing** Specify the material that was actually used in the batch. The advantage to allocating material after the batch is released is that material picking decisions can be made on the production floor.

The Process Execution application lets you use a combination of allocation methods and timing decisions for various items in a batch. There is no need for ingredients to be allocated at the same time or by the same method. However, before you complete a batch, allocate all its ingredients.

### **Releasing Batches**

Releasing a batch indicates that the batch is started. Batches that contain automatic consumption ingredients consume these ingredients upon release as long as these ingredients are allocated. For allocated ingredient lines set to automatic consumption, releasing a batch changes the pending transactions associated with these ingredients to completed transactions and consumes them from inventory. This action also changes the status of a batch from Pending to WIP. You release a batch by selecting Release from the Actions menu on appropriate windows.

### **Allocating Products**

If products or byproducts yielded by the batch are lot or location controlled, then you enter the code for the lot produced and the location where the product is yielded. Allocate products and byproducts before completing the batch.

### **Completing Batches**

Complete a batch to indicate that it is done. Batch products and byproducts are yielded. For product and byproduct lines set to automatic yield, batch completion converts pending inventory transactions associated with products and byproducts to completed transactions. This action also changes the status of the batch from WIP to Completed. Complete a batch by selecting Complete from appropriate Actions menus.

If you have not allocated any of the ingredients, products, or byproducts when you try to complete a batch, then the application indicates items requiring allocation on the Items Requiring Allocations window. Allocate the items listed on this window

to finish the batch completion process. You can make adjustments to ingredient, product, and byproduct quantities at this point or after batch completion.

### **Incrementally Backflushing a Batch**

Process manufacturing ingredients are sometimes consumed in portions throughout the production cycle to yield incremental product quantities. In order to keep inventory levels current, record material consumption and production yield as it occurs. Incremental backflushing lets you record production output incrementally prior to the batch completion, and enables the application to calculate and backflush ingredient usage.

Incremental backflushing can only be done on batches with a status of WIP or Completed batches that contain manual or incremental release items. You cannot drive incremental backflushing from an item that has a consumption type or yield type of Automatic or By Step. You cannot drive incremental backflushing with an item that has zero planned quantity. If any ingredients, products, or byproducts are not allocated, then the Incremental Backflushing batch routine displays unallocated material lines on the Items Requiring Allocation window.

### **Directly Completing a Batch**

You can directly complete a batch with a status of Pending. This action completes all steps.

### **Closing Batches**

The final step in the production cycle is closing the batch. Closing a batch prevents any further editing of the batch. This must be done after you are confident that all of the batch information is recorded correctly. Closing a batch also closes all steps, including those steps with a status of Complete.

### **Other Batch Operations**

After creation, production documents for batches, lab batches, and firm planned orders progress through various business cycle stages. For example, batches start with a status of Pending and usually end with a status of Closed. Firm planned order status starts with Pending and ends with a status of Converted.

The progression through the various stages is accomplished using whole batch functions. In the course of production runs you can make edits and adjustments to these production documents.

### **Canceling Batches**

A batch can only be canceled if it has a status of Pending. Canceling a batch deletes all its associated pending transactions. Only Pending batches can be canceled. To cancel a WIP batch, you must first unrelease the batch and then cancel it.

### **Unreleasing Batches**

For products and byproducts with a release type of Automatic, unreleasing a batch reverses any completed transactions associated with the ingredients or products in the batch and writes pending transactions to the database. The actual starting date is removed from the batch header. Other items and transactions are not affected by this action. You unrelease a WIP batch by selecting Unrelease from the Actions menu of the Batch window. The application gives you the option to delete any existing allocations if you allocated ingredients.

When you unrelease a batch with pending allocations, the application displays the question: Delete existing allocations?

- Respond Yes to cancel any previous allocations made for the batch.
- Respond No to retain previous allocations, and change the batch Status from WIP to Pending.

### **Unreleasing Batch Steps**

Unreleasing a batch step reverses the transaction, and writes a pending transaction to the database. The batch step status must be work in process to unrelease it. Resource transactions are reset to a status of Pending. Items with an Automatic By Step consumption type are reset to a status of Pending. The Actual Start date is deleted.

### **Reverting Batches to Work in Process**

When you revert a batch to work in process, the actual completion date is removed from the batch header. A reversing completed transaction is created for each existing completed transaction and a pending transaction is created. Actual quantities are reset to zero. All product and byproduct lines with a yield type of automatic are reverted to work in process. Resource transactions are reset to work in process.

### **Reverting Batch Steps to Work in Process**

Reverting a batch step to work in process posts pending transactions after posting reverse completed transactions for all product lines associated with the step with a yield type of Automatic by Step.

### **Reopening Batches**

Reopening a batch changes its status from Closed to Completed. When you attempt to reopen a closed batch, the:

- Batch status must be Closed.
- Batch transactions cannot be purged.
- Batch close cannot be posted to the subledger.
- Actual costing cannot be run on the batch if the financial period is closed. You receive a warning that actual costing was run if an actual costing period is still open when you attempt to reopen a batch. You can proceed.

The application displays the question: Do you want to reopen all the steps?

- If you respond Yes, then all steps are opened.
- If you respond No, then only the batch is opened. Batch steps must be opened individually.

### **Reopening Batch Steps**

Reopening a batch step changes the status of the step from Closed to Completed. The batch must have a status of WIP or Complete.

### **Understanding Phantom Batches**

Phantoms are intermediate item components produced in the process of making finished goods. They are tracked in inventory only by the ingredients they consume. Phantoms provide a convenient method to embed manufactured items rather than individual raw materials into a formula. These items are specified as ingredients in a formula despite the fact that they themselves are products. You explode phantoms manually or automatically.

When a production batch is created from a recipe that is based on a formula containing phantoms, each of the ingredients set up as an automatic phantom is exploded to generate a batch that produces the ingredient. This is a phantom batch. The formula used in the phantom batch could itself contain ingredients set up as phantoms. These individual components could also result in generating additional phantom batches.

Items set up as manual phantoms are not exploded automatically. Phantom items are exploded to create a batch that supplies the parent batch with ingredients. If the phantom is never exploded, then the only way that the parent batch can be completed is to change the item properties of the phantom ingredient so that it is no

longer a phantom. Once this is done, the ingredient is treated identically to an ingredient that is consumed from inventory.

When all required phantom explosions are completed, the structure of batches resembles a tree with branches. At its simplest level, this is a linear sequence and must be processed so that the lowest level batches yield products for the higher levels to consume as ingredients.

If you perform incremental backflushing on a batch that has a phantom ingredient set up as an incremental release item, then the phantom batch is also backflushed in the same ratio that is used for the parent batch. You are not advised of this process.

### **Terminating Batches**

Choose Terminate from the Actions menu to terminate a batch.

## Understanding Navigation

The following information is a summary of more detailed discussions found in the *Oracle Applications User's Guide*.

### **Navigating the Application**

In addition to the standard menu and tool palette, a hierarchical navigator provides a display of the objects in a treelike framework known as a workbench.

### **Node and Leaf**

The top-level nodes in the navigator are expanded to display groups of individual database objects. Lower level nodes, and the objects they contain, are indented to indicate that they belong to these higher level nodes. The terminal node in a branch is called a leaf node.

### **Menu and Tools**

Menu and tools let you access all globally available functions.

### **Data Organizer**

The Data Organizer groups objects on separate tabs. Each has a unique icon and its own hierarchy. The Process Execution application uses Data Organizer tabs to group batches and firm planned orders. Refer to the "Identifying Nodes and Tabs on the Navigator" topic for specific nodes and tabs that are used in Process Execution.

### **Summary Views**

Summary views provide the highest level of business information and only display information. When you select any container on the Data Organizer, the summary view can also list the contents of the container in a multirecord block.

### **Detail Views**

Detail views let you display and edit information.

Refer to the *Oracle Applications User's Guide* for more information on navigation.

### **► To navigate the application from the workbench:**

The following is a typical flow through the Process Execution application:

1. Logon to your assigned Responsibility.

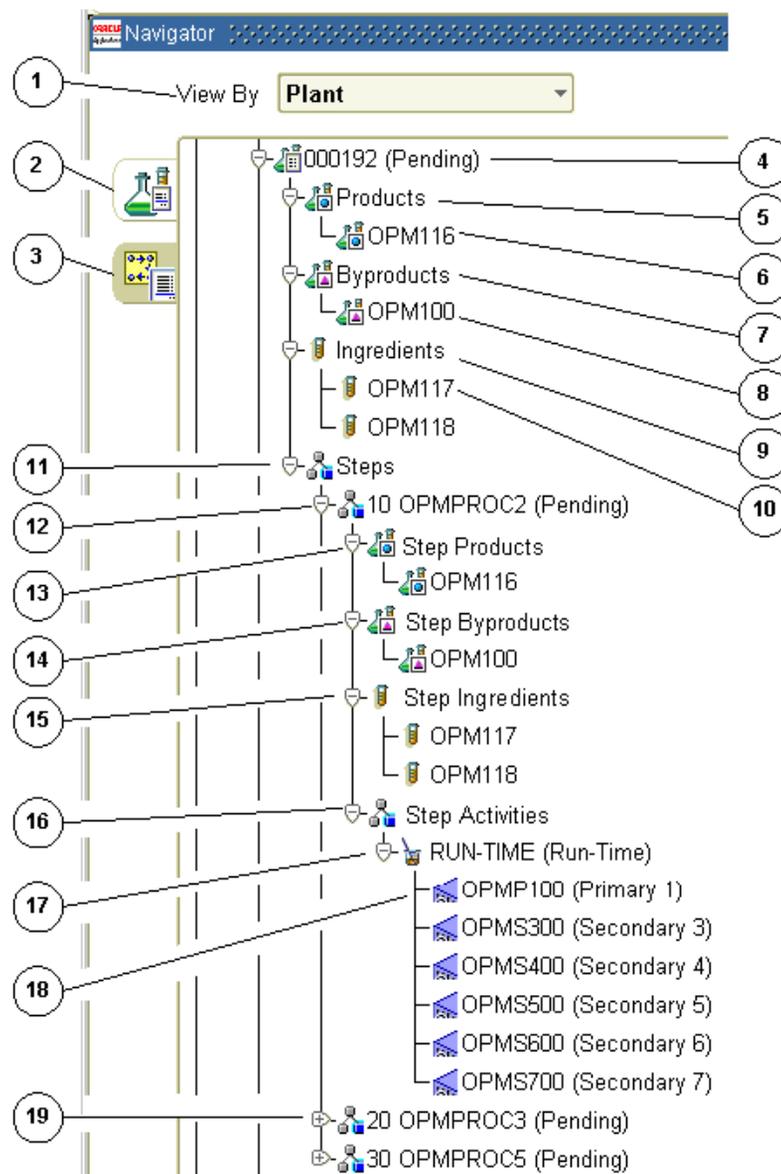
2. Select **Workbench** from the **Navigator** menu.
3. Click the region that contains the object type of interest. For example, the Process Execution Workbench includes these tabs:
  - Batches
  - Firm Planned Orders
4. Select the appropriate **View By** field. This field presents records sorted and grouped by the selection you make. The Process Execution View By fields are:
  - Plant
  - Firm Planned Order or Batch, depending on the tab selected
  - Status
  - Product
5. Use one of the following methods to find the appropriate folder:
  - Expand or collapse entries in the hierarchical Data Organizer.
  - Find the appropriate object from the results. Optionally, save the object in a Personal or Public folder.
6. Use one of the following methods to show the detailed view of a selected object:
  - Select the object in the Summary View and click **Details**.
  - Double-click the object in the Data Organizer until you reach the terminal or leaf object.
7. Perform actions on the selected object.
8. Navigate from detailed view to other related windows.

### **Identifying Nodes and Tabs on the Navigator:**

The following lists some of the typical elements displayed on the navigator when you view a batch by the plant scheduled to manufacture it:

- 1 is the View By box. You can view the list by Plant, Status, Batch, or Product.
- 2 is the Batches tab. Select it to display all batches available.
- 3 is the Firm Planned Orders tab. Select it to display all firm planned orders available.
- 4 is batch 000192 with the status Pending.
- 5 is the Products node for the batch.
- 6 is the product produced by the batch.
- 7 is the Byproducts node for the batch.
- 8 is the byproduct produced by the batch.
- 9 is the Ingredients node for the batch.
- 10 is the first of two ingredients used in the batch.
- 11 is the Steps node for the batch.
- 12 is step 10 in the batch. This batch step has a status of Pending.
- 13 is the Step Products node for step 10.
- 14 is the Step Byproducts node for step 10.
- 15 is the Step Ingredients node for step 10.
- 16 is the Step Activities Node for step 10.
- 17 is an activity in step 10.
- 18 is a batch resource used to perform the activity.
- 19 is step 20 in the batch. It has not been expanded.

The following graphic illustrates the previously described nodes and tabs in the navigator window.





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## Setting Up

The Process Execution application is seamlessly integrated to the Product Development application. Therefore, setup in Process Execution is limited to modifications that are required to recipes and their associated validity rules in order to produce the production batch. This topic provides the setup requirements. You must set up responsibilities and menu access.

The following topics provide the information required to set up Process Execution:

- [Setting Up in Other Applications](#)
- [Setting Up Responsibilities and Menu Access](#)

## Setting Up in Other Applications

The following topics present the prerequisite setup required prior to running the Process Execution application:

### Setting Up in OPM System Administration

Following is setup in the OPM System Administration application:

#### Set Up Profile Options

Set up the following profile options:

- GME: Allow Material Deletion
- GME: Allow Process Qty Less Than Min Capacity
- GME: Auto-Release Allocated Quantity Only
- GME: Backflush Resource Usage
- GME: Calculate Interim Resource Usage
- GME: Check Inventory Shortage Upon Save
- GME: Copy Formula Text
- GME: Copy Routing Text
- GME: Default Actual Resource Usage
- GMD: Default Consumption/Yield Type
- GME: Display Nonworking Days in Scheduler
- GME: Step Controls Batch Status
- GME: Use Auto-Allocation
- GME: Use Shop Calendar Default
- GME: Validate Flexfields on Server
- GME: Validate Planned Dates
- GME: Warn If Plan Qty is Greater than Allocated Qty

Refer to the *Oracle Process Manufacturing Implementation Guide* for more information.

#### Set Up Unit of Measure Types

Set up units of measure for mass, volume, and count.

**Set Up Units of Measure**

Define any new units of measure not previously used in the Product Development application. Specify the UOM type to which it belongs and a conversion factor to convert the new unit of measure to the reference unit of measure.

**Set Up Plants**

Set up Plant organizations for the Process Execution application. The Plant field on the Organizations window determines whether or not the organization is a manufacturing plant. Non Manufacturing Plant indicates the Organization is not a manufacturing plant. Manufacturing Plant indicates Organization is a manufacturing plant. When you set up an organization as a laboratory, verify that you select Laboratory as the Plant type on the Organizations window in the System Administration application.

**Set Up Document Ordering**

Set up numbered documents for production batches, and specify whether these documents are numbered in sequence automatically, or if numbers are entered manually. If you choose automatic document ordering, then specify the length of the document numbers.

Define document ordering for the following document types:

- PROD for production batches
- FPO for firm planned orders

See: *Oracle Process Manufacturing Implementation Guide*

**Setting Up in OPM Inventory Control**

Following is setup in the OPM Inventory Control application:

**Set Up the Inventory Calendar**

The inventory calendar is used to enter transactions in Oracle Process Manufacturing.

**Set Up Items**

Set up all items used to produce production batches including:

- Ingredients
- Products and Coproducts

- Byproducts

### **Set Up Unit of Measure Control**

Set up single or dual unit of measure control for each item.

### **Set Up Item and Lot Unit of Measure Conversions**

Set up unit of measure conversions between units of measure with differing unit of measure types. Conversions across each type must be set up at the item, lot, or subplot level. For example, the conversion from pounds to gallons, which is a conversion from mass to volume, is different for water than it is for ethanol because each has a different density.

### **Set Up Lot and Sublot Control**

Optionally, set up item lot, subplot, and location control. Set up item and lot unit of measure conversions. When a batch ingredient or a batch product is lot controlled, you can use:

- Manual inventory allocation to let you specify the lot used in batch production.
- Automatic inventory allocation to let the application specify the lot used in batch production.

### **Set Up Automatic Lot and Sublot Numbering**

Optionally, set up automatic lot and subplot numbering on the Lot Automation Parameters window in the Inventory Control application. Refer to the "Generating Automatic Lot/Sublot Numbering" topic in the *Oracle Process Manufacturing Inventory Management User's Guide* for additional information.

### **Set Up Status Control**

Optionally, set up lot status control. Status indicates whether certain lots can be used in production.

### **Set Up Item Types and Categories**

Optionally, set up item types and categories. Inventory types include inventory items, noninventory items, and consignment items such as consignment finished goods, and consignment inventory items.

### **Set Up Item Allocation Classes**

Allocation classes are required if you intend to allocate stock automatically to production batches, sales orders, or shipments. You assign an allocation class code

to each set of allocation parameters that you define. Allocation parameters associated with this class code become effective for the item. Allocation classes link items to allocation parameters. This is only required if you are using automatic, rule based allocation.

### **Set Up Allocation Parameters**

Set up allocation parameters. You must link allocation classes for automatic allocations to the allocation parameters that are required. You define these parameters on the Allocation Parameters window in Oracle Process Manufacturing Inventory Control application. You can set up automatic lot allocation or user initiated automatic lot allocation. If allocation parameters are not set up, then autoallocation uses the GMI:Allocation Type profile option.

**Automatic lot allocation** If you plan to let the application perform automatic lot allocation of inventory for production batches, then you use the Allocation Parameters window to specify the production lot allocation parameters that are used for all allocation classes. Specify the warehouses where these rules are valid.

**User Initiated automatic lot allocation** If you plan to let someone in production initiate the automatic allocation, then use the Allocation Parameters window to specify that this allocation is initiated by the user.

Personal Profile Options for GMI:Allocation Method and GMI:Allocation Type are defined in the System Administration application.

Oracle Process Manufacturing uses these defaults if allocation parameters are not provided. If you plan to let Oracle Process Manufacturing perform automatic lot allocation for sales orders or shipments, then enter allocation parameters in the Order Fulfillment application.

See: *Oracle Process Manufacturing Implementation Guide*

### **Set Up Warehouses**

Set up all warehouses where you plan to consume materials and store finished goods. Specify the warehouse where the plant consumes each item when it is used as an ingredient in a batch, and the warehouse where the plant replenishes each item when it is a product of a batch.

### **Set Up Plant Warehouse Relationships**

- For each item used as a batch ingredient, specify a warehouse source for ingredient consumption.

- For each product or byproduct generated by a batch, specify a warehouse that is replenished by the plant.

You can set up multiple consumption and replenishment warehouses for each item. If you set up more than one consumption or replenishment warehouse for an item, then the application selects one to use as default for batch transactions.

### **Set Up Production Rules**

Production rules enable you to specify a standard production quantity of material for each item produced. These rules are referenced by the MRP and MPS applications to schedule the arrival of materials and availability of plant resources. Oracle Process Manufacturing uses lead times entered for these rules to calculate completion dates and times for batches if a routing is not used. You can specify fixed or variable lead times for items. It is not necessary, however, to set up these rules in order to create batches.

See: *Oracle Process Manufacturing Inventory Management User's Guide*

### **Setting Up in OPM Process Planning Applications**

Following is setup in the OPM Process Planning applications:

#### **Set Up Plant Warehouse Relationships**

Set up plant warehouse relationships in Oracle Process Manufacturing Process Planning applications.

**Consumption Warehouses** Each raw material item that is used as an ingredient in a batch must have a consumption warehouse. This is the warehouse that supplies ingredients to the plant for production.

**Replenishment Warehouses** Each product or byproduct that is produced must have a replenishment warehouse. This is the warehouse that receives products or byproducts produced by the plant.

These definitions do not restrict which warehouses you use when you edit the warehouse on a transaction. For example, you can change the warehouse on an ingredient transaction to one that is not specified as a consumption warehouse for the item.

**Setting Up Plant Warehouses** Some items can be both ingredients and products, therefore you specify both consumption and replenishment warehouses for them. For example, skim milk can be both an ingredient, as in raw material for production of fat free cottage cheese, or a product, as in packaged skim milk.

The Plant Warehouses window in Oracle Process Manufacturing Process Planning applications lets you specify the warehouses where a plant consumes ingredients and the warehouses where a plant replenishes products. The consumption warehouse or replenishment warehouse specified for an item on this window is used as default for transactions when you enter a batch that uses the item as an ingredient or generates the item as a product. If the item is automatically allocated, then this is the warehouse where the application attempts to allocate ingredient quantities. Edit the warehouse on the Line Allocations or Pick Lots windows for the batch to consume from a different warehouse.

**Setting Up Multiple Plant Warehouse Types** You can set up multiple consumption and replenishment warehouses for each item. If you set up more than one consumption or replenishment warehouse for an item, then Oracle Process Manufacturing selects one to use as the default for batch transactions. Oracle Process Manufacturing selects this warehouse code in ASCII sort sequence, as follows: blanks, non-alphanumeric characters, numeric characters, uppercase alphabetic characters, and lowercase alphabetic characters. You must edit the warehouse on the appropriate batch transaction window to use a different warehouse.

**Shortcut for Setting Up Consumption and Replenishment Warehouses** If you have several items that share the same consumption and replenishment warehouses, then there is a shortcut to entering consumption and replenishment rules for these items. When you enter the items on the Oracle Process Manufacturing Inventory Items window, then enter one code in the Warehouse Item field for all of the items that share the same consumption and replenishment rules. Enter that warehouse item code in the Warehouse Item field on the Plant Warehouses window. Consumption and replenishment rules apply to all items that use the specified warehouse item code.

If all items use the same consumption and replenishment warehouses, then leave the Warehouse Item field on the Plant Warehouses window blank.

### **Set Up Resources**

Optionally, set up all resources required in process execution. Resources are the assets used to produce batches. These resources include production equipment and human resources. You are able to define resource types in general or specific terms. For example, in general terms a baking resource can be OVENS. However, each oven can be identified as an individual resource, such as OVEN 1, OVEN 2, or OVEN 3.

Each resource has a component classification code that is used for costing purposes. You have the option to group resources into resource classifications. For example, the resource classification COOKING UNITS could include OVENS, STOVES, and GRILLS. Usage statistics are collected at the resource level.

See: *Oracle Process Manufacturing Cost Management User's Guide*

### **Set Up Plant Resources**

Optionally, set up all plant resources required in process execution. Resources can operate at differing capacities from plant to plant. For example, one plant can operate a resource a full 24 hour day, while another plant can only operate that resource at 18 hours a day. Similarly, the cost of using a resource varies from plant to plant.

The Plant Resources window in Oracle Process Manufacturing Process Planning applications enables you to enter information regarding available resources at specific plants. This information includes cost management information, resource usage unit of measure, and available hours per day for the resource in a specific production plant. Planning applications use this information to determine the availability and throughput of resources in each specific plant.

### **Setting Up in OPM Product Development**

Following is setup in the OPM Product Development application:

#### **Set Up Formulas**

Formulas are the basis for production batches. They are part of a recipe that has at least one validity rule and an optional routing. Formulas are lists of ingredients and products with their associated quantities and processing instructions. In some cases, you can refer to a formula as a process manufacturing bill of material. Production batches are based on formulas defined in Product Development. Formulas are also used for planning, managing costs, and scheduling.

#### **Set Up Routings**

Optionally, set up routings. Routings are a sequenced set of operations that need to be performed to complete a production batch. The operations are presented in a series of steps that organize these operations into an orderly set of activities that have individual resources associated to them.

**Set Up Operations**

Optionally, set up operations. Operations are an ordered set of activities that have to be completed for a predetermined step in a production batch. Resource requirements that are needed to perform these activities are also specified. You build operations from activities that require resources.

**Set Up Activities**

Optionally, set up activities. Activities define the actual work and materials required to produce a batch. They have individual resources associated to them. Usage statistics are collected at the resource level.

**Set Up Recipes**

Recipes standardize the structure of all information that describes production of one or more products. Recipes have:

- Formulas that define the relationship of material resources consisting of products, ingredients, and byproducts.
- Routings that define the relationships of nonmaterial resources consisting of labor and equipment operations with activities and their associated resources.
- Processing instructions that encompass the work instructions needed to produce the products.

**Set Up Validity Rules**

Validity Rules provide a combination of a quantity of material and an effective date that is used by production, planning, costing, or material safety data sheets in one or more specified organizations. Validity Dates are ordered by Organization, Product, Recipe Use, and Start Date. Validity Rules have effective dates.

**Set Up GMD:Default Consumption/Yield Type**

Set the profile option to 0, Automatic, for automatic consumption of ingredients and automatic yield of products and byproducts. This is the default.

Set the profile option to 1, Manual, to have any inserted ingredients default to manual consumption and inserted products and byproducts default to manual yield.

Set the profile option to 2, Incremental, to have any inserted items default to incremental consumption or incremental yield. This setting is required for incremental backflushing.

Set the profile option to 3, Automatic By Step, for automatic consumption of ingredients and automatic yield of products and byproducts as each step is completed.

See: *Oracle Process Manufacturing Product Development User's Guide*

## Setting Up Responsibilities and Menu Access

Set up responsibilities and assign one or more of them to each user. The following are menu and submenu selections and limitations in the Process Execution responsibilities:

### **Production Supervisor**

- Workbench
- Create Document
- Batches
- Firm Planned Order
- Batch Material Details
- Firm Planned Order Material Details
- Batch Steps
- Incremental Backflush
- Batch Operation WIP
- Inquiries
  - Production Schedule
  - Batch Step Variance
  - Material Variance
  - Resource Variance
  - Work In Process
- Reports
  - Batch Pick List
  - Batch Ticket
  - Batch Yield Variance
  - Material Usage and Substitution Variance
  - Production Activity

## **Production Operator**

- Workbench, with limited access to window functionality as listed.
- Batches, limited to Edit Text, Edit Parent, and View Validity Rules.
- Firm Planned Order, limited to Edit Text, Edit Parent, and View Validity Rules.
- Batch Material Details, limited to Autoallocate, Autoallocate Line, Edit Phantom, Edit Parent, Edit Text, Inventory Summary, Incremental Backflush, Inventory Shortage, Specifications, Samples, Results, and Pick Lots.
- Firm Planned Order Material Details, limited to Edit Text, Edit Phantom, Edit Parent, Inventory Summary, Specifications, Samples, and Results.
- Batch Steps, limited to Edit Text, Release, Complete, Unrelease, and Revert to WIP.
- Incremental Backflush
- Batch Operation WIP
- Inquiries
  - Production Schedule
  - Batch Step Variance
  - Material Variance
  - Resource Variance
  - Work In Process
- Reports
  - Batch Pick List
  - Batch Ticket
  - Batch Yield Variance
  - Material Usage and Substitution Variance
  - Production Activity

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## Firm Planned Orders

This topic provides a general understanding of firm planned orders, including how to find one once it is created on the Create Batch/Firm Planned Order window. You are shown how to modify a firm planned order, how to select validity rules, and reroute it. You are also shown how to reschedule the firm planned order. This topic also discusses how to convert the firm planned order to a batch, how to display material details in the order, and how to scale the firm planned order.

The following topics discuss how Process Execution uses firm planned orders:

- [Requirements](#)
- [Solutions](#)
- [Understanding Firm Planned Orders](#)
- [Finding a Firm Planned Order](#)
- [Selecting Validity Rules for a Firm Planned Order](#)
- [Rerouting a Firm Planned Order](#)
- [Editing a Firm Planned Order](#)
- [Finding Firm Planned Order Material Details](#)
- [Displaying Firm Planned Order Material Details](#)
- [Rescheduling a Firm Planned Order](#)
- [Converting a Firm Planned Order to a Batch](#)
- [Scaling a Firm Planned Order](#)

## Requirements

Following are some requirements that customers have for firm planned orders in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Can the firm planned order be used as a material planning tool?**

Yes. Although the firm planned order does not commit onhand inventory, it is a useful planning tool, since it serves as both a reminder of future production events and can be used to create batches. The pending supply and demand from a firm planned order is visible to and used by OPM Process Planning applications.

### **Is it difficult to reschedule a firm planned order?**

No. Firm planned orders can be rescheduled and subsequently modified using the Reschedule window and the Firm Planned Orders window.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for firm planned orders.

**Using the Firm Planned Order as a Planning Tool** A firm planned order is similar to a production batch in that it creates a time phased supply and demand of material using pending transactions. However, the firm planned order itself does not commit current onhand inventory. This distinction separates medium and long range demand from close range production batch demand. Inventory cannot be allocated against a firm planned order. However, the firm planned order can be converted into multiple, simultaneous, or consecutive batches. Therefore, it is possible for firm planned orders to be used for aggregate production planning or as a multi-batch entry tool.

**Reschedule or Modify Firm Planned Orders Quickly** The Reschedule window is used to change the Planned Start date or Planned Completion date fields. The application recalculates the field that was not changed. It is possible to update only one date. The Firm Planned Order window enables additional modifications to firm planned orders that are not yet converted to batches.

## Understanding Firm Planned Orders

Firm Planned Orders are designed for medium and long range production planning. Inventory planners manage discrepancies between net requirements and actual orders that cover them. Unplanned events can change gross requirements. Planners cannot change the actual quantities of these gross requirements directly, however they can change the timing and quantities of material on orders. The firm planned order enables them to do this.

### Creating a Firm Planned Order

You create firm planned orders:

- from the MRP Action Messages Inquiry.
- from an Oracle Applications Advanced Planning and Scheduling Planner Workbench run.
- on the Create Batch/Firm Planned Order window.

Firm planned orders serve as a guideline for batch creation. When you convert a firm planned order to one or more batches, the application selects the appropriate formula or recipe and validity rule to use. If more than one validity rule exists, then you select the appropriate one for the production run. The application displays the appropriate Recipe Validity Rules Summary window for this selection. If you are converting a firm planned order to more than one batch, then you have the option to use one validity rule for all batches, or you can select individual validity rules for each batch. Since batches are created from firm planned orders based on a formula or recipe that is set up in the Product Development application, and not on the firm planned order itself, you cannot edit the products, ingredients, or byproducts on the firm planned order. You cannot edit quantities of these items directly, since the batch is based on a formula and not directly on the firm planned order. If you were permitted to edit these fields on the firm planned order, then the changes would be lost when you converted the firm planned order to a batch. However, you can scale a firm planned order. Since a batch is based on the firm planned order product quantity, the batch is automatically scaled when it is created.

Refer to the "Creating a Batch or Firm Planned Order" topic for more information.

## Finding a Firm Planned Order

The Find Firm Planned Orders dialog box lets you search for firm planned orders that are created for a plant.

### Prerequisites

- Create a firm planned order.

### ► To find a firm planned order:

1. Navigate to the Find Firm Planned Orders dialog box.
2. Make no entries to search all records. Enter any of the following criteria to narrow the search:
  - **Status** of the firm planned order as:
    - **Canceled** to find canceled firm planned orders.
    - **Converted Firm Planned Order** to find firm planned orders that were converted to batches.
    - **Pending** to find pending firm planned orders.
  - **Document** number to find a specific firm planned order using its document number. The combination of the default plant code and Document number are included in this search.
  - **Recipe** and **Version** to find firm planned orders that use a specific recipe or recipe and version combination.
  - **Formula** and **Version** to find firm planned orders that use a specific formula or formula and version combination.
  - **Routing** and **Version** to find firm planned orders that use a specific routing or routing and version combination.
  - **Product** to find firm planned orders that produce specific product.
  - **WIP Warehouse** to find firm planned orders that use a specific work in process warehouse.
  - **Planned Dates** for the firm planned order, including its:
    - **Start** date to find a specific planned starting date for firm planned orders.

- **Completion** date to find a specific planned completion date for firm planned orders.
  - **Required** date to find a specific required completion date for firm planned orders.
3. Click **Find**. The **Firm Planned Order** window displays the results of the search.
- **To enter a new firm planned order from the Find Firm Planned Orders window:**
1. Click **New**. The **Firm Planned Order** window displays.
  2. Enter the new firm planned order as described in the "Creating a Batch or Firm Planned Order" topic.

## Selecting Validity Rules for a Firm Planned Order

The Recipe Validity Rules Summary dialog box lets you select under which circumstances a recipe can be used. This only displays when there is more than one validity rule available for the firm planned order created. Validity rules provide a combination of material quantities and a range of effective dates used by production, planning, costing, or MSDS in one or more specified organizations. You select the Validity Rule and click OK. Refer to the *Oracle Process Manufacturing Product Development User's Guide* for a complete discussion of selecting and using recipe validity rules.

## Rerouting a Firm Planned Order

The Recipe Validity Rules Summary dialog box displays when you reroute a firm planned order so that you can select the appropriate validity rule.

### Prerequisites

- Create a firm planned order.

### ■ To reroute a firm planned order:

1. Choose **Reroute** from the **Actions** menu. The Recipe Validity Rules Summary dialog box displays so that you can select an effective date with a different routing. A message displays when no other validity rules exist for the formula.
2. Select a new validity rule.
3. Click **OK**.

Refer to the *Oracle Process Manufacturing Product Development User's Guide* for a complete discussion of selecting and using recipe validity rules.

## Editing a Firm Planned Order

The Firm Planned Order window lets you edit information entered on the Create Batch/Firm Planned Order window. You can edit text, convert the firm planned order to a batch, cancel the order, reroute the firm planned order, and calculate theoretical yield.

When you change the WIP warehouse on a firm planned order and convert it to batch, then the batch is created with the newly assigned WIP warehouse. The conversion of an firm planned order to a batch uses the WIP warehouse defined on the firm planned order.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- ❑ Set up the application as described in the "Setting Up" topic.

### ■ To edit a firm planned order:

1. Navigate to the **Firm Planned Order** window.
2. Query the firm planned order **Document** number.
3. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the document number assigned when you created the firm planned order.
  - **Status** displays the current status of the firm planned order as:
    - **Canceled** indicates that the firm planned order is canceled.
    - **Converted Firm Planned Order** indicates that the firm planned order is converted to batches.
    - **Pending** indicates that the order is created.
  - **Recipe** displays the code for the recipe used in the firm planned order.
  - **Recipe Version** displays the recipe version used in the firm planned order.
  - **Recipe Description** displays a brief description of the recipe.
  - **Formula** displays the code for the formula used in the firm planned order.

- **Formula Version** displays the formula version used in the firm planned order.
  - **Formula Description** displays a brief description of the formula.
  - **Routing** displays the code for the routing used in the firm planned order.
  - **Routing Version** displays the routing version used in the firm planned order.
  - **Routing Description** displays a brief description of the routing.
4. Enter the **WIP Warehouse** where the firm planned order is scheduled for production. The **Warehouse Description** displays. This field defaults to the warehouse used to cost the production activity when it was entered on the **Create Batch/Firm Planned Order** window. If you do not enter a WIP Warehouse, then the field defaults to the product replenishment warehouse that was set up on the **Plant Warehouses** window. Required.
5. The following fields are display only:
- **Planned Start** displays the date for the batch that satisfies the firm planned order. This field defaults from the date assigned on the **Create Batch/Firm Planned Order** window.
  - **Planned Completion** displays the date that is calculated automatically from the routing or production rules. If a routing exists, then the total routing time is added to the Planned Start date to calculate the Planned Completion date. If a routing does not exist, then the fixed and variable leadtimes entered on the Production Rules window in the OPM Inventory Control application are added to the Planned Start date to calculate the Planned Completion date. If neither a routing nor leadtimes exist, then the Planned Completion date defaults to the Planned Start date. Manual entry of a Planned Completion date calculates the Planned Start date when one was not entered previously.
6. Enter the **Required Completion** date for the firm planned order. Required.
7. **Calculate Step Quantity** is:
- Selected when the automatic step quantity calculation feature is enabled on the recipe.
  - Cleared when the automatic step quantity calculation feature is not enabled on the recipe.

When the Calculate Step Quantity is selected, quantities shown for batch steps are calculated from material quantities and step dependencies. These quantities

represent a dynamic accounting of step materials as ingredients are consumed and products, coproducts, and byproducts are yielded by the step.

8. **Update Inventory** is only accessible when the organization is a laboratory. This field cannot be cleared for a production plant. The field is:
  - Selected when inventory transactions are to be created in the firm planned order. This field is selected automatically when the plant is a production facility.
  - Cleared when inventory transactions are not to be created in the firm planned order. This can only be done for a laboratory firm planned order.
9. Save the window.

● **To create a firm planned order from the workbench:**

1. Navigate to the **Navigator** window.
2. Click the **Firm Planned Order** tab.
3. Choose **New** from the **File** menu. The **Create Batch/Firm Planned Order** window displays with **Firm Planned Order** as the default **Document Type**.

● **To edit text in a firm planned order:**

1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
2. Make appropriate text changes.
3. Save the window.

● **To convert a firm planned order to a batch:**

1. Choose **Convert To Batch** from the **Actions** menu. The **Firm Planned Order to Batch Conversion** window displays.
2. Convert a firm planned order into one or more batches as described in the "Converting a Firm Planned Order to a Batch" topic.
3. Click **OK**.

● **To cancel a firm planned order:**

1. Choose **Cancel** from the **Actions** menu. A firm planned order can only be canceled when it has a status of **Pending**. Canceling a firm planned order deletes all pending transactions associated with it.

2. The firm planned order is canceled.

■ **To reschedule a firm planned order:**

1. Choose **Reschedule** from the **Actions** menu.
2. Reschedule the firm planned order as described in the "Rescheduling a Firm Planned Order" topic.
3. Save the window.

■ **To reroute a firm planned order:**

1. Choose **Reroute** from the **Actions** menu.
2. Select a validity rule with a different routing. A message displays when no other validity rules exist for the formula.
3. Click **OK**.

■ **To apply a theoretical yield factor to the product quantities:**

1. Choose **Theoretical Yield** from the **Actions** menu.
2. Enter a **Yield Percent**. The value entered does not carry over to batches that are based on the firm planned order, however new batches are based on the new product quantity.
3. Click **OK**.
4. Save the window.

■ **To display recipe validity rules:**

Choose View Validity Rule from the Actions menu. The Recipe Validity Rules Summary dialog box displays.

■ **To display process instructions:**

1. Choose **Process Instructions** from the **Tools** menu. The **Process Instructions** window displays.
2. View all process instructions.
3. Click **Close** to close the window.

## Finding Firm Planned Order Material Details

The Find Firm Planned Order Material Details dialog box lets you find material details for firm planned orders. Search by status, document number, recipe, formula, routing, or step. Narrow the search by entering a version number for the recipe, formula or routing.

### Prerequisites

- Create a firm planned order.

### ■ To find firm planned orders details:

1. Navigate to the Find Firm Planned Order Material Details dialog box.
2. Make no entries to search all records. Enter any of the following parameters to narrow the search:
  - **Status** of the firm planned order as:
    - **Canceled** to find canceled firm planned orders.
    - **Converted Firm Planned Order** to find firm planned orders that were converted to batches.
    - **Pending** to find pending firm planned orders.
  - **Document** to find a specific firm planned order document number.
  - **Step** to find firm planned order materials that are associated to a specific step.
  - **Recipe** to find firm planned orders that use a specific recipe.
  - **Version** to find firm planned orders that use a specific recipe version.
  - **Formula** to find firm planned orders that use a specific formula.
  - **Version** to find firm planned orders that use a specific formula version.
  - **Routing** to find firm planned orders that use a specific routing.
  - **Version** to find firm planned orders that use a specific routing version.

## Displaying Firm Planned Order Material Details

The Firm Planned Order Material Details window lets you display all ingredients, products, and byproducts required for the firm planned order. You cannot edit this window. Planners cannot edit material details displayed on this window directly, however they can change the timing and quantities of material on orders.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- Enter and save recipes.
- Create a firm planned order.

### ■ To display material details for a firm planned order:

1. Navigate to the **Firm Planned Order Material Details** window.
2. Query the **Document** number for the firm planned order if it was not entered automatically as a result of displaying the **Material Details** window from the **Firm Planned Orders** window.
3. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the document number for the firm planned order.
  - **Status** displays the status of the firm planned order as:
    - **Pending** indicates the firm planned order is pending.
    - **Canceled** indicates that the firm planned order is canceled.
    - **Converted Firm Planned Order** indicates that the firm planned order is converted to a batch.
  - **Step** displays the step number entered for a firm planned order query. Only those materials associated with that step are retrieved. This field is blank if you did not query a specific step, or if you navigated to this window from the **Firm Planned Order** window.
  - **Operation** displays the name of the operation for the listed step.
  - **Step Status** displays the status of the displayed step.

- **Recipe** displays the recipe used in the firm planned order.
- **Recipe Version** displays the version of the recipe used in the firm planned order.
- **Formula** displays the formula used in the firm planned order.
- **Formula Version** displays the version of the formula used in the firm planned order.
- **Routing** displays the routing used in the firm planned order.
- **Routing Version** displays the routing version number.

## Ingredients

4. The following fields are display only:
  - **Line** displays the batch line number for the ingredient.
  - **Item** displays the item code for the ingredient.
  - **Description** displays a brief description of the ingredient as it appears on the item master.
  - **Original Qty** displays the initial amount of each ingredient when the firm planned order was first created. This field is a baseline for the initial creation of the firm planned order.
  - **Planned Qty** displays the amount of ingredients that are planned. You cannot edit this field on this window. However, the quantity displayed here changes when the firm planned order is scaled.
  - **UOM** displays the unit of measure for the quantities.
  - **Contribute to Yield** displays:
    - **No** if the ingredient does not contribute to yield.
    - **Yes** if the ingredient contributes to yield.
  - **Scale Type** displays:
    - **Fixed** if the ingredient is not scalable.
    - **Proportional** if the ingredient is scalable.
    - **Integer** if the ingredient is scalable by integer multiples.
  - **Scale Multiple** displays the scaling increment for the ingredient.

- **Scale Rounding Variance** displays the percent variance allowable for rounding when the Scale Type is Integer.
- **Rounding Direction** displays:
  - **Down** if the acceptable rounding direction is down to the nearest multiple.
  - **Either** if the acceptable rounding direction is up or down to the nearest multiple.
  - **Up** if the acceptable rounding direction is up to the nearest multiple.
- **Scrap Factor** displays the anticipated amount of ingredient lost in the manufacturing process as a percentage. For example, if the Scrap Factor is 10 percent, then an additional 10 percent of material is added to accommodate for this loss.
- **Required Qty** is the quantity of ingredient required.
- **Consumption Type** displays the type of ingredient consumption as:
  - **Automatic** when ingredients are consumed automatically.
  - **Automatic by Step** when ingredients are consumed automatically as the step is released.
  - **Incremental** when ingredient quantities are backflushed by incremental backflushing.
  - **Manual** when ingredients are consumed manually.
- **Phantom Type** displays:
  - **Not a phantom** indicates the ingredient is not a phantom item.
  - **Automatic** indicates that the ingredient is a phantom item that is exploded automatically.
  - **Manual** indicates that the ingredient is a phantom item that requires manual explosion from the **Actions** menu.
- **Phantom** displays:
  - **Exploded** if the ingredient is exploded previously.
  - **Unexploded** if the ingredient is not exploded.
- **Contribute to Step Qty** displays:
  - **Yes** if the ingredient contributes to the step quantity.
  - **No** if the ingredient does not contribute to the step quantity.

5. You can add the following fields from the folder:

- **Actual Qty**
- **Cost Allocation**
- **Unit of Measure**
- **WIP Plan Qty**

## Products

6. The following fields are display only:

- **Line** displays the batch line number for the product.
- **Item** displays the item code for the product.
- **Description** displays a brief description of the product as it appears on the item master.
- **Planned Qty** displays the amount of products that are planned. You cannot edit this field on this window. However, the quantity displayed here changes when the firm planned order is scaled.
- **Original Qty** displays the initial amount of each product when the firm planned order was first created. This field is a baseline for the initial creation of the firm planned order.
- **UOM** displays the unit of measure for the quantities.
- **Scale Type** displays:
  - **Fixed** if the product is not scalable.
  - **Proportional** if the product is scalable.
- **Cost Allocation** displays the percent cost allocation for the product.
- **Yield Type** displays the type of product yield as:
  - **Automatic** when products are yielded automatically.
  - **Manual** when products are yielded manually.
  - **Incremental** when products quantities are calculated by incremental backflushing.
  - **Automatic by Step** when products are yielded automatically as the step is completed.

7. You can add the following fields from the folder:
  - **Actual Qty**
  - **Contribute to Yield**
  - **Phantom**
  - **Phantom Type**
  - **Required Qty**
  - **Rounding Direction**
  - **Scale Multiple**
  - **Scale Rounding Variance %**
  - **Scrap Factor (%)**
  - **Unit of Measure**
  - **WIP Plan Quantity**

### **By-Products**

8. The following fields are display only:
  - **Line** displays the batch line number for the byproduct.
  - **Item** displays the item code for the byproduct.
  - **Description** displays a brief description of the byproduct as it appears on the item master.
  - **Planned Qty** displays the amount of byproducts that are planned. You cannot edit this field on this window. However, the quantity displayed here changes when the firm planned order is scaled.
  - **Original Qty** displays the initial amount of each byproduct when the firm planned order was first created. This field is a baseline for the initial creation of the firm planned order.
  - **UOM** displays the unit of measure for the quantities.
  - **Scale Type** displays:
    - **Fixed** if the byproduct is not scalable.
    - **Proportional** if the byproduct is scalable.
  - **Yield Type** displays the type of byproduct yield as:

- **Automatic** when byproducts are yielded automatically.
  - **Manual** when byproducts are yielded manually.
  - **Incremental** when byproduct quantities are backflushed by incremental backflushing.
  - **Automatic by Step** when byproducts are yielded automatically as the step is completed.
9. You can add the following fields from the folder:
- **Actual Qty**
  - **Contribute to Yield**
  - **Phantom**
  - **Phantom Type**
  - **Required Qty**
  - **Rounding Direction**
  - **Scale Multiple**
  - **Scale Rounding Variance %**
  - **Scrap Factor (%)**
  - **Unit of Measure**
  - **WIP Plan Quantity**
10. Close the window.
- **To edit text for a firm planned order:**
1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
  2. Click **Edit Text** to edit the desired text.
  3. Save the window.
- **To edit a phantom in a firm planned order:**
1. Select the phantom material listed on the **Material Details** window.
  2. Choose **Edit Phantom** from the **Actions** menu.
  3. Edit the phantom.

4. Save the window.

► **To display process instructions:**

1. Choose **Process Instructions** from the **Tools** menu. The **Process Instructions** window displays.
2. View all process instructions.
3. Click **Close** to close the window.

## Rescheduling a Firm Planned Order

The Reschedule dialog box is available from the Firm Planned Order window. You use it to change a scheduled firm planned order. You can change the planned start date and time and the planned completion date and time on a firm planned order.

By changing the planned start date and time, you also change the planned start date and time for any pending ingredient transactions. By changing the planned completion date and time, you also change the planned completion date and time for any pending product and byproduct transactions.

If you change either the Planned Start or Planned Completion field, then the application queries whether to apply the change to the other field. If you respond Yes, then the application calculates the difference between the original date and time and the new date and time, and applies this difference to the entry in the field you did not enter. For example, if you add three days to the planned start date three days, then the application adds three days to the planned completion date and time.

### Prerequisites

- Create a firm planned order.

### ■ To reschedule a firm planned order:

1. Navigate to the Reschedule dialog box.
2. Enter one of the following:
  - **Planned Start** date for the firm planned order.
  - **Planned Completion** date for the firm planned order.
3. Click **OK**. **Apply Difference to Other Date** displays.
4. Click one of the following:
  - **Yes** to recalculate either the Planned Start or Planned Completion dates based on the date entered in step 2.
  - **No** to avoid recalculating either Planned Start or Planned Completion dates based on the date entered in step 2.
5. Click **OK**.

## Converting a Firm Planned Order to a Batch

The Convert Firm Planned Order To Batch window enables you to create one or more batches based on the firm planned order.

You display this window when you choose Convert to Batch from the Actions menu of the Firm Planned Order window. After you complete all required fields on the Firm Planned Order To Batch window, the Recipe Validity Rules Summary window displays when there is more than one validity rule, since you may want to use a different validity rule for the batch than you used for the firm planned order.

Leadtime defaults are based on the production rules, but can be changed. The Use Leadtime Entered indicator lets you select whether to use the leadtime, or have the batch creation process use the calculated duration from the production rules or the routing (if one exists). After creating a batch and before creating any transactions, the application checks for and uses the Plan Start Date and Plan Completion Date if these fields are entered.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create a firm planned order.

### ■ To convert a firm planned order to a batch:

1. Navigate to the **Convert Firm Planned Order To Batch** window.
2. **Product** displays the product code and product description for the first product produced by the firm planned order.
3. Enter the **Start** date or enter the **Completion** date. Required.
4. Enter the **Quantity Per Batch** as the amount of product to be produced by the batch created from the firm planned order. You can change the default value displayed. Required.
5. Enter the total number of **Batches** to be produced from the firm planned order. The default is one. Required.
6. Enter the **Leadtime** as the number of hours required to manufacture one batch. This is added to the Planned Start date to calculate the Planned Completion date. If the leadtime can be calculated from the batch steps or production rules, then any value entered here is overridden. Required.

7. Select **Use Leadtime Entered** to enforce the leadtime you entered. Clear this indicator to use the calculated duration from the production rules or the routing.
8. Enter the **Offset Type** as the multiple batch scheduling method to use by selecting:
  - **Start to Start** if the firm planned order requires scheduling of several batches that can start one after the other, separated only by any Offset that is specified in the Batch Offset field or start simultaneously if you enter a zero offset.
  - **Finish to Start** if the firm planned order requires scheduling of several batches that can only start after each individual batch has finished.

Required when multiple batches are scheduled.

9. The following fields are display only:
  - **Assigned** displays a quantity that is equal to the quantity per batch multiplied by the number of batches, and can be greater than the initial firm planned order quantity.
  - **Unassigned** displays the difference between the Product Quantity and the Assigned quantity. This quantity remains in the firm planned order.
10. Enter a **Batch Offset** as the amount of time between batches. This field is dependent on the scheduling method selected in the Offset Type field.
  - If you select the Start to Start scheduling method, then the value entered indicates the number of hours from the start of one batch to the start of another batch. For example, if you enter an offset value of 2, and the first batch starts at 8:00 a.m., then the next batch begins at 10:00 a.m.
  - If you select the Finish to Start scheduling method, then the value entered indicates the number of hours from the end of one batch to the start of another batch. For example, if you enter an offset value of 2, and the first batch ends at 10:00 a.m., then the next batch begins at noon.
11. The following fields are display only:
  - **Seq** displays the sequential number for each batch.
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch Num** displays the batch Document number. This is initially assigned as NEW. This field is editable when you use manual document numbering.

- **Batch Quantity** displays the quantity of product to be produced by the batch.
- **Planned Start** displays the planned start date and time for the batch.
- **Planned Completion** displays planned completion date and time for the batch.

12. Click **OK**.

■ **To convert a firm planned order to a batch using the shop calendar:**

1. Select **Use Shop Calendar** to schedule the firm planned order-to-batch conversion according to the shop calendar associated to the plant. If there is no shop calendar associated to the plant, then the conversion is scheduled contiguously.
2. Enter any additional information required on the window.
3. Click **OK**.

■ **To display the shop calendar:**

1. Click **Shop Calendar** to display the shop calendar.
2. Click **Details** to display shop calendar details.
3. Close the windows.

## Scaling a Firm Planned Order

The Scale Batch window enables you to scale a batch or firm planned order by a percentage or a specific amount. You enter a percentage to scale any scalable ingredient up or down by a percent of the displayed quantity. For example, if you enter 100 percent, then the product quantity is scaled up by 100 percent, or doubled, and the ingredient quantities are increased accordingly. If you enter -50, or negative fifty percent, then the product quantity is decreased by half. You can use an item quantity to scale materials. This is the simplest method to scale any scalable ingredients. You enter a new quantity of material.

To scale a firm planned order refer to the "Scaling a Batch or Firm Planned Order" topic.

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## Batch Creation

This topic provides a basic understanding of batches and batch status. You are shown how to find a batch, create a batch or firm planned order, select validity rules for a batch, reroute a batch, and how to edit a batch. The process of finding and editing batch material details is presented. You are also shown how to find individual batch steps and edit specific information in them, including batch step dependencies, and step activities. Other topics covered are the editing of batch step resources, the association of batch steps to items, and using the theoretical yield calculation. You are shown how to scale a batch or firm planned order, and how to reschedule a batch.

The following topics are covered:

- [Requirements](#)
- [Solutions](#)
- [Understanding Batches](#)
- [Understanding Batch Status](#)
- [Finding a Batch](#)
- [Creating a Batch or Firm Planned Order](#)
- [Selecting Validity Rules for a Batch](#)
- [Rerouting a Batch](#)
- [Editing a Batch](#)
- [Finding Batch Material Details](#)
- [Editing Batch Material Details](#)
- [Understanding Batch Step Quantity Calculations](#)

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- Finding Batch Steps
  - Editing Batch Steps
  - Editing Batch Step Dependencies
  - Editing Batch Step Activities
  - Editing Batch Step Resources
  - Adding or Modifying Process Parameters
  - Associating Batch Steps with Items
  - Using the Theoretical Yield Calculation
  - Understanding Batch Scaling
  - Scaling a Batch or Firm Planned Order
  - Rescheduling a Batch

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## Requirements

Following are some requirements that customers have for batches in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Is it possible to get a list of all completed batches for a plant by financial period?**

Yes. Use the Workbench Find Batch dialog box to list all completed batches in the defined financial period.

### **Does the application allow using up material that is near expiration?**

Yes. By creating a batch with a defined input quantity, it is possible to scale a batch to use up ingredients before they expire.

### **Does the application support consuming ingredients in multiples rather than fractional units?**

Yes. It is common for raw materials to be consumed in fractional quantities, but the Process Execution application also allows scaling and consuming ingredients in whole units.

### **Can a process be modeled on a process flow rather than material consumption basis?**

Yes. By assigning an individual status to each batch step and interrelating steps with step dependencies, the application automatically maintains the in-process status of each step based on the status of the steps dependent on it.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for batches.

**Display Batches Completed in a Financial Period** The Find Batch option on the Workbench can be used to find all completed batches in a defined financial period. Using the Advanced region on the Find Batch dialog box, enter the Actual Start Date with a Condition that is greater than or equal to the beginning of the financial period. Tab to the next row, and enter the Actual Start Date with a Condition that is less than or equal to the end date of the financial period. Click Find to list all batches in the defined period.

**Create Batches by Recipe, Product Output, Total Output or Total Input** The Create Batch/Firm Planned Order window provides four separate methods to enter a batch or firm planned order:

- Enter a recipe when a default output quantity is required.
- Enter product output when a specific quantity of a single product is required.
- Enter total output when a total quantity of all products and byproducts yielded by the batch is required.
- Enter total input when the total quantity of all ingredients that need to be consumed is required, or when a production resource such as a mixer requires a specific quantity of material for processing.

**Scale Batches by Increments** Ingredients are often consumed in full units of a specified size. For example, granulated sugar is available in 30-pound bags. When large production runs make relatively small variances in an ingredient virtually imperceptible, the application supports scaling to the closest integer quantity. Rather than specifying 87.2 pounds, integer scaling plans for 90 pounds, or three 30-pound bags.

**Model Production Process Flow** The process model ensures accurate, timely processing of materials. Production Supervisors are able to optimize the process flow and control production variances by defining step dependencies. The application delivers the flexibility to manage actual production reporting from either a material or process perspective.

## Understanding Batches

Process manufacturing is focused primarily in three areas:

- Batch Manufacturing, which is characterized by discrete, independent, production events called batches. These events are processed through a series of steps on resources that occur at different work centers. Specific ingredients are consumed at individual batch steps. Products or byproducts are yielded at specific steps.
- Continuous Manufacturing, which is sometimes referred to as a continuous process run. This type of production is usually done on dedicated equipment. For example, paper production is performed using continuous manufacturing. From the entry of raw material at the beater box to the output of product onto a roll, production progresses without intermission.
- Campaign Manufacturing, which is characterized by production runs of extended duration. Campaigns usually require highly specialized resources.

### Assigning Batch Status

The creation of a batch and its movement through production occurs with the assignment of four statuses:

- Pending
- Work in Process
- Completed
- Closed

Batch steps are also assigned these statuses during the production process. Batch status and batch step status are controlled manually or automatically.

If a batch is canceled, then it is assigned the status Canceled.

### Simultaneous Multiuser Batch Access

Multiuser batch access enables several individuals to retrieve and edit materials associated with different batch steps simultaneously. Users can edit material data for a batch step by locking the step rather than locking the entire batch. For example, a user can record lot consumption without locking batch access from other individuals working on the same batch. Batch manufacturing often requires more than one individual to record usage and yield simultaneously when the batch passes through several work centers. Each of these may consume a subset of the

ingredients that yield products, coproducts, and byproducts in one or more of batch steps.

Whole batch functions such as releasing or completing the batch are disabled as long as any part of the batch is locked.

**A Typical Production Scenario Illustrating Multiuser Batch Access** The following is a hypothetical scenario that can occur during a production cycle when using simultaneous multiuser batch access:

- The Production Supervisor schedules a batch by creating a Pending batch, using the Create Batch/Firm Planned Order window.
- The Production Supervisor releases the batch at the beginning of the shift by choosing Release from the Actions menu on the Batch window, and verifies the Start Date displayed.
- At the end of the shift, the production operators from each work center retrieve their batch step on the Batch Material Details window by querying the batch number and the step number. Each operator sees only the items associated with the step being edited. Each operator edits different parts of the same batch simultaneously.
- Production operators enter lots and quantities consumed for each ingredient associated with their step, and lots and quantities produced for each product and byproduct associated with their step.
- After the production operators have completed all their tasks, the Production Supervisor recalls the whole batch on the Batch window. After verifying that all the data is correct, the supervisor completes batch production by choosing Complete from the Actions menu.

### Understanding Batch Security

Your access to batches depends on the implementation of Process Execution in your facility. Contact your System Administrator when you have any questions about your individual access or your assigned responsibility.

### Creating a Batch

Batches are created through:

- Conversion from a firm planned order.
- Conversion from a material requirements planning order as discussed in Oracle Process Planning Application User's Guides.

- Entry on the Create Batch/Firm Planned Order window.

When a batch is created, it is assigned a status of Pending.

### **Batch Creation Calculations**

When the batch is created, the total output of the batch is divided by the routing quantity to compute a scale factor. The individual routing steps are then multiplied by this scale factor to calculate the batch step quantities. Based on these step quantities, the resource usages are computed according to the scale type assigned to each resource (proportional, fixed, or by charge). From these resource usages, the duration of the resources, activities, steps, and batch are computed.

**Allowing for Planned Process Loss** When creating a batch, allow for a planned process loss to reflect the planned percentage of material that is lost for a specific routing. Due to factors such as evaporation or changeovers, materials can be lost or unrecoverable in a production step. These lost materials need to be planned for to achieve the targeted process quantity for a step. The loss can vary depending on the material that is being processed. Therefore, a production loss factor needs to be defined at the product operation level and this loss must be reflected in both planning for and production of ingredients associated with a particular step.

### **Using the OPM Product Development Simulator and Optimizer Tool**

The OPM Product Development Simulator and Optimizer windows:

- Optimize the quantities for batch material lines
- Update a batch with the result of optimized quantities
- Rebalance a batch

Refer to the *Oracle Process Manufacturing Product Development User's Guide* for a complete discussion of the Simulator.

### **Understanding Batch Step Date Calculations**

When a pending transaction is created for a manual or incremental consumption ingredient, and the ingredient is associated to a step, then the transaction date is derived from the planned start date of the step. This also applies to a pending allocation that is entered through autoallocation, using the Pick Lots window, or manually. Rescheduling a step updates transaction dates of manual and incremental release type items associated to that step. The transaction date of default lot transaction for these items reflects the step dates.

When you select Completed to complete a transaction for a manual consumption ingredient, the transaction date defaults to the system date. Similarly, when a transaction for an incremental consumption ingredient is completed either through incremental backflushing, or by selecting Completed, then the transaction date also defaults to the system date. These rules apply to manual and incrementally yielded products. The pending transaction dates default to the planned completion date of their associated step.

### **Selecting Appropriate Validity Rules**

Choice of a validity rule determines whether a recipe can be used for a particular batch. This is based on manufacturing requirements for product quantity, planned start and completion dates for the batch, and the formula and routing that are approved for general use. Process loss can be overridden at the validity rule level, since quantities at the recipe level may not represent those quantities used in manufacturing. However, the standard quantity entered on a validity rule usually does represent these quantities. You can override the process loss on individual validity rules. Process Execution uses this process loss if it has been defined.

### **Releasing a Batch**

Releasing a batch indicates that production has begun and ingredients were consumed. You release a batch by choosing Release from the Actions menu on the Batch window.

Prior to releasing a batch, the transactions associated with the ingredient lines are called pending transactions. Pending transactions represent an expected or future change to inventory, as opposed to completed transactions which represent an actual change to inventory.

When you release a batch, the pending transactions associated with ingredient lines marked for automatic consumption are changed to completed transactions.

### **Shop Calendar Impact on Scheduling Batches and Firm Planned Orders**

The shop calendar lets production planners specify when a plant is operational and when it is not operational. Uptime and downtime can be based on the day of week, and edited for individual days to take into account holidays, overtime, and other nonworking time. OPM planning applications such as Material Requirements Planning (MRP) and Advanced Planning and Scheduling (APS) use the shop calendar when planning production. These applications do not recommend starting a batch during plant downtime.

If you attempt to reschedule an existing batch or batch step, and the plant is associated to a shop calendar, then the rescheduling operation considers the shop calendar when you select Use Shop Calendar.

**GME: Use Shop Calendar Default Profile Option** The GME: Use Shop Calendar profile option sets the default value for use of the shop calendar in a plant. The profile default is No. Set the option to Yes so that the Use Shop Calendar indicator is selected for you for each batch or batch step.

**How does this impact other Oracle applications?** Applications such as APS that query pending resource transactions in OPM Process Execution can be affected, because resource transactions can be created in multiple segments instead of a single segment.

Refer to the *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide* for a complete discussion of setting up the shop calendar.

## Implementation Considerations

Following are implementation considerations that define the limits of the shop calendar feature:

**Rescheduling the Batch and Batch Steps** All dates must comply with working time available on the shop calendar if one is available for use. Steps are rescheduled by recalculating dates. This is enforced whether or not the shop calendar is used.

**Date Changes for Batches and FPOs with No Routing or Production Rules** If you enter dates for a batch or an FPO that does not have a routing or a production rule, then it is assumed that the dates entered are accurate and reflect any downtime that occurs during production. The application does not consider the shop calendar to adjust for downtime under these circumstances. However, dates entered are validated against the shop calendar to warn you of scheduling during nonworking time. However, once the dates are accepted, the batch is created in a single, contiguous block of time.

The following actions do not make use of the shop calendar:

- Rerouting a batch
- Creating a batch step
- Inserting a step in a batch
- Scaling a batch

- Editing a step and step details
- Changing step dependencies
- Deleting a step or step details

**Limitations for Staggered Activities** Following is an example of staggered activities that are affected by shop calendar scheduling of nonworking time:

- Act1 is the startup activity
- Act2 is the actual process
- Act3 is the cleanup

In order to model this to be a startup, process, and cleanup, stagger these activities with offsets so that they follow each other.

- Act1 has an offset of zero and usage of one hour
- Act2 has an offset of one hour and usage of two hours
- Act3 has offset of three hours and usage of one hour

Assume that:

- Act1 starts at noon and lasts until 1 p.m.
- Act2 starts at 1 p.m. and lasts until 3 p.m.
- Act3 starts at 3 p.m. and lasts until 4 p.m.

If a shop calendar is applied that has working hours for a shop day defined from noon until 2 p.m. and from 3 p.m. until 5 p.m., then the times are:

- Act1 starts at noon and lasts until 1 p.m.
- Act2 starts at 1 p.m. and lasts until 4 p.m., and consists of two transactions:
  - Transaction1: 1 p.m. to 2 p.m.
  - Transaction 2: 3 p.m. 4 p.m.
- Act3 starts at 3 p.m. and lasts until 4 p.m. Note that this is not properly sequenced, because you do not begin cleanup until Act2 is complete.

The activities are modeled to be offset from the beginning of the step and not from each other. There is currently no way to accommodate dependencies between these activities.

**Understanding Warning Conditions** Warnings are issued for the reasons specified:

- If you attempt to schedule a batch that starts during nonworking time
- If you enter a planned completion date during nonworking time
- If the batch step spans nonworking time
- If the Contiguous indicator is set to Yes, and the batch spans nonworking hours

**Shop Calendar Impact on Enforcing Step Dependencies** If Enforce Step Dependency is selected, then you can change either the Planned Start Date or the Planned Completion Date, but you cannot change both dates. When you change one of these dates, then the other date is disabled. This restriction is enforced because the application must recalculate all dates based on a single date change. Business rules must maintain synchrony with the underlying data already entered.

If Enforce Step Dependency is not selected, then you are asked:

Do you want the application to recalculate the other date based on current resource usage? If you click No, then date gaps or date truncation can occur.

Date gaps occur when the span of the batch dates becomes larger than the calculated duration for the batch. The batch start date and batch completion date are truncated to meet the actual dates you enter on the Reschedule dialog box.

If there is no routing, then you can enter one or both dates, and no truncation errors are reported.

## Terminating Batches

The Terminate Batch option on the Actions menu of the Batches window lets you terminate the remainder of a batch. When you terminate a batch, the application:

- Selects the Terminated indicator on batch header.
- Completes all the WIP steps and sets indicators on these steps to Terminated.
- Cancels steps that are Pending. A Step Status of canceled is assigned.
- Deletes all pending inventory and resource transactions.
- Retains actual quantities and actual usages as they were at termination. This action does not change actual values.
- Permits entry of the actual completion date (termination date) as when completing a batch. The default is the system date.
- Completes the batch. You can search for completed batches that were terminated.

When a batch is terminated, the sample creation workflow notifications that are open are canceled. You need to manage any samples that are physically taken against the batch.

### **Terminating Batch Steps**

Pending steps that are canceled have no actual values. Phantom batches that are associated to pending steps are canceled regardless of their connection to a quality control sampling activity. WIP steps are completed, and are marked with the terminated indicator. Completed steps remain as they were at batch termination. A batch with a Terminated status is allowed to be closed in the same way as a Completed batch. A batch history record is created on terminating the batch. When a batch step is terminated, the sample creation workflow notifications that are open for this step are canceled. Manage any samples that are physically taken against the batch step.

### **Managing Batch Release for an Automatic Consumption, Non-Lot-or-Location-Controlled Ingredient with Insufficient On-hand Balance**

At batch release, if an automatic consumption, non-lot-or-location-controlled ingredient has insufficient on-hand quantity, and inventory cannot be driven negative, then the available quantity of material is consumed, and the remaining quantity displays in the default lot transaction. The available quantity is consumed and the remaining quantity is displayed as a pending transaction. This quantity is consumed when the batch is completed, if there is available quantity at that time. If there is insufficient inventory at batch completion, then the Inventory Shortages window displays.

### **Editing a Batch**

Edit a batch at its header, line, or step level. Editing a batch can have a major impact on the whole batch, so it is important to understand the consequences of the editing process.

### **Understanding the Enforce Step Dependency Indicator**

The Enforce Step Dependency indicator is set on the routing header. If a recipe uses this routing, then batches that are created from the recipe have the indicator selected on the Batch window.

When Enforce Step Dependency is selected, several business rules are applied:

- The Step Release Type field is set to Manual to indicate that the step must be released and completed manually.
- You cannot change the step dependency and step release type at the step level.
- All steps must be completed before you can complete the batch.
- All steps must be closed before you can close the batch.
- To close a step that is dependent on its previous step, the previous step must be closed.
- To unrelease the batch step, its prior dependent step must be pending.
- You must release a step before you can complete it.
- Before you can revert a dependent batch step to work in process, revert any preceding completed or closed dependent batch steps to work in process.
- Business rules validate step start and completion dates and times for appropriate batch step rescheduling.

Refer to the "Editing Batch Dependencies" topic for definitions of step dependency.

### **Using Minimum Transfer Quantities**

In the process of defining a routing, you can define a Minimum Transfer Quantity (MTQ) for a step. However, this limits the definition of what the routing step actually yields. By entering a MTQ value for a specific product in the batch step item association, the routing definition is enhanced beyond the ingredient level to the product level. The product must be associated to a batch step to permit the proper calculation of the time point where yield can be consumed. The value entered can be blank (null) to indicate that the material is consumed at the end of the step, or greater than or equal to zero. When a value greater than or equal to zero is entered, APS identifies the point in the batch step where the material that is yielded can be consumed by another demand. If you only define the MTQ, then APS can only identify when the material can be taken. This does not constrain the time frame in which the material can be consumed. Definition of a minimum delay and maximum delay, also known as a hardlink, applies this constraint to the MTQ yield point in the step for material that is yielded.

Record the minimum and maximum delay on the Batch Step/ Batch Item Association window. This entry is in the hour unit of measure for actual calendar time. The minimum delay informs APS that there is a waiting period after the MTQ yield point before material can be consumed. The maximum delay is added to the MTQ yield point to create the hard constraint for material being consumed by

another batch. The maximum delay informs APS that the material cannot be consumed after the defined time point.

The values for the minimum delay and maximum delay cannot be negative. If you enter a maximum value, then the minimum must be less than or equal to it. The entry of a MTQ for any of the products is not required for the entry of stationary or hardlink values.

Refer to *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing* for additional information.

## Understanding Batch Status

The status of the whole batch and individual batch steps progresses from Pending to Work in Process to Completed to Closed.

Use the Batch window to change whole batch status.

To change whole batch status, choose an action from the Actions menu:

- From Pending to Work in Process, choose Release.
- From Work in Process to Pending, choose Unrelease.
- From Pending or Work in Process to Completed, choose Complete.
- From Completed to Work in Process, choose Revert to WIP.
- From Completed to Closed, choose Close.
- From Closed to Completed, choose Reopen.
- Choose Terminate to terminate the batch.

Change batch step status on the Batch Steps window.

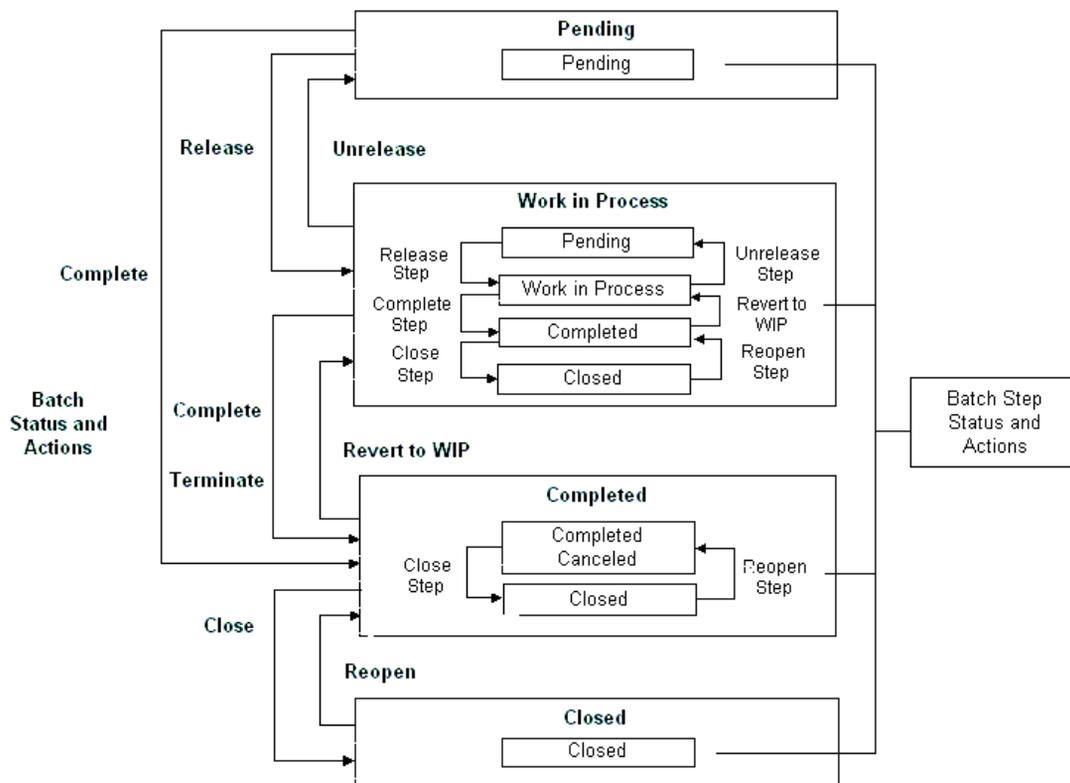
Pending batches can only have batch steps with a status of Pending. Work in Process batches can have batch steps with a status of Pending, Work in Process, Completed, or Closed. Completed batches can have batch steps with a status of Completed or Closed. Closed batches can only have batch steps with a status of Closed.

To change batch step status, choose the action indicated from the Actions menu:

- From Pending to Work in Process, choose Release Step.
- From Work in Process to Pending, choose Unrelease Step.
- From Work in Process to Completed, choose Complete Step.
- From Completed to Work in Process, choose Revert to WIP.
- From Completed to Closed, choose Close Step.
- From Closed to Completed, choose Reopen Step.

Terminating a batch cancels any remaining steps.

The following diagram summarizes the previous discussion:



## Finding a Batch

The Find Batches dialog box lets you search for batches that are entered for a plant.

### Prerequisites

- Create a batch.

### ► To find a batch:

1. Navigate to the Find Batches dialog box.
2. Make no entries to search for all records. Enter any of the following criteria to narrow the search:
  - **Status** of the batch as:
    - **Canceled** to find canceled batches.
    - **Pending** to find batches that are scheduled.
    - **WIP** to find batches that are work in process.
    - **Completed** to find batches that are complete.
    - **Closed** to find batches that are closed.
  - **Terminated** as:
    - **Yes** to find batches that were terminated.
    - **No** to find batches that were not terminated.
  - **Document** number to find a specific batch using its document number. The combination of the default Plant code and Document number are included in this search.
  - **Recipe** and **Version** to find batches that use a specific recipe or recipe and version combination.
  - **Formula** and **Version** to find batches that use a specific formula or formula and version combination.
  - **Routing** and **Version** to find batches that use a specific routing or routing and version combination.
  - **Product** to find batches that produce a specific product.
  - **WIP Warehouse** to find to find batches that use a specific work in process warehouse.

- **Planned Dates** for the batch, including its:
    - **From Start** date and **To Start** date to find a specific range of planned starting dates for batches.
    - **From Completion** date and **To Completion** date to find a specific range of planned completion dates for batches.
    - **From Required** date and **To Required** date to find a specific range of dates batches are required.
  - **Actual Dates** for the batch, including its:
    - **From Start** date and **To Start** date to find a specific range of actual starting dates for batches.
    - **From Completion** date and **To Completion** date to find a range of specific actual completion dates for batches.
    - **From Batch Close** date and **To Batch Close** date to find a specific range of actual batch closing dates.
3. Click **Find**. The **Batch** window displays the results of the search.
- **To create a new batch from Find Batches dialog box:**
1. Click **New**. The **Batch** window displays.
  2. Create the new batch as described in the "Creating a Batch or Firm Planned Order" topic.

## Creating a Batch or Firm Planned Order

The Create Batch/Firm Planned Order window lets the Production Supervisor responsibility create a batch or a firm planned order. If you have this responsibility, then you can access this window from the Batches or the Firm Planned Order windows when you create a new batch or firm planned order. You can also access this window from the Batch Material Details window, the Firm Planned Order Material Details window, and from the navigator.

Planned Start date, Planned Completion date, and Required Completion date fields are calculated as follows:

- Planned Start date defaults to the current date. You are warned when you enter a date earlier than the current date for a new batch or firm planned order.
- Planned Completion date is calculated automatically from the routing or production rules. If a routing exists, then the total routing time is added to the Planned Start date to calculate the Planned Completion date. If a routing does not exist, then the fixed and variable leadtimes entered on the Production Rules window in the Oracle Process Manufacturing Inventory Control application are added to the Planned Start date to calculate the Planned Completion date. If neither a routing nor leadtimes exist, then the Planned Completion date defaults to the Planned Start date. Manual entry of a Planned Completion date calculates the Planned Start date if one was not entered previously. The calculated Planned Completion date displays after the batch is saved.
- Required Completion date defaults to the planned completion date, and is not used in calculations.

The application uses a manually entered Planned Completion date when a routing or production rule does not exist. For each batch, the planned start date and planned completion date are validated against the validity rule dates used for the batch. Neither date can be outside the date range defined on the validity rule. If you enter the recipe and version on the Recipe tab and do not go to the Product tab, then the batch is created for the standard quantity specified on the Production Rules. If production rules are not set up, then the formula quantity is used. If you want to specify a different quantity, then use the Total Output tab where you enter the recipe, version, and output quantity (quantity of products and byproducts). If you have only one product, then this is equivalent to entering the product quantity on the Product Output tab.

### Prerequisites

- ❑ Set up the application as described in the "Setting Up" topic.

- ❑ Set up document types and document numbering as described in the *Oracle Process Manufacturing System Administration User's Guide*.

● **To create a batch or firm planned order:**

1. Navigate to the **Create Batch/Firm Planned Order** window.
2. Enter the appropriate **Document Type** to indicate entry of a **Batch** or creation of a **Firm Planned Order**. The Document Type is entered automatically when you arrive from the **Batch** window, the **Firm Planned Orders** window, or from the navigator. The default Document Type is Batch when you access the window from windows that relate to both batches and firm planned orders. Required.
3. **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
4. Determine whether you are using automatic or manual document numbering. The **Document Number** associated with the batch or firm planned order is entered as follows:
  - If you are using automatic document numbering, then a document number is assigned automatically and displays in this field after the batch is saved.
  - If you are using manual document numbering, then enter the number for the batch or firm planned order.

The combination of the Plant code and the Document Number uniquely identifies a batch or a firm planned order.

Required.
5. Enter the **WIP Warehouse** as the work in process warehouse for the batch or firm planned order. If you make no entry here, then the application selects the default WIP Warehouse from the plant warehouse rules.
6. Click one of the following regions to enter the batch or firm planned order:
  - **Recipe** to enter by specifying a recipe version with its default output quantity. Proceed to step 7.
  - **Product Output** to enter by specifying the quantity of a product required. Proceed to step 8.
  - **Total Output** to enter by specifying a recipe version and a required output quantity. Proceed to step 9.

- **Total Input** to enter by specifying a recipe version and defined input quantity. Proceed to step 10.  
Required.

### Recipe

7. To enter the batch or firm planned order by specifying a recipe version with its default output quantity:
  - a. Enter the **Recipe** to be used in the batch or firm planned order. Required.
  - b. Enter the recipe **Version** to be used in the batch or firm planned order. Required.
  - c. Proceed to step 11.

### Product Output

8. To enter the batch or firm planned order by specifying the quantity of product required.
  - a. Enter the **Product** code. Required.
  - b. Enter the **Product Quantity** and its **UOM**. Required. The **UOM Description** displays.
  - c. Proceed to step 11.

### Total Output

9. To enter the batch or firm planned order by specifying a recipe version and a required output quantity.
  - a. Enter the **Recipe** to be used in the batch or firm planned order. Required.
  - b. Enter the recipe **Version** to be used in the batch or firm planned order. Required.
  - c. Enter the **Output Quantity** and its **UOM**. Required. The **UOM Description** displays.
  - d. Proceed to step 11.

### Total Input

10. To enter the batch or firm planned order by specifying a recipe version and defined input quantity.

- a. Enter the **Recipe** and **Version** to be used in the batch or firm planned order. Required.
- b. Enter the **Input Quantity** and its **UOM**. Required.
- c. Proceed to step 11.

The following steps refer to any of the four ways to create a batch.

11. Enter the **Planned Start** date for the batch or firm planned order. The current date and time is the default.
12. Enter the **Planned Completion** date for the batch or firm planned order. This date is calculated as described at the beginning of this topic. If you enter a Planned Start date, and the batch or firm planned order either uses a routing or there are production rules for the product, then the Planned Completion date you enter is not used by the application.
13. Enter the **Required Completion** date to indicate the date and time required for batch completion. The Planned Completion date is the default.
14. Click **OK** to create the batch or firm planned order. The Recipe Validity Rules Summary dialog box displays when there is more than one validity rule. Select the appropriate validity rule as described in the "Selecting Validity Rules for a Batch" topic, and click **OK**.
15. Note the Document number assigned.

#### ■ **Displaying the shop calendar in batch scheduling:**

If a shop calendar is associated to the plant, then Shop Calendar is enabled.

1. Click **Shop Calendar**. If the plant has a shop calendar associated to it, then the shop calendar displays.
2. Navigate the shop calendar to determine available working time and nonworking time.
3. Close the window.

#### ■ **To create a batch or firm planned order using the shop calendar:**

1. Navigate to the **Create Batch/Firm Planned Order** window.
2. Select **Use Shop Calendar**. If the GME: Use Shop Calendar Default profile option is set to Yes, then this is already selected.
3. Enter other information on the window as described in this guide.

4. Click **OK** to create the batch or firm planned order. The Recipe Validity Rules Summary dialog box displays when there is more than one validity rule.

5. Select the appropriate validity rule as described in "Selecting Validity Rules for a Batch."
6. Click **OK**. Note the Document number assigned.

## Selecting Validity Rules for a Batch

The Recipe Validity Rules Summary dialog box lets you select under which circumstances a recipe can be used. This dialog box only displays when there is more than one validity rule available for the batch created. Validity rules provide a combination of material quantities and a range of effective dates used by production, planning, costing, or MSDS in one or more specified organizations. You select the Validity Rule and click OK. Refer to the *Oracle Process Manufacturing Product Development User's Guide* for a complete discussion of selecting and using recipe validity rules.

### Using the GME: Validate Planned Dates Profile Option

For each batch, the planned start date and planned completion date are validated against the validity rule dates used for the batch. Neither date can be outside the date range defined on the validity rule. This is enforced during batch creation and batch rescheduling. Certain business scenarios require extension of the planned completion date beyond the date entered on the validity rule without losing the planned start date validation.

This capability is also extended to validation of planned start date and planned completion date for firm planned orders.

The GME: Validate Planned Dates profile option controls how batch dates and firm planned order dates are validated against the validity rule used.

- Set to 0, Validate Both Planned Dates, the planned completion and planned start dates are validated against the validity rule date range when creating or rescheduling a batch or firm planned order.
- Set to 1, Validate Planned Start Date Only, only the planned start dates are validated against the validity rule date range when creating or rescheduling a batch or firm planned order.

## Rerouting a Batch

When you reroute a batch, the Recipe Validity Rules Summary dialog box displays to select the appropriate validity rule.

### Prerequisites

- Create a batch.

### ■ To reroute a batch:

1. Choose **Reroute** from the **Actions** menu. The Recipe Validity Rules Summary dialog box displays.
2. Select an effective date with a different routing. A message displays when no other validity rules exist for the formula.
3. Select a new validity rule.
4. Click **OK**.

Refer to the *Oracle Process Manufacturing Product Development User's Guide* for a complete discussion of selecting and using recipe validity rules.

## Editing a Batch

The Batch window lets you enter or modify header and product information for the batch.

### E-Record and E-Signature Approvals

There may be an e-signature event associated with this window. Refer to "Appendix C" for additional information on e-record and e-signature approvals associated with this window.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- ❑ Set up the application as described in the "Setting Up" topic.

### ► To edit a batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** number.
3. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the document number assigned when you created the firm planned order.
  - **Status** displays the current status of the firm planned order as:
    - **Pending** if a batch is created, but not yet released.
    - **WIP** if a batch is released to work in process.
    - **Completed** if a batch is completed, but not yet closed.
    - **Closed** if a batch is closed.
    - **Canceled** if a batch is canceled.
  - **Terminated** is selected if the batch was terminated.
  - **Recipe** displays the code for the recipe used in the batch.

- **Recipe Version** displays the recipe version for the validity rule that is associated with the batch.
  - **Recipe Description** displays a brief description of the recipe.
  - **Formula** displays the code for the formula used in the batch.
  - **Formula Version** displays the formula version used in the batch.
  - **Formula Description** displays a brief description of the formula.
  - **Routing** displays the code for the routing used in the batch. Edit this field on a Pending batch by choosing **Reroute** from the **Actions** menu.
  - **Routing Version** displays the routing version used in the batch.
  - **Routing Description** displays a brief description of the routing used in the batch.
4. Enter the **WIP Warehouse** where the batch is scheduled for production. The **Warehouse Description** displays. This field defaults to the warehouse used to cost the production activity when it was entered on the **Create Batch/Firm Planned Order** window. If you do not enter a WIP Warehouse, then the field defaults to the product replenishment warehouse that was set up on the **Plant Warehouses** window. Required.
  5. **Planned Start** displays the planned start date for the batch. This field defaults from the date assigned on the **Create Batch/Firm Planned Order** window. Edit this field for a Pending batch by choosing **Reschedule** from the **Actions** menu.
  6. **Actual Start** displays the date and time when the batch was released.
  7. **Planned Completion** displays the date that is calculated automatically from the routing or production rules. If a routing exists, then the total routing time is added to the Planned Start date to calculate the Planned Completion date. If a routing does not exist, then the fixed and variable leadtimes entered on the Production Rules window in the Oracle Process Manufacturing Inventory Control application are added to the Planned Start date to calculate the Planned Completion date. If neither a routing nor leadtimes exist, then the Planned Completion date defaults to the Planned Start date. Edit this field by choose **Reschedule** from the **Actions** menu.
  8. **Actual Completion** displays the actual completion date for the batch. If you do not enter a date in this field, then the current system date and time are entered when you complete the batch.
  9. Enter the **Required Completion** date for the batch. This field is for reference purposes only and is the batch due date.

10. **Batch Close** displays the date and time entered on the Close Batch dialog box.

11. **Calculate Step Quantity** is:

- Selected when the automatic step quantity calculation feature is enabled.
- Cleared when the automatic step quantity calculation feature is not enabled.

Calculate Step Quantity is selected on the Recipe Details window in the Oracle Process Manufacturing Product Development application. When Calculate Step Quantity is selected, quantities shown for each step are cumulative, and represent a dynamic accounting of step materials as ingredients are consumed and products, coproducts, and byproducts are yielded by the step. Clear the box to turn off the automatic step quantity calculation feature. If the recipe used in the batch does not have the Calculate Step Quantity selected, then you cannot select it here.

12. **Update Inventory** is:

- Selected when inventory transactions are created and inventory levels updated. This field is always selected automatically when the plant is a production facility.
- Cleared when inventory transactions are not to be created in the batch. This can only be done for a laboratory batch.

13. **Enforce Step Dependency** is:

- Selected when the batch enforces step dependency.
- Cleared when the batch does not enforce step dependency.

Refer to the "Understanding Batches" topic for a complete explanation of this feature.

14. The following folder fields are for use with Oracle Manufacturing Scheduling only:

- **Finite Scheduled** is selected when the WPS engine reschedules the batch.
- **Firmed** is selected when the WPS engine should not reschedule the batch.

Refer to "Defining Firmed Batch" in the *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing User's Guide* for additional information.

- **Priority** indicates how important the batch is. Lower numbers are higher priority.

15. Save the window.

● **To edit text in a batch:**

1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
2. Make appropriate text changes.
3. Save the window.

● **To cancel a batch:**

1. Choose **Cancel** from the **Actions** menu. A batch can only be canceled if it has a status of Pending. To cancel a work in process batch, you must unrelease the batch. Canceling a batch order deletes all pending transactions associated with it. You cannot restore a canceled batch. If you cancel a batch accidentally, then you must create a new batch.
2. The batch is canceled.

● **To reschedule a batch:**

1. Choose **Reschedule** from the **Actions** menu.
2. Reschedule the batch as described in the "Rescheduling a Batch" topic.
3. Click **OK**.

● **To reschedule a batch using the shop calendar:**

1. Choose **Reschedule** from the **Actions** menu. The Reschedule dialog box displays.
2. Select **Use Shop Calendar** to schedule the batch according to the shop calendar associated to the plant. This is already selected if the GME: Use Shop Calendar Default profile option is set to Yes.
3. Click **OK**. The batch is rescheduled according to the shop calendar associated to the plant.

● **To reroute a batch:**

1. Choose **Reroute** from the **Actions** menu. The Recipe Validity Rules Summary dialog box displays.
2. Select an effective date with a different routing. A message displays when no other validity rules exist for the formula.

3. Select a new validity rule.
4. Click **OK**.

■ **To release a batch:**

1. Choose **Release** from the **Actions** menu.
2. The Release a Batch dialog box displays.
3. Enter the **Actual Start Date** for the batch.
4. Click **OK**.

■ **To unrelease a batch:**

1. Choose **Unrelease** from the **Actions** menu.
2. The batch **Status** field changes to **Pending**.

■ **To close a batch:**

1. Choose **Close** from the **Actions** menu. The Close Batch dialog box displays.
2. Enter the **Batch Close Date**.
3. Click **OK**. The batch **Status** field displays **Closed**.

■ **To reopen a batch:**

1. Choose **Reopen Batch** from the **Actions** menu.
2. The batch **Status** field displays **Completed**.

■ **To complete a batch:**

1. Choose **Complete** from the **Actions** menu. The Complete Batch dialog box displays.
2. Enter the **Actual Completion Date** as the date the batch was completed.
3. Click **OK**. The batch **Status** field changes to **Completed**.

■ **To revert a batch to work in process:**

1. Choose **Revert to WIP** from the **Actions** menu.
2. The batch **Status** changes to **WIP**.

► **To calculate product quantity based on a specified yield factor:**

1. Choose **Theoretical Yield** from the **Actions** menu.
2. Make appropriate changes to the **Theoretical Yield**. The Theoretical Yield entered does not carry over to batches that are based on a firm planned order.
3. Save your work.

► **To create a batch from the workbench:**

1. Click the **Batch** tab on the **Navigator** window.
2. Choose **New** from the **File** menu. The **Create Batch/Firm Planned Order** window displays with **Batch** as the default **Document Type**.
3. Create the batch.
4. Click **OK**.

► **To create batches from the Batch Material Details window:**

1. Click **Materials Details**.
2. Press **Tab** to display the **Create Batch/Firm Planned Order** window.
3. Complete the fields as described in the "Creating a Batch or Firm Planned Order" topic.

► **To display the E-Record Generic Query:**

1. Choose **E-Record Details** from the **Actions** menu. The **E-Record Generic Query** displays if this option is implemented in your application.
2. Refer to "Appendix C" for information on e-records.
3. Close the window.

► **To display process instructions:**

1. Choose **Process Instructions** from the **Tools** menu. The **Process Instructions** window displays.
2. View all process instructions.
3. Click **Close** to close the window.

## Finding Batch Material Details

The Find Batch Material Details dialog box lets you find material details for batches. Search by status, document number, recipe, formula, routing, or step. Narrow the search by entering a version number for the recipe, formula or routing.

### Prerequisites

- Create a batch.

### ► To find material details:

1. Navigate to the Find Batch Material Details dialog box.
2. Make no entries to search all records. Enter any of the following parameters to narrow the search:
  - **Status** of the batch as:
    - **Canceled** to find canceled batches.
    - **Pending** to find pending batches.
    - **WIP** to find batches that are work in process.
    - **Completed** to find batch steps that are completed.
    - **Closed** to find batch steps that are closed.
  - **Terminated** as:
    - **Yes** to find batches that were terminated.
    - **No** to find batches that were not terminated.
  - **Document** to find a specific batch document number.
  - **Step** to find batch materials that are associated to a specific step.
  - **Recipe** to find batches that use a specific recipe.
  - **Version** to find batches that use a specific recipe version.
  - **Formula** to find batches that use a specific formula.
  - **Version** to find batches that use a specific formula version.
  - **Routing** to find batches that use a specific routing.
  - **Version** to find batches that use a specific routing version.

3. Click **Find**.
4. The **Batch Material Details** window displays the first batch found that meet the parameters entered.

## Editing Batch Material Details

The Batch Material Details window lets you display all ingredients, products, and byproducts required for a batch. You can update the actual quantity on this window or by using the Update Material Detail API that meets these criteria:

- Material should be a plain controlled item.
- Consumption type is automatic release or automatic release by step.
- Batch status is WIP or complete.
- Only one real completed transaction exists for the material. It is updated automatically based on the actual quantity entered.

You can update the actual quantity for lot and location control items that have a single completed transaction. You can also update an effective plain item with a zero actual quantity. This creates a new completed transaction for the quantity you specify in the Actual Qty field.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- Create a batch.

### ■ To edit batch material details:

1. Navigate to the **Batch Material Details** window.
2. Query the **Document** number for the batch if it was not entered automatically as a result of displaying this window from the **Batch** window.
3. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current Plant.
  - **Document** displays the document number for the batch.
  - **Status** displays the status of the batch as:
    - **Pending** indicates the batch is pending.
    - **WIP** indicates the batch is work in process.
    - **Completed** indicates the batch is completed.

- **Closed** the batch is closed.
- **Canceled** indicates that the batch is canceled.
- **Terminated** is selected if the batch was terminated.
- **Step** displays the step number entered for a batch query. Only those materials associated with that step are retrieved. This field is blank if you did not query a specific step, or if you navigated to this window from the **Batch** window.
- **Operation** displays the name of the operation for the listed step.
- **Step Status** displays the status of the displayed step.
- **Recipe** displays the recipe used in the batch.
- **Recipe Version** displays the version of the recipe used in the batch.
- **Formula** displays the formula used in the batch.
- **Formula Version** displays the version of the formula used in the batch.
- **Routing** displays the routing used in the batch.
- **Routing Version** displays the routing version number.

## Ingredients

4. **Line** displays the batch line number for the ingredient.
5. **Item** displays the item code for the ingredient. Required.
6. The following fields are display only:
  - **Description** displays a brief description of the ingredient as it appears on the item master.
  - **Original Qty** displays the initial quantity of each ingredient when the batch was first created. This field is a baseline from the initial creation of the batch, and cannot be changed.
  - **Planned Qty** displays the quantity of ingredients that were planned.
  - **UOM** displays the unit of measure for the original and planned quantities.
  - **WIP Plan Qty** displays the work in process planned quantity of ingredients. This field displays for batches with a status of WIP, Completed, or Closed.

7. **Actual Qty** displays the actual quantity of ingredients used. This field displays on batches with a status of WIP or Completed. You can edit this field for plain controlled items as previously described in the introduction to this topic.
8. **Allocated** is:
  - Checked if the material displayed on the ingredient line is fully allocated.
  - Cleared if the material displayed on the ingredient line was not fully allocated.
9. The following fields are editable in a batch with a status of Pending, except when the batch is a phantom. Phantom batches update these fields when the phantom is exploded.
  - **Contribute to Yield** displays:
    - **Yes** if the ingredient contributes to yield.
    - **No** if the ingredient does not contribute to yield.
10. The following fields are display only:
  - **Scale Type** displays:
    - **Fixed** if the ingredient is not scalable.
    - **Proportional** if the ingredient is scalable.
    - **Integer** if the ingredient is scalable by multiples.
  - **Scale Multiple** displays the scaling increment for the ingredient.
  - **Rounding Variance** displays the percent variance allowable for rounding when the Scale Type is Integer. If the Rounding Variance field is left blank, then rounding occurs without regard to variance.
  - **Rounding Direction** displays:
    - **Down** if the acceptable rounding direction is down to the nearest multiple.
    - **Either** if the acceptable rounding direction is up or down to the nearest multiple.
    - **Up** if the acceptable rounding direction is up to the nearest multiple.
  - **Scrap Factor** displays the anticipated amount of ingredient lost in the manufacturing process as a percentage. For example, if the Scrap Factor is 10 percent, then an additional 10 percent of material is added to accommodate for this loss.

- **Required Qty** displays the sum of the planned quantity and the scrap.
  - **Consumption Type** displays the type of ingredient consumption as:
    - **Automatic** when ingredients are consumed automatically when the batch is released.
    - **Manual** when ingredients are consumed manually.
    - **Incremental** when ingredients quantities are backflushed by incremental backflushing.
    - **Automatic by Step** when ingredients are consumed automatically as the step is released.
  - **Phantom Type** displays:
    - **Not a Phantom** indicates the ingredient is not a phantom item.
    - **Automatic** indicates that the ingredient is a phantom item that is exploded automatically.
    - **Manual** indicates that the ingredient is a phantom item that requires manual explosion from the **Actions** menu.
  - **Phantom** displays:
    - **Exploded** if the phantom ingredient is exploded previously.
    - **Unexploded** if the phantom ingredient is not exploded.
  - **Contribute to Step Qty** displays:
    - **Yes** if the ingredient contributes to the step quantity.
    - **No** if the ingredient does not contribute to the step quantity.
  - **Step** displays the step associated to the ingredient.
11. Add the following fields from the folder:
- **Cost Allocation**
  - **Unit of Measure**

## Products

12. The following fields are display only:
- **Line** displays the batch line number for the product.
  - **Item** displays the item code for the product.

- **Description** displays a brief description of the product as it appears on the item master.
- **Original Qty** displays the initial quantity of each product when the batch was first created. This field is a baseline from the initial creation of the batch, and cannot be changed.
- **Planned Qty** displays the amount of products that are planned. The Planned Qty changes when the batch is scaled, and is editable in a batch with a status of Pending.
- **UOM** displays the unit of measure for the original and planned quantities.
- **WIP Plan Qty** displays the work in process planned quantity of products. This field displays for batches with a status of WIP, Completed, or Closed.
- **Actual Qty** displays the actual quantity of products yielded. This field displays on batches with a status of WIP or Completed.

13. **Allocated** is:

- Checked if the material displayed on the product line is fully allocated.
- Cleared if the material displayed on the product line was not fully allocated.

14. The following fields are display only:

- **Scale Type** displays:
  - **Fixed** if the product is not scalable.
  - **Proportional** if the product is scalable.
- **Cost Allocation** displays the percent cost allocation for the product.
- **Yield Type** displays the type of product yield as:
  - **Automatic** when products are yielded automatically when the batch is completed.
  - **Manual** when products are yielded manually.
  - **Incremental** when product yield is calculated by incremental backflushing.
  - **Automatic by Step** when products are yielded automatically as the step is completed.
- **Step** displays the step associated to the product.

15. Add the following fields from the folder:

- **Actual Qty**
- **Contribute to Yield**
- **Phantom**
- **Phantom Type**
- **Required Qty**
- **Rounding Direction**
- **Scale Multiple**
- **Rounding Variance %**
- **Scrap Factor (%)**
- **Unit of Measure**
- **WIP Plan Qty**

## **By-Products**

16. The following fields are display only:

- **Line** displays the batch line number for the byproduct.
- **Item** displays the item code for the byproduct.
- **Description** displays a brief description of the byproduct as it appears on the item master.
- **Original Qty** displays the initial amount of each byproduct when the batch was first created. This field is a baseline for the initial creation of the batch.
- **Planned Qty** displays the amount of byproducts that were planned. The Planned Qty changes when the batch is scaled, and is editable in a batch with a status of Pending.
- **WIP Plan Qty** displays the work in process planned quantity of byproducts. This field displays for batches with a status of WIP, Completed, or Closed.
- **UOM** displays the unit of measure for the original and planned quantities.

17. **Allocated** is:

- Checked if the material displayed on the product line is fully allocated.
- Cleared if the material displayed on the product line was not fully allocated.

18. The following fields are display only:
  - **Scale Type** displays:
    - **Fixed** if the byproduct is not scalable.
    - **Proportional** if the byproduct is scalable.
  - **Yield Type** displays the type of byproduct yield as:
    - **Automatic** when byproducts are yielded automatically when the batch is completed.
    - **Manual** when byproducts are yielded manually.
    - **Incremental** when byproduct yield is calculated by incremental backflushing.
    - **Automatic by Step** when byproducts are yielded automatically as the step is completed.
  - **Step** displays the step associated to the byproduct.
19. Add the following fields from the folder:
  - **Actual Qty**
  - **Contribute to Yield**
  - **Cost Allocation**
  - **Phantom**
  - **Phantom Type**
  - **Required Qty**
  - **Rounding Direction**
  - **Scale Multiple**
  - **Rounding Variance %**
  - **Scrap Factor (%)**
  - **Unit of Measure**
  - **WIP Plan Qty**
20. Click **Batch** to navigate to the **Batch** window.
21. Click **Batch Steps** to navigate to the **Batch Steps** window.
22. Close the window.

► **To edit text in a batch:**

1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
2. Make appropriate text changes.
3. Save the window.

► **To edit a parent batch:**

1. Select the parent batch.
2. Choose **Edit Parent** from the **Actions** menu. The parent batch displays.
3. Edit the parent batch.
4. Save the window.

► **To edit a phantom batch:**

1. Select a phantom ingredient.
2. Choose **Edit Phantom** from the **Actions** menu. The phantom batch displays.

► **To display a summary of available inventory for an item:**

1. Select the item.
2. Choose **Inventory Summary** from the **Actions** menu. The **Inventory Summary** window displays the availability of the selected item. Drill down to the **Inventory Summary Details** window for more detailed inventory.
3. Close the window.

► **To scale a batch:**

1. Select the batch.
2. Choose **Scale Batch** from the **Actions** menu. The **Scale Batch** window displays.
3. Scale the batch as described in the "Scaling a Batch or Firm Planned Order" topic.

► **To pick lots and locations for an ingredient:**

1. Select the item.
2. Choose **Pick Lots/Locations** from the **Actions** menu. The **Pick Lots/Locations** window displays.

3. Pick lots and locations as described in the "Picking Lots and Locations" topic.

► **To edit a parent batch:**

1. Select the phantom batch.
2. Choose **Edit Parent** from the **Actions** menu. The parent batch displays for you to edit.
3. Save the window.

► **To initiate automatic allocation for a line in a batch:**

1. Select the line to allocate in the batch.
2. Choose **Allocate Line** from the **Actions** menu.

► **To manually allocate a material line in a batch:**

1. Select the line to allocate manually.
2. Click **Line Allocation** or drill down on the indicator located to the left of the selected line.
3. Allocate the material as described in the "Editing Batch Line Allocations" topic.

► **To display inventory shortages:**

1. Choose **Inventory Shortage** from the **Actions** menu. The **Inventory Shortages** window displays.
2. Close the window.

► **To display specifications for a batch:**

1. Choose **Specifications** from the **Actions** menu. The **Specifications** window displays the material specifications.
2. Close the window.

► **To display samples for a batch:**

1. Choose **Samples** from the **Actions** menu. The **Samples Summary** window displays with sample details associated with the material. Refer to the *Oracle Process Manufacturing Quality Management User's Guide* for information about how to use this window.
2. Close the window.

► **To display process instructions:**

1. Choose **Process Instructions** from the **Tools** menu. The **Process Instructions** window displays.
2. View all process instructions.
3. Click **Close** to close the window.

## Understanding Batch Step Quantity Calculations

The quantity of material required in a specific step is dependent on the quantity of material that passes into and out of that step. Input material consists of ingredients that are injected directly into steps or material that is transferred from preceding steps.

If you use automatic step quantity calculations, then the step quantities are calculated from the quantities of the items in the formula, after you tie the routing and formula together in a recipe, and specify the item-step associations and routing step dependencies. Step quantities are calculated from the quantity of ingredients being added to each step, and the quantity that comes from previous steps based on step dependencies. This is where the transfer percent comes into play, since it is used to specify how much of the quantity from a step flows on to a subsequent step, after subtracting out any product or byproduct yielded by the step.

If you are not using automatic step quantity calculation, then you have to enter step quantities. When you create a batch, the batch quantity is compared to the routing quantity to determine a scale factor. The scale factor is applied to the routing step quantities to scale them up or down for the batch step quantities.

The following example shows how material can be input, transferred, and output from a series of production steps.

Step 1: Add 10 pounds of Ingredient 1 to 25 pounds of Ingredient 2. The resulting 35 pounds of intermediate yields 5 pounds of Byproduct 1, and there is a complete, 100 percent transfer of 30 pounds of material to step 2.

Step 2: The material transferred to step 2 is processed and split as follows:

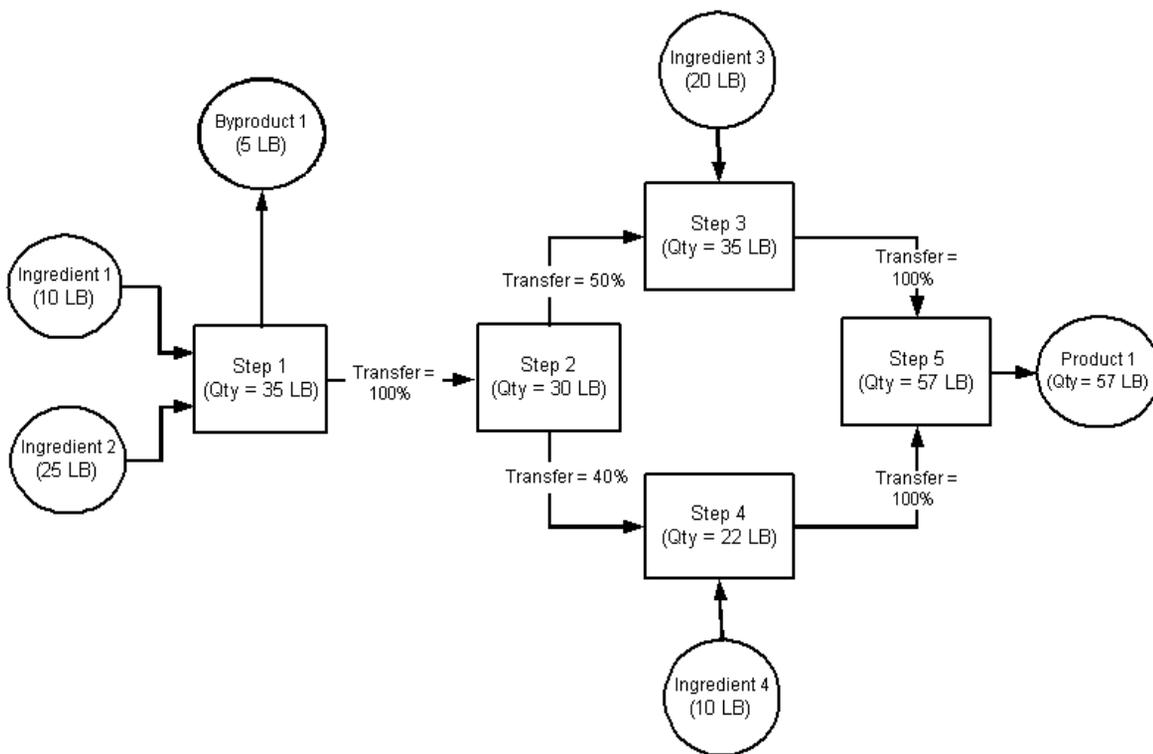
- 50 percent, representing 15 pounds, is transferred to step 3.
- 40 percent, representing 12 pounds, is transferred to step 4.

Step 3: Add 20 pounds of Ingredient 3 to the 15 pounds of material transferred from step 2. Transfer all 35 pounds of this material to step 5.

Step 4: Add 10 pounds of Ingredient 4 to the 12 pounds of material transferred from step 2. Transfer all 22 pounds of this material to step 5.

Step 5: This step processes the 57 pounds of material from steps 3 and 4 to produce product 1.

The following depicts the previously described example. LB is equal to pounds.



## Finding Batch Steps

The Find Batch Steps dialog box lets you find batch steps using batch status, batch document number, routing, or routing version as search criteria.

### Prerequisites

- Create a batch.

### ► To find batch steps:

1. Navigate to the Find Batch Steps dialog box.
2. Make no entries to search all records. Enter any of the following criteria to narrow the search:
  - **Status** of the batch as:
    - **Canceled** to find canceled batch steps.
    - **Pending** to find pending batch steps.
    - **WIP** to find batch steps that are work in process.
    - **Completed** to find batch steps that are completed.
    - **Closed** to find batch steps that are closed.
  - **Terminated** as:
    - **Yes** to find batches that were terminated.
    - **No** to find batches that were not terminated.
  - **Document** to find batch steps in a specific batch document number in the listed plant.
  - **Routing** to find batch steps in a specific routing.
  - **Version** to find batch steps associated to a specific routing version.
3. Click **Find**. The **Batch Steps** window displays the results of the search.

## Editing Batch Steps

The Batch Steps window lets you display and edit batch steps in a specific production run. View the planned and actual values for start dates, completion dates, step quantities, charges, due date, and step date. The Batch steps window also lets you release, complete, or close a batch step. In addition, you may view planned operations, planned start dates, planned completion dates and the status of each batch step.

The Firm Planned Order Steps window is display only. Field definitions are the same except they apply to a firm planned order.

### E-Record and E-Signature Approvals

There may be an e-signature event associated with this window. Refer to "Appendix C" for additional information on e-record and e-signature approvals associated with this window.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Create a batch.

### ► To edit batch steps:

1. Navigate to the **Batch Steps** window.
2. Query the **Document** number.
3. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the the batch document number.
  - **Status** displays batch status as:
    - **Canceled** for canceled batches.
    - **Completed** for batches that are complete.
    - **Closed** for batches that are closed.
    - **Pending** for batches that are scheduled.
    - **WIP** for batches that are work in process.

- **Terminated** is selected if the batch was terminated.
- **Routing** displays the code for the routing used in the batch.
- **Routing Version** displays the routing version used in the batch.
- **Production Routing Qty** displays the total quantity of material planned to be yielded.
- **Routing Qty UOM** displays the unit of measure for the Batch Routing Qty field.

### Planned Dates

4. If you insert a new step, then you can edit information. The following fields display step-specific information:
  - **Step** displays the step number for the operation in the routing, and can be edited when you are entering a new step.
  - **Operation** displays the code for the operation performed in the step, and can be edited when you are entering a new step.
  - **Version** displays the operation version number.
  - **Step Status** displays the status of the step as:
    - **Completed** for a step that is completed.
    - **Closed** for a step that is closed.
    - **Canceled** for a step that is canceled.
    - **Pending** for a step that has not started.
    - **WIP** for a step that is work in process.

Step Status can be edited when you are entering a new step.
5. **Start** displays the planned start date for the batch step. Enter a new Start date when the batch step status is Pending by choosing **Reschedule** from the **Actions** menu.
6. **Completion** displays the planned completion date for the batch step. Enter a new completion date for the batch step when the batch step status is Pending or WIP.

## Actual Dates

7. If you insert a new step, then you can edit information. The following fields display step-specific information:
  - **Step** displays the step number for the operation in the routing, and can be edited when you are entering a new step.
  - **Operation** displays the code for the operation performed in the step, and can be edited when you are entering a new step.
  - **Version** displays the operation version number.
8. **Start** displays the actual start date for each step as it was entered on the **Release Step** window.
9. **Completion** displays the actual completion date for each step as it was entered on the **Complete Step** window. You cannot edit this field until the step is closed.

## Step Quantities

10. If you insert a new step, then you can edit information. The following fields display step-specific information:
  - **Step** displays the step number for the operation in the routing.
  - **Operation** displays the code for the operation performed in the step.
  - **Version** displays the operation version number.
11. **Planned** displays the planned step quantity for each step as follows:
  - If the automatic step quantity calculation feature is on, then the planned step quantity is calculated from item step associations and step dependencies.
  - If the automatic step quantity calculation feature is off, then the planned step quantity defaults to the routing step quantity, as it is scaled to the total batch.
12. **Actual** displays the actual step quantity for each step with its **UOM**. If you do not enter a value in this field, then it defaults as follows:
  - If the automatic step quantity calculation feature is on, then the actual step quantity is calculated from item step associations and step dependencies.
  - If the automatic step quantity calculation feature is off, then the actual step quantity is the planned quantity when the step is completed.

## Charges

13. If you insert a new step, then you can edit information. The following fields display step-specific information:
  - **Step** displays the step number for the operation in the routing.
  - **Operation** displays the code for the operation performed in the step.
  - **Version** displays the operation version number.
  - **Capacity** displays the maximum step capacity with its **UOM**. This is calculated as the smallest maximum capacity of the resources marked as capacity constraining.
  - **Planned Charges** displays the planned number of charges for the operation. It is calculated from the step quantity and step capacity.
  - **Actual Charges** displays the actual number of charges for the operation. It is calculated from the step quantity and step capacity.

## Others

14. If you insert a new step, then you can edit information. The following fields display step-specific information:
  - **Step** displays the step number for the operation in the routing.
  - **Operation** displays the code for the operation performed in the step.
  - **Version** displays the operation version number.
  - **Release Type** displays:
    - **Automatic** to indicate that the step is automatically released or completed when subsequent steps are released or completed.
    - **Manual** to indicate that the step must be released and completed manually, or by completing the batch.Required.
  - **Minimum Transfer Quantity** is used by the Oracle Advanced Planning and Scheduling application. It is intended to reduce overall lead times by defining the minimum amount of material that must be produced in a step at a specific production operation and resource before the next operation can begin. This reduces bottlenecks by letting processes transfer an interim quantity of completed material to the next step without the requirement to complete the entire step.

- **Quality Status** displays requirements for the step that are specified in the Quality Management application:
    - **No Sample Required** indicates that a quality inspection sample is not required for the step.
    - **Sample Required** indicates that a quality inspection sample is required for the step.
    - **Results Required** indicates that results are required for the step.
    - **No Results Required** indicates that test results are not required for the step.
    - **Action Required** indicates that a follow-up response is required for the test result.
    - **In Spec** indicates that the result conforms to the specification.
  - **Due Date** displays the date the step is due to complete.
  - **Step Close Date** displays the actual step closing date.
15. Click **Batch** to display the **Batch** window.
  16. Click **Material Details** to display the **Material Details** window.
  17. Save the window.

● **To insert a new step in a batch:**

1. Select the first blank **Step** field after the last step displayed on the **Operation Details** pane.
2. Enter the new **Step** number.
3. Complete all required fields.
4. Save the window.
5. Close the window and reopen it to display the new **Step** in its proper sequence.

● **To edit text in a batch:**

1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
2. Make appropriate text changes.
3. Save the window.

**► To display activity details for a step:**

1. Select the **Step**.
2. Choose **Activity Details** from the **Actions** menu. The **Batch Step Activities** window displays.
3. Close the window.

**► To display batch step and batch item associations:**

1. Select the **Step**.
2. Choose **Item-Step Association** from the **Actions** menu. The **Batch Step/Batch Item Association** window displays.
3. Close the window.

**► To display batch step dependencies:**

1. Select the **Step**.
2. Choose **Batch Step Dependencies** from the **Actions** menu. The **Batch Step Dependencies** window displays.
3. Close the window.

**► To release a batch step:**

1. Select the **Step**.
2. Choose **Release Step** from the **Actions** menu. The Release Batch Step dialog box displays.
3. Enter the **Actual Start Date**.
4. Click **OK**.
5. Step status changes from **Pending** to **WIP**.

**► To unrelease a batch step:**

1. Select the **Step**.
2. Choose **Unrelease Step** from the **Actions** menu.
3. The **Step Status** changes from **WIP** to **Pending**.

► **To complete a batch step:**

1. Select the **Step**.
2. Choose **Complete Step** from the **Actions** menu. The Complete Batch Step dialog box displays.
3. Enter the **Actual Start Date**.
4. Enter the **Actual Completion Date**. This field defaults to the system date and time.
5. Click **OK**.

► **To revert a completed step to work in process:**

1. Select the **Step**.
2. Choose **Revert to WIP** from the **Actions** menu.
3. The **Step Status** changes from **Complete** to **WIP**.

► **To close a batch step:**

1. Select the completed **Step**.
2. Choose **Close Step** from the **Actions** menu.
3. Enter the **Batch Step Close Date**.
4. Click **OK**.

► **To reschedule a batch step:**

1. Select the **Step**.
2. Choose **Reschedule Step** from the **Actions** menu.
3. Enter the rescheduled **Planned Start** date.
4. Click **OK**.

► **To reschedule a batch step using the shop calendar:**

1. Select the batch step to reschedule.
2. Choose **Reschedule Step** from the **Actions** menu. The Reschedule dialog box displays.
3. Select **Use Shop Calendar** to schedule the batch step according to the shop calendar associated to the plant.

4. Enter one of the following:
  - **Planned Start** to reschedule the step planned start date.
  - **Planned Completion** to reschedule the step planned completion date.

Click **Yes** to indicate whether you want the application to recalculate the other date based on the batch duration.
5. Select **Reschedule Dependent Steps** to reschedule only those steps that depend on the selected step. This is not an option if you enforce step dependencies.
6. Click **OK**. The batch step is rescheduled according to the shop calendar associated to the plant. A warning displays if the batch step goes out of the contiguous duration.
7. Click **Yes** to continue.

■ **To display resource details for an activity:**

1. Select the **Step**.
2. Choose **Activity Details** from the **Actions** menu. The **Batch Step Activities** window displays.
3. Select the **Activity**.
4. Choose **Resource Details** from the **Actions** menu. The **Batch Step Resources** window displays.
5. Close the window.

■ **To display transaction details for a step:**

1. Select the **Step**.
2. Choose **Activity Details** from the **Actions** menu. The **Batch Step Activities** window displays.
3. Select the **Activity**.
4. Choose **Resource Details** from the **Actions** menu. The **Batch Step Resources** window displays.
5. Select the **Resource**.
6. Choose **Transactions** from the **Actions** menu.
7. The **Resource Transactions** window displays.
8. Close appropriate windows.

► **To reopen a step:**

1. Select the **Step**.
2. Choose **Reopen Step** from the **Actions** menu.
3. The **Step Status** changes from **Closed** to **Completed**.

► **To display the E-Record Generic Query:**

1. Choose **E-Record Details** from the **Actions** menu. The **E-Record Generic Query** displays if this option is implemented in your application.
2. Refer to "Appendix C" for information on e-records.
3. Close the window.

► **To display process instructions:**

1. Choose **Process Instructions** from the **Tools** menu. The **Process Instructions** window displays.
2. View all process instructions.
3. Click **Close** to close the window.

## Editing Batch Step Dependencies

The Batch Step Dependencies window lets you create, modify, or delete batch step dependencies. Step dependencies are relationships between individual routing steps that assign how and when steps can start. Some steps cannot start until a previous step completes. For example, a cooling operation cannot begin until the heating operation that precedes it is complete. Batch step dependencies are used to calculate planned start times and can be overwritten. Do not create circular step dependencies. For example, do not create dependencies where step 10 must occur before step 20, and step 20 must occur before step 10.

Step Dependencies are definable as:

- Finish-to-start with no offset, to indicate that a process step begins immediately after the completion of its preceding step. For example, a consecutive addition of ingredients is required without interruption.
- Finish-to-start with positive offset, to indicate that a process step begins a specified period of time after the completion of its preceding step. For example, time is required to rest material before the addition of another ingredient.
- Finish-to-start with negative offset, to indicate that a process step begins a specified period of time before the completion of its preceding step. For example, a production device needs to be activated before the addition of the next ingredient.
- Start-to-start with no offset, to indicate that a process step begins at the same time as the step it depends on. For example, there is a need for simultaneous addition of ingredients without interruption.
- Start-to-start with positive offset, to indicate that a process step begins a specified time after the beginning of its preceding step. This is similar to finish-to-start with negative offset, but by specifying that the dependency is start-to-start, you ensure the positive offset is maintained when the previous dependent step finishes early.

The offset is defined in the Standard Delay field as a positive or negative number. The application uses step dependencies when individual steps are rescheduled.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create recipes.
- Create a batch or firm planned order.

### ► To edit batch step dependencies:

1. Navigate to the **Batch Steps** window.
2. Select the **Step** to make dependent on another step.
3. Choose **Batch Step Dependencies** from the **Actions** menu. The **Batch Step Dependencies** window displays for the selected step.
4. The following fields are display only:
  - **Plant Code** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the the batch document number.
  - **Routing** displays the routing identification number associated to the step.
  - **Routing Version** displays the routing version number.
  - **Routing Description** displays a brief description of the routing.
  - **Batch Step** displays the batch step you selected on the **Batch Steps** window.
  - **Operation** displays the operation associated with the batch step displayed.
  - **Operation Version** displays the version number of the operation.
  - **Operation Description** displays a description of the operation.

### Dependencies

5. Enter the **Previous Step** that the Batch Step displayed is dependent on. The dependent step must follow the Routing Step entered in this field. For example, if the displayed Batch Step is step 30, and the previous step number that it is dependent on is step 20, then you enter 20.
6. The following fields are display only:
  - **Operation** displays the operation associated with the batch step.
  - **Version** displays the version of the operation associated with the batch step.
  - **Dependency Type** displays:

- **Start-to-start** if the start of the step specified in the Batch Step field is dependent on the start of the step in the displayed in the Previous Step field.
  - **Finish-to-start** if the start of the step specified in the Batch Step field is dependent on the completion of the step displayed in the Previous Step field. For example, when Step 20 is dependent on Step 10 and there is no specified offset, Step 20 is scheduled to start when Step 10 finishes. If an offset of one hour is specified, then Step 20 is scheduled to start one hour after Step 10 ends. You create overlapping steps by defining a Finish-to-start dependency with a negative offset so that Step 20 starts before step 10.
7. Enter the **Standard Delay** as the standard number of hours from the end of the preceding step to the start of the current step, or the start of the preceding step to the start of the current step, depending on the Dependency Type entered. This field is used to calculate step start times. If you enter a value equal to zero, then the step following the current step begins immediately after the step ends or starts. Enter a negative Standard Delay if the Dependency Type is finish-to-start to create overlapping steps.
  8. Enter the **Transfer Percent** as the percentage of material that goes to the dependent step after all products and byproducts are yielded. This percentage is used to calculate the quantity of the dependent step if automatic step quantity calculations are on. For example:
    - If 40 percent of the material from the Previous Step comes into the current Batch Step as a result of 60 percent of the material going to another step, then enter 40 for the Transfer Percent.
    - If 90 percent of the material from the Previous Step comes into the current Batch Step as the result of 10 percent being lost to evaporation or being retained by processing equipment, then enter 90 for the Transfer Percent.

## Editing Batch Step Activities

The Batch Step Activities window lets you view activity details for each batch step.

The Firm Planned Order Step Activities window is display only. Field definitions are the same except they apply to a firm planned order.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- Create a batch.

### ■ To edit batch step activities:

1. Navigate to the to the **Batch Steps** window.
2. Select the **Step** containing the activities to edit.
3. Choose **Activity Details** from the **Actions** menu. The **Batch Step Activities** window displays for the selected step.
4. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the the batch document number.
  - **Step** displays the batch step number.
  - **Step Status** displays the batch step status as:
    - **Completed** for a step that is completed.
    - **Closed** for a step that is closed.
    - **New** for a new step.
    - **Pending** for a step that has not yet started.
    - **WIP** for a step that is work in process.
  - **Operation** displays operation number associated with the displayed batch step.
  - **Operation Version** displays the version of the operation displayed.
  - **Operation Description** displays a brief description of the operation.

- **Planned Start** displays the planned start date for the batch step.
  - **Planned Completion** displays the planned completion date for the batch step.
5. If **Sequence** is checked, then the step is a sequence-dependent activity.

### Planned Dates

6. The following fields are display only:
- **Activity** displays the activity required for the batch operation.
  - **Description** displays a brief description of the activity.
7. **Offset (Hours)** displays the planned number of hours from the start of the step to the start of the activity. You can edit this field. Required.
8. The following fields are display only:
- **Start** displays the planned start date for the displayed activity.
  - **Completion** displays the planned completion date for the activity.

### Actual Dates

9. The following fields are display only:
- **Activity** displays the activity required for the batch operation.
  - **Description** displays a brief description of the activity.
  - **Start** displays the actual start date for the activity.
  - **Completion** displays the actual completion date for the activity.

### Factor

10. The following fields are display only:
- **Activity** displays the activity required for the batch operation.
  - **Description** displays a brief description of the activity.
11. **Planned Factor** displays the number of times the activity is planned to be performed. You can edit this field.
12. When selected, the **Material Scheduled** indicator shows that an activity consumes or yields material. The indicator is cleared for activities that do not consume or yield material. The Advanced Planning and Scheduling application uses the Material Scheduled indicator for scheduling purposes.

13. **Actual Factor** displays the actual number of times the activity was performed. You can edit this field.

● **To edit text in a batch:**

1. Choose **Edit Text** from the **Actions** menu. The **Select Text Paragraph** window displays.
2. Make appropriate text changes.
3. Save the window.

● **To display resource details:**

1. Choose **Resource Details** from the **Actions** menu. The **Batch Step Resources** window displays.
2. Make appropriate changes.
3. Save the window.

## Editing Batch Step Resources

The Batch Step Resources window lets you display detailed planned information about batch resources at the step level. This information includes the planned and actual throughput, planned and actual production dates, scheduling information, capacity, cost, and production parameters.

Process quantity is the quantity that is processed by the resource. At the operation level, it is used along with usage to define a throughput rate.

The Firm Planned Order Step Resources window is display only. Field definitions are the same except they apply to a firm planned order.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create a batch.

### ■ To enter batch step resources:

1. Navigate to the **Batch Steps** window.
2. Select the **Step** containing the resources to edit.
3. Choose **Activity Details** from the **Actions** menu. The **Batch Step Activities** window displays.
4. Select the **Activity** containing the resources to edit, and choose **Resource Details** from the **Actions** menu. The **Batch Step Resources** window displays for the selected step.
5. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the batch document number.
  - **Step** displays the batch step you selected on the **Batch Steps** window.
  - **Status** displays the batch step status as:
    - **Completed** for a step that is completed.
    - **Closed** for a step that is closed.
    - **New** for a new step.

- **Pending** for a step that has not yet started.
- **WIP** for a step that is work in process.
- **Operation** displays the operation associated with the batch step with the **Operation Version**.
- **Operation Description** displays a brief description of the operation.
- **Activity** displays the activity associated to the displayed operation.
- **Activity Description** displays a brief description of the activity.

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**Note:** If you want to display or modify process parameters, click Process Parameters at the bottom of the window.

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### Planned Throughput

6. The following fields are display only:

- **Resource** displays the resource associated with the displayed step.
- **Description** displays a brief description of the resource.
- **Count** displays the planned number of resources needed for this activity.
- **Seq Usage** displays the sequence-dependent usage. This is the usage associated to a sequence-dependent transaction.
- **Process Qty** displays the planned quantity of material to be processed by the resource. This value combined with the Usage defines the usage rate. For example, if a resource can mix 200 gallons per hour, enter 200 as the Process Quantity, enter 1 for the Usage, and the UOM for hours.
- **UOM** displays the unit of measure for the planned process quantity.
- **Usage** displays the planned amount the resource can be used. This value is usually expressed in hours or partial hours. For example, enter one hour and 15 minutes as 1.25.

$\text{Resource Usage} = \text{Count} * \text{Usage} * \text{Charges}$

- **Usage UOM** displays the unit of measure for the Usage field, and is usually expressed in hours. However, usage can also be calculated for electrical power and process flow rate.

**Actual Throughput**

7. The following fields are display only:
  - **Resource** displays the resource associated with the displayed step.
  - **Description** displays a brief description of the resource.
8. Enter the actual **Count** for the planned number of resources needed for this activity.
9. Enter the actual **Quantity** of material processed by the resource.
10. **UOM** displays the unit of measure for the actual process quantity.
11. Enter the actual **Total Usage** for the resource. For example, one hour and 15 minutes is entered as 1.25. Required.
12. **Usage UOM** displays the unit of measure for the Usage field.

**Planned Dates**

13. The following fields are display only:
  - **Resource** displays the resource associated with the displayed step.
  - **Description** displays a brief description of the resource.
14. **Start** displays the planned start date for the resource in the displayed step. This field can be edited while the batch has a status of Pending.
15. **Completion** displays the planned completion date for the resource in the displayed step. This field can be edited while the batch has a status of Pending or WIP.

**Actual Dates**

16. The following fields are display only:
  - **Resource** displays the resource associated with the displayed step.
  - **Description** displays a brief description of the resource.
17. Enter the actual **Start** date for the resource associated with the displayed step.
18. Enter the actual **Completion** date for the resource associated with the displayed step.

**Scheduling Information**

19. The following fields are display only:

- **Resource** displays the resource associated with the displayed step.
  - **Description** displays a brief description of the resource.
  - **Resource Type** displays:
    - **Primary** to indicate that this is the rate determining resource. It limits or determines throughput. It is also referred to as the bottleneck or critical resource.  
 For example, the labor needed to operate the mixing equipment and the tank that holds the paint are two listed resources for paint production. The tank must be the primary resource, since even when there is an increase in labor, the time required to mix the paint does not change, since tank capacity is constant.
    - **Secondary** to indicate a resource that replaces the primary resource when it is not available. This resource performs the same task as the primary resource. It is unconstrained, and it has usage. The Advanced Planning and Scheduling application does not schedule the secondary resource.
    - **Auxiliary** for resources that work as companions with the primary resources to perform an activity. These resources do not affect the rate.
20. Enter the **Offset (Hours)** interval as the time delay from the start of the activity to the point where the resource is actually required. Required.
21. Select one of the following as **Scale Type**:
- **Proportional** if the resource usage is scaled in a ratio that is proportional to the quantity of material being processed.
  - **Fixed** if the resource usage is not scaled, regardless of the quantity of material being processed.
  - **By Charge** if resource usage is scaled in multiples based on the number of charges specified. With this type of scaling:  

$$\text{Resource Usage} = \text{Count} * \text{Usage} * \text{Charges}$$

## Capacity

22. The following fields are display only:
- **Resource** displays the resource associated with the displayed step.
  - **Description** displays a brief description of the resource.

- **Minimum Capacity** displays the minimum capacity for the displayed resource.
- **Maximum Capacity** displays the maximum capacity for the displayed resource.
- **UOM** displays the unit of measure for capacity.
- **Constraint is:**
  - Selected if the capacity of this resource is used in calculating the step capacity.
  - Cleared if this resource is not used in calculating step capacity.

### Costing Information

23. The following fields are display only:
    - **Resource** displays the resource associated with the displayed step.
    - **Description** displays a brief description of the resource.
  24. Enter the **Analysis** code for the resource. Analysis Codes are set up on the **Cost Analysis Codes** window in the Cost Management application. For example, you may want to distinguish between a value-added and a non-value-added activity.
  25. **Analysis Description** displays a description of the analysis code.
  26. Enter the **Component Class** code for the resource. Component classes group resources for reporting purposes.
  27. **Component Class Description** displays a brief description of the Component Class field.
- **To enter or modify process parameters:**
1. Click **Process Parameters**. The **Resource Process Parameters** window displays.
  2. Refer to "Adding or Modifying Process" for information on this window.
  3. Close the window.

## Adding or Modifying Process Parameters

Process parameters are a component of the process instructions necessary to run resources during the batch process. They are usually machines or instruments and are the standard for executing a task. They can be generic or specific. Each industry and company uses different machines and instruments, and there are different requirements for recording process parameters.

A process parameter details information such as temperature, pressure, or time that is pertinent to the product, but does not fall into the classification of input or output. You can use process parameters as set points, comparison values, or in conditional logic.

You can use folders and flexfields with this window.

See: *Oracle Applications User's Guide* and *Oracle Applications Flexfields Guide*

### Prerequisites

- Set up process parameters.

See: *Oracle Process Manufacturing Capacity Planning User's Guide* and *Oracle Process Manufacturing Product Development User's Guide*.

### ■ To display the Resource Process Parameters window:

1. Navigate to the **Resource Process Parameters** window from the **Batch Step Resources** window.
2. The following fields are display only:
  - **Plant** displays the organization where the batch is created.
  - **Document** displays the batch number where the process parameters actual values are added.
  - **Step** displays the step of the batch.
  - **Status** displays the status of the step.
  - **Operation** displays the operation of the step, the **Operation Version**, and the **Operation Description**.
  - **Activity** displays the activity related to the step and the **Activity Description**.
  - **Resource** displays the resource attached to the activity and the **Resource Description**. This is the resource that has the process parameters attached to it.

**► To enter or modify process parameters:**

1. Position the cursor in the **Process Parameter** field, and enter one of the listed process parameters. Required.
2. The following fields default from the process parameter set up in the planning application:
  - **Description** is a description of the process parameter entered.
  - **Target** indicates the target value for the process parameter.
  - **Actual** displays the actual value from the machine or process. You can only enter this value if the step has a status of WIP or Complete.
  - **Minimum** is the lowest acceptable value for a numeric range type of process parameter.
  - **Maximum** is the highest acceptable value for a numeric range type of process parameter.
  - **Units** is the unit of measure for the process parameter.
3. Enter a flexfield for the process parameter, if desired.
4. Save the window.

## Associating Batch Steps with Items

This Batch Step/Batch Item Association window lets you modify the batch steps where items are introduced into or yielded from the production process.

It is currently an optional window used to record information for user defined reports. The application provides a record of ingredients or items that go into a given batch step. Use this window to change any of the steps where items are introduced into or yielded from the process.

### Prerequisites

- Create a batch.

### ■ To associate batch steps with batch items:

1. Navigate to the to the **Batch Steps** window.
2. Select the **Step** to modify.
3. Choose **Item/Step Association** from the **Actions** menu. The **Batch Step/Batch Item Association** window displays for the selected step.
4. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Document** displays the batch document number.
  - **Status** displays the status of the batch.
  - **Routing** displays the routing used in the batch.
  - **Routing Version** displays the routing version number.
  - **Routing Description** displays a brief description of the routing.
  - **Formula** displays the formula used in the batch.
  - **Formula Version** displays the formula version number.
  - **Formula Description** displays a brief description of the formula.
  - **Step** displays the batch step number.
  - **Operation** displays the operation code.
  - **Version** displays the operation version number.
  - **Description** displays a brief description of the operation.

- **Planned Quantity** displays the planned quantity processed by the step with its **UOM**.
- 5. Enter the **Step** number to associate to the item listed on the same line.
- 6. The following fields are display only:
  - **Line Type** displays:
    - **Ingredient** if the item is an ingredient in the formula.
    - **Product** if the item is a product in the formula.
    - **By-Product** if the item is a byproduct in the formula.
  - **Line** displays the line number of the material in the formula.
  - **Item** displays the item code.
  - **Description** displays a brief description of the item as it appears on the item master.
  - **Planned Quantity** displays the planned quantity of material to be used in the batch with its **UOM**.
- 7. Save the window.

## Using the Theoretical Yield Calculation

The Calculate Theoretical Yield dialog box lets you adjust the product quantities based on the ingredient quantities and a user-defined yield factor. The application sums the quantities of all ingredients that contribute to yield. This sum is multiplied by the yield percent, and the product quantities are adjusted to total the resulting quantity. This only adjusts the total product quantities, while leaving the ingredient quantities unchanged.

### Prerequisites

- Create a batch or firm planned order.

### ■ To calculate theoretical yield for batches:

1. Navigate to the Calculate Theoretical Yield dialog box.
2. Enter the **Yield Percent**.
3. Click **OK**.

### ■ To calculate theoretical yield for material details:

1. Navigate to the Calculate Theoretical Yield dialog box.
2. Enter the **Yield Percent**.
3. Click **OK**.

### ■ To calculate theoretical yield for firm planned orders:

1. Navigate to the Calculate Theoretical Yield dialog box.
2. Enter the **Yield Percent**.
3. Click **OK**.

### ■ To calculate theoretical yield for firm planned order material details:

1. Navigate to the Calculate Theoretical Yield dialog box.
2. Enter the **Yield Percent**.
3. Click **OK**.

## Managing the Theoretical Yield of Overallocated Items

If you reduce the theoretical yield of a batch with previously allocated products, then the Items Over Allocated - Theoretical Yield window displays.

### ■ To manage the theoretical yield of overallocated items:

1. Navigate to the **Batch Material Details** window.
2. Query a pending or WIP batch.
3. From the **Products** tab, select the product **Line**.
4. From the **Actions** menu, choose **Theoretical Yield**. The Calculate Theoretical Yield dialog box displays.
5. Enter a **Yield Percent** less than 100% to drive the product quantity below the allocated quantity.
6. Click **OK**.
7. The following error displays:

To reduce the batch yield, please adjust existing allocations to match the new quantity.

Click **OK** to proceed.
8. The **Items Over Allocated - Theoretical Yield** window displays.
9. The **DEFAULT LOT** displays the overallocated quantity as a negative number in the **Allocated Qty** field. This represents the quantity of material that must be decreased in the individual lots allocated. You must bring the total allocated material down by the amount indicated.
10. Enter a decreased **Allocated Qty** for each allocated material. Do not include the minus sign.
11. Repeat step 10 until the quantity displayed for the **DEFAULT LOT** is zero.
12. Click **Proceed**.

## Understanding Batch Scaling

Scale batches up or down by input or output:

- If the batch ingredients are scaled, then a specific scaling factor is applied to all scalable ingredients. A calculated output scale factor is applied to all scalable outputs.
- If the batch outputs are scaled, then a factor is applied to all scalable outputs. A calculated input scale factor is applied to all scalable ingredients.

In order for this approach to be successful, specify whether the quantities of each item in the batch are fixed or scalable.

Proportional scaling is the least complex scale type since the given and calculated factors are applied appropriately to the scalable item inputs or outputs. In addition to being present in fixed or scalable quantities, items in a batch can contribute to the yield. In order to scale batches properly, specify whether the ingredients need to be increased using fixed or proportional scaling. It is possible to have fixed scale ingredients that do not contribute to yield.

### Scale Type Definitions

The quantities of items which are fixed scale are not altered when a formula or batch is scaled. For example, if a formula has a fixed scale ingredient with a quantity of 10 kg and the formula is scaled by a factor of two, then the quantity remains fixed at 10 kg.

Items that are proportionally scaled have their quantities changed when a formula is scaled up or down. With proportional scaling, the scaling is continuous in that the scaled quantities can contain decimals. Proportionally scaled items may or may not contribute to yield.

While proportional scaling makes sense for many items in process industries, it does not make sense for all items.

The following lists the types of batch scaling available:

- Type 0 is Fixed scaling.
- Type 1 is Proportional scaling.
- Type 2 is Integer scaling.

The following lists the Contribute to Yield types available in Process Execution:

- Yes indicates that an ingredient contributes to yield.
- No indicates that an ingredient does not contribute to yield.

## Understanding Scale Type Rules

The following summarizes the business rules in effect for scale types:

- The Contribute to Yield type for ingredients can be set to Yes or No.
- Products and byproducts cannot have an Integer scale type.
- Ingredients can be assigned a scale type of Fixed, Proportional, or Integer.
- If an ingredient is assigned a scale type of Integer, then it must also be assigned a:
  - Scale Multiple, to specify the multiple in which the ingredient can be used in a batch. For example, a Scale Multiple of 30 indicates the ingredient is used in quantities of 30, 60, or 90, and so forth.
  - Rounding Variance, to specify an acceptable percent deviation up or down from the calculated ingredient quantity. If the Rounding Variance field is left blank, then rounding occurs without regard to variance. You do not have to enter any value for ingredients that have a scale type of integer. If the rounding variance is not entered, then the value is appropriately rounded up or down to the integer value depending on the rounding direction without respect to the variance.
  - Rounding Direction, to specify whether the quantity of material must be rounded up to the next higher scale multiple of material, down to the next lowest scale multiple of material, or if the material can be rounded up or down. If the material can be rounded up or down, then it is rounded to the nearest multiple.

### Fixed Scale

To scale a batch with fixed scale items, the application must convert the quantities of ingredients, products, and byproducts to a common unit of measure. The unit of measure used for this calculation is the base unit of measure specified by the GMD: Yield Type profile option. This is usually mass. All items in the batch that contribute to yield must be convertible to this unit of measure.

If the batch contains fixed quantity ingredients that contribute to yield, then the scalable ingredients are scaled by an amount necessary to produce the new product quantity, not by the percent entered as the scale factor. If all products are set to fixed quantity, then no quantities in the batch are changed.

**Fixed Scale With Yield Contribution** The quantities of items for this scale type are not altered when a batch or batch step is scaled. If a batch has a fixed scale

ingredient with a quantity of 2000 kg and the batch output is scaled by a factor of 2, then the quantity remains fixed at 2000 kg.

These quantities are taken into account when calculating the factor to apply to the scalable ingredients so that the yield ratio is preserved. In the example that follows, the ratio is 115:120 before scaling and 230:240 after scaling the output by a factor of 2.

Item	Batch Quantity	Quantity After Scaling
Product A	11500 kg	23000 kg
Ingredient A, Proportional Scaling	5000 kg	11000 kg
Ingredient B, Proportional Scaling	5000 kg	11000 kg
Ingredient C, Fixed and Contributing	2000 kg	2000 kg

**Fixed Scale Without Yield Contribution** The quantities of items for this scale type are also not altered when a batch is scaled. This is the same as the previous example, however the item quantities are not considered when scaling the remaining ingredients. These quantities have no effect on scaling at all. For example, in the following, batch Ingredient C is fixed scale without yield contribution. If the product is scaled by a factor of 2, then the quantities after scaling appear as if ingredient C were not included.

Item	Batch Quantity	Quantity After Scaling
Product A	10000 kg	20000 kg
Ingredient A, Proportional Scaling	5000 kg	10000 kg
Ingredient B, Proportional Scaling	5000 kg	10000 kg
Ingredient C, Fixed and Noncontributing	2000 kg	2000 kg

See: *Oracle Process Manufacturing Inventory Management User's Guide*

### Proportional Scale

If the batch contains proportionally scalable ingredients, then the scalable ingredients are increased in a direct ratio to produce the new product quantity. In the following example, Product A is proportionally scaled from 10000 kg to 20000 kg.

Item	Batch Quantity	Quantity After Scaling
Product A	10000 kg	20000 kg
Ingredient A, Proportional Scaling	5000 kg	10000 kg
Ingredient B, Proportional Scaling	5000 kg	10000 kg

With proportional scaling, Ingredient A and Ingredient B are multiplied by a factor of 2.

### Examples of Single and Mixed Scale Types

The following discussion compares different scale types:

**Single Type Scaling** If a batch consists solely of proportionally scalable items, then scaling the output or the input scales everything in the same ratio. It is also possible to construct a batch from items that are all fixed scale. This batch is ineligible for scaling.

**Mixed Type Scaling: Fixed and Proportional With Yield Contribution** If a batch contains both fixed and proportionally scaled items, then the factor applied to the scalable quantities is not the same as the overall scaling factor. Consider a batch that yields 3000 kg of scalable product by converting 1000 kg of fixed scale Ingredient 1 and 2000 kg of scalable Ingredient 2. If the product is scaled by a factor of 2 to produce 6000 kg, then 5000 kg of Ingredient 2 is required, not 4000 kg. The factor applied to the Ingredient 2 quantity is therefore 2.5 rather than 2. If the inputs are scaled by a factor of 2, then the output is 5000 kg, or 2 times 2000 kg of Ingredient 2 plus 1000 kg of Ingredient 1. The yield of the product is scaled by a factor of 1.667 rather than by a factor of 2, as shown in the following:

Item	Batch Quantity	Quantity After Scaling
Product B	3000 kg	6000 kg
Ingredient 1 Fixed and Contributing	1000 kg	1000 kg
Ingredient 2 Proportional Scaling	2000 kg	5000 kg

**Mixed Type Scaling: Proportional With Yield Contribution and Fixed Without Yield Contribution** If the fixed quantity of an ingredient has no effect on batch yield, then the batch line yield contribution field must indicate this. When a fixed quantity item that does not contribute to yield is encountered by the scaling algorithms, the

item quantity is not scaled, and is ignored when deriving the scale factor to apply to the remaining items. The batch is treated as consisting only of the remaining items.

If a batch is scaled so that 2000 kg of scalable product is made by converting 2000 kg of scalable Ingredient 1 in the presence of 1000 kg of fixed scale Ingredient 2 that does not contribute to the yield, then the output doubles. Scaling the inputs by a factor of 2 doubles the output quantity, since the fixed scale ingredient quantity is not to be changed. It does not matter if 100 kg of Ingredient 2 is used. The same is true when outputs are scaled.

Item	Batch Quantity	Quantity After Scaling
Product C	2000g	4000 kg
Ingredient 1 Proportional Scaling	2000 kg	4000 kg
Ingredient 2 Fixed and Noncontributing	1000 kg	1000 kg

### Understanding Integer Scaling

Some material in process industries is picked from inventory in eches, such as a 30 pound bag of defoamant or a box of antistatic sheets. If an item is issued in 30 pound bags, then it is supplied in full bags and managed on the production floor appropriately. If the UOM used in the formula or batch is the bag, then scale in whole integer increments. To express the ingredient in pounds, the use of integer scaling is not sufficient. You need a way to specify that the ingredient must only be scaled in multiples of 30 pounds.

When materials are scaled by a multiple, a scaling direction and a rounding variation value need to be specified so that the scaled quantity is rounded properly. Scaling by a multiple results in ingredients being rounded up or down to the next whole multiple specified for the item in the batch. It is possible that the batch ingredient is not scaled as a result of not meeting the criteria to round up or down.

If the Rounding Variance field is left blank, then rounding occurs without regard to variance.

### Examples of Integer Scaling

When the Integer scale type is selected, specify the Scale Multiple, Rounding Variance, and Rounding Direction. In the following example, Product C is scaled up by 60 percent.

**Simple Integer Scaling** The following is a simple example of using the Integer scale type with directional rounding:

Item	Batch Quantity	Quantity After Scaling
Product Pkg1	1000 kg	2500 kg
Ingredient 1 Proportional Scaling	1000 kg	2500 kg
Ingredient 2 Integer	1 pallet	3 pallets

Ingredient 2 has a Batch Quantity of 1 pallet with the following specifications:

- Scale Multiple = 1
- Rounding Variance = 100 percent
- Rounding Direction = Either

Since it is not possible to use 2.5 pallets, the Integer scale type rounds the requirement up to 3 pallets.

**Complex Integer Scaling** The following example is a more complex example of using the Integer scale type with directional rounding:

Item	Batch Quantity	Quantity After Scaling
Product C	2000 kg	3200 kg
Ingredient 1 Proportional Scaling	2000 kg	3200 kg
Ingredient 2 Integer	25 kg	40 kg

Ingredient 2 has a Batch Quantity of 25 kg with the following specifications:

- Scale Multiple = 25 kg
- Rounding Variance = 30 percent of the Batch Quantity After Scaling. This is 0.3 of 40 kg, or up to 12 kg
- Rounding Direction = Down

The decision is whether to use 25 kg or 50 kg of material to produce Product C, since Ingredient 3 is only dispensed in multiples of 25 kg. The differences between the required Batch Quantity and the Scale Multiple is 10 kg for the Up Rounding Direction, and 15 kg for the Down Rounding Direction. The Down Rounding Direction is calculated as follows:

- Lower Scale Multiple - Quantity After Scaling  
= 25 - 40

= -15 kg for the Down Rounding Direction

Take the absolute value of any negative Rounding Direction. In this case, the lower Rounding Direction has an absolute value of 15 kg.

The acceptable Rounding Variance is up to 12 kg. The Rounding Direction is Down, and the calculated absolute value for the down Rounding Direction is 15 kg, representing 3 kg more than the acceptable Rounding Variance. It is not acceptable to round down to 25 kg, so 40 kg of Ingredient 3 must be used in the batch.

If the Rounding Direction were Up, then it is acceptable to use 50 kg of Ingredient 3, since a 10 kg difference is less than the acceptable Rounding Variance of 12 kg. The Up Rounding Direction is calculated as follows:

- Upper Scale Multiple - Quantity After Scaling  
= 50 - 40  
= 10 kg for the Up Rounding Direction.

### **Limitations for Repeated Scaling of an Integer Scaled Item**

Scaling issues occur when an item with an Integer scale type is scaled more than once during the production cycle. The following example presents the issues:

Item P1 is a product with an original quantity of 100 units. Its planned quantity before scaling is 100.

Item P1 is composed of the following ingredients:

- I1, ingredient one, has a original quantity of 100 units and is scaled proportionately.
- I2, ingredient two, has a original quantity of 50 units and is scaled proportionately.
- I3, ingredient three, has an original quantity of 25 units and is scaled with the Integer scale type. The increment is 25, the rounding tolerance is 100 percent, and the scaling direction of Up.

When item P1 is scaled from 100 to 150 units:

- I1 is scaled from 50 to 75 units.
- I2 is scaled from 25 to 37.5 units.
- I3 is scaled from 25 to 37.5, and rounded up to 50 using the specified increment and rounding tolerance.

If item P1 is scaled again from 150 units to 300 units, then a proportional scaling factor of two is applied to the planned quantity:

- I1 is scaled from 75 to 150 units.
- I2 is scaled from 37.5 to 75.

A scaling issue occurs with I3, since the quantity calculated at second scaling is 100. However, it must be scaled to 75. This calculation is obvious when the original quantity is used for scaling. If the original quantity is used, then there is no issue.

If an ingredient, I4, is added to the batch, then its original quantity is zero. When a scale factor is applied, the quantity remains zero. If the original quantity of P1 was itself an scale multiple, and scaling occurred at batch creation, then using the original quantity does not prevent the rounded quantity from being scaled. This results in an inflated quantity when the rounding direction is up, or a deflated quantity when the rounding direction is down.

**Editing a Planned Quantity of Ingredient Manually** If a planned quantity is edited manually, then it is not possible to use either the original quantity or the formula quantity, since using either quantity results in loss of the manually entered quantity. For example, if the planned quantity of I1 is adjusted from 75 to 85 after the batch is scaled initially, then the application of the scale factor results in a new scaled quantity of 150, rather than 170.

### Resolving the Issues

You have the option to choose either the original formula quantity or the planned quantity of an ingredient when you attempt to scale an item with an Integer scale type.

**Using the Original Formula Quantity** The original formula quantity is used for scaling. No rounded quantities are used. If items are inserted in the batch, then there is no formula quantity, and these items are not scaled. Enter their quantities manually. The issue of inflated or deflated scaled quantities is eliminated.

**Using the Planned Quantity** Edits made to the planned quantity are not lost. Rounded quantities are scaled. This results in either inflated or deflated quantities. Enter these quantities manually.

## Scaling a Batch or Firm Planned Order

The Scale Batch window lets you scale a batch or firm planned order by a percentage or a specific amount. When a pending batch is scaled, the application updates the planned quantity of items and other planned numbers, such as step quantity and resource usage.

When a work in process batch is scaled, the application updates the work in process planned quantities for material, however step quantity and resource usage are not scaled.

- If the automatic step quantity calculation is off, then the planned numbers for Pending steps are scaled, and WIP and Completed steps are not changed.
- If the automatic step quantity calculation is on, then the step quantities and resource usage are not changed, since none of the material quantities used were changed. Once the steps are completed, the automatic step quantity calculation selects the appropriate actual quantities to use in calculations.

### Using a Percent to Scale Materials

You enter a percentage to scale any scalable ingredient up or down by a percent of the displayed quantity. For example, if you enter 100 percent, then the quantity of the selected item is scaled up by 100 percent, or doubled, and the other quantities are increased accordingly. If you enter -50, or negative fifty percent, then the item quantity is decreased by half.

### Using an Item Quantity to Scale Materials

This is the simplest method to scale any scalable ingredients. Enter a new quantity of material.

### Prerequisites

- Create a batch or firm planned order.
  - Batch status must be Pending or WIP.
  - Completed batches must be reverted to work in process prior to scaling.
- **To scale material in a batch or firm planned order by a percentage:**
1. Select the material to scale. For example, select the product.

2. Choose one of the following from the **Actions** menu:
  - **Scale Batch.** The Scale Batch dialog box displays.
  - **Scale Firm Planned Order.** The Scale Firm Planned Order dialog box displays.
3. Select **Percent**.
4. Enter a percentage for the scaling **Factor**. For example, to double the material, enter 100.
5. Click **OK**.

■ **To scale material in a batch or firm planned order by entering a new quantity:**

1. Select the material to scale. For example, select the product.
2. Select one of the following from the **Actions** menu:
  - **Scale Batch.** The Scale Batch dialog box displays.
  - **Scale Firm Planned Order.** The Scale Firm Planned Order dialog box displays.
3. Select **Item Quantity**.
4. Select one of the following:
  - **Planned Qty** to scale the batch by the planned quantity.
  - **Formula Qty** to scale the batch by the original formula quantity.
5. The following fields are display only:
  - **Line** displays the line number of the material.
  - **Item** displays the item code of the material.
  - **Description** displays a brief description of the material.
  - **Old Quantity** displays the quantity to rescale with its **UOM**.
6. Enter a **New Quantity** for the material.
7. Click **OK**.

► **To scale a completed batch:**

1. Choose **Revert to WIP** from the **Actions** menu to change the batch status to work in process.
2. Scale the batch as described in this topic.

## Managing Overallocated Items

If you reduce the size of a batch with previously allocated items, then the **Items Overallocated - Scale Batch** window displays.

► **To manage overallocated items:**

1. Navigate to the **Batch Material Details** window.
2. Scale the batch down as described in the "Scaling a Batch or Firm Planned Order" topic:
  - If you select **Percent**, then enter a negative scaling **Factor**.
  - If you enter an **Item Quantity**, then enter a **Planned Qty** below the quantity of material allocated.
3. Click **OK**.
4. The following error displays:

To scale the batch down, please adjust your existing allocations to match the new quantity.

Click **OK** to proceed.
5. The **Items Over Allocated - Scale Batch** window displays.
6. The **DEFAULT LOT** displays the overallocated quantity as a negative number in the **Allocated Qty** field. This represents the quantity of material that must be decreased in the individual lots allocated. You must bring the total allocated material down by the amount indicated.
7. Enter a decreased **Allocated Qty** for each allocated material. Do not include the minus sign.
8. Repeat step 7 until the quantity displayed for the **DEFAULT LOT** is zero.
9. Click **Proceed**. The **Batch Material Details** window redisplay with the rescaled batch quantities that correct the overallocation.
10. Save your work.

## Rescheduling a Batch

The Reschedule dialog box is available from the Batch window. Use it to change a scheduled batch. Change the planned start date and time on a Pending batch. You can also change the planned completion date and time on a Pending or WIP batch. Completed batches cannot be rescheduled.

By changing the planned start date and time, you also change the planned start date and time for any pending ingredient transactions. By changing the planned completion date and time, you also change the planned completion date and time for any pending autorelease product and byproduct transactions.

If you change either the Planned Start or Planned Completion dates, then the application queries whether to apply the change to the other field. If you respond Yes, then the application calculates the duration of the batch, and computes the other date by taking the shop calendar into account if it is selected for use.

Refer to "Shop Calendar Impact on Scheduling Batches and Firm Planned Orders" for additional information on using the shop calendar to reschedule batches.

### Prerequisites

- Create a batch.

### ■ To reschedule a batch:

1. Navigate to the Reschedule dialog box.
2. Enter one of the following:
  - **Planned Start** date for the batch. You can only edit this field if the batch has a status of Pending.
  - **Planned Completion** date for the batch.
3. Select **Use Shop Calendar** to use the shop calendar to reschedule dates.
4. Click **OK**.
5. **Apply Difference to Other Date** appears if the **Enforce Step Dependency** indicator is not selected. Click one of the following:
  - **Yes** to recalculate either the Planned Start or Planned Completion dates based on the date entered in step 2.
  - **No** to avoid recalculating either Planned Start or Planned Completion dates based on the date entered in step 2.



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## Batch Material Allocation

This topic provides a basic understanding of batch material allocations, including how to edit whole batch and batch line allocations. Procedures are presented to determine unallocated items and manage inventory shortages. You are shown how to manage items that fail autoallocation, and how to pick specific lots and locations for use in batch production.

The following topics are covered:

- [Requirements](#)
- [Solutions](#)
- [Understanding Batch Allocations](#)
- [Editing Batch Line Allocations](#)
- [Determining Items Requiring Allocation](#)
- [Using the Items Failing Autoallocation Window](#)
- [Managing Inventory Shortages](#)
- [Picking Lots and Locations](#)

## Requirements

Following are some requirements that customers have for materials in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Does the application support automatic ingredient allocation?**

Yes. The application has the flexibility to allocate ingredients automatically or manually.

### **Can inventory shortages be managed from the shop floor?**

Yes. The Inventory Shortages window displays a line by line summary of materials that have a planned quantity greater than available inventory.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for materials.

**Allocate Ingredients Automatically or Manually** Automatic allocation selects lots without user intervention. Manual allocation must be done on the Line Allocations window. The Pick Lots/Locations window assists the Production Operator in specifying material to be used in production.

**Manage Inventory Shortages from the Shop Floor** Inventory shortages are displayed in the Inventory Shortages window. Production Operators can determine the shortage and act on it immediately from the shop floor.

## Understanding Batch Allocations

The process of allocating ingredients refers to specifying the ingredient lots to be used in batch production. The application lets you allocate ingredients automatically or manually. If you use automatic allocation, then the application automatically selects the lots to be used. If you use manual allocation, then allocate materials on the Line Allocations window. Specify which materials are to be used on the Pick Lots/Locations window.

Allocate manually before or after releasing a batch. Allocate lot or location controlled ingredients before you consume them. Run the Batch Pick List Report as a guide to picking the correct material. If you decide to record what went into a batch after it has started, instead of what goes into it before it starts, then allocate manually after releasing the batch.

### Automatically Allocating Batch Ingredients

The GME: Use Auto-Allocation profile option controls whether the application can perform automatic lot allocation.

See: *Oracle Process Manufacturing Implementation Guide*

Set up the desired allocation class sets. These are set up in the Oracle Process Manufacturing Inventory Control application. Valid categories within the allocation class set correspond to the flexfield structure assigned to it. All categories defined for this flexfield structure become the valid categories for this category set. Classes are available for Automatic FEFO, User Initiated FEFO, Automatic FIFO, and User Initiated FIFO. Associate these categories to individual items and define their individual allocation parameters.

The Allocation Parameters window is used to specify the production lot allocation parameters for all allocation classes, and the warehouses in which those rules are valid. Profile options GMI: Allocation Method and GMI: Allocation Type are defined in the System Administration application. The application uses these defaults when allocation parameters are not provided.

Link allocation classes for automatic allocations to the allocation parameters you require.

### Fully Automatic Lot Allocation

Use fully automatic lot allocation when the following conditions are true for the item:

- The ingredient is lot-controlled.

- The proper material can be selected using FIFO or FEFO, single lot or multi-lot, and lot status rules.
- The ingredient is available at the time of batch entry in the consumption warehouse specified on the Plant Warehouses window.

When you release a batch the application attempts to allocate items automatically set up for fully automatic lot allocation.

For more information on setting up allocation parameters, refer to the *Oracle Process Manufacturing Inventory Management User's Guide*.

### **Understanding User-Initiated Automatic Allocation**

With user-initiated automatic allocation, the application automatically allocates ingredients, but prompt it to perform the allocation, since allocation is not performed automatically when the batch is first saved. Prompt allocation of all ingredients that are set to automatic allocation by choosing Allocate Batch from the Actions menu on the Batch Material Details window. Enable the application to perform allocation of individual ingredient lines by selecting the line on the Batch: Material Details window, and then choosing Allocate Line from the Actions menu. Use user-initiated automatic allocation when the following circumstances are true for the item:

- The ingredient is lot-controlled.
- The proper material can be chosen using FIFO or FEFO, single lot or multi-lot, and lot status rules.
- The ingredient is available at the time of allocation in the consumption warehouse specified on the Plant Warehouses window. The ingredient may not necessarily be available at the time of batch entry.

There are two ways to set up an ingredient for user-initiated automatic allocation:

- Assign the item an allocation class on the Items window. The allocation class must be linked to allocation parameters that specify user-initiated automatic allocation on the Allocation Parameters window.
- Set up the GMI:Allocation Type profile option to User Initiated.

### **Manually Allocating Batch Ingredients**

Allocate ingredients manually on the Line Allocations window available from the Batch Material Details window. Use this window to display or change allocations made using any of the automatic allocation methods. Manual allocation is the most flexible way to allocate inventory. Use this method when the automatic methods are

inappropriate. Use manual allocation to allocate ingredients that are not lot or location controlled from a warehouse other than the consumption warehouse specified on the Plant Warehouses window.

### **Picking Lots and Locations**

Allocate material using the Pick Lots/Location option found Actions menu of the Batch Material Details window or the Line Allocations window.

Pick lots is similar to manual allocation, but it shows you what is available for allocation in the consumption warehouse. By default, Pick Lots shows the availability of an item in the consumption warehouse shown on the Line Allocations window. Change the warehouse to pick lots from other warehouses that are owned by other organizations.

The generic LOV on the Lot field lists all the lots whether or not they contain inventory, and regardless of whether the inventory is committed elsewhere.

## Editing Batch Line Allocations

The Line Allocations window lets you edit materials that are allocated for ingredients, products, and byproducts.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create a batch.

### ■ To enter line allocations:

1. Navigate to the **Batch Material Details** window.
2. Query the batch containing the lines to allocate.
3. Select the **Line** to allocate.
4. Click **Line Allocations**. The **Line Allocations** window displays.

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**Note:** If automatic lot and subplot numbering is set up in the OPM Inventory Control application for a product at the item level, then when you tab through the Lot and Sublot fields, and the product does not yet have a lot number assigned, a lot or subplot number is generated. Refer to the "Generating Automatic Lot/Sublot Numbering" topic in the *Oracle Process Manufacturing Inventory Management User's Guide* for more information.

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5. Enter the **Lot** to be allocated to the batch. This field is only accessible if the material is lot-controlled. The DEFAULTLOT entry indicates the quantity to be allocated for lot-controlled items. Required if ingredient is lot controlled.
6. Enter the **Sublot** to be allocated to the batch. This field is only accessible if the material is lot-controlled.
7. Enter the consumption **Warehouse** for the material. This defaults to the consumption warehouse specified on the **Plant Warehouses** window. Required.
8. Enter the **Location** of the ingredient. Required if the ingredient and warehouse are location controlled.

9. Enter the **Allocated Qty** of material that is being taken from the specified lot, subplot, warehouse, and location in the **UOM** displayed on the batch line. Required.
10. **Completed** indicates line allocation status. It is used to release ingredient lines that are set to manual release. This field is only accessible if the ingredient line is set to manual or incremental consumption and the batch has a status of WIP. Completed is:
  - Selected to consume the quantity specified and replace pending transactions with completed transactions.
  - Cleared if the line must not yet be consumed.
11. Enter the **Secondary Qty** if the item is dual unit of measure controlled.
12. **Secondary UOM** displays the secondary unit of measure if the item is dual unit of measure controlled.
13. Enter a **Reason** code to be associated with the transaction.
14. Enter the **Transaction Date**. This field has the following defaults:
  - When the batch is created, ingredient transactions default to the planned start date of the batch. Ingredients with a consumption type of Automatic by Step default to the planned start date of the step to which they are associated.
  - When the batch is released, ingredients with a consumption type of automatic default to the actual start date and time and the transaction is completed.
  - Ingredients with a consumption type of manual or incremental default to the system date and time when the completion indicator on the Line Allocations window is checked. For incremental consumption items, this happens through incremental backflushing.Transaction dates do not update:
  - If you change the actual start date after releasing a batch.
  - If you change the actual completion date after completing the batch.
15. The following fields are display only:
  - **Primary Qty** displays the quantity of material allocated to the line in the primary inventory unit of measure for the item.
  - **Primary UOM** displays the primary inventory unit of measure for the item.

- **Onhand Qty** displays the total quantity available in inventory in the specified warehouse and location.
- **Usable Qty** displays the quantity of material available to shipping, sales, or production.
- **Available Qty** displays uncommitted material that has a lot status that is usable for production.
- **Completed** displays the total quantity of all completed transactions that are associated with the selected Line. For ingredients, this is the quantity that is consumed. For products, this is the quantity that is yielded.
- **Pending** displays the total quantity of all pending transactions associated with the selected Line. This is the quantity that is not yet consumed or yielded.
- **Allocated** displays the total quantity of material that is allocated for the selected Line.

16. Click **Next Line** to display the next Line listed in the batch material.

17. Click **Previous Line** to display the previous Line listed in the batch material.

18. Click **Pick Lots/Location** to display the **Pick Lots/Locations** window to select specific lots and locations of materials to use in the batch as described in the "Picking Lots and Locations" topic.

19. Click **OK**.

#### ■ **To allocate a line automatically:**

1. Select the line to allocate automatically. The line must be set for automatic allocation.
2. Choose **Autoallocate Line** from the **Actions** menu.
3. The line is allocated automatically. If a problem is identified, then the **Items Failing Autoallocation** window displays to correct the problem.
4. Save the window.

#### ■ **To display line allocations for a firm planned order:**

The Line Allocations window for a firm planned order has the same content as the Line Allocations window for a batch. The window is display only.

## Determining Items Requiring Allocation

The Items Requiring Allocation window displays the items that are not yet allocated under the following circumstances:

- When you release a batch and any ingredients with a consumption type of Automatic are not fully allocated. You have the option to proceed. Any unallocated quantity remains pending and is not consumed.
- When you release a step and any ingredients associated with the step that have a consumption type of Automatic by Step are not fully allocated. You have the option to proceed. Any unallocated quantity remains pending and is not consumed.
- When you use incremental backflushing, and the quantities that are backflushed are not fully allocated. Allocate these items before saving the batch.
- When you complete a batch and have not allocated any of the ingredients, products, or byproducts in the batch. Allocate these items before you complete the batch.
- When you complete a batch step and any any items associated to the step with a consumption type or yield type of Automatic by Step are not fully allocated.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites:

- Create a batch.
- Release the batch.

### ■ To display items requiring allocation:

1. Navigate to the **Items Requiring Allocation** window.
2. The following fields are display only:
  - **Line** displays the line number of the material that may require allocation. All relevant lines for the batch are displayed.
  - **Line Type** displays the type of material as Product, Byproduct, or Ingredient.
  - **Item** displays the code for the material that requires allocation.
  - **Item Description** displays a brief description of the item.

- **Allocated Qty** displays the quantity of material that is allocated for the item displayed.
- **Unallocated Qty** displays displays the quantity of material that is not allocated.
- **UOM** displays the unit of measure for the Unallocated Qty field.

## Allocations

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**Note:** If automatic lot and subplot numbering is set up in the OPM Inventory Control application for a product at the item level, then when you tab through the Lot and Sublot fields, and the product does not yet have a lot number assigned, a lot or subplot number is generated. Refer to the "Generating Automatic Lot/Sublot Numbering" topic in the *Oracle Process Manufacturing Inventory Management User's Guide* for more information.

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3. The following fields are display only:
  - **Lot** displays DEFAULT LOT on the first row, and lots already allocated on subsequent rows. Enter the Lot to allocate to the batch.
  - **Sublot** displays each subplot already allocated, if the item is subplot controlled. Enter the subplot to allocate to the batch.
  - **Warehouse** displays the consumption warehouse for material used in the batch.
  - **Location** displays the inventory location for material if the warehouse is location controlled. If both the item and warehouse where it is located are location controlled, then a location code must be entered here.
4. In the first row, **Allocation Qty** displays the total quantity of material required for the allocation. Subsequent rows display the quantity of material allocated to the line for each of the listed warehouses. You can edit this field.
5. **Completed** indicates line allocation status. It is used to release ingredient lines that are set to manual consumption or to yield product lines set to manual yield.
  - Selected to consume or to yield the quantity specified and replace pending transactions with completed transactions.
  - Cleared if the line must not be consumed or yielded.

6. Enter the **Secondary Qty** of allocated material in the secondary unit of measure if the item is dual unit of measure controlled.
7. **Secondary UOM** displays the secondary unit of measure, if the item is dual unit of measure controlled.
8. Enter a **Reason** code to be associated with the transaction.
9. Enter the **Transaction Date**.
10. The following fields are display only:
  - **Onhand Qty** displays the current onhand quantity of the lot in the specified warehouse.
  - **Primary Qty** displays the quantity of material allocated to the line in the primary inventory unit of measure for the item.
  - **Primary UOM** displays the primary inventory unit of measure for the item.
11. Click **Next Line** to select the next line until you reach the next line requiring material allocation.
12. Allocate remaining ingredients.
13. Save the window.
14. Click **Proceed** to continue with the function that was being performed, such as batch creation, batch release, or batch completion.

► **To allocate ingredients from the Items Requiring Allocation window using Pick Lots:**

1. Select the **Line** requiring allocation.
2. Choose **Pick Lots/Locations** from the **Actions** menu.
3. Select appropriate materials for the line as described in the "Picking Lots and Locations" topic.
4. Click **Next Line** to select the next line until you reach the next line requiring material allocation.
5. Repeat steps 2 through 4 until all lines are allocated.
6. Click **Proceed** to continue with the function that was being performed, such as batch creation, batch release, or batch completion.

## Using the Items Failing Autoallocation Window

The Items Failing Autoallocation window helps you manage individual lines that fail automatic allocation. Enter allocation quantities for items that do fail. The window displays when you attempt to create a batch or when you choose Allocate Batch from the Actions menu on the Batch Material Details window and the application cannot automatically allocate items that are set for automatic allocation.

You do not have to take immediate action on these issues. You have the option to initiate automatic allocation or manual allocation later on in the production process.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create a batch with items that can be automatically allocated.
- Attempt to allocate a line that has an item set for automatic allocation. If automatic allocation fails, then the application displays the Items Failing Autoallocation window.

### ■ To use the Items Failing Autoallocation window:

1. Navigate to the **Batch Material Details** window.
2. Query the batch containing the lines to allocate.
3. Select the ingredient line that is set for automatic allocation.
4. If the ingredient line cannot be automatically allocated, then the **Items Failing Autoallocation** window displays.
5. The following fields are display only:
  - **Line** displays the batch line number for the ingredient.
  - **Line Type** displays the type of material as Product, Byproduct, or Ingredient.
  - **Item** displays the item code.
  - **Item Description** displays a brief description of the item.
  - **Allocated Qty** displays the quantity of the item that was allocated.
  - **Unallocated Qty** displays the quantity of material that cannot be autoallocated.

- **UOM** is the unit of measure for the quantity.
6. Use the folder to add the following fields:
    - **Available Qty** displays the quantity to allocate.
    - **Onhand Qty** displays the total quantity available in inventory in the specified warehouse and location.
    - **Usable Qty** displays the quantity of material available to shipping, sales, or production.

## Allocations

7. **Lot** displays DEFAULT LOT if the item is lot controlled. If a default lot displays, then there is no subplot. Other material lots listed are the individual lots allocated to satisfy the total material requirements for the line. Tab to the first field below DEFAULT LOT and enter the Lot number to use.
8. **Sublot** displays each subplot of material entered to fulfill requirements displayed as the DEFAULT LOT. This field does not display in the first row. Tab to the first Sublot field below the DEFAULT LOT. Enter the subplot of material to use if the material is subplot controlled.
9. **Warehouse** displays the consumption warehouse for material used in the batch. Enter the consumption warehouse that has Lot entered.
10. **Location** displays the inventory location for material if the warehouse is location controlled. If both the item and the warehouse where it is stocked are location controlled, then the location code appears here. Enter the location of the material if the warehouse is location controlled.
11. **Allocation Qty** displays the allocation quantity required on the first line. Enter the desired quantity for the specified Lot and Sublot. Once you tab out of this field, then the DEFAULT LOT quantity decreases by the quantity entered.
12. **Completed** indicates line allocation status. It is used to release ingredient lines that are set to manual release. This field is only accessible if the ingredient line is set to manual or incremental release and the batch has a status of WIP.  
Completed is:
  - Selected to release the quantity specified and replace pending transactions with completed transactions.
  - Cleared if the line must not be released.
13. **Secondary Quantity** indicates the quantity allocated on the selected line in the secondary unit of measure, if the item is dual unit of measured controlled. Enter

the allocation quantity in this field if the material is dual unit of measure controlled.

14. Use the folder to add the **Allocation UOM** as the unit of measure for **Allocation Qty** field.

## Managing Inventory Shortages

The Inventory Shortages window displays a line by line summary of material shortages. The window displays when:

- A planned quantity is greater than available inventory at batch creation. The fields are display only.
- You choose Inventory Shortages from the Actions menu. The fields are display only.
- You try to consume more inventory than is available. You can edit or enter allocations to correct the inventory shortage.

The header portion of the Inventory Shortages window displays the usable inventory at the item level. The Available Qty displayed is at the item level. This is material that is committed to other batches but, may not yet be allocated.

The Allocations region of the Inventory Shortages window displays material that is allocated at the lot, subplot, and location level. The Available Qty displayed is at the lot level. For example, it is possible to have an Allocation Qty that is greater than the Available Qty displayed in the header.

The window displays automatically when you attempt to save or release a batch if appropriate profile options are set.

Profile options that control whether this window displays are:

- GME: Check Inventory Shortage Upon Save  
This profile option lets you display the Inventory Shortages window when you save a batch. Just-in-time manufacturers must consider setting this profile value to zero, since a warning of shortages may not apply to their material arrival and availability.
- GMI: Allow Negative Inventory  
The Inventory Shortages window does not display on release if you decide to allow negative inventory by setting GMI: Allow Negative Inventory profile option to one.

See: *Oracle Process Manufacturing Implementation Guide*

You can use folders with this window.

See: *Oracle Applications User's Guide*

## Prerequisites

- ❑ Create a batch.

### ► To display inventory shortages:

1. Navigate to the **Inventory Shortages** window.
2. The following fields are display only:
  - **Line** displays the line number of the material that has a shortage.
  - **Line Type** displays the type of material as Product, Byproduct, or Ingredient.
  - **Item** displays the code for the material that has a shortage.
  - **Item Description** displays a brief description of the item.
  - **UOM** displays the unit of measure used for the item on the batch.
  - **Onhand Qty** displays the current onhand inventory quantity of material for the item displayed in the consumption warehouse.
  - **Usable Qty** displays the onhand material that has a lot status that is usable for production.
  - **Available Qty** displays uncommitted material that has a lot status that is usable for production.
3. Use the folder to add **Unallocated Qty** to track unallocated quantities.

## Allocations

The following fields are not editable on batch creation, or if you choose Inventory Shortage from the Actions menu of the Batch Material Details window.

4. Enter the **Lot**. DEFAULT LOT displays on the first row. Other material lots listed are the individual lots allocated to satisfy the total material requirements for the line.
5. Enter the **Sublot**. This field displays each subplot of material entered to fulfill requirements. This field does not display in the first row.
6. Enter the **Warehouse** as the consumption warehouse for this ingredient used in the batch.
7. Enter the **Location** as the inventory location for material if the warehouse is location controlled. If both the item and the warehouse where it is stocked are location controlled, then a location code must be entered here.

8. In the first row, **Allocation Qty** displays the total quantity of material required for allocation. Subsequent rows display the quantity of material allocated to the line for each of the listed warehouses. You can edit this field.
9. When selected, **Completed** indicates that the transaction is completed and the quantity is consumed.
10. Enter the **Secondary Qty** as the quantity of allocated material in the secondary unit of measure, if the item is dual unit of measure controlled.
11. **Secondary UOM** displays the secondary unit of measure, if the item is dual unit of measure controlled.
12. Enter the **Reason** as the reason code associated with the transaction.
13. Enter the **Transaction Date** as the date and time the lot is scheduled for consumption. Individual allocation transaction dates and times are listed.
14. The following fields are display only:
  - **Onhand Qty** displays the current onhand inventory quantity of material for the item displayed in all warehouses.
  - **Primary Qty** displays the quantity of material allocated to the line in the primary unit of measure
  - **Primary UOM** displays the primary unit of measure.
15. Click **Proceed**.
16. Use the folder to add **Allocation UOM** to display the unit of measure for the allocation.

► **To enter material allocations for inventory shortages:**

1. Enter a **Lot** to allocate to the item.
2. Enter the **Sublot** if the Lot is subplot controlled.
3. Enter the **Warehouse** that contains the material to allocate. You must have access to this warehouse.
4. Enter the **Allocation Qty** to allocate from the specified lot. The Allocation Qty listed for the DEFAULT lot decreases by the amount allocated to the specific Lot, Sublot, and Warehouse combination. If the item is dual unit of measure controlled, then the application queries if you want to calculate the Secondary UOM. Select **Yes**, and continue.
5. Click **Next Line** to enter the next line.

6. Repeat steps 1 through 4 for all additional materials to allocate to the item.
7. Click **Proceed**.

## Picking Lots and Locations

The Pick Lots/Locations window lets you select specific lots and locations of ingredients to use in a batch. Picking lots is similar to the manual allocation process. However, it only allows you to pick material that is available.

The generic LOV on the Lot field lists all lots regardless of inventory content or commitment.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Create a batch that has lot or location controlled items.

### ■ To pick lots and locations:

1. Navigate to the **Batch Material Details** window.
2. Query the batch that has lines to select specific lots and locations of ingredients to be used.
3. Select the batch **Line**.
4. Choose **Pick Lots/Location** from the **Actions** menu. The **Pick Lots/Locations** window displays.
5. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch to assign lots and locations.
  - **Item** displays the item code for the material to pick.
  - **Line Quantity** displays the total quantity of material required for the batch line with its **UOM**.
  - **Unallocated Qty** displays the quantity of material that is not allocated with its **UOM**.
6. Enter the **Warehouse** to pick lots and locations. Required.
7. The following fields are display only:
  - **Description** displays the description of the warehouse.
  - **Lot** displays the lot code.

- **Sublot** displays the subplot code.
  - **Location** displays the lot location, if the item is location controlled.
  - **Expire Date** displays the date the lot is scheduled to expire.
  - **Available Qty** displays uncommitted material that has a lot status that is usable for production.
8. Enter **Allocated Qty** as the quantity of material to pick for the allocation.
  9. The following fields are display only:
    - **Grade** displays the quality control grade assigned to the lot, if it is grade controlled.
    - **Lot Created** displays the date the lot was created.
    - **Lot Status** displays the lot status if it is status controlled.
  10. Click **OK** to pick the specified lots and locations.
  11. Click **Default Unallocated** to automatically set the Allocated field for the lot selected to the lesser of the Unallocated Qty or the Available Qty.
  12. Save the window.



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## Batch Production

This topic provides procedures for releasing and unreleasing a batch. Procedures are presented for editing batch steps in production, editing resource transactions, and recording batch operation work in process. The process of checking lot status when yielding product presents the business rules that are enforced when yielding batch material into an existing lot. You are given an understanding of and procedures for incremental backflushing. Discussions of activity factors and charges are provided to enhance your understanding of how these are used in the process execution application.

The following topics are covered:

- [Requirements](#)
- [Solutions](#)
- [Releasing a Batch](#)
- [Unreleasing a Batch](#)
- [Releasing a Batch Step](#)
- [Unreleasing a Batch Step](#)
- [Checking Lot Status When Yielding Product](#)
- [Understanding Incremental Backflushing](#)
- [Performing Incremental Backflushing](#)
- [Editing Batch Steps in Production](#)
- [Understanding Charges](#)
- [Calculating Charges for Dependent Steps](#)
- [Understanding Activity Factors](#)

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- [Editing Resource Transactions](#)
  - [Recording Batch Operation Work in Process](#)

## Requirements

Following are some requirements that customers have for batch production in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Does the application keep inventory current for ingredients that are consumed incrementally in the production cycle?**

Yes. Incremental backflushing provides a convenient method to keep inventory current for batches that consume ingredients incrementally throughout the time production occurs. Incremental backflushing is used to model continuous flow type production.

### **Does the application show batch production progress at a glance?**

Yes. The Process Execution Workbench window provides a consolidated view of batch products, byproducts, ingredients, and steps.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for batch production.

**Keep Inventory Current with Incremental Backflushing** Incremental backflushing provides a simple method to record ingredient consumption and production yield as it occurs prior to batch completion. Incremental backflushing enables the timely entry of material transactions of ingredients for batches with a status of WIP, and eliminates the need for the user to enter ingredient consumption quantities, since these quantities can be backflushed.

**Totally Integrated Batch Process Management** The Process Execution application manages the total batch production process from the material and nonmaterial resources. The Process Execution Workbench window displays batches in a single consolidated view. This allows viewing products, byproducts, and ingredients at both a summary level and at the individual step level.

## Releasing a Batch

The Release Batch dialog box lets you release a batch for production.

When you release a batch, the application validates the batch status as Pending. This makes the batch a candidate for release. The application checks for a batch validity rule, and advises you if one is not found. Pick a validity rule if one is not assigned. The application then checks for items requiring allocation if the GME:Auto-Release Allocated Quantity Only profile option is set to zero. It checks for unexploded phantoms, except for those that are Automatic by Step with a step association. If unexploded phantoms are found, then you set the phantom type to Not a Phantom before releasing the batch. At this point, the application releases phantom batches recursively, and consumes materials as follows:

- For a production batch, the application checks lot status and expiration dates, checks for inventory shortages in unallocated automatic consumption ingredients, completes transactions, and updates the planned and actual quantities.
- For a laboratory batch, the application updates the WIP planned quantity to the planned quantity for all materials, and then updates the actual quantity of ingredients to the planned quantity.
- Batch status is set to work in process.
- An actual start date is assigned to the batch.

### Prerequisites

- Create a batch.

### ■ To release a batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** you to release.
3. Choose **Release** from the **Actions** menu. The Release Batch dialog box displays.
4. Enter the **Actual Start Date** for the batch.
5. Click **OK**.

## Unreleasing a Batch

Once a batch is released, it is possible to revert its status from Released to Pending. Completed transactions are reversed, actual values are reset to zero, and inventory is updated.

### Prerequisites

- ❑ Create and release a batch.

### ■ To unrelease a batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** to unrelease.
3. Choose **Unrelease** from the **Actions** menu.
4. The following message displays:  
Are you sure you want to unrelease the batch? (y/n).
5. Click **Yes** to unrelease the batch.
6. If allocations exist, then the following message displays:  
Delete existing allocations (y/n)?
7. Click **Yes** to delete any existing allocations, or click **No** if you want to retain them.
8. The batch **Status** field changes to **Pending**.

## Releasing a Batch Step

The Release Batch Step dialog box lets you release a batch step.

### Prerequisites

- Create a batch.

### ► To release a batch step:

1. Navigate to the **Batch Steps** window.
2. Query the batch **Document** containing the step to release, and select the **Step**.
3. Choose **Release Step** from the **Actions** menu. The Release Batch Step dialog box displays.
4. Enter the **Actual Start Date**.
5. Click **OK**.
6. If the application finds inventory shortages, then the following message displays:

Inventory shortages found for the batch.

Click **OK** to proceed. The **Release Step Inventory Shortages** window displays. Make appropriate allocations on this window.

7. The step status changes from **Pending** to **WIP**.

## Unreleasing a Batch Step

Once a batch step is released, it is possible to revert its status from Released to Pending. Completed transactions are reversed, actual values are reset to zero, and inventory is updated.

### Prerequisites

- Release a batch step.

### ■ To unrelease a batch step:

1. Navigate to the **Batch Steps** window.
2. Query the batch **Document** containing the step to unrelease, and select the **Step**.
3. Choose **Unrelease Step** from the **Actions** menu.
4. The following message displays:  
Are you sure you want to unrelease the batch step? (y/n)
5. Click **Yes** to unrelease the batch step.
6. If allocations exist, then the following message displays:  
Delete existing allocations? (y/n)
7. Click **Yes** to delete any existing allocations, or click **No** to retain them.
8. The step status changes from **WIP** to **Pending**.

## Checking Lot Status When Yielding Product

The GMI: Move Different Status profile option can be used to prevent yielding an additional quantity of a lot into a specific location if the existing quantity has a status that is different from the default status for the item.

### Warning When Yielding Batch Material into an Existing Lot

Use the GMI: Move Different Status profile option to prevent yielding a lot into a location where the lot already exists, but has a status that is different from the item default status:

- Set to 0, the profile option prevents the yield transaction from being saved. The application displays an error message indicating that the lot already exists in the target location and that it has a status different from the default status.
- Set to 1, the profile option lets the yield transaction retain the status of the material already in the target location.
- Set to 2, the profile option allows the yield transaction to be saved only if the onhand balance of the lot in the target location is 0. In this case, the quantity yielded assumes the default status for the item.

The profile option only applies when the lot has a status that is different from the item default lot status. If a lot yielded has the item default status, then you are permitted to yield an additional quantity into the same location.

### Warning When Editing or Reversing Batch Material Transactions

Editing product yield can drive inventory negative. For example, if 100 kg of material was yielded into a location, subsequently moved to a different location, and you edited the original yield transaction from 100 kg to 90 kg, then a balance of -10 kg is posted.

The GMI: Allow Negative Inventory profile option warns you when editing or reversing product or byproduct yield:

- Set to 0, if the change to the product or byproduct yield quantity drives inventory negative, then an error message displays and you cannot save your work.
- Set to 1, you can save without warning or error.
- Set to 2, if the change to the product or byproduct yield quantity drives inventory negative, then a warning displays and you are asked if you want to proceed. You can save your work or cancel the transaction.

### **Rechecking Negative Inventory and Lot Status When You Save**

There is a possible delay between the entry of a transaction and the actual processing of the transaction as you save your work. The application rechecks the inventory balances when you save your work. An appropriate response displays depending on the settings previously described for the GMI: Allow Negative Inventory and GMI: Move Different Status profile options.

## Understanding Incremental Backflushing

Incremental backflushing lets you record production output or yield incrementally as it occurs prior to batch completion. The application calculates the ingredient usage by backflushing the ingredients based on product yield and planned quantities. Incremental backflushing can only be performed on batches that have a status of WIP or Completed. Ingredient items must have a consumption type of Incremental in order to be backflushed by incremental backflushing.

With incremental backflushing, the application calculates actual quantities for the items that are set to a consumption type of incremental in a WIP batch. Calculations are proportional to the quantity of the item selected for incremental backflushing. The following example illustrates how this works as new incremental quantities of a product are entered. The batch formula used for the illustration consists of three items that have manual and incremental consumption types. Both proportional and fixed contributing to yield scale types are shown.

Item	Type	Scale Type	Quantity
Product 1	Manual Yield Type	Proportional	100
Ingredient 1	Incremental Consumption Type	Proportional	90
Ingredient 2	Incremental Consumption Type	Fixed Contributing to Yield	2
Ingredient 3	Manual Consumption Type	Proportional	8

Set incremental consumption types for formula lines in the Product Development application. When the batch is released, the planned and actual quantities are:

Item	Planned Quantity	Actual Quantity
Product 1	100	0
Ingredient 1	90	0
Ingredient 2	2	0
Ingredient 3	8	0

An incremental backflushing is performed by entering an incremental quantity of 10 for Product 1.

When you accept the incremental backflushing, batch quantities become:

Item	Planned Quantity	Actual Quantity
Product 1	100	10
Ingredient 1	90	9
Ingredient 2	2	2
Ingredient 3	8	0

When 10 units of Product 1 are incrementally backflushed, the actual quantity of Ingredient 1 is calculated to be 9. To calculate this, the application divides the incremental quantity of the item driving incremental backflushing by the planned quantity of that item in order to calculate a scale factor. In the example, Product 1 drives incremental backflushing. The incremental quantity entered for Product 1 is 10 and the scale factor is  $10/100$  or 0.1. The planned quantity of each scalable item with a consumption type of Incremental is multiplied by this factor to calculate the incremental increase in the actual quantity of these items. In this example, the planned quantity of Ingredient 1 is 90, which when multiplied by 0.1 gives an incremental quantity of 9. This was added to the previous actual quantity of 0 to give a new actual quantity of 9.

The quantity of Ingredient 1 is calculated without considering the scalability of other items in the batch or whether the consumption type of other items is Incremental.

For non-scalable, incremental items, the application consumes the full planned quantity the first time you perform an incremental backflushing. The actual quantity of Ingredient 2, therefore, is calculated as 2, and not 0.2.

Ingredient 3 has a consumption type of Manual. Its quantity is not affected by the incremental backflushing. Manually enter the actual quantities for items with a Manual consumption type.

If one unit of Ingredient 1 was lost through a spill, and the quantity consumed was actually 10 instead of 9, then adjust this quantity on the Material Details and Line Allocations windows. The new batch quantities become:

Item	Planned Quantity	Actual Quantity
Product 1	100	10
Ingredient 1	90	10
Ingredient 2	2	2
Ingredient 3	8	0

When you edit items with a consumption type of Incremental on the Batch Material Details window or the Line Allocations window, they function the same as items with a consumption type of Manual, and there is no effect on the quantities of the other items in the batch.

When you perform another incremental backflushing of 10 units of Product 1. The batch quantities adjust as follows:

Item	Planned Quantity	Actual Quantity
Product 1	100	20
Ingredient 1	90	19
Ingredient 2	2	2
Ingredient 3	8	0

Another 10 units is added to the actual quantity of Product 1, and the scale factor is again calculated to be 0.1. An incremental quantity of 9 units of Ingredient 1 is again calculated and added to the previous actual quantity of 10, resulting in a new actual quantity of 19. The actual quantities of Ingredient 2 and Ingredient 3 remain unchanged.

Each time an incremental backflushing is performed, the application creates completed transactions for the incremental quantity. If you looked at the transactions for Ingredient 1, assuming for the moment that it is neither lot controlled nor location controlled, then you see the following:

Status	Quantity	Comment
Complete	9	From the first incremental backflushing
Complete	1	From the manual adjustment
Complete	9	From the second incremental backflushing
Pending	71	The difference between the planned and actual quantity

The item that drives incremental backflushing does not have to have a consumption or yield type of Incremental. Since the quantity of the item that drives incremental backflushing is measured and entered, and is not calculated by the application, it must have a consumption or yield type of Manual. In the previous example, Product 1 drives incremental backflushing. The incremental backflushing can also be driven by a byproduct or ingredient. It does not have to be a product.

### Allocating Ingredients for Incremental Backflushing

If any of the ingredients with a consumption type of incremental are lot controlled or location controlled, and you entered allocations before the incremental backflushing, then the application attempts to consume the additional actual quantity from those allocations automatically. For example, if Ingredient 1 in the previous example were lot controlled, and 30 units were allocated from each of three lots before the first incremental backflushing, when you perform the incremental backflushing, then the application consumes all nine units from the first lot to be allocated.

Similarly, if the product were lot controlled or location controlled, and was allocated before the incremental backflushing, then the application automatically yields into the allocated lot or lots in the same order that they were allocated. The application does not create new lot allocations with incremental backflushing. It consumes ingredients from or yields products into already existing lot allocations.

The full actual quantity of Incremental consumption or yield type items must be allocated in order to save the batch. This is required because all completed transactions for lot controlled items must specify a lot. If this were not required, then the onhand balances would not reflect the current total onhand inventory. If

there is insufficient quantity in pending allocations to consume from or yield into when an incremental backflushing is performed, then the Items Requiring Allocation window displays.

Adjust quantities downwards by entering a negative incremental quantity or a new actual quantity that is less than the current actual quantity. If actual quantities are reduced through incremental backflushing, then the application resets any allocations that were completed back to a Pending status, until all completed allocations equal the new actual quantity.

### **Incremental Backflushing Scenarios**

The following two scenarios show how to use incremental backflushing in a situation where the full planned quantities of the product and ingredients are allocated in advance, and a situation where product lots are not allocated in advance.

**Full Planned Quantities of Product and Ingredient Allocated** The planned quantity of the ingredients and products is allocated before the batch is run. The following are the steps in this scenario:

1. Create a batch.
2. Allocate the planned quantity of the ingredients and products.
3. Release the batch.
4. Each time you record a new quantity of the product yielded by the batch, enter it on the Incremental Backflushing window. Enter an incremental quantity, the new actual quantity, or the percent of planned quantity that was produced to the point of your making the entry.
5. Click OK to save the batch with the actual quantity updated for the product and ingredients, and the quantities are consumed from the existing allocations.
6. When the batch is finished, choose Complete from the Actions menu on the Batch window.

**Product Lots Not Allocated** The planned quantity of the ingredients is allocated before the batch is run, but the product is not allocated. Each time a new lot of the product is yielded, the lot number and quantity produced is reported. The following are the steps in this scenario:

1. Create a batch.
2. Allocate the planned quantity of the ingredients.

3. Release the batch.
4. Each time a lot of the product is yielded, enter the new lot and quantity on the Line Allocations window available from the Batch Material Details window.
5. Select Completed on the Line Allocations window for completed lot transaction lines to indicate that the transaction is complete.
6. Click OK on the Line Allocations window. You return to the Batch Material Details window.
7. Choose Backflush from the Actions menu on the Batch Material Details window. The Incremental Backflushing window displays the new actual quantity and the incremental quantity entered for the new lot.
8. Click OK to redisplay the Material Details window. Note that the actual quantity of the ingredients is backflushed.
9. Save the batch.
10. When the batch is complete, choose Complete from the Actions menu on the Batch window.

### **Incrementally Backflushing Phantom Ingredients**

If you perform incremental backflushing on a parent batch that contains phantoms, then ingredients in the phantom batches that have an incremental consumption type are also backflushed.

**Scaling Phantoms** If you manually edit the actual quantity of an incremental release phantom ingredient in the parent batch, then you are asked if you want to scale the phantom batches. This is no different from editing the quantity of a nonincremental phantom, since all items in the phantom batch are scaled.

**Understanding How Scrap Factor Works with Incremental Backflushing** If Incremental backflushing is driven by an ingredient with a scrap factor, then the scale factor is calculated by comparing the incremental quantity with the ingredient's required quantity rather than its planned quantity. When incremental backflushing is driven by an ingredient with a scrap factor, the formula is:

$$\text{Scale Factor} = (\text{Incremental Quantity}) / (\text{Required Quantity})$$

$$(\text{Required Quantity}) = (\text{Planned Quantity}) * (1 + \text{Scrap Factor})$$

Therefore,

$$\text{Scale Factor} = (\text{Incremental Quantity}) / (\text{Planned Quantity}) * (1 + \text{Scrap Factor})$$

If there are ingredients with scrap factors that have a consumption type of Incremental, then the backflush quantity that is added to the current actual quantity of an ingredient to determine its new actual quantity is calculated by multiplying the scale factor by the required quantity of ingredient instead of its planned quantity. Therefore,

$$\text{Backflush Quantity} = \text{Scale Factor} * \text{Required Quantity}$$

By substitution, this becomes:

$$\text{Backflush Quantity} = \text{Scale Factor} * \text{Planned Quantity} * (1 + \text{Scrap Factor})$$

### **Inserting Items into a WIP Batch**

When you insert an item in a WIP batch, you cannot enter a planned quantity. Incremental quantity updates calculated for the actual quantity of incremental release items are calculated by multiplying the scale factor by the planned quantity for the item. Items added to a WIP batch are not updated incrementally, even when their consumption type is incremental.

### **Changing the Yield Type After Incremental Backflushing**

If you change the yield type of a product or byproduct to Incremental after you perform incremental backflushing, then the product with a yield type change is updated by any future incremental backflushing. Its percent of plan, however, is not the same as the percent of plan of the other Incremental items. This happens as a result of the incremental scale factor being applied during incremental backflushing.

For example, suppose you perform incremental backflushing for 50 percent of the planned quantity of an item. The Incremental release items are updated so that their actual quantity is 50 percent of their planned quantity. If you change the yield type of the product from Automatic release to Incremental release, and you perform another incremental backflushing for an additional 10 percent of the item driving incremental backflushing, then 10 percent of the planned quantity is added to the actual quantity of all Incremental items in the batch. Therefore, the items that had an Incremental release before any changes were made, have an actual quantity equal to 60 percent of their planned quantity, while the product that just had its yield type changed has an actual quantity equal to only 10 percent of its planned quantity.

Trying to change the yield type of a product from Incremental release to Automatic release in a WIP batch is handled in the same way as changing from Manual to Automatic release. If there are any completed transaction lines for the Incremental release product, then they must be deleted before changing the yield type to

Automatic and saving the WIP batch. There cannot be completed transactions for Automatic release products in a WIP batch.

### **Adjusting Actual Quantities After Full Completion**

Incremental backflushing allows you to adjust actual quantities after batch completion. Change a product quantity on a completed batch, and have the actual quantities for the incremental release items in the batch backflushed or recalculated.

## **Calculating Resource Usage for an Incremental Backflush**

Resource usage is calculated and driven by ingredient consumption for a particular step when the Automatic Step Quantity Calculation (ASQC) option is selected, and the GME: Calculate Interim Resource Usage profile option is set to Yes. You can calculate resource usage for an associated step and the resource usage for prior dependent steps.

### **Calculating Resource Usage Based on Product Yield**

If it is based solely on ingredient consumption, then in many instances the calculation of resource usage is not accurate. To record actual resource usage for a step associated to a product, use the incremental backflushing functionality without ASQC selected, and the GME: Backflush Resource Usage profile option set to Yes. Performing an incremental backflush on a product that is associated to a step records the resource usage proportionally when this profile option is set to Yes.

### **Step Dependency Calculations**

If the dependency is start-to-start, then the ratio calculated from incremental backflush is applied to the step, and to the resource. If the dependency is finish-to-start, then the step is considered complete, and the usage and quantities are calculated at 100 percent of the plan. If a preceding dependent step is completed, then it remains unchanged.

### **Implementation Considerations**

- If the product is set to the incremental or manual yield type and the yield was not completely recorded using incremental backflushing, then when the batch is completed, these materials display in the Complete Batch Incomplete Manual Allocations window. You can record the remaining yield. Because this is a manual process and not done through incremental backflushing, the resource usage is not backflushed.

- Only the step associated to the product that incremental backflushing is initiated from and all its dependent preceding steps have the usage backflushed.
- If the product that incremental backflushing is initiated from is not associated to a step, then no resource usage is backflushed.
- ASQC must be set to Off. The Calculate Step Quantities indicator on the recipe header must be cleared.
- Usage is not backflushed to an associated step or any dependent preceding steps if they are completed. This extends to completed batches where it is possible to initiate incremental backflushing for materials, but does not affect any of the resource usages.
- To use incremental backflushing on the product, it is a requirement that the yield type of the product must be manual or incremental.

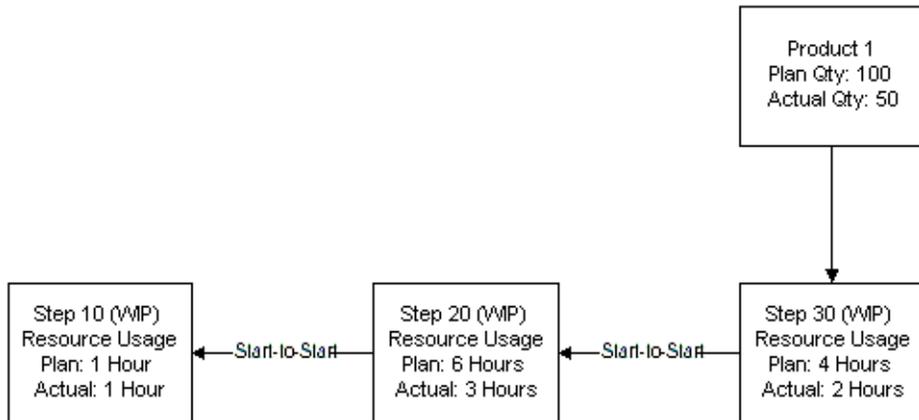
**Example 1: Impact of Incremental Backflushing on Start-to-Start Step Dependency**

Product 1 is associated to step 30, has a plan quantity of 100, and 50 are produced. An incremental backflush is performed on Product 1. All step resources are calculated at 50 percent.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	0.5 hour
Step 20 WIP	Start-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	20	4 hours	2 hours

Following is an illustration of the previously tabulated WIP step dependencies, plan resource usage, and actual resource usage:



**Example 2: Impact of Incremental Backflushing on Finish-to-Start Step Dependency**

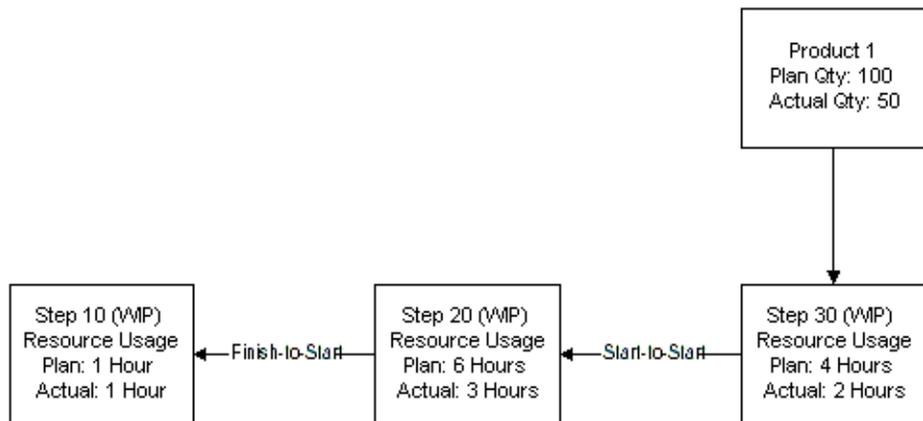
Product 1 is associated to step 30, has a plan quantity of 100, and 50 are produced.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	1 hour
Step 20 WIP	Finish-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	20	4 hours	2 hours

The usage for Step 10 is calculated at 100 percent for the first incremental backflush, and remains unchanged for subsequent incremental backflushing.

Following is an illustration of the previously tabulated WIP step dependencies, plan resource usage, and actual resource usage:



**Example 3: Impact of Incremental Backflushing on a Step Prior to a Completed Step**

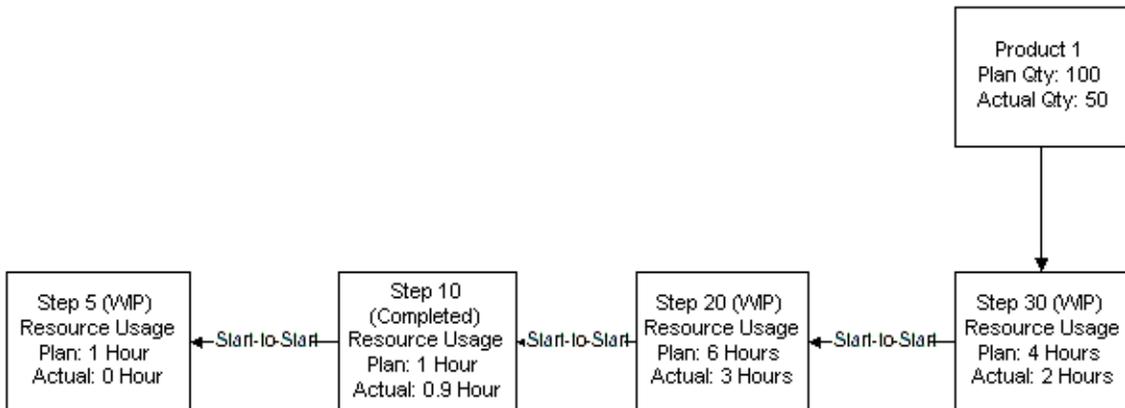
Product 1 is associated to step 30, has a plan quantity of 100, and 50 are produced.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 5 WIP	n/a	n/a	1 hour	0 hour
Step 10 Complete	Start-to-Start	5	1 hour	0.9 hour
Step 20 WIP	Start-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	20	4 hours	2 hours

Step 10 is complete. The usage remains unchanged for Step 10 each time incremental backflushing is initiated on Product 1. This example also shows a start-to-start dependency from Step 10 to Step 5. Step 5 shows no usage calculation, because when a completed step is encountered, the usage backflushing does not continue.

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



**Example 4: Impact of Additional Yield on Resource Usage after Incremental Backflushing**

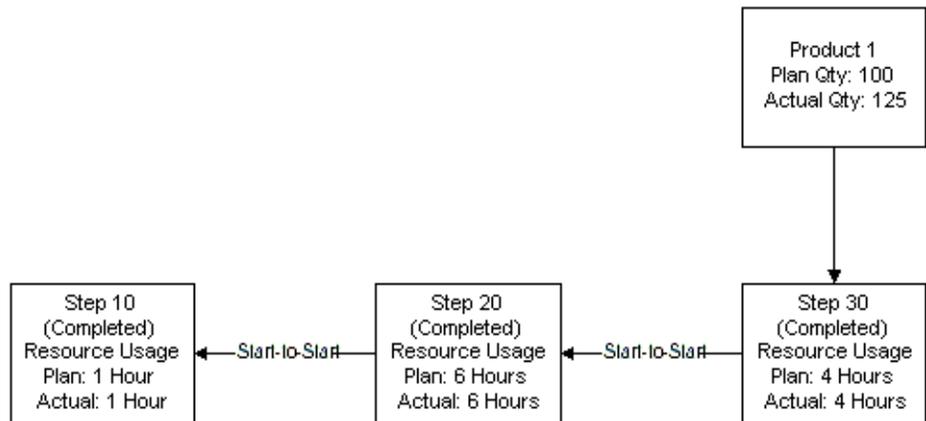
Product 1 is associated to step 30, has a plan quantity of 100, and 125 are produced.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 Completed	n/a	n/a	1 hour	1 hour
Step 20 Completed	Start-to-Start	10	6 hours	6 hours
Step 30 Completed	Start-to-Start	20	4 hours	4 hours

This example shows incremental backflushing in a completed batch. The material produced an additional yield. However, the resource usage does not reflect this. You can adjust the usage manually, if needed.

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



**Example 5: Impact of Incremental Backflushing on Two Incremental Type Products**

Product 1 is an incremental type product associated to step 30, has a plan quantity of 100, and 50 are produced. Product 2 is associated to step 60, has a plan quantity of 100, and 50 are produced. Step 70 is not associated to a material.

Following are tables of the step dependencies, plan resource usage, and actual resource usage:

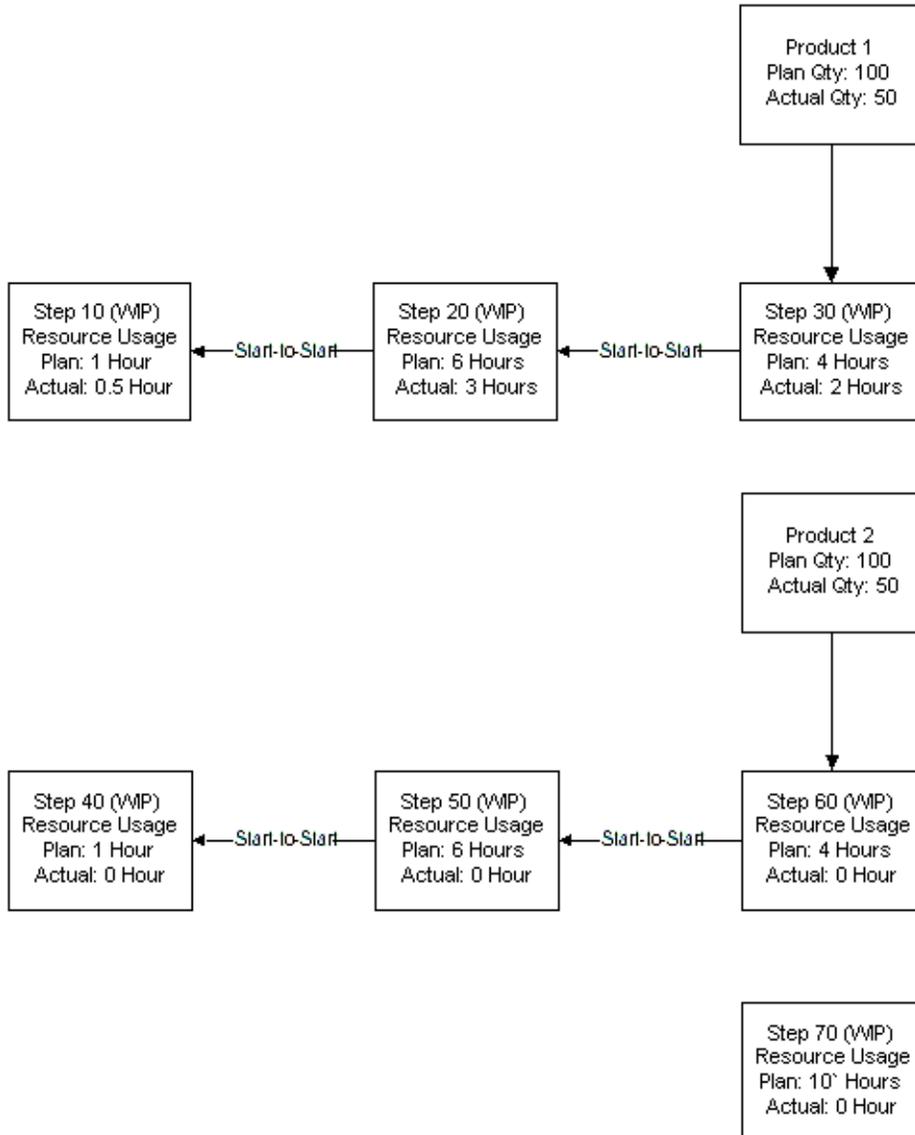
Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	0.5 hour
Step 20 WIP	Start-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	20	4 hours	2 hours

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 40 WIP	n/a	n/a	1 hour	0 hour
Step 50 WIP	Start-to-Start	40	6 hours	0 hour
Step 60 WIP	Start-to-Start	50	4 hours	0 hour
Step 70 WIP	Start-to-Start	n/a	10 hours	0 hour

If you initiate an incremental backflush on Product 1 for 50 percent of plan, then material incremental backflushing calculates an actual quantity of 50 for both products. Resource usage backflushing is done for Steps 30, 20, and 10. Steps 60, 50, and 40 remain unchanged because they are associated to Product 2. Product 2 is not the product that incremental backflushing was initiated from. Step 70 remains unchanged because it is not associated to either.

In this scenario, it makes sense to make both products manual yield. This lets you initiate an incremental backflush on Product 1 and the usage for its associated step and dependent steps is calculated, but Product 2 and its associated and dependent steps remain unchanged. When backflushing is initiated from Product 2, Product 1 and its steps remain unchanged.

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



**Example 6: Impact of Incremental Backflushing on a Product with Midstream Step Associations**

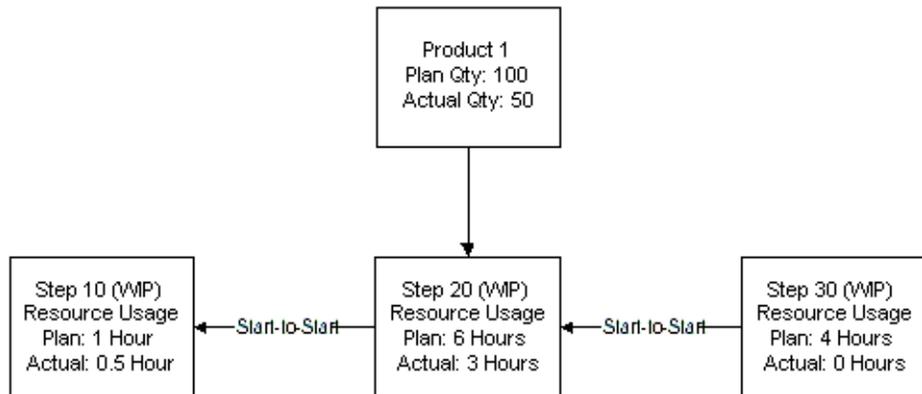
Product 1 is associated to step 20, has a plan quantity of 100, and 50 are produced. Step 30 is dependent on step 20.

Following are steps, statuses, step dependencies, and plan and actual resources:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	0.5 hour
Step 20 WIP	Start-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	20	4 hours	0 hours

An incremental backflush is performed on Product 1. Usage is not calculated for step 30.

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



### Example 7: Impact of Incremental Backflushing on Fixed, Proportional, and By Charge Scaling

Product 1 is associated to step 20, has a plan quantity of 100, and 25 are produced.

The batch is released.

Step 10 is released.

- Activity 1 has a Plan Activity Factor of 1 and an Actual Activity Factor of 1.
- Activity 2 has a Plan Activity Factor of 2 and an Actual Activity Factor of 2.

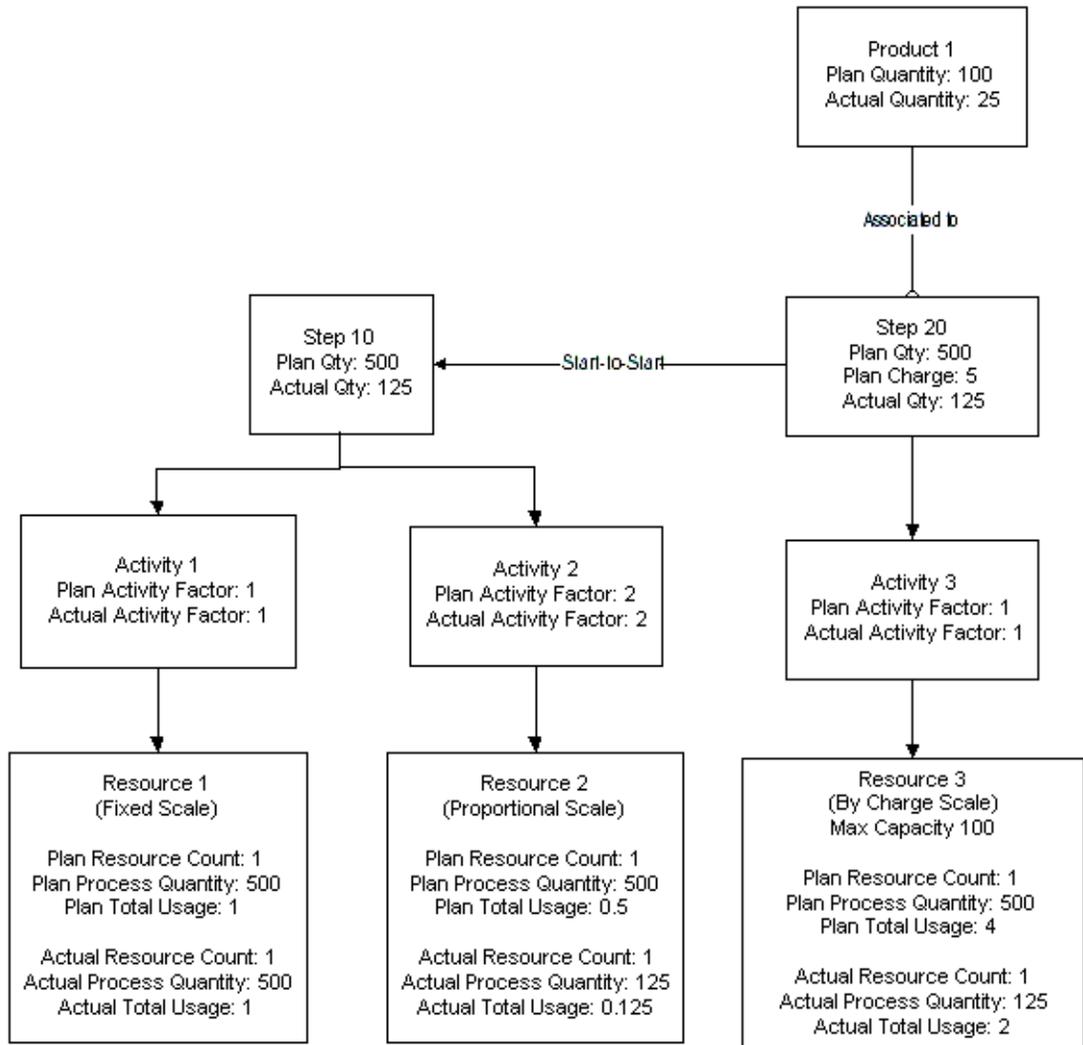
Step 20 is released:

- Activity 3 has a Plan Activity Factor of 1 and an Actual Activity Factor of 1.
- Initiate an incremental backflush on Product 1. Specify a new actual quantity of 25.

Resource	Scale Type	Plan	Actual
1	Fixed	Resource Count: 1 Process Quantity: 500 Total Usage: 1	Resource Count: 1 Process Quantity: 500 Total Usage: 1
2	Proportional	Resource Count: 1 Process Quantity: 500 Total Usage: 0.5	Resource Count: 1 Process Quantity: 125 Total Usage: 0.125
3	By Charge	Resource Count: 1 Process Quantity: 500 Total Usage: 4	Resource Count: 1 Process Quantity: 125 Total Usage: 2

The actual total usage for Resource 3 is based on 2 charges because the step quantity is greater than the quantity for 1 charge. This causes the usage to be rounded up to the next charge of 2.

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



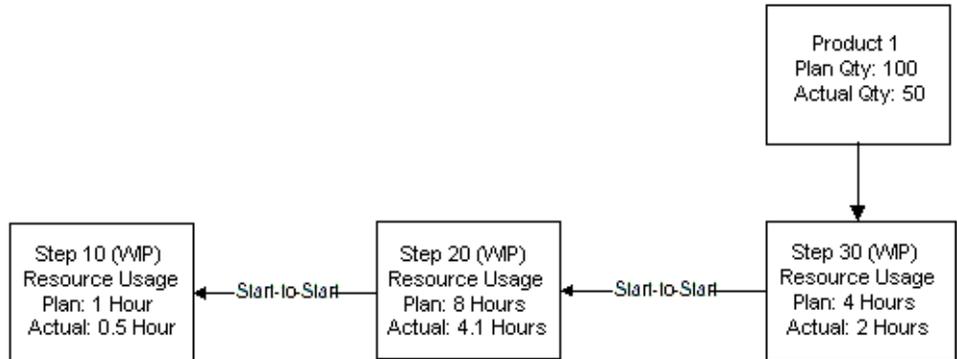
**Example 8: Impact of Sequential Incremental Backflushing**

Product 1 has a plan quantity of 100, and 50 are produced. This example shows an initial incremental backflush initiated on Product 1 for 50 percent of plan with a subsequent manual addition of a 0.1 hour resource transaction for step 20.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	0.5 hour
Step 20 WIP	Start-to-Start	10	8 hours	4.1 hours
Step 30 WIP	Start-to-Start	20	4 hours	2 hours

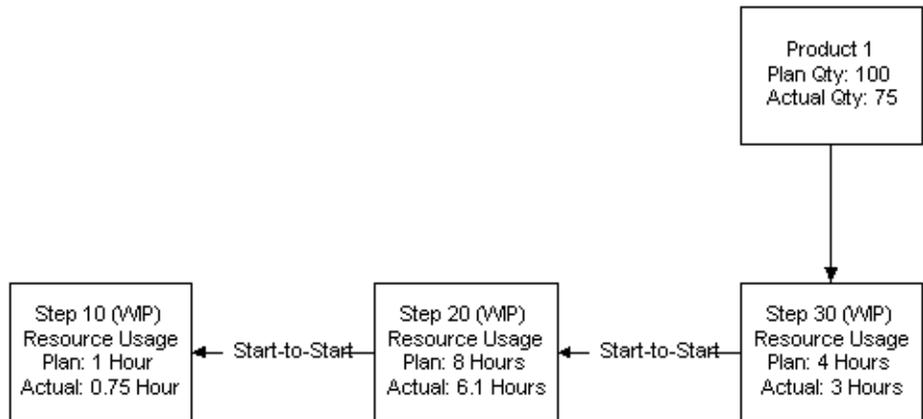
Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



If an additional incremental backflush of 25 is performed for Product 1, then the actual usage for Step 20 retains the 0.1 hour resource transaction, and the resource usage backflush adds a resource transaction for 25 percent of the plan usage, which is calculated as 2 hours.

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 WIP	n/a	n/a	1 hour	0.75 hour
Step 20 WIP	Start-to-Start	10	8 hours	6.1 hours
Step 30 WIP	Start-to-Start	20	4 hours	3 hours

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



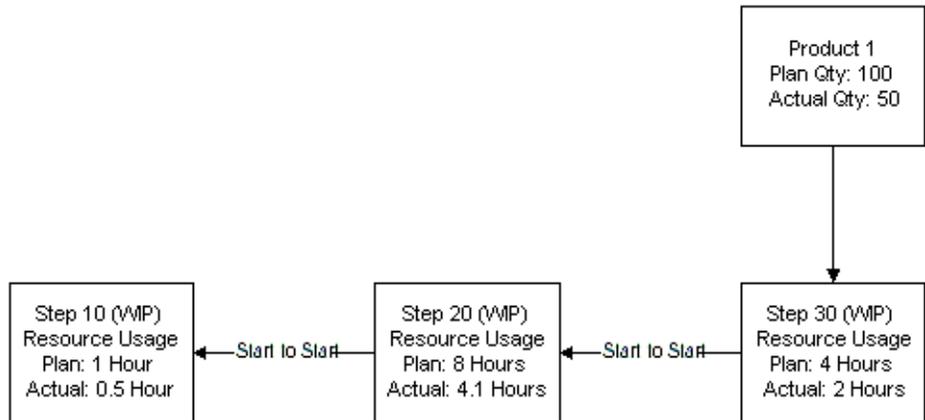
**Example 9: Implementing a Negative Incremental Backflush**

This example is a continuation of example 8. Product 1 has a plan quantity of 100, and 50 are produced. This example shows the result of initiating an incremental backflush of -25 on Product 1. Note that the additional resource transaction on Step 20 is retained, and 25 percent of each of the plan usages is subtracted.

Following are steps, statuses, step dependencies, and plan and actual resources:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10	n/a	n/a	1 hour	0.5 hour
Step 20	Start-to-Start	10	8 hours	4.1 hours
Step 30	Start-to-Start	20	4 hours	2 hours

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



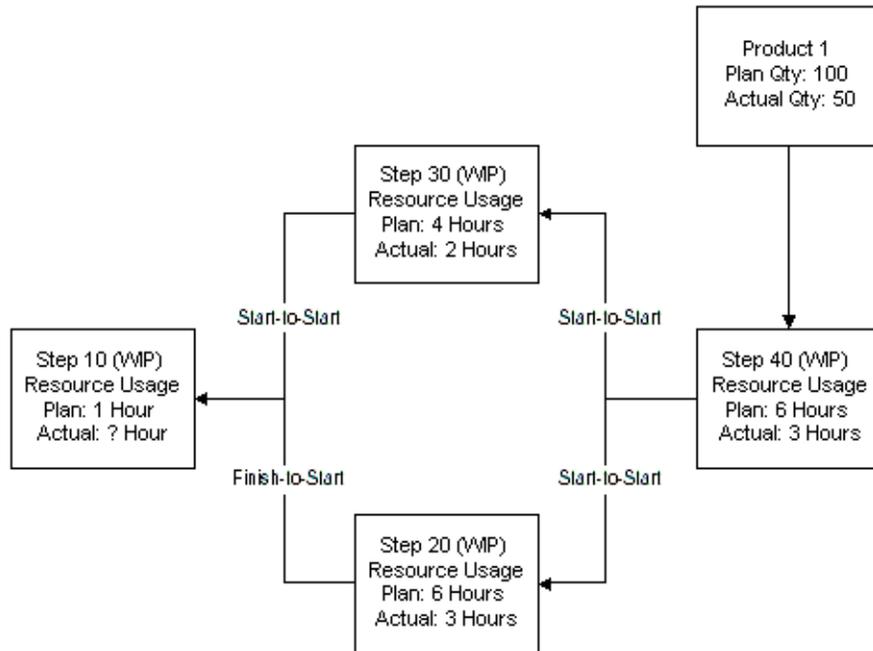
**Example 10: Impact of Varying the Initiation of the Backflush Operation**

Product 1 has a plan quantity of 100, and 50 are produced. This example shows an initial incremental backflush initiated on Product 1 for 50 percent of plan. Two steps are dependent on step 10. Each step has a different dependency type.

Following is a table of the step dependencies, plan resource usage, and actual resource usage:

Step and Status	Dependency	Dependent on Step	Plan	Actual
Step 10 Completed	n/a	n/a	1 hour	? hour
Step 20 WIP	Finish-to-Start	10	6 hours	3 hours
Step 30 WIP	Start-to-Start	10	4 hours	2 hours
Step 40 WIP	Start-to-Start	30 and 20	6 hours	3 hours

Following is an illustration of the previously tabulated step dependencies, plan resource usage, and actual resource usage:



The impact on actual usage changes depending on which way you initiate the backflush.

- If the calculation is initiated from the start-to-start path (from step 30), then the actual usage is 0.5 hour.
- If the calculation is initiated from the finish-to-start path (from step 20), then the actual usage is one hour.

This example shows two steps dependent on step 10 with different dependency types. One of these steps is a finish-to-start dependency. It is recommended that Step 10 be completed, and not be WIP. In that case, the resource usage remains unchanged because it already has a usage calculated on completion. If you have both a start-to-start and a finish-to-start dependency back to the same step, then the earlier step must be completed before backflushing resource usage.

## Performing Incremental Backflushing

The Incremental Backflushing window lets you drive incremental backflushing on a work in process or completed batch. Enter an incremental quantity, a new actual quantity, or a new percent of planned quantity for an item.

By default, incremental release items are assigned the current system date and time for the incremental backflushing procedure. You can specify a transaction date for the incremental backflushing to ensure that all the completed transactions of incremental release items have the date you enter rather than the default system date and time. The date entered must not fall in the closed period for the warehouse.

### Prerequisites

- Create a batch.
- Ensure batch status is WIP or Completed.

### ■ To incrementally backflush a batch:

1. Navigate to the **Incremental Backflushing** window.
2. **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
3. **Batch** displays one of the following:
  - If you accessed this window from the menu, then query the batch Document number. If you query a phantom batch, then an error message displays to advise you that the batch cannot be found. Phantom batches cannot drive incremental backflushing, since changes made to phantoms do not directly affect the parent batch.
  - If you accessed this window from the **Batch Material Details** window, then the window displays with all batch header information supplied.
4. The following fields are display only:
  - **Status** displays the status of the batch. For incremental backflushing, the batch must be WIP or Completed.
  - **Product** displays the product code for the first product produced by the batch.
  - **Terminated** is selected if the batch was terminated.
  - **Recipe** displays the code for the recipe used in the batch.

- **Recipe Version** displays the recipe version.
  - **Formula** displays the formula used to produce the batch.
  - **Formula Version** displays the formula version.
  - **Routing** displays the routing associated with the batch.
  - **Routing Version** displays the routing version.
5. **Item** displays the item code driving incremental backflushing.
- If you accessed the **Incremental Backflushing** window from the menu, then you must enter the Item.
  - If you accessed the window from the **Batch Material Details** window, then the Item code, Description, and Line Type are displayed automatically.
6. The following fields are display only:
- **Item Description** displays a brief description of the item.
  - **Line Type** displays the type of material as Product, Byproduct, or Ingredient.
7. Enter one of the following:
- An incremental quantity in the **Incremental Qty** field for the **UOM** displayed.
  - A new actual quantity in the **New Actual** field for the **UOM** displayed.
  - A new percent of the planned quantity in the **Percent Plan** field. Enter the percent as a whole number. For example, enter five percent as 5.
8. To override entry of the default system date and time for the incremental backflushing operation, enter **Transaction Date** as the actual date the incremental backflushing is performed. Leave this field blank to enter the current system date and time.
- Based on the field entered, the application calculates the values for the other fields. For example, if you enter a new actual quantity, the values are calculated for the incremental quantity and percent of planned quantity.
9. The following fields are display only:
- **Line** displays the line number you are completing in the batch.
  - **UOM** displays the unit of measure for the **Incremental Qty** and **New Actual** fields.

- **Planned Qty** displays the planned quantity for the item displayed.
  - **Old Actual** displays any previous actual quantities completed for the item displayed.
10. Click **OK**. The application performs backflushing by calculating a new actual quantity for all the items in the batch that have a consumption type of Incremental.
- If you accessed the window from the menu, then the batch is saved automatically.
  - If you accessed the window from the **Batch Material Details** window, then the application redisplay the batch where you chose **Backflush** from the **Actions** menu. You can edit the calculated actual quantities or enter any additional allocations.
11. Save the window.

## Editing Batch Steps in Production

The Batch Steps window lets you view planned and actual values for start dates, completion dates, step quantities, charges, due date, and step date. The Batch steps window also lets you release, complete, or cancel a batch step. In addition, you may view planned operations, planned start dates, planned completion dates and the status of each batch step.

Refer to the "Editing Batch Steps" topic for a complete discussion of the Batch Steps window.

## Understanding Charges

A charge is defined as one full load of material that can be accommodated in a single pass through the processing equipment. Charge calculations consider the:

- Volume or mass of material processed
- Processing equipment capacity
- Time required for a single pass through the equipment

For example, a charge requires one hour of mixing time. Obviously, the size of the mixing vessel, the method of mixing, and the material mixed all contribute to the processing rate limitations. If a batch is planned for 4500 gallons, and the routing step has a tank capacity of 1000 gallons, then five charges, or mini-batches, are required to process the full 4500 gallons. If proportional scaling is used for this calculation, then 4.5 hours of processing time would be required. However, the actual required process time is a full five hours, since in most cases, after producing 4000 gallons, the remaining 500 gallons of material still needs a full hour of processing.

## Using Operation Charge Step Dependencies

You can apply interoperational dependencies to the charges of an upstream operation in a single routing. In the definition of the batch step dependencies defined initially as routing step dependencies, the Apply to Charge indicator takes the defined dependency and applies it to all charges of the dependent step. The dependency type, standard time offset, and maximum time offset are not applied to the operation, but rather to each charge that is processed in the dependent step.

### Example

For example, step 10 yields a charge in 100 pound increments. Step 20 consumes that material by-charge in the same increment. The yield at the end of the charge determines the timing for the material. Therefore, you define a finish-to-start relationship, and select the Apply to Charge indicator. Step 20 starts its first charge at the end of the first charge for step 10. This functionality applies to users of the Oracle Advanced Supply Chain Planning (ASCP) application.

Refer to *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing* for additional information.

## Calculating Charges for Dependent Steps

The application calculates how much material is to be processed by each batch step, taking into account the step dependencies, and the input and output of material associated with the individual step. This information is used to calculate the number of charges required to satisfy the demand based on the maximum capacity of the selected process element. The process element can be a resource, an activity, or the step itself.

When you change the planned quantity of a material, the application recalculates all dependent quantities in the recipe. An option is available at the routing level to indicate whether step quantities are manually maintained or automatically calculated by the system. The prerequisites of the step quantity calculation are the creation of step dependencies and the association of material to each appropriate step.

Operation charge details are generated each time a batch is created when an operation contains a resource that is constrained by capacity. To have charges generated, the application must find a resource that has a capacity constraint (or, smallest capacity), and must be scaled by-charge. That resource is then associated to the charge detail. The resource is defined in the OPM Capacity Planning application.

You cannot modify charge details. When charge details are communicated to APS, they are scheduled and the dates are returned to the Process Execution application. Also returned are firm planned orders that have charge details generated by APS. These generated details are recorded in Process Execution.

Sometimes the charges sent to APS are modified in size. This occurs when the synchronization process is run in APS. Synchronization identifies the upstream and downstream events and ensures that the materials are timed correctly to maximize output and minimize downtime. This APS process can decrease the size of charges in a batch to ensure that the consuming batch and the charge are both at the same rate.

The charge number is sequential and begins at one. Charges increase by one for each successive charge. The charge quantity is the maximum capacity for the chargeable resource, except for the final charge that is the remainder of the batch step quantity.

Refer to the *Oracle Process Manufacturing Capacity Planning User's Guide* for additional information.

Following are business rules in effect for recording operation charges:

- Resizing a batch quantity causes various batch step quantities to change for a resource that is chargeable. If this occurs, then the charges are recalculated to accommodate the resizing.
- Rescheduling a batch clears charge detail dates. All customary batch rescheduling rules apply.
- Deletion or replacement of a chargeable resource causes the charges to be removed. You can delete a chargeable resource or you can substitute a resource for a chargeable resource.

● **To display charge details:**

1. Navigate to the **Batch Steps** window.
2. Query the desired batch number.
3. Choose **Charge Details** from the **Tools** menu to display the **Resource Charges** window.
4. The following fields are display only:
  - **Batch No** is the batch document number.
  - **Resources** display the individual resources for each batch charge.
  - **Step** is the step associated to the resource charge.
  - **Activity Sequence Number** displays the sequence of the process parameter such as the one displayed on the **Generic Resource Parameters** window in the Capacity Planning application.
  - **Charge Number** is the number of charges required to satisfy the demand based on the maximum capacity of the selected process element.
  - **Charge Qty** is the quantity of material for the charge.
  - **Planned Start** is the planned start date and time for the charge.
  - **Planned Completion** is the planned completion date and time for the charge.
5. Close the window.

## Understanding Activity Factors

An Activity Factor defines the number of times that an activity is performed. For example, if a quality test must be performed at the beginning, middle, and end of a mixing time period, then use an Activity Factor of three. Activity Factors are applied to resource usage when planning and calculating resource costs. They can be set to zero to exclude a particular activity.

### Setting Up Preferred Sequences for Activities

In many cases, setup times depend on the setup type of a previous activity that was processed by a given resource. Evaluation of these activities generates a firm sequence in which to perform them in order to minimize the sum of changeover times for the entire cycle. After you define and create activity sequences in APS, they are returned to the source Process Manufacturing instance. When you create these sequences, you can firm the resource to ensure that the scheduling engine does not move the resource usage.

**Example** For example, you can set up a firm sequence in the activity RUNTIME for resource RES-1 in Batches 1202, 1203, and 1039. The running of that sequence does not change in the plan generated by APS. Those values are recorded in Process Execution once released by APS and returned to APS on a data collection. There is no visibility to the Firm Sequence values in Process Execution.

Refer to *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing* for additional information.

## Editing Resource Transactions

The Resource Transactions window lets you enter actual usage for each of the resources used in batch steps.

For batches that use the Automatic Step Quantity Calculation (ASQC), the actual resource usage is enabled by selecting the Calculate Step Quantity indicator on the recipe header. When this indicator is selected, individual operation step quantities are calculated based on material quantities, step-material associations, and step dependencies.

### Calculating Actual Resource Usage

Following is an example of calculating actual resource usage:

The material from step 10 flows into step 20. The quantity of step 10 is 100 kilograms (kg), and 50 kg of material is added in step 20. The quantity in step 20 is calculated as 150 kg. Resource usage is calculated based on the step quantity and the throughput. If a resource used in step 20 can process 100 kg in one hour, and the scale type selected is Linear, then the resource usage is 1.5 hr.

Planned step quantities and resource usage are calculated when a batch is created, and while the batch and step have a status of Pending. These quantities are updated whenever the material planned quantities are updated. After the batch and step are released and have a status of WIP, the actual step quantity is updated whenever the actual material quantities are updated.

Steps can run for a considerable period of time. You can update the actual resource usage based on the progress made through a lengthy step. This allows the planning and scheduling applications to identify that there is less remaining resource time required than that posted at the start of the step. For example, if a step that takes 1.5 hr. is halfway completed, then the planning application should recognize that only 0.75 hr. of resource usage remain instead of the full 1.5 hr. Without this information the planning application underestimates the capacity available for other batches. With this enhancement, the actual resource usage is updated as the actual step quantity is updated. This decreases the pending resource transactions upon which the Advanced Planning and Scheduling application bases its view of resource availability.

### Using the GME: Calculate Interim Resource Usage Profile Option

The GME: Calculate Interim Resource Usage profile option functions only with ASQC batches as follows:

- Set to No, the profile option does not update the actual resource usage every time the actual step quantity is updated. This is the default, and is how the application functioned prior to the enhancement.
- Set to Yes, the profile option updates the actual resource usage every time the actual step quantity is updated.

### Implementation Consideration

If using resources with a scale type of By Charge, then you must update the actual step quantity in integer multiples of charges to reflect the correct usage.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Create a batch that has a routing.

### ■ To enter resource transactions:

1. Navigate to the **Resource Transactions** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Batch Step** displays the batch step number.
  - **Step Status** displays the status of the step as:
    - **Pending** for a step that is pending.
    - **WIP** for a step that is work in process.
    - **Completed** for a step that is completed.
    - **Closed** for a step that is closed.
    - **Canceled** for a step that is canceled.
  - **Operation** displays the code for the operation performed in the step.
  - **Operation Description** displays a brief description of the operation.
  - **Activity** displays the activity associated to the displayed operation.

- **Activity Description** displays a brief description of the activity.
- **Resource** displays the resource associated with the activity.
- **Resource Description** displays a brief description of the resource.
- **Actual Resource Usage** displays the actual resource usage for the batch step. This is the total resource usage of the completed transactions.
- **Usage UOM** displays the unit of measure for the Actual Resource Usage field.

### Transaction Details

3. Enter the **Transaction Date**. The current date and time is the default if you enter a new transaction.
4. Enter **Resource Usage** for the resource transaction.
5. Enter the actual **Start Date** for the transaction.
6. Enter the actual **End Date** for the transaction. This date is the same as the start date if the resource usage is not expressed in time units.
7. **Completed** is:
  - Selected if the resource transaction is completed.
  - Cleared if the resource transaction is not completed.
8. **Reason** displays a reason code associated with the transaction. For example, LOSS can signify that the transaction resulted in an inventory loss associated with the transaction.
9. Save the window.

## Recording Batch Operation Work in Process

The Batch Operation WIP window lets you report material transferred from step to step. This window is a standalone window, however data entered here is not used anywhere else in the application. It is not used in calculating step quantities. You cannot edit steps on this window.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Enter a save a batch.
- Batch status must be work in process.

### ► To record WIP transferred from step to step:

1. Navigate to the **Batch Operation WIP** window.
2. **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
3. Query the **Batch** document number and **Batch Step** number to edit work in process transfers.

### WIP Received

4. Enter the **Quantity** of material that was received as a transfer into the Batch Step displayed on this window. Required.
5. Enter the **UOM** for the material quantity transferred to the Batch Step. Required.
6. Enter the **Step Number** of the batch step that is the source of the material transfer. Required.
7. Enter the **Transaction Date** and time of the material transfer. This field defaults to the current system date and time.

### WIP Sent

8. Enter the **Quantity** of material that was sent as a transfer from the Batch Step displayed on this window. Required.
9. Enter the **UOM** for the material quantity transferred from this batch step. Required.

10. Enter the **Step Number** of the batch step that is the target of the material transfer. Required.
11. Enter the **Transaction Date** and time of the material transfer. This field defaults to the current system date and time.
12. Save the window.

● **To find a batch operation work in process:**

1. Navigate to the **Find Batch Operation WIP** window.
2. Enter any of the following to narrow your search:
  - **Status** as Canceled, Pending, WIP, Completed or Closed.
  - **Batch** as the batch document number.
  - **Batch Step** as the batch step number.
3. Click **Find**.

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## Batch Completion

This topic provides a basic understanding of batch completion, including how to complete a batch and revert a completed batch to work in process. You are shown how to close and reopen a batch.

The following topics are covered:

- [Requirements](#)
- [Solutions](#)
- [Understanding Batch Completion](#)
- [Completing a Batch](#)
- [Reverting a Batch to Work in Process](#)
- [Closing a Batch](#)
- [Reopening a Closed Batch](#)

## Requirements

Following are some requirements that customers have for batch completion in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Can a batch be reopened if someone accidentally closes it?**

Yes. The Reopen Batch command is available from the Actions menu to reopen a batch that is closed accidentally. A batch cannot be reopened if the financial period in which it was closed is also closed.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for batch completion.

**Reopen Closed Batches** When a production batch requires no additional processing, it is complete and must be closed in order to calculate actual production costs. If batches are closed accidentally, then they can be reopened by authorized users.

## Understanding Batch Completion

Completing a batch indicates that the batch is finished and has yielded all of its product materials. Prior to batch completion, transactions that are associated with the product and byproduct lines that are set for automatic yield have a Pending status. When you complete the batch, all pending transactions are completed and inventory levels are updated.

When you attempt to complete a batch, any outstanding issues related to batch completion are analyzed by a set of business rules. Appropriate error messages display to manage these issues prior to closing the batch.

It is possible to change batch status from Completed back to WIP. If a production staff member accidentally completes a batch, then it is possible to revert the status of the batch back to work in process.

## Completing a Batch

The Complete a Batch dialog box lets you complete a batch.

### Prerequisites

- Verify that the batch status is pending or work in process.

### ■ To complete a batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** number you to complete.
3. Choose **Complete** from the **Actions** menu. The Complete a Batch dialog box displays.
4. **Actual Start Date** displays the date entered for the start of the batch.
5. Enter the **Actual Completion Date** as the date the batch was completed.
6. If there are any outstanding issues, then appropriate error messages display. For example, you cannot close a batch with unexploded phantoms.
7. Click **OK**.

## Reverting a Batch to Work in Process

If a batch is completed accidentally, then this feature lets you revert the status of the batch to work in process. You must revert a batch to work in process if you want to scale the batch.

### Prerequisites

- ❑ Complete a batch.

### ■ To revert a batch to work in process:

1. Navigate to the **Batch** window.
2. Query the batch **Document** number you to revert to work in process.
3. Choose **Revert to WIP** from the **Actions** menu.
4. If there are any outstanding issues, then appropriate error messages display.
5. Batch status changes from **Completed** to **WIP**.

## Closing a Batch

The Close Batch dialog box lets you close a batch. Batch status must be Completed to close a batch. Batches cannot be closed if any step in the batch is Pending or Work in Process. All batch steps must have a status of Completed or Closed to close a batch. Closing a batch prevents any further editing of the batch. This must be done after you are confident that all of the batch information is recorded correctly.

### Prerequisites

- Complete a batch.

### ► To close a batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** number to close.
3. Choose **Close** from the **Actions** menu. The Close Batch dialog box displays.
4. Enter the **Batch Close Date**.
5. Click **OK**.

## Reopening a Closed Batch

You must have the Production Supervisor responsibility to use this function. When a batch is complete and no additional changes are required, it must be closed in order for it to become eligible for actual cost calculations. If a batch is closed accidentally, then it is possible to reopen it. Only authorized individuals have access to this function. A batch cannot be reopened if it is posted to a closed financial period, or if transactions are purged.

### Prerequisites

- Complete and close a batch.
- Select the batch to reopen.

### ■ To reopen a closed batch:

1. Navigate to the **Batch** window.
2. Query the batch **Document** number to reopen.
3. Choose **Reopen Batch** from the **Actions** menu.
4. Batch status changes from **Closed** to **Completed**.

This topic shows you how to run and interpret inquiries for a production schedule, work in process, material variances, batch step variances, resource variances, and resource usage.

The following topics provide the methods to run and interpret process execution inquiries:

- [Requirements](#)
- [Solutions](#)
- [Running a Production Schedule Inquiry](#)
- [Interpreting a Production Schedule Inquiry](#)
- [Running a Work in Process Inquiry](#)
- [Interpreting a Work in Process Inquiry](#)
- [Interpreting Work in Process Inquiry Details](#)
- [Running a Material Variance Inquiry](#)
- [Interpreting a Material Variance Inquiry](#)
- [Interpreting a Material Variance - Ingredient Inquiry](#)
- [Interpreting a Material Variance - Step Details Inquiry](#)
- [Running a Batch Step Variance Inquiry](#)
- [Interpreting a Batch Step Variance Inquiry - Summary](#)
- [Interpreting Batch Step Variance Inquiry - Details](#)
- [Interpreting Batch Step Variance Inquiry - Activities](#)
- [Interpreting Batch Step Variance Inquiry - Activity Resources](#)

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- [Running a Resource Variance Inquiry](#)
  - [Interpreting Resource Variance Details](#)
  - [Interpreting Resource Usage](#)
  - [Interpreting Resource Usage Details](#)

## Requirements

Following are some requirements that customers have for inquiries in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Can a production schedule differentiate between pending and WIP batches?**

Yes. The Production Schedule Selection Criteria window lets you select batches by pending or WIP status.

### **Is it possible to display all current work in process for the plant?**

Yes. The Work in Process Inquiry searches for batches that have a status of work in process.

### **Is there an application tool to monitor variances in material production and consumption?**

Yes. The Material Variance Inquiry enables the Production Supervisor to monitor processes that are outside expected production tolerances.

### **Can variances be viewed at the step level?**

Yes. The Batch Step Variance Inquiry enables the display of variances at the step level.

### **Is it possible to view bottlenecks in the production process?**

Yes. The Resource Variance Inquiry enables the Production Supervisor to display variances in actual versus planned hours for each resource utilized in the batch.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for inquiries.

**Production Schedule Inquiry Differentiates Pending and WIP Batches** The Production Schedule Selection Criteria dialog box enables the selection of the type and status of a production schedule. Production Supervisors can display Firm Planned Orders and Batches that are scheduled for production. The inquiry allows differentiation by status.

**Work in Process Inquiry Displays Specified Batches in Production** The Work in Process Inquiry Selection Criteria dialog box enables the search of batches by plant, document number, start date, and formula or routing used. The Work In Process Inquiry Details window displays relevant information about planned and actual dates for each batch step as well as required completion dates, so that the Production Supervisor can gain an overview of all work in process.

**Material Variance Inquiry Shows Discrepancies Between Actual and Planned Batch Quantities** Production Supervisors use the Material Variance Inquiry to monitor material consumption. When a process is outside expected production tolerances, the inquiry assists in the troubleshooting of specific problems in batch production.

**Batch Step Variance Inquiry Displays Step Variances** Step Variances are a valuable diagnostic tool that can be used to troubleshoot a process flow problem. Failure to close batch steps or the inability to complete them in an allowable time helps Production Supervisors optimize work processes at the batch step level.

**Resource Variance Inquiry Identifies Resource Consumption Problems** The Production Supervisor runs the Resource Variance Inquiry to identify any variations in resource consumption during batch production. By investigating planned versus actual hours used for each resource, it is possible to troubleshoot production bottlenecks and remove contentions for resources in a production run. The Resource Usage window enables management to examine relative efficiencies for a process.

## Running a Production Schedule Inquiry

The Production Schedule Selection Criteria dialog box lets you limit the list of production schedules displayed. When you accept the selected criteria entered, the Production Schedule window lists the scheduled batches and firm planned orders that meet those criteria.

### Prerequisites

- Enter and save a production schedule.

### ► To run a production schedule inquiry:

1. Navigate to the Production Schedule Selection Criteria dialog box.
2. Enter a code for the **Plant** that has scheduled the batches or firm planned orders. The code entered must be accessible from and effective for your responsibility. Required.
3. Enter one or more of the following parameters to specify the Type and Status of Production Schedule to display:
  - Select **Firm Planned Order** to display scheduled firm planned orders. Clear it if you do not want to display firm planned orders.
  - Select **Batch** to display scheduled batches. Clear it if you do not want to display scheduled batches.
  - Select **Pending** to display pending batches. Clear it if you do not want to display pending batches and firm planned orders.
  - Select **WIP** to display work in process. Clear it if you do not want to display WIP.Required.
4. Make no entries in the **From** and **To** fields to search all data, or enter a starting **From** and ending **To** value to narrow the range in each of the following:
  - **Start Date** of the Firm Planned Order or Batch.
  - **End Date** of the Firm Planned Order or Batch.
  - **Batch or Firm Planned Order** number.
  - **WIP Warehouse** code.
  - **Recipe** code.

- **Recipe Version.**
  - **Product** code. Required.
  - **Formula** code.
  - **Version** number.
  - **Routing** code.
  - **Routing Version.**
  - **Planning Class** code.
  - Enter the initial **Routing Class** code in the **From** field and the ending Routing Class code in the **To** field.
5. Click **OK** to display the **Production Schedule Inquiry** window.

## Interpreting a Production Schedule Inquiry

The Production Schedule Inquiry window displays all firm planned orders and batches that meet the criteria entered on the Production Schedule Selection Criteria window.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Run a production schedule inquiry.

### To interpret a production schedule inquiry:

1. Navigate to the **Production Schedule Inquiry** window.
2. The following fields are display only:
  - **Type** displays whether the line entry is for a **Firm Planned Order** or for a **Batch**.
  - **Plant** displays the code name of the manufacturing or laboratory organization.
  - **Batch/Firm Planned Order** displays the batch or firm planned order number.
  - **Product** displays the code for the primary product used in the batch or firm planned order.
  - **Description** is a detailed description of the product produced by the batch or firm planned order.
  - **Planned Start Date** is the planned start date and time for the batch or firm planned order.
  - **Planned End Date** is the planned end date and time for the batch or firm planned order.
  - **Status** is the status of the batch or firm planned order, and can be **Pending** or **WIP**.
  - **Formula** is the code for the formula used in the batch or firm planned order.
  - **Version** is the formula version number used in the batch or firm planned order.

- **Routing** is the routing code for the recipe used in the batch or firm planned order.
  - **Version** is the routing version number used in the batch or firm planned order.
  - **Warehouse** is the WIP warehouse for the batch or firm planned order.
3. Close the window.

## Running a Work in Process Inquiry

The Work in Process Inquiry Selection Criteria dialog box lets you generate a Work in Process Inquiry to view detailed information about batches that are in process. Narrow the inquiry by using selection criteria that limit the data displayed.

### Prerequisites

- Create batches.

### ► To run a work in process inquiry:

1. Navigate to the Work in Process Inquiry Selection Criteria dialog box.
1. Make no entries in the **From** and **To** fields to search all data, or enter a starting **From** and ending **To** value to narrow the range in each of the following:
  - **Plant** code.
  - **Batch** document number.
  - **Start Date** of the batches.
  - **Formula** code.
  - Formula **Version** number.
  - **Routing** code.
  - Routing **Version** number.
2. Click **OK** to display the **Work in Process Inquiry** window.

## Interpreting a Work in Process Inquiry

The Work in Process Inquiry window displays batches that meet the criteria entered for WIP Inquiry Selection Criteria. The Work in Process inquiry provides important information about batches that are in process including their scheduled completion, number of steps completed, and total steps that remain active. The inquiry is a good indicator of percent batch completion.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Run a work in process inquiry.

### ■ To interpret a work in process inquiry:

1. Navigate to the **Work in Process Inquiry** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization.
  - **Batch** displays the batch document number.
  - **Planned Completion Date** displays the planned date and time of completion for each of the batches listed.
  - **Routing** displays the code for the routing used for each batch displayed.
  - **Routing Version** displays the version of the routing used for each batch displayed.
  - **Total Steps** displays the total number of batch steps in each routing.
  - **Completed Steps** displays the number of batch steps that are completed in the batch.
  - **Active Steps** displays the number of batch steps that are in process.
3. Drill down to the **Work in Process Inquiry Details** window to display additional process details for a specific batch.
4. Close the window.

## Interpreting Work in Process Inquiry Details

The Work In Process Inquiry Details window displays work in process details for a specific batch. Individual steps in each operation show planned start and completion dates, planned step quantities, the actual start and completion dates, and status of each step. The date and time for required completion and closing date for each step give you a thorough summary of batch step information.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Run a work in process inquiry.

### ■ To interpret work in process inquiry details:

1. Navigate to the **Work In Process Inquiry Details** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Product** displays the code for the primary product produced by the batch.
  - **Routing** displays the code for the routing for the selected batch.
  - **Version** displays the routing version number for the selected batch.
  - **Description** displays the description of the routing.
  - **Quantity** displays the planned product quantity that can be made by the combination of the batch, routing, and version.
  - **UOM** displays the unit of measure for the product quantity displayed.

### Batch Steps

3. The following fields are display only:
  - **Step** displays the operation step number.
  - **Operation** displays the name of the operation for the listed step.
  - **Planned Start Date** displays the planned start date and time for the batch step.

- **Planned Completion Date** displays the planned completion date and time for the batch step.
  - **Planned Step Quantity** displays the planned step quantity.
  - **Actual Start Date** displays the actual start date and time for the step.
  - **Actual Completion Date** displays the actual completion date and time for the step.
  - **Actual Step Quantity** displays the actual step quantity used in the batch.
  - **Status** displays the status of the step. Status can be Pending, WIP, Canceled, Completed, or Closed.
  - **Step Closed Date** displays the date and time the batch step was closed.
  - **Required Completion Date** displays the batch due date and time.
4. Click **Close** to close the window.
- **To redisplay the Work in Process Inquiry window:**
1. Choose **Work in Process** from the **Actions** menu.
  2. The **Work in Process Inquiry** window displays.

## Running a Material Variance Inquiry

The Material Variance Inquiry Selection Criteria dialog box lets you generate a Material Variance Inquiry to view detailed information about variances in batch material production and consumption. Narrow the inquiry by using selection criteria that limit the data displayed.

### Prerequisites

- Create batches.
- Consume batch materials.

### ► To run a material variance inquiry:

1. Navigate to the Material Variance Inquiry Selection Criteria dialog box.
2. Make no entries in the **From** and **To** fields to search all data, or enter a starting **From** and ending **To** value to narrow the range in each of the following:
  - **Plant** code.
  - **Batch** document number.
  - **Start Date** of the batches.
  - **Formula** code.
  - Formula **Version** number.
  - **Routing** code.
  - Routing **Version** number.
  - **Item** code.
3. Click **OK** to display the **Material Variance Inquiry** window.

## Interpreting a Material Variance Inquiry

The Material Variance Inquiry window lets you display the variances observed between actual and planned batch quantities. The material variance is expressed as a percent. Optimize and troubleshoot the production run by monitoring the actual amounts of material produced in batches. Variances also help monitor production costs by signaling a process that is outside an expected production tolerance.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Run a material variance inquiry.

### ■ To interpret a material variance inquiry:

1. Navigate to the **Material Variance Inquiry** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Actual Start Date** displays the date and time the batch was started.
  - **Product** displays the material produced by the batch.
  - **Planned Quantity** displays the expected amount of material to be generated by the batch.
  - **Actual Quantity** displays the actual amount of material generated by the batch.
  - **Variance [%]** displays material variance expressed as a percent, as calculated by:  
$$(\text{Actual Quantity} - \text{Planned Quantity}) / \text{Planned Quantity} * 100\%$$

For example, a material variance of 25% occurs when the Actual Quantity is 250 and the Planned Quantity is 200, as calculated by:

$$(250 - 200) / 200 * 100\%$$
  - **Formula** displays the code of the formula used in the batch.
  - **Version** displays the version of the formula used in the batch.

- **Routing** displays the code of the routing code used in the batch.
  - **Version** displays the version of the routing used in the batch.
  - 3. Drill down to the **Material Variance - Ingredient Inquiry** window.
- ▶ **To display the Material Variance - Ingredient Inquiry window:**
1. Navigate to the **Material Variance Inquiry** window.
  2. Select the **Batch** to examine for ingredient material variances.
  3. Choose **Ingredients** from the **Actions** menu. The **Material Variance - Ingredient Inquiry** window displays.

## Interpreting a Material Variance - Ingredient Inquiry

The Material Variance - Ingredient Inquiry window lets you view ingredient details for each line in a batch, including both planned and actual quantities and percent variances for each ingredient. This inquiry lists ingredient consumption detail information.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Perform a material variance inquiry.

### ■ To interpret a material variance ingredient Inquiry:

1. Navigate to the **Material Variance - Ingredient Inquiry** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Product** displays the code for the primary product produced by the batch.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the routing version number for the selected batch.
  - **Recipe** displays the code of the recipe used in the batch.
  - **Version** displays the version of the recipe used in the batch.
  - **Planned Quantity** displays the planned quantity of material to be produced by the batch.
  - **Actual Quantity** displays the actual amount of material produced by the batch.
  - **Planned Start** displays the planned start date for the batch.
  - **Actual Start** displays the actual start date for the batch.
  - **Planned Completion** displays the planned completion date and time for the batch.
  - **Actual Completion** displays the actual finish date for the batch.

## Ingredient Details

3. The following fields are display only:
  - **Line** displays the formula line number for the ingredient.
  - **Item** displays the item code for the ingredient.
  - **Planned Quantity** displays the planned quantity of the ingredient in the primary unit of measure.
  - **Planned Quantity2** displays the planned quantity of the ingredient in the secondary unit of measure if the ingredient is dual unit of measure enabled.
  - **Actual Quantity** displays the actual quantity of ingredient in the primary unit of measure.
  - **Actual Quantity2** displays the actual quantity of ingredient in the secondary unit of measure if the ingredient is dual unit of measure enabled.
  - **UOM** displays the unit of measure used to express the ingredient quantities.
  - **Variance [%]** displays the ingredient variance expressed as a percent, as calculated by:

$$(\text{Actual Quantity} - \text{Planned Quantity}) / \text{Planned Quantity} * 100\%$$

For example, an ingredient variance of 25% occurs when the Actual Quantity is 125 and the Planned Quantity is 100, as calculated by:

$$(125 - 100) / 100 * 100\%$$

### ■ To display the Material Variance - Step Details Inquiry:

1. Navigate to the **Material Variance - Ingredient Inquiry** window.
2. Select the **Batch** to examine for variances at the step detail level.
3. Choose **Step Details** from the **Actions** menu. The **Material Variance - Step Details Inquiry** window displays.

### ■ To redisplay the Material Variance Inquiry from the Material Variance - Ingredient Inquiry window:

1. Navigate to the **Material Variance - Step Details Inquiry** window.
2. Choose **Material Variance** from the **Actions** menu. The **Material Variance - Ingredient Inquiry** window displays.

► **To display the Material Variance - Step Details window:**

1. Navigate to the **Material Variance - Ingredient Inquiry** window.
2. Choose **Step Details** from the **Actions** menu. The **Material Variance - Step Details** window displays.

## Interpreting a Material Variance - Step Details Inquiry

The Material Variance - Step Details window lets you view variances on each step in the production batch.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Perform a material variance inquiry on ingredients.

### ► To interpret a material variance steps details inquiry:

1. Navigate to the **Material Variance - Step Details** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Ingredient** displays the ingredient code used in the batch.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the routing version number for the selected batch.
  - **Product** displays the code for the primary product produced by the batch.
  - **Planned Quantity** displays the routing planned quantity of ingredient consumed by the batch.
  - **Actual Quantity** displays the actual quantity of ingredient consumed by the batch in the primary unit of measure.
  - **UOM** displays the unit of measure used to express the ingredient quantities.

### Step Details

3. The following fields are display only:
  - **Step** displays the batch step number.
  - **Operation** displays the name of the operation for the listed step.
  - **Status** is the status of the batch step and can be **Pending**, **WIP**, **Completed**, or **Closed**.

- **Standard Quantity** displays the quantity of ingredient specified in the formula consumed in the batch step.
- **Planned Quantity** displays the planned quantity of material consumed by the step.
- **Actual Quantity** displays the actual quantity of material consumed by the step.
- **UOM** displays the unit of measured used to express ingredient quantities.
- **Variance [%]** displays the batch step variance expressed as a percent, as calculated by:

$$(\text{Actual Quantity} - \text{Planned Quantity}) / \text{Planned Quantity} * 100\%$$

For example, a step variance of 25% occurs when the Actual Quantity is 125 and the Planned Quantity is 100, as calculated by:

$$(125 - 100) / 100 * 100\%$$

● **To display the Material Variance - Ingredient Inquiry window:**

1. Navigate to the **Material Variance - Step Details** window.
2. Choose **Ingredients** from the **Actions** menu. The **Material Variance - Ingredient Inquiry** window displays.

## Running a Batch Step Variance Inquiry

The Batch Step Variance Inquiry Selection Criteria dialog box lets you generate a Batch Step Variance Inquiry to view detailed information about variances in batch step material consumption. Narrow the inquiry by using selection criteria that limit the data displayed.

### Prerequisites

- Create batches.
- Consume batch materials.

### ► To run a batch step variance inquiry:

1. Navigate to the Batch Step Variance Inquiry Selection Criteria dialog box.
2. Make no entries in the **From** and **To** fields to search all data, or enter a starting **From** and ending **To** value to narrow the range in each of the following:
  - **Plant** code.
  - **Batch** document number.
  - **Start Date** of the batches.
  - **Recipe** code.
  - **Recipe Version** number.
  - **Routing** code.
  - **Routing Version** number.
  - **Item** code.
  - **Operation** code.
  - **Operation Version** number.
3. Click **OK** to display the **Batch Step Variance Inquiry** window.

## Interpreting a Batch Step Variance Inquiry - Summary

The Batch Step Variance Inquiry - Summary window provides detailed information about batch variances. Determine the actual and planned hours for each batch.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Run a batch step variance inquiry.

### ■ To interpret a batch step variance inquiry summary:

1. Navigate to the **Batch Step Variance Inquiry - Summary** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current Plant.
  - **Batch** displays the batch document number.
  - **Actual Completion Date** displays the actual finish date for the batch.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the routing version number for the selected batch.
  - **Num of Routing Steps** displays the total number of steps in the routing.
  - **Num of Batch Steps** displays the total number of steps in the batch.
  - **Planned Hours** displays the planned number of hours required to complete the batch step.
  - **Actual Hours** displays the actual number of hours required to complete the batch step.
  - **Variance [%]** displays the batch step variance expressed as a percent, as calculated by:  
$$(\text{Actual Hours} - \text{Planned Hours}) / \text{Planned Hours} * 100\%$$

For example, a step variance of 25% occurs when the Actual Hours are 2.50 and the Planned Hours are 2.00, as calculated by:

$$(2.50 - 2.00) / 2.00 * 100\%$$
3. Drill down to the **Batch Step Variance Inquiry** window.

## Interpreting Batch Step Variance Inquiry - Details

The Batch Step Variance Inquiry - Details window provides detailed information about batch steps in a production run. Navigate to the Batch Step Inquiry - Operation Details window from this window.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Run a batch variance inquiry.

### ■ To display batch step variance details:

1. Navigate to the **Batch Step Variance Inquiry - Details** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Product** displays the primary product produced by the batch.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the routing version number for the selected batch.
  - **Planned Start** displays the planned start date and time for the batch.
  - **Actual Start** displays the date the batch was actually started.
  - **Planned Completion** displays the planned completion date and time for the batch.
  - **Actual Completion** displays the date the batch was actually completed.

### Dates

3. The following fields are display only:
  - **Step** displays the step number for the displayed batch.
  - **Operation** displays the operation performed in the displayed batch step.
  - **Planned Start** displays the planned start date and time for the batch step.

- **Planned Completion** displays the planned completion date and time for the batch step.
- **Actual Start** displays the actual start date and time for the batch step.
- **Actual Completion** displays the actual completion date and time for the batch step.

## Usage

4. The following fields are display only:
  - **Step** displays the step number for the displayed batch step.
  - **Operation** displays the operation performed in the displayed batch step.
  - **Planned Hours** displays the planned number of hours to perform the batch step.
  - **Actual Hours** displays the actual number of hours to perform the batch step.
  - **Variance [%]** displays the variance of planned versus actual hours.
5. Drill down to display the **Batch Variance Inquiry - Operation Activities** window.

## Interpreting Batch Step Variance Inquiry - Activities

The Batch Step Variance Inquiry - Activities window displays the step activities associated with the batch. Each activity is listed with information about its planned start and completion date and time and actual start and completion date and time. Planned factors and actual factors are also provided.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- Run a batch step variance inquiry.

### ► To display batch step variance inquiry operation activities:

1. Navigate to the **Batch Step Variance Inquiry - Activities** window.
2. The following fields are displayed only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Product** displays the primary product produced by the batch.
  - **Qty Per Batch** displays the planned quantity of product produced by the batch.
  - **UOM** displays the primary unit of measure used to express quantity per batch.
  - **Batch Step** displays the batch step number selected.
  - **Operation** displays the operation performed in the displayed batch step.
  - **Process Qty UOM** displays the unit of measure used to express the processed quantity of material.
  - **Planned Start** is the planned start date and time for the batch.
  - **Actual Start** displays the actual start date and time for the batch.
  - **Planned Completion** displays the planned completion date and time for the batch.
  - **Actual Completion** displays actual completion date and time for the batch.

## Activities

3. The following fields are display only:
  - **Activity** displays the activity in the operation.
  - **Planned Factor** displays the planned number of times the activity is performed.
  - **Planned Start Date** displays the planned start date and time for the activity.
  - **Planned Completion Date** displays the planned completion date and time for the activity.
  - **Actual Factor** displays the actual number of times the activity is performed.
  - **Actual Start Date** displays the actual start date and time for the activity.
  - **Actual Completion Date** displays the actual completion date and time for the activity.
4. Close the window.

## Interpreting Batch Step Variance Inquiry - Activity Resources

The Batch Step Variance Inquiry - Activity Resources window displays the batch step activity resources associated with the batch and usage details for each resource.

You can use folders with this window.

See: *Oracle Applications User's Guide*

### Prerequisites

- ❑ Run a batch step variance inquiry.

### ► To display batch step variance activity resource usage details:

1. Navigate to the **Batch Step Variance Inquiry - Activity Resources** window.
2. The following fields are display only:
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Product** displays the primary product produced by the batch.
  - **Qty Per Batch** displays the planned quantity of product produced by the batch.
  - **UOM** displays the primary unit of measure used to express quantity per batch.
  - **Batch Step** displays the batch step number selected.
  - **Operation** displays the operation performed in the displayed batch step.
  - **Process Qty UOM** displays the unit of measure used to express the processed quantity of material.
  - **Planned Start Date** is the planned start date and time for the batch.
  - **Actual Start Date** displays the actual start date and time for the batch.
  - **Planned Completion Date** displays the planned completion date and time for the batch.
  - **Actual Completion Date** displays actual completion date and time for the batch.
  - **Activity** displays the activity performed by each listed resource.

## Usage Details

3. The following fields are display only:
  - **Resource** displays each resource used in the batch step.
  - **Planned Count** displays the planned number of resources scheduled to perform the batch step.
  - **Planned Hours** displays the planned number of hours scheduled for each resource to perform the batch step.
  - **Planned Start Date** displays the planned start date and time for the resource to begin the batch step.
  - **Planned Completion Date** displays the planned completion date and time for the resource to complete the batch step.
  - **Actual Count** displays the actual number of resources that were required to perform the batch step.
  - **Actual Hours** displays the actual number of hours that were required to perform the batch step.
  - **Actual Start Date** displays the actual date and time the listed resource started the batch step.
  - **Actual Completion Date** displays the actual date and time the listed resource finished the batch step.
  - **UOM** displays the usage unit of measure. This is usually expressed in hours.
  - **Variance [%]** displays the usage variance between the planned hours and the actual hours as a percentage:

$$(\text{Actual Hours} - \text{Planned Hours}) / \text{Planned Hours} * 100\%$$

For example, a usage variance of 25% occurs when the Actual Hours are 2.5 and the Planned Hours are 2.0, as calculated by:

$$(2.5 - 2.0) / 2.0 * 100\%$$

## Running a Resource Variance Inquiry

The Resource Variance Inquiry Selection Criteria dialog box lets you generate a Resource Variance Inquiry to view detailed information about variances in resource consumption during production. Narrow the inquiry by using selection criteria that limit the data displayed.

### Prerequisites

- Create batches.
- Use resources.

### ► To run a resource variance inquiry:

1. Navigate to the Resource Variance Inquiry Selection Criteria dialog box.
2. Make no entries in the **From** and **To** fields to search all data, or enter a starting **From** and ending **To** value to narrow the range in each of the following:
  - **Resource** code.
  - **Plant** code.
  - **Batch** document number.
  - **Start Date** of the batches.
  - **Formula** code.
  - Formula **Version** number.
  - **Routing** code.
  - Enter the initial routing **Version** number in the **From** field and the ending Version number in the **To** field.
  - **Item** code.
  - **Operation** code.
  - Operation **Version** number.
3. Click **OK**. The **Resource Variance Details** window displays.

## Interpreting Resource Variance Details

The Resource Variance Details window lets you view information about variances in resource consumption. Resources are the assets such as equipment and labor that are used to manufacture products. Resources are set up in the OPM Process Planning applications. View details about the non-material resources used, the date and time specific resources are used, the planned and actual time they are used, and the variances between the planned and actual use.

### Prerequisites

- ❑ Run a resource variance inquiry.

### ■ To interpret resource variance details:

1. Navigate to the **Resource Variance Details** window.
2. The following fields are display only:
  - **Resource** displays the code or name of the resource selected in the inquiry.
  - **Last Usage** displays the date when the resource was used.
  - **Total Batches** displays the total number of batches where the resource was used.
  - **Planned Hours** displays the planned number of usage hours scheduled for the resource.
  - **Actual Hours** displays the actual number of usage hours used by the resource.
  - **Variance** displays the variance between the planned hours and the actual hours as a percentage:

$$(\text{Actual Hours} - \text{Planned Hours}) / \text{Planned Hours} * 100\%$$

For example, a resource variance of 25% occurs when the Actual Hours are 2.5 and the Planned Hours are 2.0, as calculated by:

$$(2.5 - 2.0) / 2.0 * 100\%$$

### ■ To display detailed resource usage detailed information:

1. Run a **Resource Variance** inquiry.
2. There are two methods to display resource usage:
  - Click **Resource Usage**.

- Select **Resource Usage** from the **Actions** menu.

The **Resource Usage** window displays.

## Interpreting Resource Usage

The Resource Usage window lets you see actual usage and variances between planned and actual hours for each resource. By reviewing this information, you determine the relative efficiencies of the process and troubleshoot bottlenecks and other production utilization problems.

### Prerequisites

- ❑ Run a resource variance inquiry.

### ■ To interpret resource usage:

1. Navigate to the **Resource Usage** window.
2. The following fields are display only:
  - **Resource** displays the code used to identify equipment or labor used in the manufacturing process.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the version of the routing used in the batch.
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current plant.
  - **Batch** displays the batch document number.
  - **Actual Start Date** displays the actual date and time the resource was utilized.
  - **Status** displays the status of the batch.
  - **Planned Hours** displays the number of hours scheduled for the resource in the displayed routing.
  - **Actual Hours** displays the number of hours actually used for the resource displayed in the routing.
  - **Variance %** displays the difference between the planned hours and actual hours expressed as a percent using the following calculation:

$$(\text{Actual Hours} - \text{Planned Hours}) / \text{Planned Hours} * 100\%$$

For example, a resource variance of 25% occurs when the Actual Hours are 2.5 and the Planned Hours are 2.0, as calculated by:

$$(2.5 - 2.0) / 2.0 * 100\%$$

- **Batch Product** displays the primary product the batch produces.
  
- **To redisplay the Resource Variance Details window:**
  1. Choose **Resource Variance Details** from the **Actions** menu.
  2. The **Resource Variance Details** window displays.
  
- **To display the Resource Usage Details window:**
  1. Choose **Resource Usage Details** from the **Actions** menu.
  2. The **Resource Usage Details** window displays.

## Interpreting Resource Usage Details

The Resource Usage Details window lets you view additional details about resource usage that are not displayed on the Resource Usage window.

### Prerequisites

- ❑ Run a resource variance inquiry.

### ■ To view resource usage details:

1. Navigate to the **Resource Usage Details** window.
  - **Plant** displays the code name of the manufacturing or laboratory organization. This defaults to your current Plant.
  - **Resource** the code used to identify equipment or labor used in the manufacturing process.
  - **Routing** displays the code for the routing used in the batch.
  - **Version** displays the routing version.
  - **Batch** displays the batch document number.
  - **Product** displays the primary product produced by the batch.

### Usage Details

2. The following fields are display only:
  - **Operation** displays the name of the operation for the listed routing.
  - **Activity** displays the action where the operation is performed.
  - **Planned Count** displays the planned number of resources scheduled to perform the operation.
  - **Actual Count** displays the actual number of resources used to perform the operation.
  - **Planned Usages** displays the planned number of usage hours scheduled for the resource.
  - **Actual Usages** displays the actual number of usage hours used by the resource.
  - **UOM** displays the usage unit of measure. This is usually expressed in hours.

- **Variance** displays the difference between the planned usage and the actual usage of the resource during the operation step as a percent, as calculated by:

$$(\text{Actual Usages} - \text{Planned Usages}) / \text{Planned Usages} * 100\%$$

For example, a usage variance of 25% occurs when the Actual Usage is 250 and the Planned Usage is 200, as calculated by:

$$(250 - 200) / 200 * 100\%$$



This topic explains several preformatted reports that assist you in the picking of production batch materials, ticketing of materials to be used in production, evaluating scheduled batch and firm planned order production activities, assessing variances in actual and calculated batch yield, and evaluating unusual usage cost variances.

The following reports are discussed:

- [Requirements](#)
- [Solutions](#)
- [Running the Batch Pick List Report](#)
- [Running the Batch Ticket Report](#)
- [Running the Production Activity Report](#)
- [Running the Batch Yield Variance Report](#)
- [Running the Material Usage and Substitution Variance Report](#)

## Requirements

Following are some requirements that customers have for reports in Process Execution. The answers are explained in detail in the "Solutions" topic.

### **Can materials be picked prior to release of a production batch.**

Yes. Allocation of ingredients prior to batch release is facilitated by the Batch Pick List report. The report identifies lots that must be picked and their individual warehouse locations.

### **Does the application print a batch ticket?**

Yes. The Batch Ticket report enables the Production Operator to sort batches by document number or by start date and batch number.

### **Is it possible to view production activities by recipe and start date for a specific time period?**

Yes. The Production Activity report shows all scheduled batch and firm planned orders activities for a defined interval.

### **Can yield variances be monitored by batch document number?**

Yes. The Batch Yield Variance report provides an analysis of accounting value and accounting yield for batches selected by batch document number or start date.

### **Can unusual usage variances be identified for one or more production batches that have undergone material substitution?**

Yes. The Material Usage and Substitution Variance report provides a comparison of all batches over a defined interval.

## Solutions

Process Execution provides solutions to help resolve issues at every stage of the production process. The following represent some of the key performance solutions for reports.

**Batch Pick List Report Identifies Lots Allocated for Production** The Batch Pick List report helps the Production Operator identify allocated materials prior to releasing a batch. The Batch Pick List serves a guide to picking materials that are reserved for use.

**Batch Ticket Report Identifies a Sequenced Item Material List for All Batch Components** The Batch Ticket report enables the Production Operator to list batches by document number or by start date and batch number. Each batch component is listed in sequence by item, planned quantity, and UOM. All steps associated with the batch are provided with batch operation and version, step quantity, and UOM.

**Production Activity Report Displays Batch and Firm Planned Order Activities Scheduled for a Specified Interval** The Production Activity report enables the Production Supervisor to review plant utilization by listing all batch and firm planned order activity for a specified time period. Document numbers, start dates, end dates, and recipe usage are identified.

**Batch Yield Variance Report Enables Evaluation of Total Value Variance** The Batch Yield Variance report calculates the sum of all value variances in a batch. Value variances are individual differences between the accounting value and actual value of planned or formula costs of product produced by a batch.

**Material Usage and Substitution Variance Report Enables Evaluation of Material Substitution** By comparing total usage variance to total subvariances that result from ingredient substitution, it is possible to identify the impact of material substitutions on batch costs. The accounting unit cost must be current for this report to help Production Supervisors evaluate substitutions based on batch size and actual usage of material.

## Running the Batch Pick List Report

The Batch Pick List report identifies the material that must be picked for production batches. If you allocate ingredients before releasing batches, then the Batch Pick List report identifies the lots that must be picked and the warehouse locations where the ingredients must be picked. Use the Batch Pick List as a guide to picking material before actual allocation.

See: *Oracle Applications User's Guide*

### ► To submit the Batch Pick List report:

1. Navigate to the **Submit Request** window.
2. In the Name field, enter **Batch Pick List**. The Parameters dialog box displays.
3. Enter any of the following fields to narrow the scope of the report:
  - **From Batch No** is the number of the first batch to include on the report.
  - **To Batch No** is the number of the last batch to include on the report.
  - **From Start Date** is the initial starting date in the range to report. Only batches that start on or after this date are included on the report.
  - **To Start Date** is the final starting date in the range to report. Only batches that start on or before this date are included on the report.
4. Select one of the following to indicate how to sort the report:
  - **Batch No** to sort the report by batch document numbers.
  - **Warehouse, Item, Location** to sort the report by warehouse, item, and location.
5. Click **OK**. The **Submit Request** window displays.
6. Complete the fields on the **Submit Request** window and click **Submit**. View or print the report.

## Batch Pick List Report Output

The following fields are displayed on the Batch Pick List report:

- **Warehouse** displays the warehouse where the ingredient is located.
- **Location** displays the physical location of the ingredient in the warehouse.
- **Item** displays the code and description of the item to be picked.
- **Batch** displays the number of the batch where the item is an ingredient.
- **Seq** displays the sequence of the ingredient line number in the batch.
- **Planned Qty** displays the planned quantity in the primary unit of measure for the batch.
- **Planned Qty2** displays the planned quantity in the secondary unit of measure, if the item is dual unit of measure controlled.
- **Recipe Num** displays the code that identifies the batch recipe.
- **Version** displays the batch recipe version number.
- **Planned Start Date** is the planned start date and time for the batch.
- **Actual Start Date** displays the actual start date and time for the batch.
- **Lot** displays the lot that is allocated to the batch if the item is lot controlled.
- **Sublot** displays the subplot that is allocated to the batch if the item is subplot controlled.
- **Allocated Qty** displays the quantity of material allocated to the batch.
- **UOM** displays the primary unit of the measure for the item.
- **Allocated Qty2** displays the quantity of material allocated to the batch in the secondary unit of measure, if the item is dual unit of measure controlled.
- **UOM** displays the secondary unit of measure for the item.
- **Total Allocated** displays the total quantity of material allocated to the batch.

## Running the Batch Ticket Report

The Batch Ticket report prints one or more batch tickets. Batch tickets identify the batch document number and include information about the recipe used to produce the batch, planned start date, planned completion date, required completion date, and specific items and item quantities to be used in manufacturing the batch. Specify the order that batches are sorted and where to print the report.

See: *Oracle Applications User's Guide*

### ► To submit the Batch Ticket report:

1. Navigate to the **Submit Request** window.
2. In the Name field, enter **Batch Ticket**. The Parameters dialog box displays.
3. Enter any of the following fields to narrow the scope of the report:
  - **From Batch No** is the number of the first batch to include on the report.
  - **To Batch No** is the number of the last batch to include on the report.
  - **From Start Date** is the initial starting date in the range to report. Only batches that start on or after this date are included on the report.
  - **To Start Date** is the final starting date in the range to report. Only batches that start on or before this date are included on the report.
4. Select one of the following to indicate how to sort the report:
  - **Batch No** to sort the report by batch document number.
  - **Start Date** and **Batch No** to sort the report by start date and the batch document number.
5. Click **OK**. The **Submit Request** window displays.
6. Complete the fields on the **Submit Request** window and click **Submit**. View or print the report.

## Batch Ticket Report Output

The following fields are displayed on the Batch Ticket report:

- **Batch** displays the plant code where the batch is scheduled for production and the batch document number.
- **Recipe** displays the recipe used to produce the batch.
- **Version** displays the recipe version number.
- **Formula** displays the formula used to produce the batch.
- **Version** displays the batch formula version number.
- **Routing** displays the routing used to produce the batch.
- **Version** displays the routing version number.
- **Planned Start Date** is the planned start date and time for the batch.
- **Planned Completion Date** displays the planned completion date and time for the batch.
- **Required Completion Date** displays the batch due date.
- **WIP Whse** displays the work in process warehouse used to establish production costs for the batch.
- **Product** displays the following batch ticket information about the product:
  - **Seq** displays each product line number.
  - **Item** displays the code for the product in the batch.
  - **Description** displays the description of each item.
  - **Planned Qty** displays the planned quantity for products in the primary unit of measure for the batch.
  - **UOM** is the primary unit of measure for the Planned Qty.
- **Ingredient** displays the following batch ticket information about each ingredient in the product:
  - **Seq** displays ingredient line number.
  - **Item** displays the code for each ingredient in the batch.
  - **Description** displays the description of each item.

- **Planned Qty** displays the planned quantity for ingredients in the primary unit of measure for the batch.
- **UOM** is the primary unit of measure for the Planned Qty.
- **Byproduct** displays the following batch ticket information about any byproducts in the product:
  - **Seq** displays byproduct line number.
  - **Item** displays the code for each byproduct in the batch.
  - **Description** displays the description of each item.
  - **Planned Qty** displays the planned quantity for byproducts in the primary unit of measure for the batch.
  - **UOM** is the primary unit of measure for the Planned Qty.
- **Steps** displays all batch steps associated with the listed Batch.
  - **Step Num** displays each batch step number.
  - **Operation** displays each batch operation.
  - **Version** displays the version number for the operation.
  - **Step Quantity** displays the quantity of material consumed by the operation.
  - **UOM** displays the primary unit of measure for the Step Quantity.

## Running the Production Activity Report

The Production Activity report shows scheduled batch and firm planned order production activities. Unreleased batches that have a status of Pending are reported. Specify the range of batches or firm planned orders, the date range, the sort order, and where to print the report.

See: *Oracle Applications User's Guide*

### ■ To submit the Production Activity report:

1. Navigate to the **Submit Request** window.
2. In the Name field, enter **Production Activity**. The Parameters dialog box displays.
3. Enter any of the following fields to narrow the scope of the report:
  - **From Batch No** is the initial batch to include on the report.
  - **To Batch No** is the final batch to include on the report.
  - **From Start Date** is the initial starting date in the range to report. Only batches that start on or after this date are included on the report.
  - **To Start Date** is the final starting date in the range to report. Only batches that start on or before this date are included on the report.
4. Select one of the following to indicate how to sort the report:
  - **Recipe, Version, Start Date** to sort the report by batch recipe, version, and batch start date.
  - **Start Date, Recipe, Version** to sort the report by batch start date, recipe, and version.
5. Click **OK**. The **Submit Request** window displays.
6. Complete the fields on the **Submit Request** window and click **Submit**. View or print the report.

## Production Activity Report Output

The following fields are displayed on the Production Activity report:

- **Plant** displays the code name of the manufacturing or laboratory organization.
- **Batch/FPO From** displays the number of the first batch or firm planned order that you specified in the range to report.
- **To** displays the last batch or firm planned order number specified in the range to report.
- **Start Date From** displays the first start date specified in the range to report.
- **To** displays the last start date specified in the range to report.
- **Type** displays the document type as:
  - **PROD** for a batch.
  - **FPO** for a firm planned order.
- **Plant** displays the code name of the manufacturing or laboratory organization.
- **Batch/Firm** displays the document number of the batch or firm planned order.
- **Recipe** displays the recipe used to produce the batch or firm planned order.
- **Version** displays the recipe version number.
- **Start Date** displays the planned start date for the batch or firm planned order.
- **End Date** displays the planned end date of the batch or firm planned order.

## Running the Batch Yield Variance Report

The Batch Yield Variance report displays the actual and calculated batch yield. The report helps you evaluate differences between specified recipe yield and actual batch yield. Variances are calculated based on the accounting cost for each item used in the batch. You are able to specify a date range, an item range, and a range of batches, the sort order, and where to print the report.

See: *Oracle Applications User's Guide*

### ■ To submit the Batch Yield Variance report:

1. Navigate to the **Submit Request** window.
2. In the Name field, enter **Batch Yield Variance**. The Parameters dialog box displays.
3. Enter any of the following fields to narrow the scope of the report:
  - **From Batch No** is the initial batch to include on the report.
  - **To Batch No** is the final batch to include on the report.
  - **From Start Date** is the initial starting date in the range to report. Only batches that start on or after this date are included on the report.
  - **To Start Date** is the final starting date in the range to report. Only batches that start on or before this date are included on the report.
4. Select one of the following to indicate how to sort the report:
  - **Batch No** to sort the report by batch document number.
  - **Start Date and Batch No** to sort the report by start date and the batch document number.
5. Click **OK**. The **Submit Request** window displays.
6. Complete the fields on the **Submit Request** window and click **Submit**. View or print the report.

## Batch Yield Variance Report Output

The following fields are displayed on the Batch Yield Variance report:

- **Currency** displays the currency used in the calculations. For example, USD is United States dollars.
- **Item** displays the code of the item produced by the batch.
- **Description** displays a description of the item code.
- **Accounting Value** displays the planned or formula cost of the product that is produced by the batch. This is calculated by multiplying the Unit Cost by the Accounting Yield quantity.
- **Accounting Yield** displays the quantity expected to be produced by the formula.
- **Actual Value** displays the actual cost of the product. This is calculated by multiplying the Unit Cost by the Actual Yield.
- **Actual Yield** displays the actual quantity that the batch yields.
- **Quantity Variance** displays the difference between the Actual Yield and the Accounting Yield.
- **Value Variance** displays the difference between the Accounting Value and the Actual Value.
- **Variance (%)** displays:  
 $(\text{Quantity Variance} / \text{Accounting Yield}) * 100\%$
- **Batch** displays the batch document number.
- **Recipe** displays the recipe used to produce the batch.
- **Version** displays the recipe version number.
- **Batch Size** displays the planned quantity of the primary product.
- **Total Value Variance** is the sum of all Value Variances.

## Running the Material Usage and Substitution Variance Report

The Material Usage and Substitution Variance report displays the actual and calculated batch yield. The report identifies batches with unusual usage costs and provides a cost comparison and variance of actual costs against the standard usage that must be incurred as setup for each formula. Variances are calculated based on the accounting cost for each item used in the batch. You are able to specify a date range, an item range, and a range of batches, the sort order, and where to print the report.

See: *Oracle Applications User's Guide*

### ► To submit the Material Usage and Substitution Variance report:

1. Navigate to the **Submit Request** window.
2. In the Name field, enter **Material Usage and Substitution Variance**. The Parameters dialog box displays.
3. Enter any of the following fields to narrow the scope of the report:
  - **From Batch No** is the initial batch to include on the report.
  - **To Batch No** is the final batch to include on the report.
  - **From Start Date** is the initial starting date in the range to report. Only batches that start on or after this date are included on the report.
  - **To Start Date** is the final starting date in the range to report. Only batches that start on or before this date are included on the report.
4. Select one of the following to indicate how to sort the report:
  - **Batch No** to sort the report by batch document number.
  - **Start Date and Batch No** to sort the report by start date and the batch document number.
5. Click **OK**. The **Submit Request** window displays.
6. Complete the fields on the **Submit Request** window and click **Submit**. View or print the report.

## Material Usage and Substitution Variance Report Output

The following fields are displayed on the Material Usage and Substitution Variance report:

- **Currency** displays the currency used in the calculation. For example, USD is United States dollars.
- **Batch** displays the batch document number.
- **Recipe** displays the recipe used to produce the batch.
- **Version** displays the recipe version number.
- **Batch Size** displays the planned quantity of the primary product.
- **Accounting Unit Cost** displays displays unit cost of the ingredient.
- **Accounting Quantity** displays the planned quantity of material in the primary unit of measure. This quantity is scaled for the batch.
- **UOM** is the primary unit of measure.
- **Actual Usage** displays the actual quantity of material used in the primary unit of measure.
- **Quantity Variance** is the difference between Actual Usage and the Accounting Quantity.
- **Variance %** is:  
$$(\text{Quantity Variance} / \text{Accounting Quantity}) * 100\%$$
- **Value Variance** displays the difference between the value of material actually used and the value of material expected to be used.
- **Total Variance** displays the total of all Value Variances.
- **Total Usage Variance** displays the difference between the Value Variance and Usage Variances.
- **Total Sub Variance** displays the total value of variances that result from ingredient substitution.

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## Process Execution Workbench

Through the Process Execution Workbench, you can view summary information about batches and firm planned orders by batch, firm planned order, plant, product, and status. The Process Execution Workbench provides access to information about batches and firm planned orders through a navigator. There are two tabs located on the navigator - Batches and Firm Planned Orders. Click either the Batches or Firm Planned Orders tab to access the summary information that you are interested in.

The batch and firm planned order summary information windows provide access to batch and firm planned order maintenance windows so that you can review or edit the data.

You can also create custom views that provide a convenient method to locate and access a batch or firm planned order.

The following topics are discussed in detail:

- [Creating a Custom View](#)
- [Viewing Batch Summary Information](#)
- [Viewing Firm Planned Order Summary Information](#)
- [Finding a Firm Planned Order from the Workbench](#)
- [Finding a Batch from the Workbench](#)

## Creating a Custom View

Use the Find function through the Process Execution Workbench to create either a standard or advanced custom view. Standard and advanced custom views provide a convenient method to locate and access a batch or firm planned order. Once a view is generated, the criteria or output can be saved in the Personal or Public Shortcuts for future use.

See: *Oracle Applications User's Guide*

### Standard Custom View

A standard custom view allows you to query the database for batches or firm planned orders based on plant, document, product, planned start date, and status. The result of the query lists the batch or firm planned order documents sorted by plant and document number. Double-click a document line in the results list to display the Batches or Firm Planned Order windows. These windows are also accessible by selecting a document line in the results list and clicking Details. Use the Batches and Firm Planned Orders windows to review or edit the data.

The following search criteria is available in the standard custom view. Enter any number or combination of fields.

- Plant  
If a plant is entered, then a search is conducted for the plant for which the batch or firm planned order was created. If the Plant field is left empty, then a search is conducted for batches or firm planned orders for all plants you have access to.
- Document  
Search for a specific batch or firm planned order by entering the document.
- Product  
If a Product is entered, then documents are retrieved that are associated with this product.
- Planned Start Date  
The Planned Start Date is the planned date from which batches or firm planned orders are scheduled to start. Documents are retrieved with a planned start date greater than or equal to the specified date.
- Status

If a Status is selected, then batches or firm planned orders with the indicated status are located.

Once a view is generated, the criteria or output can be saved for future use in the Personal or Public Shortcuts.

### **Advanced Custom View**

The advanced custom view lets you perform a complex query on batches or firm planned orders based on the criteria entered.

An advanced search on the following items is available:

- **Routing Version**

If a routing version is entered, then documents are retrieved based on this routing version and the selected operator.

- **Planned Start Date**

The planned start date is the planned date that the batches or firm planned orders are scheduled to start. If a planned start date is entered, then documents are retrieved based on this date and the selected operator.

- **Planned Completion Date**

The planned completion dates is the planned date that the batches or firm planned orders are scheduled to finish. If a planned completion date is entered, then documents are retrieved based on this date and the selected operator.

- **Actual Start Date**

The actual start date is the date that the batches or firm planned orders started. If an actual start date is entered, then documents are retrieved based on this date and the selected operator.

- **Actual Completion Date**

The actual completion date is the date that the batches or firm planned orders finished. If an actual completion date is entered, then documents are retrieved based on this date and the selected operator.

- **Product**

If a product is entered, then documents are retrieved that are associated with this product and the selected operator.

- **Ingredient**

If an ingredient is entered, then documents are retrieved that are associated with this ingredient and the selected operator.

The following operators are supported:

- Equal
- Like
- Less Than
- Less or Equal
- Greater Than
- Greater or Equal

● **To create an Advanced Custom View:**

1. Select an item.
2. Select an operator from the **Condition** field.
3. Enter a specific value.
4. Once a view is generated, the criteria or output can be saved for future use in the Personal or Public Shortcuts.

## Viewing Batch Summary Information

Use the Process Execution Workbench to view summary information about batches by batch, plant, product, and status. The Process Execution Workbench provides access to information about batches through a navigator. There are two tabs located on the navigator - Batches and Firm Planned Orders. Click the Batches tab to access summary information about batches. Use the View By option in the Process Execution Workbench to change the way you view the summary information.

The View By Batch options provides a list of batches ordered by planned start date, plant, or batch number. Only batches associated to the plants that you have access to are listed in the navigator.

The View By Product options provides a list of batches organized by products. The product list is sorted by product code or product planning class. Only products and coproducts for which batches exist are listed in the navigator.

The View By Status option provides a list of batches organized by status code.

The View By Plant option provides a list of batches organized by plant. The plants are sorted by plant code or company code. Only plants for which batches exist are listed in the navigator. Also only batches associated to the plants that you have access to are listed.

### Batch Summary Window Features

The following features may be available on a summary window:

Some of the summary windows provide a **Number of Documents** field. This is the number of documents on the summary window.

The **Find** option allows you to quickly locate a particular batch. Enter the Document to search for and click Find.

The **Details** button provides access to the Batch window for the current batch. Use the Batch window to review or edit the data.

The **Batch Steps** and **Steps** buttons provide access to the Batch Steps maintenance window for the current batch. Through the Batch Steps maintenance window, you can review or edit the data.

The **Material Details** button provides access to the Batch Material Details window.

## Batch Summary Windows Details

Each batch summary is described in this topic. A description of the summary and its associated fields are provided.

### Summary by Plant

The Summary by Plant window displays all batches grouped by plant. To view this summary, the View By option must indicate Plant and a plant in the navigator must be selected.

The following fields are available in this summary window:

Number of Documents, Document, Status, Terminated Indicator, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version

### Summary by Status

The Summary by Status window displays all batches grouped by status. Batches can be viewed by Pending, WIP, Completed, Closed, and Canceled. To view this summary, the View By option must indicate Status and a status in the navigator must be selected.

The following fields are available in this summary window:

Number of Documents, Document, Status, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version, Terminated

### Summary by Product

The Summary by Product window displays all batches grouped by product. To view this summary, the View By option must indicate Product and a product in the navigator must be selected.

The following fields are available in this summary window:

Number of Documents, Document, Status, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned

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Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version

### **Summary of Document**

The Summary of Document window displays all batches grouped by plant. To view this summary, a batch in the navigator must be selected.

The following fields are available in this summary window:

Plant, Document, Status, Product, Planned Quantity, Actual Quantity, UOM, Planned Start Date, Planned Completion Date, Actual Start Date, Actual Completion Date, Formula, Formula Description, Formula Version, Product Description, Routing, Routing Description, Routing Version, Terminated indicator

### **Summary of Batch Steps**

The Summary of Batch Steps window displays all the steps for the selected batch. To view this summary, the Steps node for the batch in the navigator must be selected.

The following fields are available in this summary window:

Plant, Batch, Step, Operation, Description, Step Status, Actual Completion Date, Actual Start Date, Actual Step Quantity, Due Date, Planned Completion Date, Planned Start Date, Planned Step Quantity, Step Closed Date, UOM, Terminated indicator

### **Summary of Step**

The Summary of Step window displays information about each batch step. To view this summary, select Steps in the navigator.

The following fields are available in this summary window:

Step, Step Status, Terminated indicator, Operation, Version, Operation Description, Planned Step Quantity, Planned Step Quantity UOM, Actual Step Quantity, Actual Step Quantity UOM, Planned Start Date, Actual Start Date, Planned Completion Date, Actual Completion Date, Actual Charges, Due Date, Max Step Capacity, Max Step Capacity UOM, Max Unit Of Measure, Planned Charges, Step Release Type, Step Unit Of Measure, Unit of Measure

### **Summary of Products**

The Summary of Products window displays all the products for the selected batch. To view this summary, the Products node for the batch in the navigator must be selected.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit of Measure, WIP Planned Quantity

### **Summary of Byproducts**

The Summary of Byproducts window displays all the byproducts for the selected batch. To view this summary, select the batch Byproducts node in the navigator.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Actual Quantity UOM, Actual Unit Of Measure, Allocated, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit Of Measure, WIP Planned Quantity

### **Summary of Ingredients**

The Summary of Ingredients window displays all the ingredients for the selected batch. To view this summary, select the batch Ingredients node in the navigator.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Unit Of Measure, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit of Measure, WIP Planned Quantity

### **Summary of Ingredient**

The Summary of Ingredient window displays information for the selected ingredient. To view this summary, select an ingredient for a batch in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Consumption Type, Allocation Indicator, Scale Type, Scrap Factor, Phantom Type, Cost Allocation

### **Summary of Step Details**

The Summary of Step Details window displays the batch step detail. To view this summary, select the batch detail in the navigator. The following fields are available in this summary window:

Step, Operation, Version, Desc, Activity, Activity Description, Planned Activity Factor, Actual Activity Factor, Actual Complete Date, Actual Start Date, Offset Interval, Planned Complete Date, Planned Start Date

### **Summary of Products By Step**

The Summary of Products By Step window displays the products associated to a particular step. To view this summary, open a batch step in the navigator and select a Product.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Step, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Actual Unit Of Measure, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit Of Measure, WIP Planned Quantity

### **Summary of Byproducts By Step**

The Summary of Byproducts By Step window displays the byproducts associated to a particular step. To view this summary, open a batch step in the navigator and select a Byproduct.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Step, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Actual Unit Of Measure, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit Of Measure, WIP Planned Quantity

### **Summary of Ingredients by Step**

The Summary of Ingredients by Step window displays the ingredients associated to a particular step. To view this summary, open a batch step in the navigator and select an Ingredient.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Step, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Actual Unit of Measure, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit Of Measure, WIP Planned Quantity

### **Summary of Step Details**

The Summary of Step Details window displays information for the selected step. To view this summary, select a batch step detail in the navigator.

The following fields are available in this summary window:

Step, Operation, Version, Desc, Activity, Activity Description, Planned Activity Factor, Actual Activity Factor, Actual Complete Date, Actual Start Date, Offset Interval, Planned Complete Date, Planned Start Date

### **Summary of Product**

The Summary of Product window displays information for the selected product. To view this summary, select a batch product in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Yield Type, Allocation Indicator, Scale Type, Cost Allocation, UOM, Actual Unit Of Measure, Phantom Type, Rounding Direction, Scale In Multiples, Scale Rounding Variance, Scrap Factor, Unit of Measure

### **Summary of Byproduct**

The Summary of Byproduct window displays information for the selected byproduct. To view this summary, select a batch byproduct in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Yield Type, Allocation Indicator, Scale Type, UOM, Cost Allocation, Phantom Type, Rounding

Direction, Scale in Multiples, Scale Rounding Variance, Scrap Factor, Unit of Measure

### **Summary of Step Activity**

The Summary of Step Activity window displays information for each step activity. To view this summary, select a step activity in the navigator. The following fields are available in this summary window:

Step, Activity, Activity Desc, Planned Start Date, Planned Complete Date, Actual Start Date, Actual Complete Date, Offset Interval, Planned Activity Factor, Actual Activity Factor

### **Summary of Step Activity Resource**

The Summary of Step Activity Resource window displays information for the selected resource. To view this summary, select a batch step resource in the navigator.

The following fields are available in this summary window:

Resource, Resource Description, Plan Resource Count, Plan Resource Quantity, Planned Resource Usage, Calculate Charges, Actual Resource Count, Actual Resource Quantity, Actual Resource Usage, Planned Start Date, Planned Complete Date, Actual Start Date, Actual Complete Date, Resource Type, Offset Interval, Scale Type, Actual Unit of Measure, Analysis Code, Analysis Code Description, Capacity UOM, Component Class, Max Capacity, Min Capacity, Process Parameter 1, Process Parameter 2, Process Parameter 3, Process Parameter 4, Process Parameter 5, Resource Unit of Measure, Unit of Measure, [ ] (Descriptive Flexfield)

## Viewing Firm Planned Order Summary Information

Through the Process Execution Workbench, you view summary information about firm planned orders by plant, product, and status. The Process Execution Workbench provides access to information about firm planned orders through a navigator. There are two tabs located on the navigator - Batches and Firm Planned Orders. Click the Firm Planned Orders tab to access summary information about firm planned orders. Use the View By option in the Process Execution Workbench to change the way you view the summary information.

The View By Firm Planned Order options provides a list of firm planned orders ordered by planned start date, plant, or firm planned order number. Only firm planned orders associated to the plants that you have access to are listed in the navigator.

The View By Product options provides a list of firm planned orders organized by products. The product list is sorted by product code or product planning class. Only products and coproducts for which firm planned orders exist are listed in the navigator.

The View By Status option provides a list of firm planned orders organized by status code.

The View By Plant option provides a list of firm planned orders organized by plant. The plants are sorted by plant code or company code. Only plants for which firm planned orders exist are listed in the navigator. Also only firm planned orders associated to the plant that you have access to are listed.

### Firm Planned Order Summary Window Features

The following features may be available on a summary window:

Some of the summary windows provide a **Number of Documents** field. This is the number of documents on the summary window.

The **Find** option allows you to quickly locate a particular firm planned order. Enter the Document to search for and click Find.

The **Details** button provides access to the Firm Planned Order maintenance window for the current firm planned order. Through the Firm Planned Order maintenance window, you can review or edit the data.

## Firm Planned Order Summary Windows Details

Each firm planned order summary is described in this topic. A description of the summary and its associated fields are provided.

### Summary by Plant

The Summary by Plant window displays all firm planned orders grouped by plant. To view this summary, the View By option must indicate Plant and a plant in the navigator must be selected.

The following fields display in this summary window:

Number of Documents, Document, Status, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version

### Summary by Status

The Summary by Status window displays all firm planned orders grouped by status. Firm planned orders can be viewed by Pending, Converted, and Canceled. To view this summary, the View By option must indicate Status and a status in the navigator must be selected.

The following fields are available in this summary window:

Number of Documents, Document, Status, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version

### Summary by Product

The Summary by Product window displays all firm planned orders grouped by product. To view this summary, the View By option must indicate Product and a product in the navigator must be selected.

The following fields are available in this summary window:

Number of Documents, Document, Status, Product, Planned Quantity, UOM, Planned Start Date, Actual Completion Date, Actual Quantity, Actual Quantity UOM, Actual Start Date, Formula, Formula Description, Formula Version, Planned

Completion Date, Plant, Product Description, Routing, Routing Description, Routing Version

### **Summary of Document**

The Summary of Document window displays all firm planned orders by plant. To view this summary, select a firm planned order in the navigator.

The following fields are available in this summary window:

Plant, Document, Status, Product, Planned Quantity, Actual Quantity, UOM, Planned Start Date, Planned Completion Date, Actual Start Date, Actual Completion Date, Formula, Formula Description, Formula Version, Product Description, Routing, Routing Description, Routing Version

### **Summary of Products**

The Summary of Products window displays all the products for the selected firm planned order. To view this summary, select the Products node for the firm planned order in the navigator.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit of Measure, WIP Planned Quantity

### **Summary of Byproducts**

The Summary of Byproducts window displays all the byproducts for the selected firm planned order. To view this summary, select the Byproducts node for the firm planned order in the navigator.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Quantity UOM, Actual Quantity UOM, Actual Unit Of Measure, Allocated, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit Of Measure, WIP Planned Quantity

### **Summary of Ingredients**

The Summary of Ingredients window displays all the ingredients for the selected firm planned order. To view this summary, select the Ingredients node for the firm planned order in the navigator.

The following fields are available in this summary window:

Plant, Document, Recipe, Version, Desc, Line, Item, Planned Quantity, Actual Quantity, UOM, Actual Unit Of Measure, Allocated, Contribute Step Qty Ind, Contribute Yield Ind, Cost Allocation, Item Description, Original Quantity, Phantom Type, Release Type, Rounding Direction, Scale Multiple, Scale Rounding Percent, Scale Type, Scrap Factor, Unit of Measure, WIP Planned Quantity

### **Summary of Ingredient**

The Summary of Ingredient window displays information for the selected ingredient. To view this summary, select an ingredient for a firm planned order in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Consumption Type, Allocation Indicator, Scale Type, Scrap Factor, Phantom Type, Cost Allocation

### **Summary of Product**

The Summary of Product window displays information for the selected product. To view this summary, select a product in a firm planned order in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Yield Type, Allocation Indicator, Scale Type, Cost Allocation, UOM, Actual Unit Of Measure, Phantom Type, Rounding Direction, Scale In Multiples, Scale Rounding Variance, Scrap Factor, Unit of Measure

### **Summary of Byproduct**

The Summary of Byproduct window displays information for the selected byproduct. To view this summary, select a byproduct within a firm planned order in the navigator.

The following fields are available in this summary window:

Line, Item, Item Description, Planned Quantity, Actual Quantity, UOM, Yield Type, Allocation Indicator, Scale Type, UOM, Cost Allocation, Phantom Type, Rounding

Direction, Scale in Multiples, Scale Rounding Variance, Scrap Factor, Unit of Measure

## Finding a Firm Planned Order from the Workbench

The Find Firm Planned Order dialog box lets you search for and list all firm planned orders that fit the parameters you specify on the Standard and Advanced regions of the window.

### Prerequisites

- Enter and save firm planned orders.

### ► To find a batch from the workbench:

1. Navigate to the Find Firm Planned Order dialog box.
2. Enter as many parameters as needed to complete the search:
  - Enter search parameters in the **Standard** region for: **Plant, Document Product, Planned Start Date, or Status.**
  - Enter search parameters in the **Advanced** region for a specific: **Item, Condition, or Value.**
3. Click **Find**.
4. Review the results of the search.

### ► To save search criteria to Personal Shortcuts:

1. Click **Save As ...**
2. Select **Search Criteria**.
3. Enter a **New Folder Name** for the search criteria.
4. Click **Save**.

### ► To save selected results of the search to Personal Shortcuts:

1. Click **Save As ...**
2. Select **Only Selected Results**.
3. Enter a **New Folder Name** for the selected results.
4. Click **Save**.

## Finding a Batch from the Workbench

The Find Batch dialog box lets you search for and list all batches that fit the parameters you specify on the Standard and Advanced regions of the window.

### Prerequisites

- Enter and save batches.

### ■ To find a batch from the workbench:

1. Navigate to the Find Batches dialog box.
2. Enter as many parameters as needed to complete the search:
  - Enter search parameters in the **Standard** region for: **Plant, Document Product, Planned Start Date, Status, or Terminated.**
  - Enter search parameters in the **Advanced** region for a specific: **Item, Condition, or Value.**
3. Click **Find**.
4. Review the results of the search.

### ■ To display a selected Document Number:

1. Select the **Document Number** from the search **Results** list.
2. Click **Details**.
3. The **Firm Planned Order** window displays the details of the selected Document Number.

### ■ To save search criteria to Personal Shortcuts:

1. Click **Save As ...**
2. Select **Search Criteria**.
3. Enter a **New Folder Name** for the search criteria.
4. Click **Save**.

### ■ To save selected results of the search to Personal Shortcuts:

1. Click **Save As ...**
2. Select **Only Selected Results**.

3. Enter a **New Folder Name** for the selected results.
4. Click **Save**.

■ **To set date conditions for a search:**

1. Select one of the following for **Item**:
  - **Planned Start Date**
  - **Planned Completion Date**
  - **Actual Start Date**
  - **Actual Completion Date**
2. Select one of the following for the date **Condition**:
  - **Greater or Equal to Today +** to generate results that meet the parameters entered for dates that are greater than or equal to the current date plus the value entered.
  - **Greater or Equal to today -** to generate results that meet the parameters entered for dates that are greater than or equal to the current date minus the value entered.
  - **Less or Equal to Today +** to generate results that meet the parameters entered for dates that are less than or equal to the current date plus the value entered.
  - **Less or Equal to Today -** to generate results that meet the parameters entered for dates that are less than or equal to the current date minus the value entered.
  - **Equal to Today** to generate results that meet the parameters entered for the current date. The **Value** field does not apply to this condition.

If you save this search to your Personal Shortcuts, then the application uses the current system date when you rerun the saved search.

3. Enter the **Value** for the selected condition.
4. Click **Find**.



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## Production Scheduler Workbench

This topic provides a basic understanding of the Production Scheduler Workbench including the bucketed load for a selected set of plant resources, continuous resource load, and a chart of activities to assist in the rescheduling of batches and firm planned orders. The Gantt Chart lets you change plant assignments, adjust bucket sizes, and filter batches and firm planned orders based on selected criteria.

The following topics are covered:

- [Understanding the Production Scheduler Workbench](#)
- [Using the Production Scheduler Workbench](#)

## Understanding the Production Scheduler Workbench

The Production Scheduler Workbench provides a graphical display of scheduled production activities. Batches and firm planned orders are depicted as horizontal bars. View resource load information such as requirements versus capacity in the following formats:

- Continuous horizon
- Table
- Vertical bar

Use the Production Scheduler Workbench as a reactive scheduling tool to address unanticipated events such as material shortages or unavailable resources. The Production Supervisor responsibility can reschedule batches, firm planned orders, and operations with a drag-and-drop operation.

The Production Scheduler Workbench offers the following capabilities:

- Display scheduled production activities for a specified plant graphically in a Gantt Chart framework.
- Reschedule batches, firm planned orders, and operations using a drag-and-drop operation.
- Gain access to appropriate batch and firm planned order panes for creation and maintenance tasks.

### **Continuous Resource Load**

The Production Supervisor can display the horizon as a continuous resource load graph for a selected set of plant resources.

### **Bucketed Resource Load**

The Production Supervisor can display the bucketed load for a selected set of plant resources, and view resource load information in either a tabular format or a vertical bar format.

### **Understanding the Gantt Chart in the Production Scheduler**

In order to understand the Gantt Chart, you must first understand its terminology. The Gantt Chart is a tool that depicts project tasks with their associated resources in a timeline. Gantt Charts let you track the progress of the project from start to finish.

**Project** A project is a set of activities that ends with specific accomplishment, and which has nonroutine tasks, distinct start and finish dates, and resource constraints such as time, money, people, and equipment.

**Tasks** Tasks are activities that must be completed to achieve the project goal. It is customary to break the project into tasks and subtasks. Tasks have a start date and time, and an end date and time. The Production Scheduler Workbench uses routings as the high level tasks. The routing subtasks are composed of operations organized into stepwise activities that utilize human and material resources.

**Milestones** Milestones are important checkpoints or interim goals for a project. The production routing start dates and end dates are milestones.

### **Gantt Chart**

The Gantt Chart displays shop activities in a timeline. It provides a means to reschedule batches and firm planned orders graphically using the drag-and-drop operation.

The Gantt Chart provides the following capabilities:

- Display batches, firm planned orders, and their related operations, activities, and resources for a specified plant.
- Change the current plant to another production facility.
- Reschedule batches, firm planned orders, and operations with a drag-and-drop operation.
- Integrate completely with other Process Execution functions.
- Adjust bucket sizes that affects the Gantt Chart and associated resource load versus capacity view.
- Filter out batches and firm planned orders that are shown on the Gantt Chart and store the user defined selection criteria in the database.
- Reschedule, create, and maintain batch or firm planned order functions that are controlled through the Security Profile.
- Use of the shop calendar to schedule batches and firm planned orders.

### **Resource Load versus Capacity**

The Resource Load capability provides the following capabilities:

- Select from a list of resources to display load.

- Display either continuous or bucketed resource load.
- Access the Batch List pane to display firm planned orders and batches that consume the selected resource. Reschedule batches and firm planned orders from this pane.

### **Production Scheduler Workbench Layout**

The Production Scheduler Workbench lets you view all scheduled batches and firm planned orders for a particular plant. Reschedule batches and firm planned orders interactively. Reschedule operations using drag-and-drop operations.

The workbench has four panes:

- Top left pane, the navigator, set as default.
- Top right pane, the Gantt Chart, set as default.
- Bottom left pane, the Selected Resources.
- Bottom right pane, the Resource Load Versus Capacity graph.

The Production Scheduler Workbench view defaults to the hierarchical navigator and the Gantt Chart panes. The Selected Resources and Resource Load Versus Capacity panes appear when you select Show or Hide Resource Load on the tool palette.

**Navigator Pane** There are four levels of information or branches in the navigator:

- Document, as a batch or firm planned order with product information
- Operation with version
- Activity
- Resource

The top level batch or firm planned order is created dynamically as you display the Production Scheduler Workbench. It is based on the filter criteria defined for the default plant. When a node is expanded in the navigator, horizontal bar charts representing each child node are also displayed.

**Gantt Chart Pane** The Gantt Chart pane consists of a timeline that appears at the top of the pane, and a horizontal bar chart. The timeline represents a time axis or bucket for the horizontal bar chart. The Gantt Chart mirrors the information presented in the navigator. The horizontal bar charts show scheduled production activities over time for each:

- Batch
- Firm Planned Order
- Operation
- Activity
- Resource

The left vertical edge of a horizontal bar represents the start date. The right vertical edge of a horizontal bar represents the end date. A vertical line displays below the current date.

The Gantt Chart pane lets you:

- Reschedule batches, firm planned orders, and operations manually using a drag-and-drop operation or through direct access to the Reschedule dialog box. You can only reschedule pending production documents with drag-and-drop. To reschedule work, use the Reschedule dialog box as described in the "Rescheduling a Batch or Firm Planned Order" topic.
- View the properties of each object shown in the Gantt Chart such as batch, firm planned order, operation, activity, and resource. Information about dates, quantities, and descriptions is displayed on Properties.

All horizontal bar charts may not be visible, since the start date of the related objects may fall outside of the time interval determined by the window boundaries. In order to make a particular object visible in the Gantt Chart:

- Move the horizontal scroll bar until the desired object displays.
- Enter a new start date in the date field on the tool palette. The Gantt Chart scrolls to the first batch or firm planned order for which the start date is found to be the closest to the entered date .
- Double-click on the desired object in the navigator to make the timeline scroll to the start date of the selected object in the navigator.
- Use the Adjust Unit Width slider to adjust the minor scale on the workbench.

**Selected Resources Pane** The Selected Resources pane displays details regarding resources selected through the Select Resources dialog box. When you click Select Resources, the Select Resources dialog box displays. This lets you select the available resources to display in the Resource Load Versus Capacity pane. Note that only resources belonging to the current plant are shown.

**Resource Load Versus Capacity Pane** This pane displays the Required resource load versus the Available resource capacity for the selected resources that appear in the Select Resources pane. This pane shares the same timeline as the Gantt Chart pane.

The Required resource load, Available resource capacity, and Overload resource capacity key indicators appear to the right of the graphic menu. The key indicators are:

- Required, the number of units required by the resource for all batches in that time bucket.
- Available, the number of resource capacity units in that time bucket. These may be already assigned.
- Overload, the number of resource units that are required but already committed.

The graphic menu provides the following choices:

- Table displays a tabular format. The top number in the table represents the Required resource load; the bottom number represents the Available resource capacity.
- Continuous displays a continuous graph. Non-bucketed lines representing Required, Available, and Overload resources accurate to the minute.
- Bar displays a bar graph. The number on the left represents the Required resource load; the number on the right represents the Available resource capacity.

When you select:

- Table or Bar, the Required and Available key indicators display.
- Continuous, the Required, Available, and Overload key indicators appear.

### **Identifying Buttons on the Scheduler Workbench**

The following discussion and graphic identify and explain each of the tools displayed on the Scheduler Workbench tool palette:

1 is the Refresh button. Click it to refresh panes with data retrieved from the database.

2 is the Enable/Disable Scheduling button. Click it to enable scheduling in the Scheduler Workbench. Click it again to disable scheduling in the Scheduler Workbench.

3 is the Show/Hide Resource Load button. Click it to show the resource load. Click it again to hide the resource load.

4 is the Refresh Resource Load button. Click it to refresh the load for a selected resource.

5 is the Help button. Click it to display online help for the current window or dialog box.

The following is a graphic of the previously described toolbar buttons:



### Adjusting Timescale Unit Width on the Workbench

Move the Adjust Unit Width slider to the left to decrease the interval step size of the timescale, or move the slider to the right to increase the interval step size of the timescale.

### Adjusting the Minor Scale Interval on the Workbench

The timescale consists of a major scale interval and a minor scale interval in units ranging from 15 minutes to one month.

1. Right-click the minor scale interval on the workbench.
2. Select one of the following to resize the minor time scale interval:
  - 15 minutes
  - 30 minutes
  - Hours
  - Days
  - Weeks
  - Months
3. The unit interval adjusts to the scale unit selected.

### **Rescheduling During Nonworking Time**

Planners can schedule the shop floor to accommodate nonworking time. The Gantt chart pane highlights nonworking time by use of a color that contrasts with the background color that is used to represent work time during the workday.

### **Rescheduling Without a Defined Shop Day**

If a shop calendar exists, but there is no shop day defined for the dates that a batch is scheduled, then the application issues a warning:

No shop day has been defined on the shop calendar for a day during this batch.  
Reschedule batch anyway (Y/N)?

If you click Y (Yes), then the application continues the rescheduling process. If you click N (No), then you return to the Reschedule window. This does not occur if you reschedule a firm planned order.

### **Using the Real Calendar to Display the Timeline**

If the dates you schedule fall outside the shop calendar date range, or there is no shop calendar assigned to the current plant, then the real calendar displays on the timeline. It is important to note that weekends then appear as workdays.

The shop calendar does not extend infinitely in either direction of the dates displayed. Therefore, the real calendar displays on either side of its limits.

### **Yielding a Finite Scheduled Plan**

The Advanced Planning and Scheduling application replaces the Work In Process Planning Scheduler (WPS) finite scheduling process and yields a finite scheduled plan. If the details of a batch or planned order are returned from APS, then it is the same as scheduling a batch in WPS. The Finite Scheduled indicator is selected when the WPS engine reschedules the batch details. Batch details are anything related to the routing that is returned or scheduled by APS. APS allows either order header planning or order detail planning .

## Using the Production Scheduler Workbench

The Production Scheduler Workbench lets you manage shop floor schedules.

Refer to the "Understanding the Production Scheduler Workbench" topic for a complete explanation of the tool palette and layout of the window panes.

### Prerequisites

- Set up the GME: Display Nonworking Days in Scheduler profile option.
- Create batches and firm planned orders.

### ► To display the Production Scheduler Workbench:

1. From the Production Supervisor responsibility menu, choose **Production Scheduler**. The Scheduler Workbench Startup Parameters dialog box displays.
2. Refer to the "Configuring Scheduler Startup Parameters" topic for a complete discussion on the use of this window.

### ► To display the resource load in table, continuous, or bar formats:

1. Click **Show/Hide Resource Load** to display the resource load.
2. Click **Select Resource(s)** to display the Select Resource(s) dialog box.
3. Select one or more resources and click **OK**.
4. Select one of the following display formats:
  - **Table** to display the resource load with the Required hours in the top cell and the Available hours in the bottom cell.
  - **Continuous** to display the resource load with a three-dimensional overlay of Required hours, Available hours, and Overload hours. This format identifies resource contentions. Each horizontal line represents the scaled number of hours displayed in the left pane.
  - **Bar** to display a bar graph of the Required hours on the left and the Available hours on the right.

Extend the vertical lines that separate each format up to the dates listed in the Gantt Chart pane to determine the date.

5. Click **Show/Hide Resource Load** again to hide the resource load.

► **To go to the current date:**

1. There are two methods to go to the current date:
  - Click **Go To Today**.
  - Enter the current date and time in the **Go To Today** field.
2. The graph adjusts to the current date and time, indicated by a vertical line from the top to the bottom of the Gantt Chart pane.

► **To display the product information tooltip:**

1. Position the cursor over a batch or firm planned order on the Gantt chart. The tooltip displays the batch or firm planned order with its status, main product code, planned or actual quantity, and UOM.
2. Move the cursor to hide the tooltip.

► **To display the operation tooltip:**

1. Position the cursor over an operation bar on the Gantt chart. The tooltip displays the operation and its version. The operation version is displayed to the right of the slash mark (/).
2. Move the cursor to hide the tooltip.

## Configuring Scheduler Startup Parameters

The Scheduler Workbench Startup Parameters dialog box lets you configure the Scheduler Workbench view.

### Prerequisites

- Create batches and firm planned orders.

► **To configure startup parameters:**

1. Navigate to the Scheduler Workbench Startup Parameters dialog box.
2. Enter the **From Date** as the starting date and time to begin viewing the production schedule for the plant. Use the LOV to display the **Calendar** date-time editor. Required.
3. Enter the **To Date** as the ending date and time to end viewing the production schedule for the plant.
4. **Organization** displays the default plant.

5. Enter the **Document** number for a specific batch or firm planned order. Do not enter a value in this field to display all documents found for the specified parameters.
6. Select one or both of the following:
  - **Batch** to display the specified batch document or all batches found for the specified parameters.
  - **FPO** to display the specified firm planned order document number or all firm planned orders found for the specified parameters.

### Batch Status

7. Select one or more of the following:
  - **Pending** to display pending batches.
  - **WIP** to display work in process batches.
  - **Completed** to display completed batches.
8. Enter the **Product, Ingredient, or Resource**. Keep the % in each of these fields to display all components found for the specified parameters.

### Resource Type

9. Enter the **Resource Type** as:
  - **Auxiliary** to display all auxiliary resources found for the specified parameters.
  - **Primary** to display all primary resources found for the specified parameters.
  - **Secondary** to display all secondary resources found for the specified parameters.
10. Click **Gantt Chart** to display the **Scheduler Workbench** window.

### Using the Filter

The Filter dialog box lets you narrow the Scheduler Workbench display of documents, statuses of batches or firm planned orders, product codes, ingredients used, and resource types.

1. Click **Filter...**
2. Enter one or more of the following fields to narrow the information displayed:

- Starting date and time in the **From** window.
  - Ending date and time in the **To** window.
  - **Document** number of the batch or firm planned order.
  - **Product** code of the primary product produced in the batch.
  - **Ingredient Used** in the product.
  - **Resource** used in the routing.
3. Select **Batches** or **Firm Planned Orders** to filter by document type.
  4. Select **Batch Status** as any combination of **Pending**, **WIP**, or **Completed**.
  5. Select **Resource Type** as any combination of **Auxiliary**, **Primary**, or **Secondary**.
  6. Click **Apply** to view the results of the filtering.
  7. Click **OK** to close the dialog box.

## Displaying the Document Properties

The Document Properties dialog box lets you display scheduling and status information about batches and firm planned orders.

1. In the navigator, right-click the batch or firm planned order node and choose **Properties**. The Document Properties dialog box displays.

### Batch or FPO

2. The following fields are display only:
  - The document name displays next to **Batch** or **FPO**.
  - **Product** displays the main product with its description.
  - **Planned Start Date** displays the planned start date and time of the document type.
  - **Planned End Date** indicates the planned completion date and time of the document type.
  - **Status** is the current status of the batch or FPO.
  - **Planned Quantity** of material to be produced and its UOM.
  - **Actual Quantity** is the actual quantity of material for the first product in the batch or FPO.

3. Click **Recipe** to display information about the recipe derived from the recipe validity rule used to create the batch or FPO.

## Recipe

4. The following fields are display only:
  - **Recipe** indicates the recipe code.
  - **Version** indicates the recipe version.
  - **Description** indicates the recipe description.
  - **Formula** indicates the formula used in the document type.
  - **Version** indicates the formula version.
  - **Description** indicates the formula description.
  - **Routing** indicates the routing used in the document type.
  - **Version** indicates the routing version.
  - **Description** indicates the routing description.
5. Click **OK** to close the dialog box.

## Displaying the Operation Properties

The Operation Properties dialog box lets you display information about operations in each of the routing steps in a batch or firm planned order.

1. In the navigator, right-click the operation node and choose **Properties**. The Operation Properties dialog box displays.
2. The following fields are display only:
3. **Operation** displays the operation code. Its version displays to the right of the slash mark (/), and its description displays on the next row.
  - **Step** displays the the step number.
  - **Planned Start Date** displays the planned start date and time of the step.
  - **Planned End Date** displays the planned completion date and time of the step.
  - **Status** displays the status of the step.
  - **Planned Quantity** displays the planned step quantity.

4. Click **OK** to close the dialog box.

## Displaying the Activity Properties

The Activity Properties dialog box lets you display information about activities in each of the operations in a batch or firm planned order.

1. In the navigator, right-click the activity node and choose **Properties**. The Activity Properties dialog box displays.
2. The following fields are display only:
  - **Activity** displays the activity code and description.
  - **Start Date** displays the start date and time of the activity.
  - **End Date** displays the completion date and time of the activity.
  - **Cost Analysis Code** displays the cost analysis code and description.
3. Click **OK** to close the dialog box.

## Displaying the Resource Properties

The Resource Properties dialog box lets you display information about each of the resources assigned to activities in a batch or firm planned order.

1. In the navigator, right-click the resource node and choose **Properties**. The Resource Properties dialog box displays.
2. The following fields are display only:
  - **Resource** displays the resource code and description.
  - **Plan Count** displays how many resources are needed for the activity.
  - **Plan Quantity** displays how much material is planned for the activity and the UOM for this material.
  - **Plan Usage** displays how long the resource runs and the usage UOM, which is usually in hours.
  - **Offset Interval** displays the time offset from the start of the activity to when the resource is actually used.
  - **Planned Start Date** displays the planned start date and time for the resource.

- **Planned End Date** displays the planned completion date and time for the resource.
  - **Resource Type** indicates if the resource is Primary, Secondary, or Auxiliary.
  - Charge.
3. Click **OK** to close the dialog box.

## Rescheduling a Batch or Firm Planned Order

The Reschedule dialog box lets you reschedule a batch or firm planned order. You can use drag-and-drop or the resize option to reschedule pending documents.

### ■ To reschedule a batch or firm planned order using the navigator:

1. In the navigator, right-click the batch or firm planned order node and choose **Reschedule**.
2. **Batch** or **Firm Planned Order** displays the document number.
3. Enter a new **Start Date** and time.
4. Enter a new **End Date** and time.
5. Select **Use Shop Calendar** to use the shop calendar to reschedule the batch or firm planned order.
6. Click **Reschedule**.

### ■ To reschedule batch or firm planned order using the resize option:

1. In the Gantt Chart pane, click the graph line next to the batch or firm planned order to reschedule. A small hand appears to indicate that you can reschedule it. Two handles appear on the line. The left handle adjusts the **Start Date**. The right handle adjusts the **End Date**.
2. Reschedule the batch or firm planned order using one of these methods:
  - Drag the left handle to the left to decrease the **Start Date**.
  - Drag the right handle to the right to increase the **End Date**.

The Reschedule dialog box appears with the selected Start Date and End Date and the option to use the shop calendar. You can edit these entries.

3. Click **Reschedule**.

► **To reschedule batch or firm planned order using the drag-and-drop option:**

1. In the Gantt Chart pane, click the batch or firm planned order you want to reschedule.
2. Drag the batch or firm planned order to its new location on the schedule and drop it. The Reschedule dialog box appears with the selected Start Date and End Date.
3. You can edit the **Start Date** and the **End Date**.
4. Select **Use Shop Calendar** to reschedule the batch or firm planned order using the shop calendar.
5. Click **Reschedule**.

► **To display the batch or firm planned order details:**

In the navigator, right-click the batch or firm planned order node and choose **Details**.

## Rescheduling Batch Steps

The Reschedule dialog box lets you reschedule batch steps.

► **To reschedule batch steps using the navigator:**

1. In the navigator, right-click the batch step node and choose **Reschedule**.
2. **Step** displays the step number and code.
3. Enter a new **Start Date** and time.
4. Enter a new **End Date** and time.
5. Select **Reschedule Dependent Steps** only to reschedule the steps that depend on this step.
6. Select **Use Shop Calendar** to use the shop calendar to reschedule the batch steps.
7. Click **Reschedule**.

► **To reschedule batch steps using the resize option:**

1. In the Gantt Chart pane, click the graph line next to the batch step you want to reschedule. A small hand appears to indicate that you can reschedule the step.

Two handles appear on the line. The left handle adjusts the **Start Date**. The right handle adjusts the **End Date**.

2. Reschedule the step using one of these methods:
  - Drag the left handle to the left to decrease the **Start Date**.
  - Drag the right handle to the right to increase the **End Date**.
3. The Reschedule dialog box appears with the selected Start Date and End Date and the option to use the shop calendar. You can edit these entries.
4. Click **Reschedule**.

► **To reschedule batch steps using the drag-and-drop option:**

1. In the Gantt Chart pane, click the batch step you want to reschedule.
2. Drag the step to its new location on the schedule and drop it. The Reschedule dialog box appears with the selected Start Date and End Date and the option to use the shop calendar. You can edit the **Start Date** and the **End Date**.
3. Click **Reschedule**.

## Displaying Composite Resources

The resource composite view lets the production planner display the load versus capacity graph of a selected set of resources. From this graph, you can request all batches and firm planned orders that consume a selected resource within a selected time bucket.

► **To select resources for a composite resource view:**

1. Use one of these methods to display the resource load pane:
  - Click **Show/Hide Resource Load**.
  - From the **Actions** menu, choose **Show/Hide Resource Load**.
2. Click **Select Resource(s)...** to display the Select Resource(s) dialog box.
3. Select one of these methods to move resources:
  - Click the desired resource in **Available Resources**, then click the single right-arrow button to move it to the **Selected Resources**.
  - Click the double right-arrow button to move all items in **Available Resources** to the **Selected Resources**.

4. Click **OK**.

► **To remove resources from the composite resource view:**

1. Click **Select Resource(s)...** to display the Select Resource(s) dialog box.
2. Select one of these methods to move resources:
  - Click the desired resource in **Selected Resources**, then click the single left-arrow button to move it to the **Available Resources**.
  - Click the double right-arrow button to move all items in the **Selected Resources** to the **Available Resources**.
3. Click **OK**.

## Rescheduling a List of Batches

The Reschedule dialog box lets you reschedule one or several batches that are consuming a particular resource for a given period of time. You cannot change the start date for a WIP batch. If you want to reschedule a particular WIP batch, then override the plan completion date. The application reschedules batches that have changed the planned start or completion dates. If the Gantt chart is in view mode, then you cannot reschedule a batch. Click on the Enable/Disable Scheduling icon on the toolbar to switch from view mode to the scheduling mode.

► **To reschedule a list of batches or firm planned orders:**

1. Use one of these methods to display the resource load pane:
  - Click **Show/Hide Resource Load**.
  - From the **Actions** menu, choose **Show/Hide Resource Load**.
2. Type the scheduled date and time in the **Go To** field and press **Enter**. The Gantt chart displays the scheduled start date entered.
3. Click **Select Resource(s)** to display the Select Resource(s) dialog box.
4. Use one of these methods to move resources:
  - Click the desired resource in **Available Resources**, then click the single right-arrow button to move it to the **Selected Resources**.
  - Click the double right-arrow button to move all items in **Available Resources** to the **Selected Resources**.
5. Click **OK**.

6. Double-click the desired time bucket in the **Resource Load** graph. The Reschedule dialog box displays. All documents consuming the selected resource within the selected time bucket are displayed in the Reschedule dialog box.
7. Determine if you want to use the shop calendar in the rescheduling. Select **Use Shop Calendar** to use the shop calendar.
8. **Document** displays the document number.
9. **Start Date** displays the batch start date and time. You can edit this field if the batch is not released.
10. **End Date** displays the batch completion date and time. You can edit this field to redistribute the scheduled workload.
11. **Duration** displays the time until the scheduled End Date in hours and minutes.
12. **Document Type** displays the Batch or Firm Planned Order document type.
13. **Status** displays the current status of the listed document type.
14. Click **Reschedule** to reschedule the batches, or click **Cancel** to cancel the action. All edited batches are rescheduled.

## Changing or Finding an Organization

The Change Organization dialog box lets you change or find an organization.

### ► To change an organization:

1. From the **Actions** menu, choose **Change Organization**. The Change Organization dialog box displays.
2. Select the **Organization**.
3. Click **OK**.

► **To find an organization:**

1. From the **Actions** menu, choose **Change Organization**. The Change Organization dialog box displays.
2. Enter the desired organization in the **Find** field.
3. Click **Find**.

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## Process Execution Navigator Paths

Although your System Administrator may have customized your Navigator, typical navigation paths are described in the following tables. In some cases, there is more than one way to navigate to a window. These tables provide the most typical default path.

Window	Path
Activity Properties	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:expand batch or firm planned order node:right-click activity node:choose Properties
Allocation Details	Production Supervisor:Sales Order Reservations:Sales Order/Batch Reservations:Find:Allocation Details
Batch	Production Supervisor:Batches
Batch Material Details	Production Supervisor:Batch Material Details
Batch Operation WIP	Production Supervisor:Batch Operation WIP
Batch Pick List Report	Production Supervisor:Reports:Run
Batch Sales Order Reservation Information	Production Supervisor:Sales Order Reservations:Sales Order/Batch Reservations:Find
Batch Step Activities	Production Supervisor:Batch Steps:Actions:Activity Details
Batch Step Dependencies	Production Supervisor:Batch Steps:Actions:Batch Step Dependencies
Batch Step Resources	Production Supervisor:Batch Steps:query the batch Document number:select a Step:Actions:Resource Details

<b>Window</b>	<b>Path</b>
Batch Step Variance Inquiry - Activities	Production Supervisor:Production Supervisor:Inquiries:Batch Step Variance:Batch Step Variance Inquiry Selection Criteria:Batch Step Variance Inquiry - Summary:Batch Step Variance Inquiry - Details:drill down on a batch step
Batch Step Variance Inquiry - Activity Resources	Production Supervisor:Inquiries:Batch Step Variance:Batch Step Variance Inquiry Selection Criteria:Batch Step Variance Inquiry - Summary:Batch Step Variance Inquiry - Details:Batch Step Variance Inquiry - Activities:drill down on a batch step
Batch Step Variance Inquiry - Details	Production Supervisor:Production Supervisor:Inquiries:Batch Step Variance:Batch Step Variance Inquiry Selection Criteria:Batch Step Variance Inquiry - Summary:drill down on a batch step
Batch Step Variance Inquiry - Summary	Production Supervisor:Inquiries:Batch Step Variance:Batch Step Variance Inquiry Selection Criteria:drill down on a batch
Batch Step Variance Inquiry Selection Criteria	Production Supervisor:Inquiries:Batch Step Variance
Batch Step/Batch Item Association	Production Supervisor:Batches:query the batch Document number:click Steps:Actions:Item/Step Association
Batch Steps	Production Supervisor:Batch Steps
Batch Ticket Report	Production Supervisor:Reports:Run
Batch Yield Variance Report	Production Supervisor:Reports:Run
Calculate Theoretical Yield	Production Supervisor:Batches:query the batch Document number:Actions:Theoretical Yield
Change Organization	Production Supervisor:Production Scheduler:Workbench Startup Parameters:Scheduler Workbench:Actions:Change Organization
Charge Details	Production Supervisor:Batch Steps:Tools:Charge Details
Complete Batch	Production Supervisor:Batches:query the batch Document number:Actions:Complete Batch

<b>Window</b>	<b>Path</b>
Convert Firm Planned Order to Batch	Production Supervisor:Firm Planned Order:query the firm planned order Document number:Actions:Convert to Batch
Create Batch/Firm Planned Order	Production Supervisor:Batches:tab out of NEW Document field Production Supervisor:Firm Planned Order:tab out of NEW Document field
Document Properties	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:right-click batch or firm planned order node:choose Properties
Filter	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:click Filter
Find Batch Material Details	Production Supervisor:Batch Material Details:View:Find...
Find Batch Operation WIP	Production Supervisor:Batch Operation WIP:View:Find...
Find Batch Steps	Production Supervisor:Batch Steps:View:Find...
Find Batches	Production Supervisor:Batches:View:Find...
Find Batches (from the Workbench)	Production Supervisor:Workbench:click Batch tab:Actions:View:Find...
Find Firm Planned Orders	Production Supervisor:Firm Planned Order:View:Find...
Find Firm Planned Orders (from the Workbench)	Production Supervisor:Workbench:click Firm Planned Order tab:Actions:View:Find...
Find Reservations	Production Supervisor:Sales Order Reservations:Sales Order/Batch Reservations
Firm Planned Order	Production Supervisor:Firm Planned Order
Firm Planned Order Material Details	Production Supervisor:Firm Planned Order Material Details
Incremental Backflushing	Production Supervisor:Incremental Backflush
Inventory Shortages	Production Supervisor:Batch Material Details:Ingredients: Actions:Inventory Shortage

<b>Window</b>	<b>Path</b>
Items Failing Autoallocation	Production Supervisor:Batches:Batch Material Details:Actions:Autoallocate Line The window displays if the line cannot be allocated automatically.
Items Over Allocated - Scale Batch	Production Supervisor:Batches:Batch Material Details:Scale Batch:enter negative Percent or Item Quantity below Planned Qty:OK
Items Requiring Allocation	Production Supervisor:Batches:query the batch Document number:Actions:Complete
Line Allocations	Production Supervisor:Batch Material Details:Line Allocations
Material Usage and Substitution Variance Report	Production Supervisor:Reports:Run
Material Variance - Ingredient Inquiry	Production Supervisor:Inquiries:Material Variance:Material Variance Inquiry Selection Criteria:enter criteria:click OK:Material Variance Inquiry:drill down on the desired batch
Material Variance - Step Details	Production Supervisor:Inquiries:Material Variance:Material Variance Inquiry Selection Criteria:enter criteria:click OK:drill down on the desired batch:Material Variance - Ingredient Inquiry:drill down on the desired Line
Material Variance Inquiry	Production Supervisor:Inquiries:Material Variance:Material Variance Inquiry Selection Criteria:enter criteria:click OK
Material Variance Inquiry Selection Criteria	Production Supervisor:Inquiries:Material Variance
Navigator	Production Supervisor:Workbench
Operation Properties	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:right-click batch or firm planned order:choose Properties
Pick Lots/Locations	Production Supervisor:Batch Material Details:query the batch Document number:select Line:click Line Allocations

<b>Window</b>	<b>Path</b>
Process Instructions	Production Supervisor:Batches:Tools:Process Instructions  (also available from these windows: Firm Planned Order, Firm Planned Order Material Details, Batch Material Details, and Batch Steps)
Production Activity Report	Production Supervisor:Reports:Run
Production Reservation Rules	Production Supervisor:Sales Order Reservations:Sales Order Reservation Parameters
Production Schedule Inquiry	Production Supervisor:Inquiries:Production Schedule:Production Schedule Selection Criteria:enter selection criteria:click OK
Production Schedule Selection Criteria	Production Supervisor:Inquiries:Production Schedule
Recipe Validity Rules	Production Supervisor:Batches:Tools:View Validity Rule
Recipe Validity Rules Summary	Production Supervisor:Batches:Actions:Reroute Production Supervisor:Firm Planned Order:Actions:Reroute
Reschedule	Production Supervisor: Batches:Actions:Reschedule  Production Supervisor:Firm Planned Order:Actions:Reschedule
Resource Process Parameters	Production Supervisor:Batch Steps:query the batch Document number:Actions:Activity Details:select an Activity:Actions:Resource Details:select a Resource:Process Parameters
Resource Properties	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:expand batch or firm planned order node:right-click resource node:choose Properties
Resource Transactions	Production Supervisor:Batch Steps:query the batch Document number:select the batch step:Actions:Transactions

<b>Window</b>	<b>Path</b>
Resource Usage	Production Supervisor:Resource Variance:OK:Actions:Resource Usage Production Supervisor:Inquiries:Resource Inquiries:Resource Variance:Resource Variance Inquiry Selection Criteria:Resource Usage
Resource Usage Details	Production Supervisor:Inquiries:Resource Inquiries:Resource Variance:Resource Variance Inquiry Selection Criteria:Resource Usage:Resource Usage Details
Resource Variance Details	Production Supervisor: Inquiries: Resource Inquiries:Resource Variance:Resource Variance Inquiry Selection Criteria
Resource Variance Inquiry Selection Criteria	Production Supervisor:Inquiries:Resource Variance
Scale Batch	Production Supervisor:Batches:click Material Details:select material to scale:Actions:Scale Batch Production Supervisor:Firm Planned Order:click Material Details:select material to scale:Actions:Scale Firm Planned Order
Scheduler Workbench	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:click Gantt Chart
Scheduler Workbench Startup Parameters	Production Supervisor:Production Scheduler
Select Resources	Production Supervisor:Production Scheduler:Scheduler Workbench Startup Parameters:enter startup parameters:click Gantt Chart:select batch or firm planned order:click Select Resources
Submit Requests	Production Supervisor:Reports:Run:OK
Summary by Plant	Production Supervisor:Workbench:Batch:View By Plant:select a plant in the navigator
Summary by Plant	Production Supervisor:Workbench:Firm Planned Orders:View By Plant:select a plant in the navigator

<b>Window</b>	<b>Path</b>
Summary by Product	Production Supervisor:Workbench:Batch:View By Product:select a product in the navigator Production Supervisor:Workbench:Firm Planned Orders:View By Product: select a product in the navigator
Summary by Status	Production Supervisor:Workbench:Batch:View By Status:select a status in the navigator Production Supervisor:Workbench:Firm Planned Orders:View By Status:select a status in the navigator
Summary for Batch Steps	Production Supervisor:Workbench:Batch:select the Steps node for the batch in the navigator
Summary of Byproduct	Production Supervisor:Workbench:Batch:select a byproduct within a batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select a byproduct in the navigator
Summary of Byproducts	Production Supervisor:Workbench:Firm Planned Orders:select the Byproducts node in the navigator Production Supervisor:Workbench:Batch:select the Byproducts node for the batch in the navigator
Summary of Byproducts By Step	Production Supervisor:Workbench:Batch:for a batch in the navigator open a batch step and select a Byproduct
Summary of Document	Production Supervisor:Workbench:Batch:select a batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select a firm planned order in the navigator
Summary of Ingredient	Production Supervisor:Workbench:Batch:select an ingredient within a step within a batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select an ingredient in the navigator
Summary of Ingredients	Production Supervisor:Workbench:Batch:select the Ingredients node for the batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select the Ingredients node in the navigator

<b>Window</b>	<b>Path</b>
Summary of Ingredients by Step	Production Supervisor:Workbench:Batch:for a batch step in the navigator open a batch step and select an Ingredient
Summary of Product	Production Supervisor:Workbench:Batch:select a product within a batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select a product in the navigator
Summary of Products	Production Supervisor:Workbench:Batch:select the Products node for the batch in the navigator Production Supervisor:Workbench:Firm Planned Orders:select the Products node in the navigator
Summary of Products By Step	Production Supervisor:Workbench:Batch:for a batch in the navigator open a batch step and select a Product
Summary of Step	Production Supervisor:Workbench:Batch:select a batch step in the navigator
Summary of Step Activity Resource	Production Supervisor:Workbench:Batch:select a batch resource in the navigator
Summary of Step Details	Production Supervisor:Workbench:Batch:select a step detail for a batch in the navigator Production Supervisor:Workbench:Batch:select a step within a step detail for a step within a batch
Work In Process Inquiry	Production Supervisor:Inquiries:Work In Process Inquiry Selection Criteria:enter selection criteria:click OK
Work in Process Inquiry Details	Production Supervisor:Inquiries:Work In Process Inquiry Selection Criteria:enter selection criteria:click OK:Work In Process Inquiry:drill down on the desired Batch
Work in Process Inquiry Selection Criteria	Production Supervisor:Inquiries:Work In Process

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## Process Execution Profile Options

During your implementation, you set a value for selected profile options to specify how your Process Execution application controls access to and processes data. Process Execution uses the listed profile options.

- GME: Allow Material Deletion
- GME: Allow Process Qty Less Than Min Capacity
- GME: Auto-Release Allocated Quantity Only
- GME: Backflush Resource Usage
- GME: Calculate Interim Resource Usage
- GME: Check Inventory Shortage Upon Save
- GME: Copy Formula Text
- GME: Copy Routing Text
- GME: Default Actual Resource Usage
- GMD: Default Consumption/Yield Type
- GME: Display Nonworking Days in Scheduler
- GME: Step Controls Batch Status
- GME: Use Auto-Allocation
- GME: Use Shop Calendar Default
- GME: Validate Flexfields on Server
- GME: Validate Planned Dates
- GME: Warn If Plan Qty Is Greater than Allocated Qty



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# Oracle E-Records Events in Process Execution

OPM Process Execution supports the acquisition of electronic signatures on electronic records. Electronic documentation replaces paper with a seamless interface of business activities that improves manufacturing throughput and enhances the overall quality of operations in the enterprise. The following provides information for online and deferred events that are Oracle E-Records enabled in the OPM Process Execution application. A brief discussion of each event is provided. Refer to the *Oracle E-Records Implementation Guide* for details on setting up the events and approvals.

## Events

The following table lists the events that are e-record and e-signature enabled for OPM Process Execution:

Event	Online or Deferred
Changing Batch Status: Release Batch (Pending to WIP), Close Batch (Completed to Closed)	Online
Changing Batch Step Status: Release Step (Pending to WIP), Close Step (Completed to Closed)	Online
Batch Allocations	Online
Complete Batch	Online
Complete Batch Step	Online
Terminate Batch	Online

### Finding Additional Oracle E-Records Information

You can find the following information in the *Oracle E-Records Implementation Guide*:

- Events
- Event Key
- Subscriptions

From the XML Gateway, using the existing Event and Event Key, you can derive the XML Map, Subscription Data, and Metadata.

## Release Batch

Release batch is an event that signals a batch has begun production, and that the automatic release ingredients have been consumed. The batch has an actual start date and the automatic release ingredients have actual quantities (if allocation was successful) supported by completed transactions. The following e-signature records are recorded for release batch:

- The release batch event
- The initiator of the release batch event
- When was the release batch initiated
- The approver of the release batch event

- When was the release batch approved

### **E-Signature for Release Batch**

E-Signature is required if:

1. You release the batch, and
2. You are subscribed to the Release Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

### **E-Record for Release Batch**

E-Record is started if:

1. You release the batch, and
2. You are subscribed to the Release Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-record turned on.

### **E-Signature for Release Batch Step**

E-Signature is required if:

1. You release a step, and
2. You are subscribed to the Release Batch Step event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch step, and
4. That rule has e-signature turned on.

If an e-signature is required for Release Batch Step, then the application does not let you change the Actual Start Date of the step. In this case, Actual Start Date is not active.

If an e-signature is required for Release Batch, then the application does not let you change the Actual Start Date. Actual Start Date is not active.

### **Batch E-Records Include Unrelease Information**

The Unrelease Batch e-record displays the same information content as is displayed in the Release Batch e-record. Actual quantities and actual starts date are not displayed. However, the planned quantities are displayed. If you deleted any existing allocations when you unreleased the batch, then these deleted allocations are also displayed on the e-record.

## **Close Batch**

Close Batch is an event that signals a batch is completed and no further changes are made to the batch data. Close Batch assigns a date to the actual close date and changes the status of the batch to closed. Once closed, you can no longer make any adjustments, insertions, or deletions to the batch. The following e-signature records are recorded for close batch:

- The close batch event
- The initiator of the close batch event
- When was the close batch initiated
- The approver of the close batch event
- When was the close batch approved

### **E-Signature for Close Batch**

E-Signature is required if:

1. You close the batch, and
2. You are subscribed to the Close Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

### **E-Record for Close Batch**

E-Record is started if:

1. You close the batch, and
2. You are subscribed to the Close Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and

4. That rule has e-record turned on.

### **E-Signature for Close Batch Step**

E-Signature is required if:

1. You close a step, and
2. You are subscribed to the Close Batch Step event, and
3. AME control parameters has a rule which is satisfied by the conditions of the step, and
4. That rule has e-signature turned on.

### **Batch E-Records Include Reopen Information**

The Reopen Batch e-record displays the same information content as is displayed in the Complete Batch e-record.

## **Batch Allocations**

Batch Allocations is the event that signals you made or changed batch allocations in a plant. A window displays to request an e-signature from the approvers specified on the rule for plant batch allocations. You can set up either e-signature or e-record or both. For example, if e-signature is off and e-record is on for the batch allocations event within the plant specified, then the data associated to the event is recorded to the database without the requirement for an online e-signature.

### **E-Signature for Close Batch Step**

E-Signature is required if:

1. You make an allocation or change allocations for the batch, and
2. You are subscribed to the Batch Allocation event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

## **Complete Batch**

Complete Batch is the event which signals that a batch has finished production. It also means that products and byproducts are yielded. Prior to batch completion,

transactions that are associated with the product and byproduct lines that are set for automatic yield have a Pending status. When you complete the batch, all pending transactions are completed and inventory levels are updated. The batch has an actual completion date and the products and byproducts have actual quantities supported by completed transactions.

E-Signature records the following for the Complete Batch event:

- The complete batch event
- The initiator of the completed batch event
- When the completed batch was initiated
- The approver of the completed batch event
- When the completed batch event was approved

### **E-Signature for Batch Complete**

E-Signature is required if:

1. You complete the batch, and
2. You are subscribed to the Complete Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

### **Batch E-Records Include Revert to WIP Information**

The Revert to WIP Batch e-record displays the same information content as is displayed in the Release Batch e-records.

## **Complete Batch Step**

Complete Batch Step is the event which signals that a batch step has completed production. It also means that step ingredients are consumed and any products or byproducts are yielded for the step. The step has an actual completed date and all step materials have actual quantities supported by completed transactions.

E-Signature records the following for complete batch step:

- The complete batch step event
- The initiator of the completed batch step event

- When the completed batch step was initiated
- The approver of the completed batch step event
- When the completed batch step event was approved

### **E-Signature for Batch Step Complete**

E-Signature is required if:

1. You complete the batch step, and
2. You are subscribed to the Complete Batch Step event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

### **Enforcing Step Dependencies**

The OPM Process Execution application is configurable to require multiple levels of approval upon completion of selected batch steps prior to allowing you to proceed to the next step in an operation.

For example, in the following sequence of batch steps:

10 - Dispense

20 - Weigh

30 - Blend

40 - Fill

OPM is configurable to enforce the sequence of all or any of the steps. For example, if Step 10 is critical and must always be reviewed prior to performing Step 20, then an e-signature by one or more approvers can be required at the completion of Step 10. Step 20 cannot begin until the required e-signature approvals are secured for Step 10. In order to subscribe to this event, follow the Enforce Step Dependency functionality.

## **Terminate Batch**

Refer to "Understanding Batches" for a complete explanation of terminating a batch. The terminate batch E-Signature records the following for the Terminate Batch event:

- The terminate batch event

- The initiator of the terminate batch event
- When the terminate batch was initiated
- The approver of the terminate batch event
- When the terminated batch event was approved

### **E-signature for Terminate Batch**

E-signature is required if:

1. You terminate the batch, and
2. You are subscribed to the Terminate Batch event, and
3. AME control parameters has a rule which is satisfied by the conditions of the batch, and
4. That rule has e-signature turned on.

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## Sales Order Reservations

This topic provides references to topics and user's guide that describe the integration between order taking and fulfillment as performed in Oracle Order Management and OPM Process Execution (also known as OPM Production).

## Setting Up Production Reservation Rules

Refer to the "Setting Up Production Reservation Rules" topic in the *Using Oracle Order Management with Process Inventory* for details on setting up production reservation rules.

## Finding Reservations

Refer to the "Finding Reservations" topic in the *Using Oracle Order Management with Process Inventory* for details on querying reservations.

## Viewing or Updating Production Information

Refer to the "Viewing or Updating Production Information" topic in the *Using Oracle Order Management with Process Inventory* for details on viewing or updating production information.

## Viewing Allocation Details

Refer to the "View Allocation Details" topic in the *Using Oracle Order Management with Process Inventory* for details on allocations.

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# Glossary

## **Activity**

Action performed during the manufacturing process, such as mixing or heating.

## **Activity Factor**

The number of times an activity is performed. For example, a quality test must be performed at the beginning, middle, and end of a mixing time period. Rather than defining the activity and associated resources three times, use an activity factor or multiplier to indicate three iterations of the same activity.

## **Allocation**

For ingredients, the process of specifying lots of material in or scheduled for a specific batch. For products, the process of specifying lots yielded by a batch and locations of product yielded. As a result, only lot or location controlled materials can be allocated.

## **ASQC**

Automatic Step Quantity Calculation. A feature that enables a Process Engineer to calculate step quantities based on the routing step definitions and ingredient usage per step.

## **Autoallocation**

See Automatic Allocation.

## **Automatic Allocation**

A type of allocation where ingredients are allocated when a batch is saved for the first time, based on a specified set of business rules.

**Backflushing**

Calculation of ingredient consumption from the entry of product yield, or the ability to calculate product yield from the entry of ingredient consumption.

**Batch**

A standard run or lot size determined by vessel size, convention, line rates, or standard run length.

**Batch Record**

A document used to plan and record a manufacturing event. The document shows the consumption of ingredients and the yielding of products, coproducts, and byproducts.

**Byproduct**

An item produced by a formula in addition to the product. Byproducts differ from products in that you do not plan your production to make byproducts. Byproducts can have monetary value, but generally have less monetary value than products, and cannot have costs assigned. In some instances there can be a cost associated with disposing of a byproduct. See Coproduct.

**Charge**

A charge is defined as one full load that can be accommodated in a single pass through the equipment. In a process manufacturing plant, the capacity of a step may be predetermined by the capacity of the equipment used in that step. For example, a mixing tank that has a maximum capacity of 1000 gallons overflows if more is added. The maximum capacity determines the total number of charges that are required to process the ingredients required for a batch. A batch size of 5000 gallons requires five charges at 1000 gallons each when the maximum capacity of the mixing tank is 1000 gallons.

**Closing a Batch**

The action taken to change the status of a batch from Completed to Closed.

**Closing a Batch Step**

The action taken to change the status of a batch step from Completed to Closed.

**Completing a Batch**

The process of indicating that all product quantities are yielded, and that the batch is complete. When you complete a batch, the pending transactions associated with

automatic completion product lines are deleted and replaced with completed transactions.

### **Completing a Batch Step**

The process of indicating that all step quantities are yielded, and that the batch step is complete.

### **Consumption Type**

For batch ingredients, denotes the type of ingredient consumption as: Automatic when ingredients are consumed automatically, Manual when ingredients are consumed manually, Incremental when ingredients are consumed in increments to keep inventory current, and Automatic by Step when ingredients are consumed automatically as the step is completed.

### **Coproduct**

One of several products produced by a formula or batch. The term is used when a formula or batch produces more than one product. The application does not distinguish between products and coproducts. See Byproduct.

### **Delay**

The number of hours from the end of the preceding batch step to the start of the current batch step. Delay calculations are needed to calculate operation start times.

### **Cost Analysis Code**

A code that specifies whether an activity is value added or nonvalue added. For example, VAL for Value Added, or NVAL for Nonvalue Added.

### **FEFO**

First Expired, First Out. Refers to use of materials closest to expiration first. Also, one method of automatic allocation based on the earliest expiring available lot. See also, FIFO. Physically, a material control technique of rotating inventory stock that is used primarily where expiration date is a concern so that materials closest to expiration are consumed first.

### **FIFO**

First In, First Out. Refers to use of the oldest materials first. Also, one method of automatic allocation based on the earliest created available lot. See also FEFO. Physically, a material control technique of rotating inventory stock that is used primarily where shelf life is a concern so that the oldest ingredients are consumed first.

**Firm Planned Order**

Also FPO. A document that represents a plan to manufacture a product. This differs from a batch in that you cannot execute against an FPO. The FPO does not commit inventory and you cannot allocate lots to it.

**Fixed Scale**

Termed Fixed Quantity in previous OPM applications. Scaling that requires ingredients to be scaled by an amount necessary to produce the new product quantity, and not by the percent entered as scale factor. If all items are set to fixed quantity or the formula is marked as not scalable at the header level, then no quantities in the formula are changed. Fixed scale ingredients may or may not contribute to yield.

**Formula**

A statement of ingredient requirements and planned product yield. A formula can also include processing instructions and ingredient sequencing directions. The formula specifies quantities of each item.

**FPO**

See Firm Planned Order.

**Incremental Backflushing**

Completing less than the full quantity of a product. This is often done with batches that run a long time and yield product in increments, and involves the calculation of ingredient consumption from the entry of product yield, and product yield from the entry of ingredient consumption.

**Ingredient**

An item which is consumed by a batch to yield a product. Specifically, a required material for the manufacture of a product.

**Integer Scaling**

A scaling approach that allows materials to be scaled in integer quantities. Support is provided for rounding up or down to a full material increment within a user-defined tolerance percentage.

**Intermediate**

A semiprocessed state of materials usually not available for sale to customers. Comparable to a subassembly in discrete manufacturing.

**Linear Scaling**

See Proportional Scaling.

**Lot**

A quantity of material produced together that shares the same resultant specifications and production costs.

**Manual Completion**

Completing a product separately from completing the batch.

**Manual Release**

Releasing an ingredient separately from releasing the batch that consumes it.

**Multiple Scaling**

See Integer Scaling.

**Offset Interval**

The time delay from the start of the activity to the point where the resource is actually required.

**Offset Type**

A multiple batch scheduling method that is specified as start-to-start or end-to-start.

**Operation**

A combination of one or more activities and the resources used to perform those activities. For example, the combination of mixing activity and the mixer (resource) defines the mixing operation.

**Pending Batch**

A batch that is scheduled, but not yet released to production.

**Pending Transaction**

A record representing an anticipated or future change to inventory.

**Phantoms**

Intermediate items that are produced only in the process of making finished goods they go into; phantoms are only tracked in inventory by the ingredients they consume.

**Process**

The manufacturing procedure.

**Process Parameter**

Processing parameters used to provide operators with information needed for managing equipment that is used during the preparation of a product or to drive a production decision, such as the type of filter to use, or the quantity of product required to fill a container. There is no direct linkage between a process parameter and the equipment it describes.

**Process Steps**

The operations or stages in the manufacturing cycle required to transform ingredients into intermediates or finished goods.

**Product**

An item which is produced by a batch. Compare with byproduct.

**Proportional Scaling**

Proportional scaling is the simplest type of batch scaling since both specified and calculated factors are applied to the scalable items proportionally. For example, proportional scaling of 100 grams of an ingredient by 200 percent means that you multiply the ingredient by a factor of two.

**Raw Material**

See Ingredient.

**Recipe**

The minimum set of information that uniquely defines the manufacturing requirements for a specific product. Recipes provide a way to describe products and include the sequencing of ingredients and processing instructions.

**Release a Batch**

Indicates that a batch is started. Indicates that ingredient quantities may be consumed. When you release a batch, the pending transactions associated with automatic release ingredient lines are deleted and replaced with completed transactions.

**Reopening a Batch**

The action taken to change the status of a batch from Closed to Completed. The batch close date is removed from the batch header.

**Reopening a Batch Step**

The action taken to change the status of a batch step from Closed to Completed. The batch step close date is removed.

**Resource**

Equipment or labor used in production.

**Resource Usage**

Calculated as the Count multiplied by Usage multiplied by Charges.

**Revert to WIP**

The action taken to change the status of a batch or a batch step from Completed to Work in Process.

**Routing**

A sequenced set of operations that need to be performed in order to complete a production batch. See Process Steps.

**Routing Process Loss**

The capability to account for material lost during the production process at the routing level. This loss can vary depending on the routing and quantity being processed by the routing. A loss factor is defined at the routing level based on a range of quantities.

**Scaling**

The proportional or disproportional increase or decrease of product, byproduct, or ingredient quantities in a formula or batch. Scaling types are: fixed, proportional, and integer. Integer scaling is sometimes called multiple scaling.

**Scrap Factor**

Material that is lost before making it into product. This material is an anticipated loss and does not contribute to yield.

**Single-step Function**

A function that only impacts a single step in a batch, and the batch lines associated with that step. Examples of single step functions are releasing, completing, and rescheduling steps.

**Sublot**

A subdivision of a lot which may be used when an entire lot is more than would be used or produced at any one time. Sublots maintain the integrity of the overall lot and allow it to be consumed in manageable pieces.

**Theoretical Process Loss**

The capability to account for the material lost during the production process at the routing level. This loss can vary depending on the routing or the individual quantity being processed by the routing. This loss is defined at the routing class level and is based on a minimum and maximum range of quantities.

**Theoretical Yield Calculation**

The predicted output of product quantities from a formula or batch based on ingredient quantities and a specified yield percentage.

**Total Input**

The total quantity of materials used to produce a batch.

**Total Output**

The total quantity of product, coproduct, and byproduct produced by a batch.

**Unrelease a Batch**

The action taken to change the status of a whole batch from WIP to Pending.

**Unrelease a Batch Step**

The action taken to change the status of a batch step from WIP to Pending. Only batch steps with a status of WIP can be unreleased.

**User-Initiated Automatic Allocation**

A type of allocation in which ingredients are automatically allocated when the user requests allocation, based on specified rules. This contrasts with automatic allocation in that user-initiated automatic allocation is performed only when the user requests it, not automatically upon saving a batch.

**Validity Rule**

Formerly effectivity. The rules that specify under which circumstances a recipe can be used. The combination of a range of material quantities and a range of effective dates used by production, planning, costing, or MSDS in one or more specified organizations.

**Variance**

The difference between planned and actual quantities expressed as a percent. For example, if a planned value is 100 and the actual value is 125, the variance is 25 percent above plan.

**Version**

A number identifying a variant of a formula, operation, routing, or recipe.

**Warehouse**

A physical location for the storage of materials. A logical grouping of locations of specific materials that may or may not be within a production facility. One or more warehouses can supply one production facility.

**Whole Batch Function**

A function that can impact the entire batch. Whole batch functions include releasing, completing, rescheduling, incrementally backflushing, and closing batches. Similarly, whole batch functions also include unreleasing, reverting to WIP, and reopening batches.

**WIP**

Work in Process.

**Work in Process**

Batches released to production are work in process.

**Yield**

As related to quantity, the planned or actual output of a process. Yield includes either a loss, an increase, or no change in the planned or actual output quantity.

**Yield Type**

For batch products, denotes the type of product yield as: Automatic, when products are yielded automatically, Manual when products are yielded manually, Incremental, when products are yielded in increments to keep inventory current, and Automatic by Step when products are yielded automatically as a step is completed.



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