

Oracle[®] Process Manufacturing Formula Management

Release 11.0

Part No. A70045-01

ORACLE[®]

Enabling the Information Age™

Oracle® Process Manufacturing Formula Management

Part No. A70045-01

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Thank you for helping us improve our documentation.

OPM Formula Management Preface

Oracle Process Manufacturing Formula Management Welcome

Welcome to *Oracle Process Manufacturing Formula Management*.

This user's guide includes the information you need to work with Oracle Process Manufacturing (OPM) effectively.

This preface explains how this user's guide is organized and introduces other sources of information that can help you.

About Oracle Process Manufacturing Formula Management

This guide contains overviews as well as task and reference information about OPM Formula Management. This guide includes the following topics:

- Formula Management Prerequisites
- Formulas Setup
- Routings Setup
- Effectivities Setup
- Scaling and Theoretical Yield
- Online Inquiries and Reports
- Appendix
- Glossary

Audience for Oracle Process Manufacturing Formula Management

This guide assumes that you have a working knowledge of your business area's processes and tools. It also assumes that you are familiar with OPM Formula Management. If you have never used OPM Formula Management, we suggest you attend one or more of the Oracle Process Manufacturing training classes available through World Wide Education. For more information about OPM and Oracle training see Other Information Sources.

This guide also assumes that you are familiar with the Oracle Applications graphical user interface. To learn more about Oracle Applications graphical user interface, read the *Oracle Applications User's Guide*.

Conventions

Bolded Text

Buttons, fields, keys, menus, and selections are bolded in procedures only. For example: To access the next form click **OK**. Otherwise, references to these features appear in regular type.

Additional Menu Options

Only nonstandard menu options are discussed. Standard menu bar options (such as Save) are not discussed. These standard options are described in the Oracle Applications User's Guide. Only menu options unique to the use of the specific form are discussed.

Field References

References to fields within procedures are in bold type. References within the body of this guide appear in regular type.

Keyboard Mapping

Some keyboards have an Enter key, while some have Return key. All references to this key appear as Enter.

Required Fields

The word "Required" appears as the last word in the field descriptions of all required fields. When the field is required contingent on the entry in another field, or only in specific situations, "Required if..." is the last sentence of the field description.

Fields Reserved for Future Use

Fields with no current processing implications are referenced by the statement, "This field is not currently used" or "Reserved for future use" is shown. Do not use these fields for your own reference data, because there are plans to link future functionality to these fields. Fields intended for informational use only are referenced by the statement, "This field is for informational purposes only".

Pending/Completed Transactions

Discussions about processing transactions that use the words 'pending' and 'completed' refer to the status of a transaction. Pending and completed do not refer to the database tables that are updated as a result of transactions (for example, some completed transactions are stored in the Pending Transactions table).

Procedures

Each chapter contains a procedure with numbered steps. Any actions which are subordinate to a step are assigned letters.

Note: You can customize your Oracle Application, therefore, all procedures are suggestive only. Navigate to forms and between responsibilities in a way that works best for your particular setup. Also note that fields may appear on your screen in a different order than they are discussed in this guide.

Oracle Process Manufacturing Glossaries

A module-specific glossary is included.

Use of Word "Character"

The word "character" means an alphanumeric character. Characters that are numeric or alphabetic only are referenced specifically.

Note: Depending on your system security profile, you may not have access to all of the forms and functions described in this guide. If you do not see a menu option described in this guide, and you want access to it, contact your System Administrator.

Do Not Use Database Tools to Modify Oracle Applications Data

Because Oracle Applications tables are interrelated, any change you make using Oracle Applications can update many tables at once. If you modify the Oracle Applications data using anything other than Oracle Applications, you could change a row in one table without making corresponding changes in related tables. If your tables are synchronized with each other, you risk retrieving erroneous information and receiving unpredictable results throughout Oracle Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also track who changes information. If you enter information into database tables using database tools, you could store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

Consequently, we strongly recommend that you never use SQL*Plus or any other tool to modify Oracle Applications data unless otherwise instructed by Oracle Support Services.

Information Sources Related to Oracle Process Manufacturing Formula Management

You can choose from many sources of information, including documentation, training, and support services, to increase your knowledge and understanding OPM Formula Management.

Online Documentation

All Oracle Applications documentation is available online on CD-ROM, except for technical reference manuals.

All user's guides are available in HTML and paper. Technical reference manuals are available in paper only. Other documentation is available in paper and sometimes PDF format.

The content of the documentation remains the same from format to format. Slight formatting differences could occur due to publication standards, but such differences do not affect content. For example, page numbers are included in paper, but are not included in HTML.

The HTML documentation is available from all Oracle Applications windows. Each window is programmed to start your web browser and open a specific, context-sensitive section. Once any section of the HTML documentation is open, you can navigate freely throughout all Oracle Applications documentation. The HTML documentation also ships with Oracle Information Navigator (if your national language supports this tool) which enables you to search for words and phrases throughout the documentation set.

Other Information Sources

OPM Formula Management shares business and setup information with other Oracle products. The following Oracle Applications guides might be useful when you are setting up and using OPM Formula Management.

- **Oracle Applications User's Guide**
This guide explains how to enter data, query, run reports, and navigate using the graphical user interface (GUI) available with this release. This guide also includes information on setting user profiles, as well as running and reviewing reports and concurrent processes.
- **Oracle Applications Flexfields Guide**
This guide provides flexfields planning, setup and reference information for the implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This manual also provides information on creating custom reports on flexfields data.
- **Oracle Workflow**
This guide provides information about the Oracle Workflow product. It provides guidance and assistance for automating and routing information of any type according to business rules.
- **Oracle Applications System Administrators 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 text, and manage processing.

Oracle Process Manufacturing Guides

The following is a list of the documentation in each product group of OPM release 11.0.

System Administration and Technical Reference

- *Oracle Process Manufacturing Implementation Guide*
- *Oracle Process Manufacturing Technical Reference Manuals*

OPM Inventory Control

- *Oracle Process Manufacturing Inventory Management User's Guide*
- *Oracle Process Manufacturing Physical Inventory User's Guide*
- *Oracle Process Manufacturing EC Intrastat User's Guide*

OPM Process Execution

- *Oracle Process Manufacturing Production Management User's Guide*
- *Oracle Process Manufacturing Process Operations Control User's Guide*

OPM Product Development

- *Oracle Process Manufacturing Formula Management User's Guide*
- *Oracle Process Manufacturing Laboratory Management User's Guide*
- *Oracle Process Manufacturing Quality Management User's Guide*

OPM Logistics

- *Oracle Process Manufacturing Order Fulfillment User's Guide*
- *Oracle Process Manufacturing Purchase Management User's Guide*

OPM Process Planning

- *Oracle Process Manufacturing Forecasting User's Guide*
- *Oracle Process Manufacturing Capacity Planning User's Guide*
- *Oracle Process Manufacturing MPS/MRP User's Guide*

OPM Financials

- *Oracle Process Manufacturing Cost Management User's Guide*
- *Oracle Process Manufacturing Manufacturing Accounting Controller User's Guide*
- *Oracle Process Manufacturing Accounting Setup User's Guide*
- *Oracle Process Manufacturing and Oracle Financials Integration*
- *Oracle Process Manufacturing and Oracle Financials Implementation Guide*

Other Sources

Training

We offer a complete set of formal training courses to help you and your staff master OPM Formula Management and reach full productivity quickly. We organize these courses into functional learning paths, so you take only those courses appropriate to your job's area of responsibility.

You have a choice of educational environments. You can attend courses offered by Oracle Education Services at any one of our many Education Centers, or you can arrange for our trainers to teach at your facility. In addition, Oracle training professionals can tailor standard courses or develop custom courses to meet your needs. For example, you may want to use your organization structure, terminology, and data as examples in a customized training session delivered at your own facility.

About Oracle

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Oracle products are available for mainframes, minicomputers, personal computers, network computers and personal digital assistants, allowing organizations to integrate different computers, different operating systems, different networks, and even different database management systems, into a single, unified computing and information resource.

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Thank You

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Formula Management Prerequisites

Prerequisites for Setting Up Formula Management

Before you can use the Formula Management module, there are several prerequisites in other modules, such as the System module and the Inventory Management module. Below is a list of the minimum prerequisites for each of the functions in Formula Management, followed by the paths to the forms on which they are set up. For a full discussion on setting up these prerequisites, see the appropriate module manuals (for example, the *Oracle® Process Manufacturing Inventory Management User's Guide*) and the online help for the appropriate forms.

You must do set up in OPM System Administration and Inventory Control to use Formula Management. The sections that follow list these setups.

Setting Up OPM Systems Administration Prerequisites

In the Systems Administration module, you must set up the following:

- Unit of measure types
- Units of measure
- Units of measure conversions

Note: See the *Oracle® Process Manufacturing Implementation Guide* for more information.

Setting Up Inventory Control Prerequisites

In the Inventory Control module, you must set up the following:

- Items and item attributes
- Unit of measure conversions for each item, between the item's primary inventory unit of measure and the unit of measure you use in the formulas, if different. This is done on the Item/Lot conversions form.

Note: Unit of measure types, units of measure, unit of measure conversions and item specific conversions (Item/Lot Conversion) are

synchronized with corresponding Oracle® Process Manufacturing (OPM) Financials data. See the *Oracle® Process Manufacturing Financial Integration User's Guide* for detailed information.

- Unit of measure type of Time
- Units of measure of HR (for hour)

Note: For more information on Inventory Control setups, refer to the *Oracle® Process Manufacturing Inventory Management User's Guide*. For more information on, refer Cost Management setups, refer to the *Oracle® Process Manufacturing Cost Management User's Guide*.

Prerequisites for Creating Routings

A routing in OPM defines the method or steps that are taken to manufacture a product.

The prerequisites to setting up routings are:

- Cost Analysis Codes
- Resources
- Unit of measure type of time
- Units of measure of HR (for hour)

Setting Up Costing Prerequisites

In the Costing Management module, you must set up the following:

- Cost analysis codes

Setting Up Configurations for Effectivity Records

Note: Use of the Configurations form is not required. If you do not use this form to specify how effectivity records are to be created, you must enter effectivities manually.

Prior to setting up formulas you want to set up configurations for the effectivity records. You use the Configurations form to enter parameters that control the creation of effectivity records in Formula Management. Effectivity records specify when and in what circumstances a formula can be used. For a full discussion of effectivity records see the *Setting Up Effectivities* section.

Use this form to specify how effectivity records are created. The parameters you establish are specific to the organization and formula use you define (that is, whether the formula is used for production, material requirements planning, costing or regulatory. Note that you can create formulas for global use by leaving the Organization field blank to indicate 'All'.

For example, you can set up one set of effectivity creation parameters for formulas used in production and a different set of parameters for formulas used in costing. For each new formula OPM lists the effectivity records based on the Configuration parameters you have set up. For example, if you have four formula configurations and you selected effectivity behaviors of display on save or manual generation, and then you create a formula, the View Effectivities form will list those four effectivity records. You then select one of these effectivities and link it to the formula. If you selected automatic generation of effectivities, then OPM automatically creates them. You can then go back and view each one.

You specify one of the following effectivity creation methods:

- An effectivity record can be created automatically when a user enters a formula
- The system can prompt the user to enter an effectivity record when entering a formula
- A formula can be entered without an effectivity record and the effectivity record added later

You also specify whether the default effective organization for effectivity records (that is, the organization for which the effectivity record is valid) will be the user's default organization or all organizations.

In addition, if you specified that effectivity records will be created automatically, you must specify how OPM will handle conflicting effectivities (that is, what happens if other formulas for the same product are effective for the same conditions as the formula being created). The options are:

- The system does not modify the other effectivity records. The newly created formula is the default.
- The system sets the end dates on the effectivity records for the other formulas to today, making the new formula the only effective one.
- The system increments the preference number of the other effectivities (thereby decreasing the preference) so that the new formula is used when another formula's effectivity record overlaps with the new formula's effectivity record.

Note: The effectivity information must match exactly with the exception of the formula name and version number for the system to update the previous effectivity record.

Regardless of how effectivity records are created, they can be modified manually.

Setting Up Configurations - Procedure

Follow the steps below, to set up configurations.

1. Navigate to the **Configurations** form.
2. Complete the fields as described in *the Configurations Form - Fields* topic.
3. Save the form.

Configurations Form - Fields

Organization

Enter the code identifying the organization for which you are defining effectivity configuration parameters. If you leave this field blank, the configuration parameters will apply to all organizations for which you have not defined specific effectivity configuration parameters.

Note: For costing rollups, you must define a specific organization in your effectivity record.

Formula Use

Select the formula use indicator for which you are defining effectivity configuration parameters. The formula use indicator controls whether the formula is used for production, material requirements planning, costing, or material safety data sheets. You may select one of the following:

- Production
- Planning
- Costing
- Regulatory

For example, if you select Production, the configuration parameters you enter will determine how effectivity records are created for production formulas, but not for other types of formulas. Required.

Effectivity Behavior

Specify how you want effectivity records created. You may choose one of the following from the list:

- Manual
You must create effectivity records manually by selecting Effectivities from the Special menu on the Formulas form or from the Formula Management menu. The Effectivity is created after the formula is saved.
- Display on Save
The Maintain Effectivities form is automatically displayed before you can enter ingredients in a new formula.
- Automatic Generation

The system automatically creates an effectivity record when you save a new formula. The automatically generated effectivity record will have the following parameters:

- A standard quantity equal to the formulated quantity
- A minimum quantity of 0
- A maximum quantity of 999,999,999
- A start date equal to today's date
- The end date is set by the SY\$EFF_MAX_DATE profile value

If you select automatic effectivity behavior, you must also specify how the system will handle situations in which previously defined formulas for the same product are effective under the same conditions. Specify this in the Effectivity Conflict field. Required.

Organization Default

Indicate if the default effective organization for effectivity records will be the user's organization or all organizations. The effective organization is the organization to which the effectivity record applies. If you associate only one effectivity record with a formula, and you specify an organization on the effectivity record, that formula can only be used by that organization. You may choose:

- Operators Organization

The default effective organization is the user's organization

- Blank For All

When you make this selection, the effectivity record will apply to all organizations

Required.

Note: For costing rollups, you must define a specific organization in your effectivity record.

Other Effectivities Conflict

You can only access this field if the Effectivity Behavior field was set to Automatic Generation.

Select how the system will respond if there are previously existing formulas for the same product which are effective under the same conditions as a new formula you are saving.

- No Change: Do not modify the other effectivity records
- New Formula preferred (by increasing the preference number for the other formula effectivity records OPM makes the new formula the first preference. 1 is the highest preference.
- End Date Set to Today: Set the end date for the other formula effectivity records to today's date so that they are no longer effective.

Required if you chose Automatic Generation for the effectivity behavior field.

Find Organizations for Formula Configurations

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Organizations for Formula Configurations - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Organizations - Fields* topic.
3. Click **Find**.

Find Organizations - Fields

Organization

Enter all or part of the code identifying the organization for which you are defining effectivity configuration parameters.

Formula Use

Select the formula use for which you are defining effectivity configuration parameters. You may select one of the following:.

- Production
- Planning
- Costing
- Regulatory

Effective Behavior

Select how you want effectivity records created. You may choose one of the following from the list:

- Manual
- Display on Save
- Automatic Generation

Organization Default

Indicate if the default effective organization for effectivity records will be the user's organization or all organizations. You can select:

- Operator Organization
- Blank for All

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Setting Up Formula Classes (Optional)

Defining classes is optional. Classes group formulas with similar characteristics and requirements for reporting purposes. For example, you may want to classify all formulas for acrylic paints together, and all formulas for water-based paints together. You would define a formula class for each type of paint. On the Formulas form, you would specify the formula class to which the formula belongs.

Setting Up Formula Classification Codes - Procedure

Follow the steps below to set up formula classification codes:

- Navigate to the **Formula Classes** form.
- Complete the fields as described in the *Formula Classes Form - Fields* topic.
- Save the form.

Formula Classes Form - Fields

Class

Enter the classification code that will identify formulas with similar characteristics or requirements. Required.

Description

Enter a brief description of the classification you are adding. Required.

Find Formula Classes

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Formula Classes- Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Formula Classes - Fields* topic.
3. Click **Find**.

Find Formula Classes - Fields

Class

Enter all or part the classification code.

Description

Enter all or part of the class description.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Setting Up Operation Classes (Optional)

Defining operations classes is optional. Class codes group operations with similar characteristics and requirements for reporting purposes.

Setting Up Operation Classes - Procedure

Follow the steps below to set up operation classification codes:

1. Navigate to the **Operation Classes** form.
2. Complete the fields as described in the *Operation Classes - Fields* topic.
3. Save the form.

Operation Classes Form - Fields

Class

Enter the classification code that will identify things (formulas, operations, or routings) with similar characteristics or requirements. Required.

Description

Enter a brief description of the classification you are adding. Required.

Find Operation Classes

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Operation Classes - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Operation Classes - Fields* topic.
3. Click **Find**.

Find Operation Classes - Fields

Class

Enter all or part the classification code.

Description

Enter all or part of the class description.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Setting Up Routing Classes (Optional)

Defining classes is optional. Classes group routings with similar characteristics and requirements for reporting purposes.

Setting Up Routing Classes - Procedure

Follow the steps below to set up routing classes:

1. Navigate to the **Routing Classes** form.
2. Complete the fields as described in the *Routing Classes - Fields* topic.
3. Save the form.

Routing Classes Form - Fields

Class

Enter the classification code that will identify things (formulas, operations, or routings) with similar characteristics or requirements. Required.

Description

Enter a brief description of the classification you are adding. Required.

Find Routing Classes

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Routing Classes - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Routing Classes - Fields* topic.
3. Click **Find**.

Find Routing Classes - Fields

Class

Enter all or part the classification code.

Description

Enter all or part of the class description.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Formulas Setup

Formulas Overview

Use the Formula Management module to define the formulas that drive your manufacturing process. (Test or prototype formulas may be created and optimized in the OPM Laboratory Management module). Formulas are lists of ingredients and products, and their associated quantities. Formulas form the basis of production. In some cases, you may refer to formulas as the bill of material (BOM). Every batch in the Production Management module is based on a formula defined in the Formula Management module. In addition, formulas are used for planning purposes and by the Costing Management (CM) and the Material Requirements Planning (MRP) modules.

Several forms are used in defining a formula. Two of these forms (the Formulas form and the Ingredients form) are required in order to save the formula as an active formula (a formula without ingredients is inactive); the others are used to enter additional information which may or may not be relevant to your formulas.

Packaging Formulas

In addition to defining the way bulk items are produced, formulas can be used to define the way items are packaged. To set up a "packaging" formula, simply enter the packaged item as the product and the bulk item, package (container), and label as the ingredients.

Header Information

To create a new formula, you enter header information (formula name, version, product, etc.), which applies to the entire formula on the Formulas form. You also enter the products and product quantities on this form. Note that when a formula produces more than one product, these are sometimes referred to as coproducts. In OPM, products and coproducts are synonymous. However, do not confuse coproducts with byproducts which are described below.

Ingredient Information

You enter ingredients and ingredient quantities on the Formula Ingredients form. Access this form from the Formulas form or the By-products form.

Byproduct Information

If your formula produces byproducts, you enter these byproducts and byproduct quantities on the Formula By-Products form. You access this form from either the Formulas form or the Formula Ingredients form. Byproducts, like products, are items produced by a formula. They differ from products in that you do not plan your production to make byproducts. Byproducts may or may not have value, but generally have less value than products or in some instances there may be a cost associated with disposing of a byproduct.

For example, in the production of applesauce you produce apple peels. These peels are not something you plan to manufacture as a product. You would never schedule a batch in order to produce apple peels. These apple peels may not have any value and may be disposed of, or you may find someone who will buy these peels. In either case, you would enter apple peels as a byproduct of your applesauce formula.

OPM does not calculate the cost of production of byproducts. Any items produced by your formulas for which you want to calculate costs should be entered as products, not byproducts. Byproducts can have an effect on the cost of products, however. For example, the cost of disposing of byproducts may increase the cost of producing your products.

Alternatively, the money you make from selling the byproducts may lower the cost of producing your products.

Additional Information

From each of the three forms just described on which you enter items (ingredients, products, and byproducts) in a formula, you can access an Additional Information form by selecting Additional Information from the Special menu. On this form you can enter additional information, such as scale types and release types, for any of the lines in the formula.

In addition to the forms mentioned above, you can access forms to enter quality control data for items in the formula (specifications, samples, results), to scale the formula, and to calculate theoretical yield. For information on entering quality control data, see the *Oracle® Process Manufacturing Quality Management User's Guide* and the online help.

Text

Like many other documents in OPM, you can add text to a formula by selecting Edit Text from the Special menu. You can do this at the header or line level. The text associated with a formula will be copied to batches which are based on the formula if the PM_COPY_FM_TEXT System Profile is set to "1." Note that identical paragraph codes must be set up on the Paragraph for the fm_form_mst and pm_btch_hdr tables for header text to be copied, and for the fm_matl_dtl and pm_matl_dtl tables for line item (product, ingredient, or byproduct) text to be copied. See the *Oracle® Process Manufacturing Implementation Guide* for more information on setting up paragraph codes.

Effectivities

You also set up effectivity records for the formulas. A formula cannot be used until an effectivity record is set up for it. See the *Effectivities Setup* section for more information on creating effectivity records.

Setting Up Formulas - Process

This process flow outlines the steps you must complete to set up a formula.

1. Navigate to the **Formulas** form and complete the fields on the Formulas form as described in the *Setting Up Formula Header and Products Information* section.
2. Navigate to the **Ingredients** form and complete the fields on the **Formula Ingredients** form as described in the *Adding Ingredients* section.
3. Proceed accordingly:
 - If the formula produces byproducts, navigate to the **By-products** form. Complete the fields as described in the *Adding By-products* section and proceed to step 4.
 - If the formula does not produce byproducts, proceed to step 4.
4. Proceed accordingly:
 - If you want to add additional information (such as whether an item can be scaled or manually released) for any line in the formula, proceed to step 5.
 - If you do not want to add additional information, proceed to step 5.
5. Add additional information as follows:
 - a) Place the cursor on the line to which you want to add information, and choose **Additional Information** from the **Special** menu. The **Additional Information** dialog box is displayed.
 - b) Complete the fields on the **Additional Information** dialog box as described in the *Adding Additional Information* section and select **OK**. The previous form is displayed.
 - c) Repeat steps a) and b) for each line to which you want to add additional information.
 - d) Proceed to step 6.
6. Save the formula.

Note: You can define Descriptive Flex Fields for this form. See the *Oracle® Applications User's Guide* for information on Descriptive Flex Fields.

Setting Up Formulas - What to Do Next

If the Effective Behavior field on the Configurations form was set to Manual entry, you must add an effectivity record for the formula before it can be used.

If the Effective Behavior field on the Configurations form was set to Displays on Save or Automatic Generation, an effectivity record has already been created. The formula will be ready to use beginning on the effectivity record's start date. For a full discussion of effectivity records (including information on editing or adding additional effectivity records), see the *Setting Up Effectivities* section.

Note: You can use the Attachments and Folders features to modify portions of this form. Attachments are only on the header and ingredients. Folders are only available on ingredients. See the *Oracle® Applications User's Guide* for more information.

Formula Flow - Ingredients to Products

Ingredients flow to finished goods (products) as follows:

1. Formula establishes relationship of ingredients to products
2. Batch record is a working copy of a formula
3. Batch ticket represents production batch
4. Ingredients are consumed by production
5. Products, coproducts and byproducts are yielded by production batch
6. Material planning is driven by coproducts
 - P/MRP does not consider *byproducts* when suggesting material replenishment
 - Cost of production is distributed over coproducts

Setting Up Formula Header and Products Information

Use the Formulas form to enter header and product information for a formula.

Setting Up Formula Header and Products Information - Procedure

Set up formula header and product information as follows:

1. Navigate to the **Formulas** form.
2. Complete the fields as described in the *Formulas Form - Fields* section.
3. Save the form.

Formulas Form- Fields

Formula

Enter the code for the formula you are adding or editing. Required.

Version

Enter the formula's version number. A formula is uniquely identified by the combination of formula code and version number. Required.

Description

Enter a description of the formula/version. This description is displayed on lookups. Required.

Comments

Enter any comments associated with the formula/version. These appear on this form only.

Formula Class

If you have set up formula classes and you want to associate this formula with a formula class, enter the code for the formula class. Classes are used for reporting purposes.

Scaling Allowed

Specify whether a batch can be scaled after it is initially created. The formula's effectivity record dictates the initial scale parameters. Scaling is the proportional increase or decrease of ingredient and product quantities. Select the check box if you want to allow scaling.

Required.

Inactive

Specify whether this formula is active or inactive. You cannot create a production batch based on an inactive formula. MRP and Costing will also not use inactive formulas. Select the check box if you want to make the formula inactive.

Required.

Seq

This field displays the line number for each product line. This field cannot be edited.

Effective Organization

Entries can only be made in this field when you are creating a formula. Specify the organization for which the formula will be effective.

Note: You can also edited this value by accessing Effective Organization from the Special menu

This field is actually part of the formula's effectivity record and not an attribute of the formula itself. It can only be edited when you are first creating a formula, because once you have saved a formula you can associate it with multiple effectivity records, and so the formula may be effective for multiple organizations. Note that to perform a Cost Rollup, you must specify an effective organization.

Formula Use

You can only edit this field when you are creating a formula, and only if the Effective Behavior field on the Configurations form was set to Displays on Save or Automatic Generation. Use this field to specify the use of this formula. Select on of the following uses:

- Production
- Planning
- Costing
- Regulatory

This field is actually part of the formula's effectivity record and not an attribute of the formula itself. It can only be edited when you are first creating a formula, because once you have saved a formula you can associate it with multiple effectivity records, and so the formula may be effective for multiple organizations. Note that to perform a Cost Rollup, you must specify an effective organization.

Item

Enter the code of the item(s) produced by this formula. If the formula code you entered is the same as an item code, that item code will display as the default in this field. Required.

Description

The item description of the product defaults from the Item Master table.

Quantity

Enter the quantity of the product that this formula yields. The quantity entered in this field will be the default standard quantity in the effectivity record, but can be changed on the Maintain Effectivities form. Required.

UOM

Enter the unit of measure in which the quantity you entered is expressed. The item's inventory unit of measure is the default. If you enter a different unit of measure, you must first have set up a unit of measure conversion between these two units of measure. Conversions between units of measure of the same unit of measure type (for example, both mass) are defined when the unit of measure is defined on the Unit of Measure form. Conversions between different unit of measure types must be defined for each item on the Item Lot/Sublot Std Conversion form

Required.

Find Formulas

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Formulas - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Formulas - Fields* topic.
3. Click **Find**.

Find Formulas - Fields

Formula

Enter all or part of the code for the formula.

Version

Enter the version number.

Product

Enter all or part of the item code for the primary product the formula is producing.

Formula Class

Enter all or part of the class code for the formula.

Scaling Allowed

Select Yes or No.

Inactive

Select Yes or No.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Formula Header and Products - Special Menu

Effectivities

Accesses the Maintain Effectivities form if there are one or zero effectivities associated with the formula, or the View Effectivities form if there are two or more effectivities associated with the formula. Use this option to associate effectivity records with the formula. See *Setting Up Effectivities*.

Specifications

Accesses the Production Specifications form. See the *Oracle® Process Manufacturing Quality Management User's Guide* for more information on specifications.

Samples

Accesses the Production Samples form. See the *Oracle® Processing Manufacturing Quality Management User's Guide* for more information on samples.

Results

Accesses the Production Results form. See the *Oracle® Process Manufacturing Quality Management User's Guide* for more information on results.

Additional Information

If the cursor is on a product line, this menu choice accesses the Additional Information dialog box, which allows you to enter additional information, such as scale type and release type, for each product line. This is described in detail later in this section.

Scale

Accesses the Scale Formula dialog box which allows you to scale the quantities of the ingredients, products, and byproducts in the formula. For more information, see the *Scaling and Theoretical Yield* section.

Theoretical Yield

Accesses the Calculate Theoretical Yield dialog box which allows calculation of the product quantities based on the ingredient quantities and a yield factor. For more information, see the *Scaling and Theoretical Yield* section.

Effective Organization

Enables you to access the Effective Organization field and allows you to specify the organization for which this formula is effective. This field can only be accessed when creating a new formula and if the FM Configuration form was set so that either the Maintain Effectivities form displays automatically on formula creation, or an effectivity record is created automatically on saving a formula. To specify the organization for which a formula is effective when you cannot use this menu option, select Effectivities from the Special menu and specify the effective organization on the Maintain Effectivities form.

Formula Use

Accesses the Formula Use field and allows you to specify the function for which this formula can be used (Production, Material Requirements Planning, Costing, or Material Safety Data Sheets). This menu option can only be used when adding a new formula. It can also only be used if the FM Configuration form was set so that either the Maintain Effectivity form displays automatically on formula creation, or an effectivity record is created automatically on saving a formula. To specify the formula use when you cannot use this menu option, select Effectivities from the Special menu and specify the formula use on the Maintain Effectivity form.

Adding Ingredients to Formulas

Use the Formula Ingredients form to enter ingredients and ingredient quantities for a formula.

The first two product lines, and the number of products, byproducts, and ingredients in the formula are displayed at the bottom of the form. These fields cannot be edited.

Notes: OPM provides an ingredient search and replace option which is discussed later on in this chapter.

You can use the Attachment and the Folders features to make modifications to this form. See the *Oracle Applications User's Guide* for more information.

Adding Ingredients - Procedure

Add ingredients to the formula as follows:

1. Navigate to the **Formula Ingredients** form.
2. Complete the fields as described in *the Formula Ingredients Form - Fields* topic.
3. Save the form.

Formula Ingredients Form - Fields

Formula

The formula code is displayed. This field cannot be edited.

Version

The version number of the formula is displayed. This field cannot be edited.

Seq

This field displays the line number for each ingredient line. This field cannot be edited.

Item

Enter the item codes of the ingredients in this formula. This information is validated against the Item Master.

Description

The item description of the ingredients defaults from the item master table. This field cannot be edited.

Quantity

Enter the quantity of each ingredient used in the formula. Required if you entered an ingredient.

UOM

Enter the unit of measure in which the quantity you entered is expressed. The item's inventory unit of measure is the default. If you enter a different unit of measure, you first must have set up a unit of measure conversion between these two units of measure. Conversions between units of measure of the same unit of measure type (for example, both mass) are defined when the unit of measure is defined on the Units of Measure form. Conversions between unit of measure types must be defined for each item on the Item Lot/Sublot Standard Conversion form.

Required if the ingredient is entered.

Formula Ingredients - Special Menu

Additional Information

If the cursor is on an ingredient line, this menu choice accesses the Additional Information dialog box, which allows you to enter additional information, such as scale type and release type, scrap factor, quantity and phantom type for each ingredient line. This is described in detail later in this section.

Scale

Accesses the Scale Formula dialog box which allows you to scale the quantities of the ingredients, products, and byproducts in the formula. See the *Scaling and Theoretical Yield* section for more information.

Theoretical Yield

Accesses the Calculate Theoretical Yield dialog box which allows calculation of the product quantities based on the ingredient quantities and a yield factor. See the Processing Scaling and Theoretical Yield section for more information.

Adding Byproducts to Formulas

Use the Formula By-products form to enter byproducts and byproduct quantities for a formula. Byproducts are items produced by a formula, but differ from products in that you do not plan your production to make byproducts, and you cannot cost byproducts.

The first two product lines, the number of products, byproducts, and ingredients in the formula are displayed at the bottom of the form. These fields cannot be edited.

You can access the header information by clicking Products. You can access the Formula Ingredients form by clicking Ingredients.

Adding Byproducts - Procedure

Add byproducts to the formula as follows:

1. Navigate to the **Formula By-Products** form.
2. Complete the fields as described in *the Formula By-Products Form - Fields* topic.
3. Save the form.

Formula By-Products Form - Fields

Formula

The formula code is displayed. This field cannot be edited.

Version

The version number of the formula is displayed. This field cannot be edited.

Seq

The line number for each byproduct line is displayed. This field cannot be edited.

Item

Enter the item codes of the byproducts produced by this formula.

Description

The item description of the byproducts defaults from the item master table. This field cannot be edited.

Quantity

Enter the quantity of each byproduct produced by the formula. Required if you entered a byproduct.

UOM

Enter the unit of measure in which the quantity you entered is expressed. The item's inventory unit of measure is the default. If you enter a different unit of measure, you must first have set up a unit of measure conversion between these two units of measure. Conversions between units of measure of the same unit of measure type (for example, both mass) are defined when the unit of measure is defined on the Units of Measure form. Conversions between unit of measure types must be defined for each item on the Item Lot/Sublot Standard Conversion form

Required if you entered a byproduct.

By-Products - Special Menu

Additional Information

If the cursor is on a byproduct, this menu choice accesses the Additional Information dialog box, which allows you to enter additional information, such as scale type and release type, for each byproduct line. This is described in detail later in this section.

Scale

Accesses the Scale Formula dialog box which allows you to scale the quantities of the ingredients, products, and byproducts in the formula. See the *Scaling and Theoretical Yield* section for more information.

Theoretical Yield

Accesses the Calculate Theoretic Yield dialog box which allows calculation of the product quantities based on the ingredient quantities and a yield factor. See the *Scaling and Theoretical Yield* section for more information.

Adding Additional Information to Formulas

You can add additional information for any line in a formula (product, ingredient, or byproduct) by placing the cursor on that line and selecting Additional Information from the Special menu. The fields that appear in the dialog box depend on which form you are on.

To add information for a product you must be on the Formulas form, to add information to an ingredient you must be on the Formula Ingredients form, and to select a byproduct you must be on the Formula By-products form.

Adding Additional Information - Procedure

Add additional information as follows:

1. Navigate to the form (Formula, Ingredient, By-product) on which you want to add additional information.
2. Complete fields as described in the Fields section.
3. Click **OK**.

Additional Information Dialog Box - Fields

Item

The code of the item on the line you selected displays from the previous screen. This field cannot be edited.

Description

The description of the item on the line you selected displays from the previous screen. This field cannot be edited.

Quantity

The quantity of the item on the line you selected displays from the previous screen. This field cannot be edited.

Scrap Factor

(Ingredients Additional Information dialog box only)

Enter the scrap factor for this formula item, expressed as a percentage (ex. 5% is entered as 5). The value entered should represent the anticipated amount of ingredient loss during manufacturing.

This field works in conjunction with the Required Quantity field. When the scrap factor percentage is entered, the required quantity will automatically be calculated using the following algorithm:

$$\text{required_qty} = \text{formula_quantity} * (1 + \text{scrap_factor}\%)$$

Required Quantity

(Ingredients Additional Information dialog box only).

Enter the ingredient quantity required for manufacturing. The value entered should represent the amount of an ingredient needed to manufacture a given product. This includes the scrap, the amount of anticipated ingredient loss during manufacturing.

This field works in conjunction with the Scrap Factor field. When the required quantity is entered, the scrap factor value will be automatically calculated using the following algorithm:

$$\text{scrap_factor}\% = (\text{required_quantity} / \text{formula_quantity}) - 1$$

Scale Type

If scaling was enabled on the Formulas form, specify the scale type for this formula line item. Select one of the following:

- Fixed Quantity
- Linear Scaling

Fixed quantity means that this item is not scaled (remains fixed) when the formula is scaled.

Linear scaling means that this item (ingredient) is scaled when the formula is scaled.

For more information on scaling, see the *Scaling and Theoretical Yield* section.

Release Type

Select one of the following the release types for this ingredient line:

- **Automatic Release**
Automatic release, when set for an ingredient line, means that this ingredient line will be released for production when a batch which uses this formula is released.
- **Manual Release**
Manual release, when set for an ingredient line, means that this ingredient line must be released individually in a batch which uses this formula.
- **Incremental Release**
Incremental, when set for an ingredient, means that the line will be released incrementally based on entries made using Partial Certification

For example, if you have an ingredient that must undergo lengthy preparation, you may want to release that line first and wait to release the rest of the batch until preparation is complete. You can also use manual release for partial releases of an ingredient, that is, to release the ingredient quantity a bit at a time.

When used on product lines, manual release allows you to do partial certification of a batch. This is useful for long batches or continuous processing, in which you want to record the fact that a certain amount of the product was yielded without having to wait until the entire batch is complete.

If you do not set this flag on this form, the lines default the type defined by FM\$DEFAULT_RELEASE_TYPE in your System Profile Value. See the *System Administration* guide for more information. release.

Note: . See the Partial Certification and Backflushing section in the *Oracle® Process Manufacturing Production Management* user's guide.

Phantom Type

You can only edit this field on the Ingredient Additional Information box. Designate the phantom type you want to use. You have three options:

- Not a phantom
- Auto-Generate Phantom Batches
- Manually Generated Phantom Batches

When you Auto-Generate Phantom Batches the system will create a dependent phantom batch and generate a production ID number to associate the related batches.

When you select Manually Generated Phantom Batches you will have to explode each phantom ingredient by selecting the Create Phantom menu option.

See the next section for more information on phantoms.

Rework Type

This field is used for reporting purposes only. You may enter a description of the rework type here.

Cost Allocation

This field only displays when you access the Additional Information dialog box from a product line on the Formulas form. Specify how the cost should be proportioned across each of your co-products. By default 100% of the cost is assigned to the product on the first line.

Formula Phantoms

Phantoms are intermediate formulas that you either don't actually manufacture as a product or don't make until you're ready to use them. They're not tracked in inventory, but their ingredients are. A phantom is made only during the production of another product, and may also be known as a transient subassembly or a blowthrough.

Enter the phantoms as formula ingredients and explode them when you enter batch tickets.

Phantom functionality is a fixed method of multi-batch management. Once several batches are linked by a production order number and the phantom type dependency, you can manage them as a single production event. There are two basic tasks associated with using phantoms in FM. They are:

- Identify one or more ingredients in a formula as phantom(s)
Use the Phantom Type field on the Ingredient Form's Additional Information dialog box to indicate that an item is a phantom.
- Build a formula for each phantom and create effectivities
The method for building a formula that will generate a phantom is the same method used to build a formula for a regular batch. However, the formula ingredient must be defined as a phantom in the Additional Information dialog box on the Formula form. There are two types of phantoms, Auto-Generate Phantom Batches and Manually Generated Phantom Batches. Both are described in more detail below.

Auto-Generate Phantom Batches

When you use the Auto-Generate Phantom Batches function with automatic document numbering, the system automatically creates a dependent phantom batch and generates a production ID number to associate the related batches. Choose Automatic Generation at the Phantom Type field to indicate this phantom as an automatic-Generate phantom.

Manually Generated Phantom Batches

When you use the Manually Generated Phantom Batches function, you will have to explode each phantom ingredient by selecting the Special > Phantom. When you release a production batch that has phantoms in its formula, the system will tell you that the phantom has not been exploded. This message can appear for one of two reasons:

- It is a manual phantom that you need to explode using the Special menu's Edit Phantom option.
- There is some problem with the phantom, for example, the effectivity is not available, or there is some kind of inventory shortage that affects that production of the phantom.

Examples of Phantoms

Some examples of phantoms are described in the following sections.

A Phantom You Make When It's Used

You use a basic bread dough for a number of kinds of bread. You don't sell it or keep it in inventory; you track only the ingredients. Your formulas for bread contain #BASICBREAD plus whatever other ingredients are needed to turn it into something besides plain white bread.

In a simple case like this, you may need only one version of the #BASICBREAD formula.

A Phantom You Never Actually Make

You make a number of products that use apples. Each product has a different formula, but all of them use apples. However, there are many varieties of apples. Flavor, texture, and sugar content vary significantly among varieties. Price and availability may also vary depending on season or other factors. Therefore, you decide to use an intermediate called #APPLEBLEND, which is made up of two or more varieties.

You don't actually make #APPLEBLEND. What you do is use its ingredients in a batch.

Ingredient Search and Replace

OPM provides a search and replace feature for ingredients in a formula. Use Ingredient Search and Replace to change an ingredient in one, all or a range of formulas. You might want to change an ingredient if the original ingredient is unavailable or environmental factors dictate that you use a different ingredient or for regulatory reasons. Ingredient Search and Replace consists of two forms. At the first form, you enter the search and replace criteria: the old and new ingredients, the formula selection criteria, and effectivity criteria. The second Ingredient Search and Replace form displays the formulas that meet the entered search criteria and enables you to enter the quantity for the new ingredient and create a new formula version.

Note: This is called Item Search/Replace on the Formula Management menu.

Ingredient Search and Replace - Procedure

1. Search and replace ingredients in a formula as follows:
2. Navigate to the **Ingredient Search\Replace** dialog box.
3. At the first **Ingredient Search and Replace** dialog box, enter the ingredient you want to replace in the **Old Ingredient** field.
4. Enter the new ingredient in the **New Ingredient** field and if necessary, enter a scaling factor for the new ingredient.
5. In the Formula **From** and **To** fields, enter a single formula and version or a range of formulas and versions. To specify, all formulas, leave the range fields blank.
6. At the Formula Effectivity panel, select the effectivity criteria for the formulas OPM searches. You can select one or a combination of effectivity search criteria:
 - Previously Effective Formula
 - Currently Effective Formula
 - Future Effective Formula
 - Never Effective Formula

Note: For information on effectivities, refer to the *Setting Up Effectivities* section.

7. At the Formula Used In panel, select the usage of the formulas OPM searches. You can select one or any combination of formula usage search criteria:
 - Production
 - Planning
 - Costing
 - Regulatory
8. At the Formula Effectivity panel, select to create a new formula with the new ingredient without an effectivity or a formula with the 'remaining' effectivity and select **OK**.
9. At the second **Ingredient Search and Replace** dialog box, click the Selection box next to each formula whose ingredient you want to replace. Enter the quantity of the new ingredient for each formula you want to change in the **Quantity** field in the New Ingredient area and **Save** the form. When you save the form, OPM searches the database for formulas with the criteria you selected and replaces the old ingredient with the new ingredient. When the process is finished, a message is displayed that a new formula has been created

Ingredient Search and Replace Form (1st)

This section describes the fields on the initial Ingredient Search and Replace Form.

Ingredient Search and Replace Form (1st) - Fields

In the top section of the form, you enter ingredient search criteria:

Organization

The user organization. For display only.

Old Ingredient

Enter the item code of ingredient you want to replace. The description of the ingredient displays. Required.

New Ingredient

Enter the item code of new ingredient. The description of the ingredient displays. Required.

Scaling Factor

Enter a scaling factor if the new ingredient needs to be scaled. Default to 1 or equal to quantity of old ingredient.

Formula

Enter a single formula or a range of formulas in the From and To fields. Leaving these fields blanks indicates that all formulas. Required.

Version (Formula)

Enter a single version or a range of versions in the From and To fields. Required.

Previously Effective Formula

Select this check box if you want OPM to search formulas whose effectivity dates are expired.

Currently Effective Formula

Select this check box if you want OPM to search formulas that are currently effective.

Future Effective Formula

Select this check box if you want OPM to search formulas whose effectivity dates fall in the future.

Never Effective Formula

Select this check box if you want OPM to search formulas that do not have effectivities.

Production

Select this check box if you want OPM to search formulas that are flagged for production usage.

Planning

Select this check box if you want OPM to search formulas that are flagged for MRP usage.

Costing

Select this check box if you want OPM to search formulas that are flagged for Costing usage.

Regulatory

Select this check box if you want OPM to search formulas that are flagged for Regulatory.

Ingredient Search and Replace Form (2nd)

After you enter the information on the first Ingredient Search and Replace form, a second form displays the following information.

Ingredient Search and Replace Form (2nd) - Fields

Old Ingredient

Displays the old ingredient's item code and description.

New Ingredient

Displays the new ingredient's item code and description.

Scaling Factor

Displays the scaling factor you selected for the new ingredient.

Candidates

Displays how many formulas met the search criteria.

(Old Ingredient) Formula

Lists the name of for the formula that contains the old ingredient.

(Old Ingredient) Version

Lists the version number of the old formula.

Line

Lists the line in the formula on which the old ingredient appears.

(Old Ingredient) Quantity

Lists the formula quantity of the old ingredient.

UOM

Displays the unit of measure for the old ingredient quantity.

(New Ingredient) Quantity

Enter the quantity of the ingredient defaults to old quantity times the scale factor.

UOM

Defaults to the unit of measure for the new ingredient quantity but can be edited if the proper conversions are set up.

New Version

OPM assigns a version number when you Save the form.

Routings Setup

Routings Overview

This section describes how to set up routings. Whereas a formula defines ingredients used to manufacture a product, a routing defines the method or steps that are taken to manufacture that product.

Routings consist of operation steps made up of activities. The first step in creating a routing is defining activities. These are actions which are taken during production, such as mixing or cooling. Activities should be divided by logical breakpoints, such as where measurements are taken. Activities are then associated with resources to form operations.

The next step in you take is to define resources. A resource is what is used to perform the activity. A resource might be a person (labor) or a piece of equipment. For example, a mixer (resource) might be associated with mixing (activity) to define the mixing operation. Resources are defined in the CRP module.

Next, you define the operations which contain the activities. Operations are steps in the routing. The different operations you define are linked to define a routing.

Last you create the routings by defining it's logical steps (operations).

OPM uses routings to include the noninventory costs associated with the manufacturing process as part of product cost rollups. See the *Oracle® Process Manufacturing Costing Management User's Guide* for more information on cost rollups.

Defining Routings - Process Flow

Note: You must define resources in the CRP module before you set up operations.

1. Navigate to the **Activities** form and complete the fields as described in the *Activities - Fields* section and save the form.
2. Navigate to the **Resources** form and complete the fields as described in the *Resources - Fields* section and save the form.
3. Navigate to the **Operations** form and complete the fields on the **Operations** form as described in the *Operations - Field* section. Proceed accordingly:
 - If you want to add additional information (such as scale type) for any line in the operation, proceed to step 4.
 - If you do not want to add additional information, proceed to step 5.
4. Add additional information as follows:
 - a) Place the cursor on the line to which you want to add additional information and select **Additional Information** from the **Special** menu.
 - b) Complete the fields on the **Additional Information** box as described in the *Additional Information - Fields* section and select **OK**.
 - c) Repeat Steps a and b for each line to which you want to add additional information.
 - d) Proceed to step 5.
5. Save the **Operation** form.
6. Select **Routing** from the **Formula Management** main menu.
7. Complete the fields as described in the *Setting Up Routings* section and save the routing.

Setting Up Activities

Activities are actions performed during production, for example, mixing or cooling. They should be divided by logical breakpoints in the manufacturing process.

Note: If you are interfacing OPM CRP with Rhythm Factory Planner, the only activities which OPM exports to Rhythm are POST-OP, RUN-TIME and SET-UP.

You assign cost analysis codes to activities. Cost analysis codes determine how the costs associated with an activity are calculated and processed by the Costing module. See the *Oracle® Process Manufacturing Costing Management User's Guide* for the Cost Analysis Codes form for more information about cost analysis codes.

Setting Up Activities - Procedure

Set up activities as follows:

1. Navigate to the **Activities** form.
2. Complete the fields as described in the *Activities Form - Fields* topic.
3. Save the form.

Activities Form - Fields

Activity Code

Type the name of the activity. Activities are the components which make up an operation. Required

Description

Enter a brief description of the activity. Required.

Analysis Code

Enter the cost analysis code. Required.

Find Activities

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Activities - Procedure

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Activities - Fields* topic.
3. Click **Find**.

Find Activities - Fields

Activity

Enter all or part of a code for an activity.

Description

Enter all or part of the text of the description of an activity.

Analysis Code

Enter all or part of an analysis code.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Activities - What to Do Next

Define resources and then set up operations. Operations associate activities with the resources used to perform the activities.

Setting Up Resources

Resources are the assets you use to produce your product such as production equipment and labor. To create operations you need to set up resources first. Resources are the machinery or labor that perform the activities in the operation.

You set up Resources on the CRP module. You may define each resource very generally (for example, "OVENS") or specifically ("OVEN1, OVEN2, and so on.) For each resource you must assign a component classification for costing purposes.

For more information on resources, refer to the *Oracle® Process Manufacturing Process Capacity Requirements Planning User's Guide*.

Setting Up Resources - Procedure

Set up resources as follows:

1. Navigate to the **Resources** form.
2. Complete the fields as described in the *Resources Form - Fields* section.
3. Save the form.

Resources Form - Fields

Resource

Enter the code by which you identify this resource. Required.

Description

Enter a brief description of the resource you are adding. Required.

Standard UOM

Indicate the valid unit of measure (for example, hours) by which you measure output of this resource. Note that if you are using OPM with the Rhythm Interface product, Rhythm only recognizes "HR" (for hours) as a valid unit for capacity resource reporting. Required.

Resource Class

You may specify the resource class to which this resource belongs. For example, the resource "Chefs" may be included in the resource class "Labor".

Component Class

A component class links this individual resource to a unit of measure, and allows you to establish costing parameters for the resource in the Costing module. Required.

Find Resources

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Resources - Procedure

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Resources - Fields* topic.
3. Click **Find**.

Find Resources - Fields

Resource

Enter all or part of the resource code.

Description

Enter all or part of the text of the description for the resource code.

Standard UOM

Enter all or part of the standard UOM. This will usually be a unit of time.

Resource Class

Enter all or part of the resource class code.

Cost Component Class

Enter all or part of the cost component class code.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Resources - What to Do Next

After you define resources you may want to define alternate resources. An alternate resource can perform the same operation as a primary resource. Alternate resources are defined on the Capacity Management Alternate Resource form. For more information, refer to *the Oracle® Process Manufacturing Capacity Requirements Planning User's Guide*. If you don't want to set up alternate resources, set up operations next.

Setting Up Operations

Define operations on the Operations form. An operation is a combination of one or more activities performed in production batch and the resources used to perform those activities. A resource can be any noninventory item used in production, such as a blender or oven. For example, the operation of mixing is composed of the activity of mixing and the mixer (resource) used to perform the mixing.

Note: You can use the Attachment feature on this form. See the *Oracle Applications User's Guide* for more information.

Setting Up Operations - Procedure

Set up operations as follows:

1. Navigate to the **Operations** form.
2. Complete the fields as described in the *Operations Form - Fields* topic.
3. Save the form.

Operations Form - Fields

Operation

Enter the code for this operation. Required.

Description

Enter a brief description of this operation. Required.

Operation Class

Enter the operation class in which this operation is categorized.

Process Qty UOM

Enter the unit of measure in which the flow of production or throughput for this operation will be measured. Required.

Resource

Enter the code for each resource used in this operation. Required.

Activity

Enter the code for the activity which the resource performs.

Count

Enter the number of these resources needed for the activity entered on this line. For example, if two identical blenders are used for mixing, enter "2".

Offset

Time delay from the start of the step until the resource is required. This parameter is used by POC.

Scale Type

Designate whether scaling will be used to determine resource quantity. Scaling is the proportional increase or decrease of resources. Setup and cleanup activities are typically not scaled, while manufacturing activities are.

You may select one of the following from the list:

- Fixed
- Linear

Fixed scaling means that, for this resource, the resource usage does not change, regardless of an increase or decrease of the quantity of material processed.

Linear scaling means that, if you double the process quantity for an operation, the resources are doubled; if you use half as much process quantity, you use half as much resources.

Required.

For more information on scaling, refer to the *Scaling and Theoretical Yield* section.

Process Quantity

Enter the processing quantity for the resource. This quantity, combined with the value in the Usage field, defines the use rate. For example, if the resource can mix 200 gallons per hour, enter 200 gallons in this field and 1 hour in the Usage field.

UOM

The unit of measure of the process quantity. This is the same as the UOM entered in the header information described above. Required.

Usage

Enter the resource usage required for the process quantity. This is usually measured in time, but may be measured in other units. If you are using CRP you must set this field as a unit of time.

For example, if the resource can mix 200 gallons per hour, enter 200 in the Process Quantity field and 1.

UOM

Enter the unit of measure the usage is measured in. This is usually a time unit of measure such as hours.

Cost Analysis Code

Enter the cost analysis code for the activity defaults from the Activity form. This code allows the Costing module to roll up the costs associated with an operation by cost analysis code. Analysis codes are set up in the Costing module.

You can override the default cost analysis code by changing this field.

Required.

Component Class Code

The component class code for the resource defaults from the Resource form. Component classes are used to categorize different classes of resources. See the *Oracle® Process Manufacturing Cost Management User's Guide* and the online help for the Cost Component Classes form for more information on component classes.

You can override the default component class code by changing this field.

Required.

Plan Type

Designate whether this resource is a primary resource. From the list, you can select:

- Primary resource

The primary resource is the rate determining resource. It limits or determines throughput. It is also referred to as a bottleneck or a critical resource. We recommend that for each operation in a routing, you flag the RUN-TIME Activity's resource as the primary resource (this is especially recommended if you use CRP.)

- Secondary resource

A secondary resource is one which would replace a primary resource when the primary resource is not available. It performs the same task as the primary resource and may have a different usage rate.

- Auxiliary resource

The term auxiliary resource is used for Capacity Planner purposes. On the Operations form, you need to flag resources as either primary or auxiliary resources when setting up resource/activity pairs. Auxiliary resources work along with the primary resources to perform an activity in an operation. They do not affect the rate of the operation. For example a primary resource in a mixing activity might be a mixer which at 100 gals/hour. The auxiliary resource might be a worker who operates the mixer. No matter how fast or slow to worker is the rate of the mixer remains the same.

Note: Capacity Planner does *not* allow multiple *primary* resource/activity pairs in a step. It does allow one primary resource and 3 auxiliary resources. For more information on setting up resources, refer to the Oracle Process Manufacturing Capacity Planner User's Guide help.

Count

Enter the number of these resources needed for the activity entered on this line. For example, if two identical blenders are used for mixing, enter "2".

Note: Capacity Planner does not consider the entry in the **Count** field.

Find Operations

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Operations - Procedure

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Operations - Fields* topic.
3. Click **Find**.

Find Operations - Fields

Operation

Enter all or part of an operation code.

Description

Enter all of an operation description.

Operation Class

Enter all or part of the operation class code.

Resource

Enter all or part of the code for the resource.

Activity

Enter the all or part of code for the activity which the resource performs.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Operations - What to Do Next

- After you have defined operations, you may want to define alternate resources. Alternate resources are defined on the CRP menu (see the *Oracle® Process Manufacturing Capacity Requirements Planning User's Guide*). You can also define alternate resources and link them to a specific operation using the Operation Alternate Resource form.
- After you have defined operations, create a routing which specifies the sequence of operations performed during manufacturing. Routings are defined on the Routings form

Operations - Special Menu

Specification

Accesses the Production Specifications form. See the *Oracle® Process Manufacturing Quality Management User's Guide* for more information on samples.

Samples

Accesses the Production Samples form. See the *Oracle® Process Manufacturing Quality Management User's Guide* for more information on results.

Results

Accesses the Production Results form. See the *Oracle® Process Manufacturing Quality Management User's Guide* for more information on results.

Operation Alternate Resources

Accesses the Operation Alternate Resource form. See the next section for more information.

Setting Up Alternate Resources (Optional)

The Operation Alternate Resources form enables you to link alternate resources to a specific operation. At this form, you may set the factors (against the primary resources) for runtime, setup and post operation for the alternate resource. This form is accessed from the Formulas menu or from the Operations forms Special menu.

Setting Up Operation Alternate Resources - Procedure

Set up alternate resources as follows:

1. Navigate to the **Operation Alternate Resource** form.
2. Complete the fields as described in the Fields section.
3. Save the form.
4. Enter the time factors for the alternate resource in the **Runtime**, **Setup** and **Post Operation** fields. For example, if the primary resource has a runtime of 1 hour and the alternate resource has a runtime of 1 hour and 30 minutes, the factor is 1.5.
5. Save the form.

Operation Alternate Resources Form - Fields

Operation

Enter the identifying code of the operation. For example, MIX.

Resource

Enter the name of the main resource. For example, MIXER1. This primary resource/alternate resource relationship must already be established on the CRP Alternate Resource form

Resource

Enter the name of the alternate resource. For example, MIXER2.

Runtime

(Factor)

Enter the time factor for the alternate resource's runtime.. For example, the main resource takes 1 hour to run through an operation. The alternate resource takes 1 hour and 30 minutes. The factor is 1.5.

Setup

(Factor)

Enter the time factor for the alternate resource's setup time. For example, the main resource takes 1 hour set up. The alternate resource takes 1 hour and 30 minutes. The factor is 1.5.

Post Operation

(Factor)

Enter the time factor for the alternate resource's post operation time. For example, the main resource takes 1 hour to clean. The alternate resource takes 1 hour and 30 minutes. The factor is 1.5.

Find Operation Alternate Resource

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Operations - Procedure

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Operation Alternate Resource - Fields* topic.
3. Click **Find**.

Find Operation Alternate Resource- Fields

Operation

Enter all or part of an operation code.

Resource

Enter all or part of the code for the resource.

Setting Up Routings

A routing represents the sequence of operations or steps used during the manufacturing process. For example, the routing for making cookies might consist of mixing the ingredients in a mixer, cutting the dough into cookie shapes, and baking in an oven.

Define routings on the Routings form. On this form, you specify each operation in sequential order, the operation quantity, and the total routing quantity.

When a routing is associated with a formula through an effectivity record, the nonmaterial costs (routing costs) incurred in the production of the product(s) made by the formula are calculated by the Costing module. You link routings to formulas on the Maintain Effectivities form.

Note: You can use the Attachments feature with the Routings form. For more information on Attachments see the *Oracle® Applications User's Guide*.

Setting Up Routings - Procedure

Set up routings as follows:

1. Navigate to the **Routings** form.
2. Complete the fields as described in the Fields section.
3. Save the form.

Routings Form - Fields

Routing Number

Enter the code for the routing to be added or edited. Required.

Routing Version

Enter the version number of the routing to be added or edited. A routing is uniquely identified by the combination of routing code and version number. Required.

Description

Enter the description of the routing. Required.

Routing Class

Enter the code of the routing class in which this routing is categorized. Routing classes are set up on the Routing Class form. Required.

Routing Quantity

Enter the product quantity for this routing. This is the total quantity for the routing. This quantity is used to scale individual step requirements. Required.

Enter the unit of measure in which the routing quantity is expressed in the field to the right of the Routing Quantity field. Required.

Step

Enter the step number. If the operations in the routing are performed in sequential order, the first operation performed in the routing should have the number "10," the second should have the number "20," and so forth. This allows you to add intermediate steps later. Required.

Operation

Enter the code for the operation performed in this step in the routing. Required.

Description

The description of the operation is displayed.

Step Quantity

Enter the operation quantity associated with this routing step.

UOM

This defaults from the process quantity unit of measure entered on the Operations form and cannot be changed.

Note: You can use the Attachments feature with the Routings form header information

Find Routings

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Find Routings - Procedure

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Routings - Fields* topic.
3. Click **Find**.

Find Routings - Fields

Routing Number

Enter all or part of a valid code for the routing to be added or edited.

Routing Version

Enter all or part of a valid version number of the routing to be added or edited.

Description

Enter all or part of a description of the routing.

Routing Class

Enter all or part of a valid code of the routing class in which this routing is categorized.

UOM

Enter all or part of the process quantity unit which was entered on the Operations form.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Routings - What to Do Next

After you have set up routings, you can associate formulas used to make products with the routings used with those formulas. In other words, you link the list of ingredients and products (the formula) with the sequence of operations (routing) performed on the ingredients to make the products. Formulas and routings are linked on the Maintain Effectivities form. Refer to the section on *Effectivities Setup* for more information on linking formulas and routings.

Effectivities Setup

Effectivity Records Overview

Effectivity records specify when, under what conditions, and for what use a particular formula can be used. For example, you may have two different production lines which produce the same product. One line produces 50 kilogram batches and the other produces 500 kilogram batches. The ratio of the ingredient quantities may differ depending on the size of the batch. In this case, you need either two formulas or two versions of a formula to produce the product. You must specify, by creating effectivity records, that the first formula is used when producing 50 kilograms of the product and the second formula is used when producing 500 kilograms of the product.

Your effectivity records would also specify that the 50 kilogram batches use the first production line and the 500 kilogram batches use the second production line. You would specify the production lines by entering the routing corresponding to the first production line in the effectivity record for the first formula and the routing corresponding to the second production line in the effectivity record for the second formula.

Another example of the use of effectivities is restricting formula use by date. For example, you may have a formula which uses a chlorofluorocarbon. Government regulations stipulate that this compound cannot be used after a certain date, so you define a formula which uses a substitute compound. You intend to use the first formula until the new regulations take effect, and then switch to the other formula. You would set the end date of the effectivity for the first formula to the last date the chlorofluorocarbon can be used, and the start date of the effectivity for the second formula to the date the regulations go into effect.

Sometimes formulas can have overlapping effectivities. For example, you may have one formula that is effective for quantities from 10 to 100 pounds and another which is effective for quantities from 50 to 500 pounds. If you are using MRP, it must be able to decide which formula to use when planning. If more than one formula qualifies, there will be a conflict which MRP cannot resolve. Therefore, you should specify which formula is preferred when more than one can be used. Oracle Process Manufacturing provides a field on the effectivity record to indicate this preference.

When you copy a formula, you also copy the formula's configuration attributes and the behavior it defines. For example, if you copy a formula with an effectivity behavior of Manual Entry, then you must create an effectivity for the new formula by selecting Effectivities. But if the formula you copied has a behavior of Automatic Generation, then the new formula will also have that behavior and the list will not display.

Formula Use - Effectivities

In addition to specifying the conditions under which formulas can be used, effectivity records also specify the purpose for which formulas can be used (referred to as the formula use). In addition to serving as the basis for batches in the Production Management module, formulas are also used by the MRP (material planning) module for material requirements planning and by the Costing module for calculating cost rollups.

Planning Effectivity

If you do not set up a planning effectivity for MRP in addition to the formula effectivity for production, when you run MRP it will use the production effectivity. This works fine for many business situations. However, there are some situations in which you may want MRP to perform its calculations based on different formulas than those used by Production. For example, you may want MRP to use one, standard formula for planning production of a certain product, even though slightly different formulas are used under different conditions or by different plants. In this case, you must set up this standard formula and create a formula effectivity record which specifies a formula use of Planning. This formula will then be used by MRP instead of the production formulas for planning production of the product.

Costing Effectivity

To perform costing calculations, such as product cost rollups, an effectivity record which specifies a formula use of costing can be set up. If you want Costing to use the same formulas as Production, you can use or simply copy the Production effectivities and save as a Costing effectivity. However, if you want to use a standard costing formula for a product even though different formulas are used in Production under different circumstances or in different plants, you must set up the formula to be used specifically for costing, and create an effectivity record which specifies that this formula is to be used for costing this product under all situations.

Note: You must enter a specific organization code in the Organization field when creating a Costing Effectivity, otherwise the costing rollup process will not work.

Regulatory Effectivity

Choose regulatory if you need to build formulas for regulatory purposes. For more information on the Regulatory module see *the Oracle Process Manufacturing Regulatory Management User's Guide*.

Effectivities - Set Up Methods

Effectivity records can be set up in several ways, depending on how you set the Effective Behavior field on the Formulas form.

If the Effective Behavior field is set to Manual Entry, you must set up effectivity records manually after you save a formula. There are two ways you can manually set up the effectivity record.

- Retrieve the formula using the Formulas form, and select Effectivities from the Special menu. The Select Effectivities form is displayed. Enter the item which you are establishing effective ways to produce, and any other selection criteria, and select Accept.
- Select Effectivities from the Formulas menu. The Select Effectivity box is displayed. Enter the item which you are establishing effective ways to produce, and any other selection criteria, and select Accept.

If the Effective Behavior field is set to Display on Save, the Maintain Effectivities form is automatically displayed when you try to access the Formula Ingredients form when entering a formula. You can still edit or add additional effectivities manually.

If the Effective Behavior field is set to Automatic Generation, an effectivity record is automatically created when you save a new formula. You can still edit or add additional effectivities manually.

A formula cannot be used until an effectivity record is set up for it.

Setting Up Formula Effectivities

Use this form to specify the item for which you want to view, add, or edit effectivities. You must also specify the formula use for the effectivities. In addition, you can limit the list of effectivities by several selection criteria described below.

If only one effectivity record exists for the criteria specified on this box, the Maintain Effectivities form is displayed. If more than one effectivity record exists for the specified criteria, the View Effectivities form is displayed.

Setting Up Formula Effectivities - Procedure

To add, edit, or view effectivities:

1. Navigate to the **Select Effectivities** box.
2. Enter the product name in the **Item** field.
3. Indicate whether the effectivity you want to view or create is for **Production, Planning, Costing** or **Regulatory** use.
4. Complete the fields on the Select Effectivity box as described on the Fields section.
5. Select **OK**. Proceed accordingly:
 - If more than one effectivity record already meets the criteria entered, the View Effectivities form is displayed. On this form, click the box next to the formula for which you want the Maintain Effectivities form to display.
 - If no effectivities or only one effectivity record meets the criteria entered, the Maintain Effectivities form is displayed.

Select Effectivity - Fields

Item

Enter the code for the desired item. Effectivity records for formulas which produce this item will be displayed. Required.

Formula Use

Indicate the formula use for which you want to view effectivities. You may select one of the following from the list:

- Production
- Planning
- Costing
- Regulatory

Organization

Enter a single organization or enter the beginning and ending organization codes in the From and To fields. To indicate All, leave the field blank.

Effective Quantity

Enter a single quantity or enter the beginning and ending quantities in the From and To fields. To indicate All, leave both the From and To fields blank.

Effective Date

Enter a single date or enter the beginning and ending dates in the From and To fields. To indicate All, leave both the From and To fields blank.

Formula

Enter a single formula or enter the beginning and ending formulas in the From and To fields. To indicate All, leave both the From and To fields blank.

Routing No

Enter a single routing or enter the beginning and ending routing codes in the From and To fields. To indicate All, leave both the From and To fields blank.

Customer

Enter a single customer or enter the beginning and ending customers in the From and To fields. To indicate All, leave both the From and To fields blank.

Formula Effectivities - What to Do Next

If more than one effectivity record meets the criteria entered, the View Effectivities form is displayed.

If zero or one effectivity record meets the criteria entered, the Maintain Effectivities form is displayed.

Viewing Effectivities

Use this box to select from a list of effectivities for the item you want to produce. You can access this form in several ways:

- By selecting Effectivities from the Formula Management main menu, completing the Select Effectivity box, and clicking OK. The View Effectivities box is only displayed if there is more than one effectivity record that meets the specified criteria. Otherwise, the Maintain Effectivities form is displayed.
- By selecting Effectivities from the Special menu on the Formulas form. The View Effectivities box is only displayed if there is more than one effectivity record associated with the formula. Otherwise, the Maintain Effectivities form is displayed.

Once this form is displayed, you click the selection box of the effectivity you want to display. All of the fields on the View Effectivities form are display-only.

View Effectivities - Fields

Item

The code identifying the formula to which this effectivity record applies is displayed. If you accessed this form from the Formulas form, this field cannot be edited.

Description

The description of the item. This is populated from the item master record.

Organization

The organization code for this effectivity record is displayed. If this field is blank, the effectivity record applies to all organizations.

Min Qty

The minimum production quantity for which this formula is effective is displayed.

Max Qty

The maximum production quantity for which this formula is effective is displayed.

UOM

Unit of measure of the item in the formula record.

Formula Use

One of the following formula uses displays:

- Production
- Planning
- Costing
- Regulatory

Standard Quantity

The standard production quantity for which this formula is effective is displayed.

Preference

The preference number for the effectivity record is displayed. This prioritizes effectivity records when multiple effectivity records are valid for a given set of conditions. The lower the preference number, the higher the priority

Effectivity Dates

The start and end dates for the effectivity are displayed.

Customer

The customer code specified on the effectivity record is displayed. This information is validated from Accounts Receivable tables.

Adding and Editing Effectivities

The Maintain Effectivities form is used to define the conditions under which a formula can be used. This form can be accessed in several ways:

- By selecting Effectivities from the Formula Management main menu, completing the Select Effectivity box, and selecting OK. If there is more than one effectivity that meets the criteria specified on the box, the View Effectivities form will display first.
- By selecting Effectivities from the Special menu on the Formulas form. If there is more than one effectivity associated with the formula, the View Effectivities form will display first.
- By selecting an effectivity from the View Effectivities form.
- By clicking Ingredients on the Formulas form when adding a new formula/version, if the Effective Behavior field on the Configurations form was set to Maintain Effectivities.

Maintain Effectivities Form - Procedures

To add an effectivity record:

1. Navigate to the **Maintain Effectivities** form.
2. Complete the fields as described in the Fields section.
3. Save the effectivity record. The **View Effectivities** box or the **Formula** form is displayed, depending on how you accessed the Maintain Effectivities form.

To edit an effectivity record:

1. Navigate to the **Maintain Effectivities** form.
2. Complete the fields as described in the fields sections.
3. Save the effectivity record. The **View Effectivities** box or the **Formulas** form is displayed, depending on how you accessed the **Maintain Effectivities** form.

Maintain Effectivities Form - Fields

Formula

The code identifying the formula to which this effectivity record applies is displayed. If you accessed this form from the Formulas form, this field cannot be edited. Required.

Version

The version of the formula to which this effectivity record applies is displayed. This field cannot be edited if you accessed this form from the Formulas form. Required.

Description

The description of the formula is displayed. This is populated from the formula header information.

Formula Use

Indicate the formula use for which you want to view effectivities. You may select one of the following from the list:

- Production
- Planning
- Costing
- Regulatory

Product

This field displays the code and description for the default product (first product listed) in the formula.

Description

The description of the product is displayed. This is populated from the Item Master table.

Preference

Enter a preference number for this formula. This is used to indicate which formula is preferred when more than one formula that produces the same product can be used in a given set of circumstances.

For example, you may have a formula that can be used when making between 10 and 150 gallons of product and another that can be used when making between 100 and 1000 gallons of the same product. While either formula can be used between 100 and 150 gallons, there may be a reason to generally prefer the use of one over the other.

Lower numbers indicate higher preference. The number "1" indicates the highest possible preference. This is used by MRP in determining which formula to use when translating product demand into ingredient requirements. Required.

Organization

Enter the organization for which you are defining the formula's effectivity. If you leave this field blank, the formula can be used by all organizations.

Note: When you create a costing effectivity, you must enter a specific organization, otherwise the costing rollup process will not work.

Standard

(Quantities Panel)

Enter the standard quantity of the product made with this formula. The product quantity from the Formulas form is the default.

This quantity is only used for product costing. It does not restrict the quantities that can be produced with the formula.

Required.

Enter the unit of measure in which this quantity and the minimum and maximum quantities are expressed in the next unlabeled field. Required.

Minimum

(Quantities Panel)

Enter the minimum quantity that this formula can be used to produce.

For example, if you enter 100 gallons, this formula cannot be selected to produce a batch of 50 gallons.

Maximum

(Quantities Panel)

Enter the maximum quantity that this formula can be used to produce. For example, if you enter 100 gallons, this formula cannot be selected to produce a batch of 150 gallons.

From

(Effective Dates Panel)

Enter the date on which this effectivity will go into effect. The formula cannot be used under the conditions specified before this date (unless another effectivity record with overlapping conditions is linked to the formula). Required.

To

(Effective Dates Panel)

Enter the date after which this effectivity will no longer be in effect. The formula cannot be used under the conditions specified after this date (unless another effectivity record with overlapping conditions is linked to the formula). Required.

Routing Number

Enter the number of the routing to be used when the formula is used under the circumstances specified in this effectivity record.

For example, you may have a production line that produces 100 gallon batches and another that produces 1000 gallon batches of the same product. You would enter the routing for the first production line on this form and specify 100 gallons in the Maximum field. You then add a second effectivity record with the routing for the second production line and specify 1000 gallons in the Maximum field.

Routing Version

Enter the version of the routing to be used when the formula is used under the circumstances specified in this effectivity record. A routing is uniquely defined by the combination of routing number and routing version number.

Description

The description of the routing displays. This is populated from the routing header information.

Customer Code

Specify the customer for which you use this formula.

For example, one customer may prefer that an item be produced using one formula, while another customer prefers another formula.

This field is for informational purposes only.

Customer Name

The descriptive name of the customer displays. Customer Code and description are populated from Oracle Financials Accounts Receivable records.

Scaling and Theoretical Yield

Scaling Formulas

Scaling is the proportional increase or decrease of formula ingredients, products, and byproducts. You set up OPM to scale formulas using the Scale Formula box, which is accessed from the Special menu on the Formulas, Formula Ingredients, or Formula By-Products form. During production, a formula can only be scaled if you indicated it was scaleable on the Formulas form. Only those items in the formula for which the Scale Type on the Additional Information form is set linear scaling will be scaled. The quantity of items for which the Scale Type was set to fixed quantity will remain fixed.

To scale a formula with fixed scale items, the system must convert the quantities of the ingredients, products, and byproducts to a common unit of measure. The unit of measure used for the calculation is the base unit of measure for the unit of measure type (usually mass) specified by the FM_YIELD_TYPE variable. The base unit of measure for a unit of measure type is the first unit of measure of that type entered into OPM. Therefore, in order to scale a formula or batch, unit of measure conversions to this unit of measure must be set up for all of the items in the formula or batch. Item unit of measure conversions are set up on the Inventory Control module's Item Lot/Conversion form.

Scaling Methods

There are two ways to scale formulas: by percentage or by item quantity. These methods are described in the following sections.

Percentage Scaling

When you enter the Scale Formula box, you are in percentage scaling mode. You can enter a percentage by which any scaleable products will be scaled. For example, if you enter 100 percent, the product quantity will be scaled up by 100 percent (in other words, doubled), and the ingredient quantities will be increased accordingly. If you enter -50 (negative fifty) percent, the product quantity will be decreased by half. Percentage scaling is illustrated in Example 1.

Formula Percentage Scaling - Example

All products and ingredients set to linear scaling
Scale by 50 percent

Before Scaling

- Product 1 30 kilograms
- Ingredient 1 10 kilograms
- Ingredient 2 20 kilograms

After Scaling

- Product 1 45 kilograms
- Ingredient 1 15 kilograms
- Ingredient 2 30 kilograms

Item Quantity Scaling

You can also scale by item quantity. To do this, from the Formulas, Formula Ingredients, or the Formula By-Products form, place the cursor on the item you want to use as the basis for scaling before selecting Scale from the Special menu. This must be a line item for which linear scaling is allowed as specified on the Formula Additional Information box. To switch from percentage scaling to item quantity scaling, select Item Quantity . Enter the new quantity which will be used (for an ingredient) or produced (for a product or byproduct) in the New Quantity field and click OK. The rest of the formula will be scaled accordingly. Item quantity scaling is illustrated in Example 2.

Formula Item Quantity Scaling - Example

All products and ingredients set to linear scaling
Scale Ingredient 1 (by item quantity) from 10 to 20 kilograms

Before Scaling

- Product 1 30 kilograms
- Ingredient 1 10 kilograms
- Ingredient 2 20 kilograms

After Scaling

- Product 1 60 kilograms
- Ingredient 1 20 kilograms
- Ingredient 2 40 kilograms

For both types of scaling, the items in the formula for which the Scale Type on the Additional Information form has been set to linear scaling will be scaled, while the quantity of items for which the Scale Type indicator was set to fixed quantity will remain fixed. If you scale by percent, the product quantity will be scaled by the percent entered.

Fixed Quantity Ingredients

If the formula contains fixed quantity ingredients, the scaleable ingredients will be scaled by an amount necessary to produce the new product quantity, not by the percent entered as the scale factor. This is illustrated in Example 3 below. If all products are set to fixed quantity, no quantities in the formula will be changed.

Formula Scaling - Example 3

Ingredient 1 set to fixed quantity, product 1, ingredient 2, and ingredient 3 set to linear scaling.
Scale by 100 percent.

Before Scaling

- Product 1 50 kilograms
- Ingredient 1 10 kilograms
- Ingredient 2 20 kilograms
- Ingredient 3 20 kilograms

After Scaling

- Product 1 100 kilograms
- Ingredient 1 10 kilograms
- Ingredient 2 45 kilograms
- Ingredient 3 45 kilograms

Note that ingredients 2 and 3 are scaled to the quantities necessary to increase the product quantity by 100 percent. Since ingredient 1 was fixed, the quantities of ingredients 2 and 3 were increased by more than the scale factor. This would be used, for example, when one of your ingredients (ingredient 1) is a nonrecovered catalyst. The quantity of the catalyst does not need to be increased to produce more of the product, but the quantity of the other ingredients does.

Defining Scaling Parameters - Procedure

Use the Scale Formula box to scale ingredient and product quantities in a formula.

1. Navigate to the **Scale Formulas** box.
2. Select either **Percent** or **Item Quantity**.
3. Complete the fields as described in the Fields section. You enter parameters for either percent (factor) scaling or item quantity scaling, not both.
4. Click **OK**.

Scale Formula Box - Fields

Percent

Select this radio button key to scale by percent. This is the default.

Factor

Enter the percent by which you want the formula scaled.

For example, to scale the formula by 100% (that is, to double the formula), enter 100. To scale the formula down by 20%, enter -20. If you select Item Quantity scaling, this field is dimmed.

Item Quantity

Select this field's radio button to scale by item quantity.

Line

The number of the line the cursor was on when you selected scaling from the previous form is displayed. This field cannot be edited.

Item

The item you are using as the basis for scaling is displayed from the previous form. This field cannot be edited.

Description

The description of the item you are using as the basis for scaling is displayed. This field cannot be edited.

Old Quantity

The quantity before scaling (that is, the quantity indicated on the previous form) is displayed. This field cannot be edited.

New Quantity

Enter the new quantity for this item. The system calculates the percent difference between the old quantity and the new quantity and scales the rest of the formula accordingly. If you selected Percent scaling, then this field appears dimmed.

Calculating Theoretical Yield

In process manufacturing, the product quantities in a formula do not necessarily equal the sum of the ingredient quantities. For example, in a certain process you may know that five percent of the mass is lost to evaporation. OPM can use this information to calculate the theoretical yield (that is, the adjusted product quantities) of a formula. You can have OPM calculate theoretical yield using the Calculate Theoretical Yield box. The example below illustrates the yield OPM will calculate if you specify a yield percent of 95.

Theoretical Yield - Example

- Ingredient 1 75 pounds
- Ingredient 2 25 pounds
- Product 95 pounds

OPM adds the ingredient quantities and multiplies by the yield percent.

To calculate theoretical yield, the system must convert the quantities of the ingredients, products, and byproducts to a common unit of measure. The unit of measure used for the calculation is the base unit of measure for the unit of measure type (usually mass) specified by the FM_YIELD_TYPE variable. (See the Oracle Process Manufacturing Constants guide.) The base unit of measure for a unit of measure type is the first unit of measure of that type entered into OPM. Therefore, in order to calculate theoretical yield, unit of measure conversions to this unit of measure must be set up for all of the items in the formula. Generally, this means that the quantities of all of the items in the formula must be convertible to a "mass" unit of measure.

Calculating Theoretical Yield - Procedure

Follow the steps below to use the Theoretical Yield box.

1. Navigate to the **Calculate Theoretical Yield** box from the **Special** menu on either the Formulas, Ingredients, or By-products form.
2. Enter the percent yield for the formula as described in the Field section. The system will add the ingredient quantities, taking unit of measure conversions into account, and multiply the sum of the ingredient quantities by this percentage.
3. Click **OK**.

If the formula yields 100 percent, you can still use this box to have OPM calculate the product quantities for you, or to check that you have added correctly. Simply use 100 percent as the yield percent.

Calculate Theoretical Yield Box - Field

Yield Percent

Enter the percentage of ingredient quantities yielded in the product quantities. OPM will add the ingredient quantities, taking unit of measure conversions into account, and multiply the sum of the ingredient quantities by this percentage.

Note: The theoretical yield used to calculate a formula product yield is not saved. Therefore you may wish to note this in a comment or text.

Online Inquiries and Reports

Formula Inquiry

Formula Inquiry enables you to view formula information without edit capabilities. Formulas provide the basis for the production process and drive the calculation of inventory demands. They represent company standards which determine the utilization of corporate assets. Therefore, it is necessary for individuals with various functions in your company to be able to view formulas and their components but not be able to edit them. Below are some examples of how you might use Formula Inquiry.

User Requirement	Formula Inquiry Feature
Production supervisor needs to view new formula for production batch that is scaled.	System permits “read only” access to formula information and displays linearly scaled ingredient formulas.
Production supervisor needs to view valid alternative formulas for producing a specific product.	System displays rows which have valid effectivities for the organization associated with the Operator code.
Process engineer must associate a routing to all formulas which do not yet have an effectivity associated to them.	Only formulas with no corresponding effectivity are displayed.
Regulatory chemist needs to assemble ingredient line declaration information.	System permits “read only” percentage view of exploded formula.

Using Formula Inquiry, you may view but not edit:

- Formulas with drill down to lower levels
- Intermediate formulas
- Text
- Formula structures
- Text editor

Formula Inquiry consists of six screens:

- Formula Inquiry Selection box
- FM Inquiry Summary View
- Intermediate FM Inquiry Summary View
- Formula View
- Intermediate Formula View
- Expanded Formula

Formula Inquiry enables you to:

- Expand a formula to see it's components.
- View a formula's lower level components (intermediate formulas).

Note: If a formula calls for an ingredient that has a intermediate formula that needs to be scaled to meet the quantity, Formula Inquiry will show the scaling of the ingredients. Fixed scaled items will also be scaled linearly.

Formula View Inquiry - Process Flow

In this section, you will find two process flows for using the Formula Inquiry options: one for expanding a formula and one for viewing an intermediate formula. You should use these process flows as guidelines only. FM Inquiry is a highly flexible tool and your needs will dictate the method and the order in which you will navigate through the screens.

To expand a formula:

1. Navigate to the **Formula Inquiry Selection** box.
2. Enter the selection criteria at this box as described in the Fields section and click **OK**. The **Formula Inquiry Summary View** box appears listing formulas that meet the criteria entered. Formulas with a “#” preceding them cannot be viewed. These formulas are associated to an organization which is not listed in your User Organizations.
3. Click the highlighted box next to the formula you want to view. The **Formula View** box appears with the formula you selected. The formula header and the components of the formula are displayed. From this list, you may **Expand** a formula, that is, see its line details on the same screen as the parent formula. Or you may decide to view a **Lower Level** formula with its header level information and line details on a separate screen. The components of the formula, including intermediate formulas are listed in the middle region of the screen. Viewable intermediate formulas have a "+" sign preceding them.
4. To expand a formula, click the box next to a formula line with a “+” sign next to it and choose **Expand** from the **Special** menu. If there is more than one effectivity for the formula, the **Intermediate Formula Inquiry Summary View** appears with a list of the effectivities for the intermediate formula you want to expand. The lines of the intermediate formula display immediately after the ingredient.

5. To condense the intermediate formula, choose **Condense** from the **Special** menu.

This removes the formula's lower levels from the screen and places a "+" sign next to the item. The formula lines display as they did before you expanded the formula.

To view a lower level or intermediate formula with header information:

1. Follow steps 1 through 2 as described above.
2. Click the box next to the formula you want to view.

The **Formula View** box appears with the formula you selected. The formula header and the components of the formula are displayed. From this list, you may **Expand** a formula, that is, see its line details on the same screen as the parent formula. Or you may decide to view a **Lower Level** formula with its header level information and line details on a separate screen. The components of the formula, including intermediate formulas are listed in the middle region of the screen. Viewable intermediate formulas have a "+" sign preceding them. Intermediate formulas that you cannot view have a "#" preceding them.

Note: You can view any level formula on the Intermediate Formula View as long as you have access to it. To view formulas below level one, you need to drill down to those levels. You do this by expanding the different levels of the intermediate formulas as described previously and then following a process similar to the one below. Alternately, you could enter criteria in the Formula Inquiry Selection box that will display these intermediate formulas on the Formula Inquiry Summary View.

3. Highlight the box of a formula line that is preceded by a "+" sign. This number indicates the number of levels you can drill down to.
4. From the **Special** menu, choose **Lower Level**. The Intermediate FM Inquiry Summary View appears listing the various effectivities for the intermediate formula if there is more than one effectivity (proceed to step 4). If there is only one effectivity the **Intermediate Formula View** will appear immediately.
5. Click the box to select an effectivity. The **Intermediate Formula View** form appears with the header information for the intermediate formula and a list of its components. Note that at this inquiry screen you may not further expand or select to view lower level formulas.

Formula Inquiry Selection

The Formula Inquiry Selection box is the starting point for all Formula Inquiry queries. Oracle Process Manufacturing displays this box, when you select the Formula Inquiry option on the Formula Menu. At this box, you specify the selection criteria of the formula you want to view.

Formula Inquiry Selection - Fields

Formula Status

Specify if you want to view active, inactive or all formulas.

Effectivity Defined

Specify if you want to view formulas with effectivities defined, not defined or all formulas.

Formula Use In

Select the radio buttons to specify which type formulas you want to view. The default is Production. You may select one, all or any combination of the following Formula uses:

- Production
- Planning
- Cost
- Regulatory

Selection Range:

Formula

Select to view all formulas, a specific formula or a range of formulas. To select a specific formula, enter the same formula number in the From and To fields. To select a range of formulas, enter different formula numbers in the Range From and/or To fields. To select all formulas leave the fields blank.

Version

Select to view all versions of a formula, a specific version, or a range of versions. To select a specific version, enter the same version number in the From and To fields. To select a range of formula version, enter different version numbers in the Range From and/or To fields. To select all versions leave the fields blank.

Required.

Organization

You can view formulas for all organizations, a specific organization or a range of organizations effective for your operator code. To select a specific organization, enter the same organization number in the From and To fields. To select a range of organizations enter different organization numbers in the Range From and/or To fields. To select all organizations leave the fields blank.

Effective Date

You can view the formulas for all effective dates, for a specific effective date or a range of effective dates. To select a specific date, enter the same date in the From and To fields. To select a range of dates, enter different dates in the Range From and/or To fields. To select all dates leave the fields blank. The format for dates is DD-MON-YYYY where DD signifies the two digit day, MON is the three character abbreviation for the month and YYYY in the four digit year.

Customer

You can view the formulas for all customers, for a specific customer or a range of customers. To select a specific customer, enter the same customer code in the From and To fields. To select a range of customers, enter different customer numbers in the Range From and/or To fields. To select all formulas leave the fields blank.

Product

Enter the item number in this field to view formulas for a specific item,

Effective Qty

Enter the quantity of the item produced by the formula. This field becomes available if you indicate a specific formula and version or a specific item produced.

Ingredient

To view formulas for a specific ingredient used, enter the ingredient used in this field.

Formula Inquiry Summary View

The Formula Inquiry Summary View form is the first screen you see after you make entries in the Formula Inquiry box described in the previous section. It lists formulas that meet the entered criteria.

From this form X, you can obtain further information for any formula. Formula Inquiry Summary View consists of two regions. The top region is scrollable and lists the organization, formula number and version, routing, and minimum and maximum quantity from the formula effectivity record. The bottom region is synchronized with the line that is highlighted in the upper region and lists the Start and End Dates, the Formula Status, the Standard Quantity, the Customer and Formula Use (production, costing, etc.).

Note: Formulas to which you do not have access are indicated by the "#" symbol in the far left column. To obtain access, you would need to have the organization indicated or the effectivity line associated to your User Profile.

Formula Inquiry Summary View - Fields

All information for these fields is taken from the Formula header, Formula detail and Effectivity tables. You cannot edit these fields.

Organization

The organization for which the formula is effective. You can only view formulas effective to organizations linked to your operator code. A "#" sign indicates you can not view the formula.

Formula

The formula code appears here.

Version

The version number of the formula.

Routing

The routing number for the formula version.

Version

The routing version number.

Minimum Qty

The minimum quantity for which this formula is effective is displayed.

Maximum Qty

The maximum quantity for which this formula is effective is displayed.

UOM

The unit of measure from the formula's effectivity record.

The following fields are located on the lower region of the screen. The data in this region scrolls as you highlight the boxes of different lines on the top half of the screen.

Effective Dates

This field lists the dates during which the formula/version is effective.

Active Formula

This check box has a check in it if the formula active. It is blank if the formula is inactive.

Standard Qty

The typical quantity that is produced by the formula. This is specified in the effectivity record.

Customer

The customer for which this formula is produced (if specified in the effectivity record)

Formula Use

Displays the use for which the formula is intended. Formula uses are:

- Production
- Planning
- Costing
- Regulatory

Formula Inquiry Summary View - Special Menu

Formula View

Displays the highlighted formula on the Formula View Inquiry form.

Formula View

When the Formula View form first appears, it displays the parent formula or the highest level of the formula for which you are making the inquiry.

The form has three regions. The upper region displays the formula header information. The middle region contains the formula detail information and the list of formula line items including the lower level formulas. The lower region displays the additional information for the item highlighted in the middle region.

A line with a “+” sign indicates that the item has a formula you may view. (Effective for the operator's organizations.) A line with the “#” symbol indicates the item has a formula but that you do not have access to it. In addition, at the beginning of each row the formula level is displayed. The system can display up to 99 levels.

Note: To see an expanded formula, refer to the Formula View Inquiry with Expanded Formula section.

Formula View - Fields

Formula

This field displays the formula's unique identifying number. You can tab into this field to scroll the text.

Version

This field displays the formula's version number. You can tab into this field.

Description

This field displays the detailed descriptive information about the formula. cannot be tabbed into.

Comments

This field displays any comments that you added at the Formula Header.

Formula Class

If the formula was classified at the header level, this information appears here.

Formula Active

This box is checked if you are viewing an active formula. It is clear when you are viewing an inactive formula. This information is taken from the formula's header.

Scaling Allowed

This box is checked if scaling is allowed on the formula. This information is taken from the formula's additional information.

(Column to the right of selection box)

This column is used to indicate if a formula is available to the user and if it can be expanded. A "+" sign indicates the formula is available for viewing or expanding. A "#" sign indicates that the formula is available to the user for viewing or expanding. A "-" sign indicates that the formula has been expanded with its components listed beneath it.

Also displayed here are the formula level of the line item if it has a formula associated to it.

Type

Indicates if the item is a product, byproduct, or ingredient of the formula.

Item

This field displays the Item code of the product, byproduct or ingredient of the formula.

Description

A more detailed description of the item.

Quantity

This field displays the quantity of the item used in the formula.

UOM

The unit of measure of the item.

This information is located in the lower region of the screen. The information scrolls as you highlight a different item in the middle region.

Phantom Type

Indicates if the ingredient is not a phantom, is and auto-generated phantom or a manually generated phantom.

Scrap Factor

Indicates how much of the item is expected to be lost (scrapped) during production. This information is taken from the Additional Information box on the Formula Ingredients screen. This number is entered as a percentage. This is set on the Formula Ingredients form's Additional Information box.

Scale Type

If scaling was enabled, this field indicates if the scaling is fixed or linear. This is set on the Formula Ingredients form's Additional Information box.

Cost Allocation

Indicates how the cost of this item is allocated for financial rollup purposes. This is set on the Formula Ingredients form's Additional Information box.

Release Type

Indicates is the item is automatic release, manual release or incremental release. This is set on the Formula Ingredients form's Additional Information box.

Formula View - Special Menu

View Text

Displays the Text Editor for the formula. If the cursor is in the header area, it will display the header text. If the cursor is on an unexpanded detail line, the text associated with the ingredient will be displayed. If the cursor is on an expanded detail line, the product text will be displayed.

Lower Level

Enables you view the intermediate formula of the highlighted item/product on the Intermediate Formula View Inquiry form. The intermediate formula can only be displayed if the intermediate product row is preceded with a "+" sign.

When you select Lower Level, OPM displays the Formula Inquiry Summary View with all valid effectivities listed if the formulas has any effectivities. See the Intermediate Formula View section for a description of this inquiry screen.

Expand

Enables you to view the components of an intermediate formula on the same form much like showing a directory with its subdirectories below it. The intermediate formula will only be expanded if it is preceded by a "+" sign. When you select Expand, OPM displays the Formula Inquiry Summary View.

Condense

Eliminates the display of lower level formulas of the line on which the cursor is placed. The cursor must be on a line preceded by a "-" sign. All expanded formulas below that level are condensed.

Intermediate Formula Inquiry Summary

OPM displays this form when you select Lower Level or Expand from the Special menu on the Formula View screen and the formula has more than one effectivity. From this screen, you select the formula want to expand or view at a lower level (the intermediate formula on a separate screen).

Intermediate Formula Inquiry Summary - Fields

Organization

The organization for which the formula is effective. This information is taken from the formula header records.

Formula

The code for the intermediate/lower level formula. This information is taken from the formula header records.

Version

The version number of the intermediate formula. This information is taken from the formula header records.

Routing

The routing number used with this formula. This information is taken from the effectivity record.

Version

The routing version. This information is taken from the effectivity record.

Minimum Qty

The minimum quantity for which this formula is effective is displayed. This information is taken from the effectivity record.

Maximum Qty

The maximum quantity for which this formula is effective is displayed. This information is taken from the effectivity record.

UOM

The unit of measure that is effective for this formula.

The following fields are located on the lower part of the screen. The data in this region scrolls as you highlight different lines on the top half of the screen.

Effective Dates

This field displays the dates between which the formula is effective.

Active Formula

This box is checked if the formula is active. The box is blank if it is an inactive formula.

Standard Qty

The typical quantity that is produced by the formula.

Customer

The customer for which this formula is produced (if specified) on the formula's effectivity record

Formula Use

This field displays the use for which the formula is intended. Formula uses are:

- Production
- Planning
- Costing
- Regulatory

Intermediate Formula View

OPM displays this form when you select Lower Level from the Formula View screen and then select an effectivity from the Intermediate FM Summary Inquiry form described in the previous section. The title bar of this screen displays the level of the formula displayed in brackets (in this example, [Level 1]). When this form is displayed, you cannot expand or view lower level formulas.

Ingredient Used Inquiry

The Ingredient Used inquiry shows you all formulas which use a specified ingredient or any of a list of ingredients. You will need this information if you are planning to substitute one ingredient for another in your formulas. For example, you may want to do this when you can get a comparable ingredient at a lower cost, or because an alternate ingredient may possess superior qualities.

Ingredient Used - Procedure

To show where an ingredient is used follow the steps below:

1. Select **Ingredient Used** to display the **Ingredient Search List** box.
2. Complete the fields as described in the Fields section.
3. Click **Find**.
4. The form displays all incidences of use of the specified ingredient.

Ingredient Search List Box

Use the Ingredient Search List box to tell OPM the which ingredients to search for.

Ingredient Search List Box - Fields

Ingredient

Enter the code for the ingredient for which you want OPM to search. All formulas which use this item as an ingredient will be displayed on the Ingredient - Where Used form.

Description

Displays the description of the item from the item master record.

Ingredient Used Form

The Ingredient Used form lists all of the formulas that use the item(s) entered on the Ingredient Search List box as an ingredient.

Ingredient Used Form - Fields

Formula

This field displays the code for each formula which uses the specified item as an ingredient.

Version

This field displays the version of the formula which uses the specified item as an ingredient.

Type

This field indicates if the item is a product or by-product of the formula.

Ingredient

This field displays the ingredient you requested OPM to search for.

Ingredient Qty

This field displays the quantity of the ingredient used in the formula.

The next field displays the unit of measure in which the ingredient quantity is expressed.

Product

This field displays the first product produced by the formula.

Description

This field displays the detailed description of the product. This information comes from the Item Master record.

Product Quantity

This field displays the quantity of the product produced by the formula.

The next field displays the unit of measure in which the product quantity is expressed.

Printing the Indented Formulas Report

The Indented Formulas report shows all of the ingredients and ingredient quantities that are used to produce an item. Any ingredients which are intermediates can be exploded into their ingredients. Note that circular references are allowed one level deep (that is, an item can be both an ingredient and a product in a formula). Circular references beyond one level, however, are identified with an error message (that is, the item cannot again be an ingredient in the lower-level formula).

Indented Formulas Report Dialog Box

The Indented Formulas report dialog box enables you to specify the formula, item, or range of formulas for which the bill formula report will be printed. You also enter other criteria specifying which formula to use, such as the type of formula which will be used (production, MRP, Costing) and the effective date.

This box works in two modes, interactive and noninteractive. When you use interactive mode, the system will first display a list of all of the formulas which meet the criteria entered on this box. For example, if you enter an item and batch quantity, and there are several effective formulas for making the specified quantity of the item (and which also meet the other criteria specified, such as effective date), the system will list each of those formulas. Click the box next to desired. The Indented Formulas Report will be generated the selected formula.

If the formula for which you are printing this report contains ingredients which are intermediates, interactive mode also lets you select which formula to use for exploding the intermediates, if they are produced by more than one formula.

When you use noninteractive mode, OPM picks the formula to use (if more than one meets the criteria specified on the box), based on the effectivity preference. If two or more formulas have the same preference level, Oracle Process Manufacturing uses the formula which was most recently modified.

Printing the Indented Formulas Report - Procedure

Run the report as follows:

1. Navigate to the **Indented Formulas Report** (referred form).
2. Complete the fields and make selections on the **Indented Formulas Report** box as described in the fields section.
3. Select **OK**. OPM generates the report and displays the **Submission History** box.

Viewing the Report Online

To view the report online, proceed as follows:

1. Choose **Help > View** my requests. The **Requests** box is displayed.
2. Highlight the box next to the **Indented Formulas** report that you want to view. Make sure that the report phase is completed.
3. Click **Report**. The report you selected is displayed on the screen.

Indented Formulas Report - Parameters

Interactive

Select this check box to use interactive mode. Leave the box blank to use non-interactive mode. Interactive mode allows you select from a list of effectivities. Non-interactive mode uses the most recent effectivity for the formula or formulas exploded.

Re-Explode

Select this check box if you want to re-explode the report. When you run an IBOM report for the first time, the report will explode out the formula regardless of what value you have in this field. Exploded formulas are held in the Formula IBOM header table and the Formula IBOM detail table (fm_ibom_hdr and fm_ibom_dtl). OPM checks these tables first whenever you generate an IBOM report. Running already exploded IBOM reports from this table greatly enhances run-time performance.

Use inactive

Select this check box if you want to explode inactive formulas.

Single Formula

Select this radio button if you want to print the indented formulas report for a single formula. When you click the box, the Formula and Version fields become available for entry.

Formula

Enter the code of the formula for which you want to print the indented formulas report. This field is editable if you selected to explode a single formula Required when displayed.

Version

Enter the formula version for which you want to print the indented formulas report. This field is editable if you selected to explode a single formula to explode. Required when displayed.

Single Item

Select this radio button if you want to print the indented formulas report for specific product.

If you are using interactive mode, a list of formula effectivities for the specified batch quantity of this product will be displayed.

If you are using noninteractive mode, the system will select a formula to use for the report based on formula effectivity preference.

Item

Enter the code for the product for which you want to print the indented formulas report. This field is only displayed if you selected to explode a single item. Required when displayed

Batch Qty

Enter the quantity of the product for which you want to print the indented formulas report. This quantity is used in determining which formula to use (the formula must be effective for this quantity) and in scaling ingredient quantities. This field is only displayed if you selected to explode a formula for a single item. Required when displayed

UOM

Enter the unit of measure in which the batch quantity is expressed. This field is only displayed if you selected to explode a formula for a single item. Required when displayed

Formula Range

Select this radio button if you want to print the bills of materials for a range of formulas. You can not enter formula ranges if you are using interactive mode.

Range

Enter the beginning and ending of the range of formulas for which bills of materials will be printed. This field is only editable if you clicked the Formula Range radio button.

Formula

Enter the code of the formula for which you want to print the indented formulas report

This field is only editable if you selected Single Formula. Required when editable

Version

Enter the formula version for which you want to print the indented formulas report.

This field is only displayed if you selected to explode a single formula. Required when editable.

Scale By

(Other Options)

Enter the percentage by which you want to scale the formula. For example, if you want the quantities doubled, enter 200. If you want the quantities decreased by half, enter 50. Leave this field set to zero (or enter 100) if you want to view the formula quantities without scaling.

Levels

(Other Options)

The default value is All. Enter the number of levels of the indented formulas report you want printed. If you enter a number greater than one, ingredients in the formula which are intermediates will be exploded into their ingredients. If you leave this set to "All," the indented formulas report will be exploded down to raw materials.

Effective Type

(Other Options panel)

Select the type of formula (what the formula is used for) which you want to use as the basis of the report. Your selections are:

- Production
- Planning
- Costing
- Regulatory

Effective Date

(Other Options panel)

Type the date for which the formula must be effective. Only formulas which are effective on this date will be used as the basis of the report.

Required.

UOM Type

(Other Options panel)

Select either formula or the inventory item master units of measure.

Copies

(Print Options panel)

Enter the number of copies of the report you want printed.

Printer

(Print Options panel)

Enter the code identifying the printer on which the report will be printed.
Required.

Style

(Print Options panel)

Select whether you want this report to print as Landscape or Portrait.

Indented Formulas Report - Report Description

The fields on the report are described below.

Indented Formulas Report - Report Fields

Formula

The code for the formula on which the indented formula report is based, followed by a colon and the formula version number. The description of the formula/version appears next.

Scale Percent

The percentage by which the formula was scaled. Note that a scale percent of zero indicates that the formula was not scaled (it is the same as a scale percent of 100).

Effective Type

This field indicates what the formulas use is. It can be one of the following:

- Production
- Planning
- Costing
- Regulator

Effective Date

The effective date you entered on the box. All formulas which appear on the report are effective on this date.

Products

The items produced by the formula.

To the right of the product's item code appear two numbers in parentheses, separated by a slash (/). The first number is the batch quantity of the product. This number is either the formula product quantity multiplied by the scale or the batch quantity you entered in the Batch Quantity field.

The second number is the product quantity from the formula.

The unit of measure in which the batch quantity and formula quantity are expressed follows the parentheses. The item description of the product appears next.

Ingredient - Description

The item code for each ingredient is displayed, followed by the ingredient description.

In addition to the ingredients, by-products are also displayed, preceded by "Byp".

If any of the ingredients is an intermediate (that is, it is the product in another formula), the ingredient line is followed by a line beginning with "Formula:." This line displays the formula code and version used to explode the intermediate into its ingredients. Following this line are the ingredients from this formula. In addition to the ingredients, byproducts (identified with "Byp:") and coproducts (identified by "Cop:") in this formula are also displayed.

Note that the by-products, coproducts, and ingredients of the formula which produces the intermediate are indented from the ingredients in the main formula. Once the indentation ends, the items which start back at the left margin are ingredients in the main formula listed at the top of the page.

Lvl

The level in the indented bill of material. Item lines from the main formula (listed at the top of the page) are identified by a "1." Item lines from a formula used to produce an ingredient in the main formula (that is, an intermediate) are identified by a "2," and so forth.

Batch quantity

The quantity of the ingredient necessary to produce the batch quantity of the product. For by-product or coproduct lines, this is the quantity of the by-product or coproduct which is produced when the batch quantity of the main product is produced.

Formula quantity

The quantities of the ingredients, by-products, and coproducts in the formula.

Standard quantity

The formula product quantity of formulas used to produce any intermediates. Note that if the quantity of the intermediate needed in the main formula is different from this standard quantity, the intermediate formula is automatically scaled to produce the necessary quantity of the intermediate. The scaled product quantity and scaled ingredient quantities are shown in the Batch Quantity column.

UOM

The unit of measure in which quantities are expressed.

Formula Management 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 form. These tables provide the most typical default path.

Form	Path
Activities	OPM Product Development > Formula Management > Setup > Activities
Additional Information	OPM Product Development > Formula Management > Formula > Special > Additional Information or OPM Product Development > Formula Management > Formula > Ingredients > Special > Additional Information or OPM Product Development > Formula Management > Formula > Byproducts > Special > Additional Information
Configurations	OPM Product Development > Formula Management > Setup > Configuration
FM Inquiry Selection	OPM Product Development > Formula Management > Formula Inquiry
FM Inquiry Summary View	OPM Product Development > Formula Management > Formula Inquiry > OK
Formula By-products	OPM Product Development > Formula Management > Formulas > By-products
Formula Class	OPM Product Development > Formula Management > Setup > Formula Class
Formula Ingredients	OPM Product Development > Formula Management > Formulas > Ingredients

Formula View	OPM Formula Management > FM Inquiry > OK > FM Summary View > Special > Formula View
Formulas	OPM Product Development > Formula Management > Formulas
Indented Bill of Materials Report	OPM Product Development > Formula Management > Reports > Indented Formulas
Ingredient Search and Replace	OPM Product Development > Formula Management > Item Search/Replace
Ingredient - Where Used	OPM Product Development > Formula Management > Ingredient Used > Ingredient Search List > Find
Ingredients Search List	OPM Product Development > Formula Management > Ingredient Used
Intermediate Formula Inquiry Summary View	OPM Product Development > Formula Management > FM Inquiry > OK > FM Summary View > Special Menu > Formula View > Special > Lower Level or Expand
Maintain Effectivities	OPM Product Development > Formula Management > Effectivities > select effectivity > OK > View Effectivities > Special > Add or Change or OPM Product Development > Formula Management > Formulas > Special > Effectivities > View Effectivities > Special > Add or Change
Operation Alternate Resources	OPM Product Development > Formula Management > Setup > Op Alternate Res
Operation Classes	OPM Product Development > Formula Management > Setup > Operation Classes
Operations	OPM Product Development > Formula Management > Operations
Routing Classes	OPM Product Development > Formula Management > Setup > Routing Classes
Routings	OPM Product Development > Formula Management > Routings
Scale Formula	OPM Product Development > Formula Management > Formula > Special > Scale or OPM Product Development > Formula Management > Formula > Ingredients > Special > Scale or OPM Product Development > Formula

	Management Byproducts > Special > Scale
Select Effectivities	OPM Product Development > Formula Management > Effectivities
Theoretical Yield	<p>OPM Product Development > Formula Management > Formula > Special > Theoretical Yield</p> <p>OPM Product Development > Formula Management > Ingredients > Special > Theoretical Yield</p> <p>or</p> <p>OPM Product Development > Formula Management > Formula > Byproducts > Special > Theoretical Yield</p>
View Effectivities	<p>OPM Product Development > Formula Management > Effectivities > OK</p> <p>or</p> <p>OPM Product Development > Formula Management > Formulas > Special > Effectivities</p>

Profile Options Related to Formula Management

During your implementation, you or your system administrator set values for selected profile options to specify how your Formula Management application controls access to and processes data. The profile options related to Formula Management are listed below.

- FM\$BYPROD_ACTIVE
- FM\$DEFAULT_RELEASE_TYPE
- FM_YIELD_TYPE
- PM_COPY_FM_TEXT

You might set up these profile options when you set up other applications prior to your Formula Management implementation. Refer to the other product user's guides for more details on how other products use these profile options.

Your system administrator sets user profile options at one or more of the following levels: Site Application, Responsibility, and User. Use the Personal Profile Options window or view or set your profile options at the user level. You can consult *the Oracle Process Manufacturing Implementation Guide* for a complete description of the profile options listed below. Consult your *Oracle Applications System Administrator's Guide* for a list of profile options common to all Oracle Applications.

Glossary

Activity

Action performed during the manufacturing process, such as mixing or heating.

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 may or may not have value, but generally have less value than products or in some instances there may be a cost associated with disposing of a byproduct.

Component Class

A way of classifying item costs. Examples of component classes are labor or overhead.

Coproduct

One of several products produced by a formula. The term coproduct is sometimes used when a formula produces more than one product. GEMMS does not distinguish between products and coproducts. Compare with by-product.

Cost Analysis Code

A code which generally specifies whether an activity is value-added or non-value-added.

Effectivity

A set of parameters that specify under what circumstances a formula can be used. These parameters include date of production and product quantity. Effectivities also link formulas with routings.

Formula

The "recipe" upon which production batches are based. A formula consists of products, ingredients, and, optionally, by-products. The formula also specifies the quantities of each item. Formulas are used by the Costing and Material Requirements Planning modules as well as the Production module.

Formula Use

The module for which a formula will be used, either Production, Costing, Material Requirements Planning, or Material Safety Data Sheets (future functionality).

Ingredient

An item which is used in a formula to produce a product.

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.

Product

An item which is produced by a formula. See also coproduct.

Resource

Any noninventory item used in production, like a mixer or oven.

Routing

A sequence of operations performed in manufacturing a product.

Scaling

The proportional increase or decrease of product, by-product, and ingredient quantities in a formula or batch.

Theoretical Yield Calculation

A calculation that calculates product quantities yielded by a formula given a specified yield percentage.

Version

A number identifying a variant of a formula or routing. All formulas and routings are uniquely identified by a combination of formula or routing code and version number.

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