Oracle® Agile Product Lifecycle Management for Process

FlexSync Formulation Solution Pack

Extensibility Pack 3.12

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ORACLE®

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Agile Product Lifecycle Management for Process

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Preface

Audience

This guide is intended for client programmers involved with integrating Oracle Agile Product Lifecycle Management for Process. Information about using Oracle Agile PLM for Process resides in application-specific user guides. Information about administering Oracle Agile PLM for Process resides in the *Agile Product Lifecycle Management for Process Administrator User Guide*.

Variability of Installations

Descriptions and illustrations of the Agile PLM for Process user interface included in this manual may not match your installation. The user interface of Agile PLM for Process applications and the features included can vary greatly depending on such variables as:

- Which applications your organization has purchased and installed
- Configuration settings that may turn features off or on
- Customization specific to your organization
- Security settings as they apply to the system and your user account

Documentation Accessibility

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Software Availability

Oracle Software Delivery Cloud (OSDC) provides the latest copy of the core software. Note the core software does not include all patches and hot fixes. Access OSDC at:

http://edelivery.oracle.com

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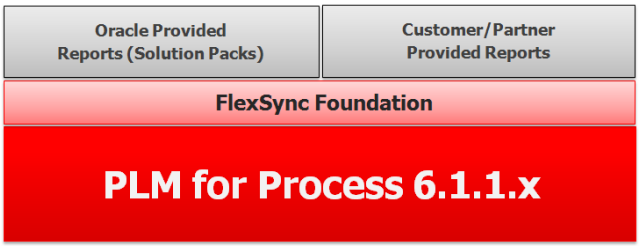
Chapter 1—FlexSync Formulation Overview

FlexSync Formulation provides you the ability to export formulation specifications to Excel. You can now use a customized Excel user interface, allowing you to monitor important key attributes while adjusting the formulation Bill of Material (BOM) quantity values. Key attributes include nutrients, extended attributes, total moisture/solids and cost. Once you are finished, the BOM Quantities can be imported back into the formulation specification.

This solution pack contains formulation handlers and out the box report templates built upon FlexSync Foundation. FlexSync Foundation can be found in the Extensibility Pack and more information can be found in the *Agile Product Lifecycle Management for Process FlexSync Foundation User Guide*.



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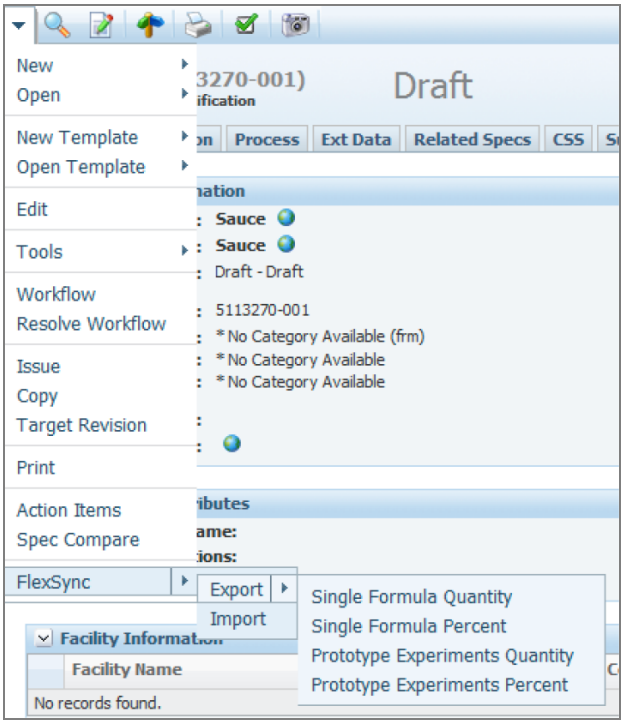
Chapter 2—Reports

FlexSync Formulation includes 4 out of the box reports that can be used immediately. Once installed the following reports will be available from the formulation specification in the action menu.

1. Single Formula Quantity
2. Single Formula Percent
3. Prototype Experiments Quantity
4. Prototype Experiments Percent



These reports contain formulation data as well as working sheets. The working sheets use out of the box Oracle VBA functions to pull data from the 'From PLM4P' worksheet as well as perform calculations. For a full list of available functions see Appendix A.

Each report includes 4 worksheets.



Sheet	Description
From PLM4P	Contains the data exported from PLM for Process. For a full list of exported data, please review to the data dictionary in Appendix B. This data should not be edited.
Primary Working Sheet	This is the working sheet where all edits should occur. The name of this sheet will vary based on the report used during export.
To PLM4P	This sheet contains the data to be imported back into PLM for Process. BOM Quantities are currently the only data allowed to be imported back into PLM for Process. This data should not be edited; the primary working sheet will update this data.
System	This sheet contains system required data and configuration settings. This data should not be edited.

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Single Formula Quantity/Percent

SingleFormulaQTY.xlsm, SingleFormulaPER.xlsm

Sauce

Apr-28-2013 8:21:08 PM

Refresh

Spec Number	Name	Qty	UOM	% Batch	EUR/100g	Cost	Moisture	Moisture Contribution	Calories (100g)	Calories Contribution	Fat (100g)	Fat Contribution	Briz (Base)	Briz Contribution
5077504-001	Salt - Granulated - Food Grade	20	kg	4.3478261	0.01472	2.944	0	0	0	0	0	0	0	0
5077502-001	Pepper - Red - Ground - 36-44M - Not Sc	300	kg	65.217391	0.29893	896.79	0	0	334	217.826087	18	11.73913043	45	29.34782609
5077485-001	Tomato Paste - Cold Break - 31% NTSS	100	kg	21.73913	0.03437	34.37	0	0	82	17.82608696	0.55	0.119565217	25	5.434782609
5077413-001	Vinegar - Distilled - White - 100 Grain	20	kg	4.3478261	0	0	22	0.956521739	69	3	0.1	0.004347826	2	0.086956522
5077511-001	Vinegar - Distilled - 120 GRAIN	20	L	4.3478261	0.01327	2.654	85	3.695652174	12	0.52173913	0	0	N/A	0
	TOTAL	460	kg	100		936.76		4.65217391		239.173913		11.863043		34.86956522

The Single Formula reports allow you to modify quantity or percent values in a single grid. As BOM values are modified, key attribute values such as cost, moisture, nutrients, and distinct extended attributes are adjusted for each input and a total is provided.

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Key Features

Feature	Description
Quantity and % Batch	The Single Formula Quantity report allows you to edit the formula based on quantity amounts. The Single Formula Percent report allows you to edit the % Batch amount.
Input UOM	Displays the UOM set for each BOM Input. Only Mass and Volume categories are supported for key value calculations.
Cost	The cost exported is based on your formulation settings Currency, Per UOM, Cost Set and Type. The report provides per input base cost and calculated cost.
Moisture Value and Contribution	The moisture value for each BOM Input as well as its contribution to the whole.
Nutrient Values and Contribution	Key nutrient values for each BOM Input as well as their contribution to the whole. Out of the box, the report includes calories, fat and sodium.
Extended Attribute Values and Contribution	Key extended attribute values for each BOM Input as well as their contribution to the whole. Out of the box, the report includes extended attribute ID 15 and 87. Extended Attributes need to be distinct and tagged with the “Is Design Attribute” tag.
Refresh	The refresh button will restore the formulation BOM back to the values originally exported.

These reports are easily configurable. If you would like to see additional nutrients or extended attributes, see the Configuration section for more details.

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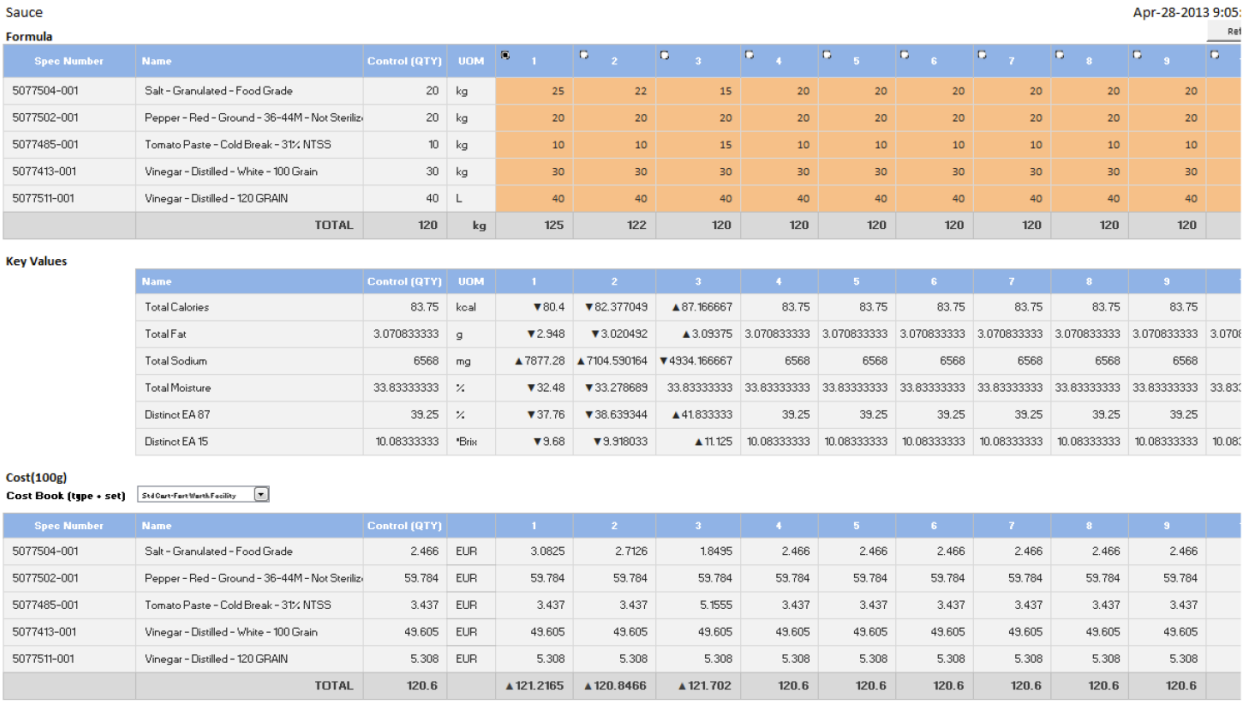
Prototype Experiments Quantity/Percent

PrototypeExperimentQTY.xlsm, PrototypeExperimentPER.xlsm



Sauce

Apr-28-2013 9:05:

Formula

Spec Number	Name	Control (QTY)	UOM	1	2	3	4	5	6	7	8	9	
5077504-001	Salt - Granulated - Food Grade	20	kg	25	22	15	20	20	20	20	20	20	
5077502-001	Pepper - Red - Ground - 36-44M - Not Steriliz	20	kg	20	20	20	20	20	20	20	20	20	
5077485-001	Tomato Paste - Cold Break - 31% NTSS	10	kg	10	10	15	10	10	10	10	10	10	
5077413-001	Vinegar - Distilled - White - 100 Grain	30	kg	30	30	30	30	30	30	30	30	30	
5077511-001	Vinegar - Distilled - 120 GRAIN	40	L	40	40	40	40	40	40	40	40	40	
	TOTAL	120	kg	125	122	120	120	120	120	120	120	120	

Key Values

Name	Control (QTY)	UOM	1	2	3	4	5	6	7	8	9	
Total Calories	83.75	kcal	▼80.4	▼82.377049	▲87.166667	83.75	83.75	83.75	83.75	83.75	83.75	
Total Fat	3.070833333	g	▼2.948	▼3.020492	▲3.09375	3.070833333	3.070833333	3.070833333	3.070833333	3.070833333	3.070833333	3.070
Total Sodium	6568	mg	▲7877.28	▲7104.590164	▼4934.166667	6568	6568	6568	6568	6568	6568	
Total Moisture	33.83333333	%	▼32.48	▼33.278689	33.83333333	33.83333333	33.83333333	33.83333333	33.83333333	33.83333333	33.83333333	33.83
Distinct EA 87	39.25	%	▼37.76	▼38.639344	▲41.833333	39.25	39.25	39.25	39.25	39.25	39.25	
Distinct EA 15	10.08333333	°Brix	▼9.68	▼9.918033	▲11.125	10.08333333	10.08333333	10.08333333	10.08333333	10.08333333	10.08333333	10.08

Cost(100g)

Cost Book (type + set)

Spec Number	Name	Control (QTY)		1	2	3	4	5	6	7	8	9	
5077504-001	Salt - Granulated - Food Grade	2.466	EUR	3.0825	2.7126	1.8495	2.466	2.466	2.466	2.466	2.466	2.466	
5077502-001	Pepper - Red - Ground - 36-44M - Not Steriliz	59.784	EUR	59.784	59.784	59.784	59.784	59.784	59.784	59.784	59.784	59.784	
5077485-001	Tomato Paste - Cold Break - 31% NTSS	3.437	EUR	3.437	3.437	5.1555	3.437	3.437	3.437	3.437	3.437	3.437	
5077413-001	Vinegar - Distilled - White - 100 Grain	49.605	EUR	49.605	49.605	49.605	49.605	49.605	49.605	49.605	49.605	49.605	
5077511-001	Vinegar - Distilled - 120 GRAIN	5.308	EUR	5.308	5.308	5.308	5.308	5.308	5.308	5.308	5.308	5.308	
	TOTAL	120.6		▲121.2165	▲120.8466	▲121.702	120.6	120.6	120.6	120.6	120.6	120.6	

The Prototype Experiments reports allow you adjust values of a single formulation for up to 10 prototypes to compare adjusted values to the original exported formulation. As BOM values are modified, key attribute values such as cost, moisture, nutrients, and distinct extended attributes are adjusted for each input and a calculated total is provided. These reports include indicators allowing you to quickly see if a key value is increasing or decreasing from your starting formulation. Once finished, you can select one formulation to import back into PLM for Process.

Key Features

Feature	Description
Quantity and % Batch	The Prototype Experiments Quantity report allows you to edit the formula based on quantity amounts. The Prototype Experiments Percent report allows you to edit the % Batch amount.
Input UOM	Displays the UOM set for each BOM Input. Only Mass and Volume categories are supported for key value calculations.
Cost	These reports allow you to change the cost set and type so you can see cost across multiple facilities. The currency, per UOM and the default cost selected is based on your formulation settings at the time of export.

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Feature	Description
Moisture Value	The calculated moisture value for your output material.
Nutrient Values	Calculated key nutrient values for your output material. Out of the box, the reports include calories, fat and sodium.
Extended Attribute Values	Calculated key nutrient extended attribute values for your output material. Out of the box, the reports include extended attribute ID 15 and 87. Extended Attributes need to be distinct and tagged with the "Is Design Attribute" tag.
Refresh	The refresh button will restore the working sheet back to the values originally exported.

Best Practices

1. Multiple variations of a formulation can be imported using Snapshots. For example, when using prototype experiments you can import prototype column 1, create a snapshot. Then import prototype column 2, create a snapshot and so on.
2. If you are experimenting with different raw materials across prototypes, add all possible raw materials to your BOM. When working with prototypes just set the materials you do not want to use to a 0 quantity.
3. You may see inconsistent theoretical calculations between Excel and PLM for Process if:
    a. Regulatory Breakdowns on the formulation inputs don't equal 100%
    b. Any overrides have been added to internal outputs
    c. Any yield adjusters have been applied.

These reports are easily configurable. If you would like to see additional nutrients or extended attributes, see the Configuration section for more details.

Important Notes:

1. Only a single formulation specification can be exported to a report. If your formulation includes an intermediate formulation you should use the BOM inclusion tool to flatten your formulation hierarchy. You can access the BOM inclusion tool by selecting the following icon  next to the context dropdown.
2. When modifying percentages, we do not normalize percentages in Excel, so if your % Batch does not match 100%, exactly, then your % Batch, nutrient values, moisture, and EA values may be slightly different when pushed back to the formulation specification.

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Chapter 3—Handlers

FlexSync handlers are used to export, format and import data. FlexSync Formulation includes handlers that export key formulation specification information as well key information from the inputs used in the formula. For a full list of exportable data, please review to the data dictionary in Appendix B.

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Chapter 4—Installing/Upgrading FlexSync Formulation

Prerequisites

- Oracle Agile Product Lifecycle Management for Process: minimum of version 6.1.1.3
- FlexSync Foundation
- Microsoft Office: versions 2007, 2010, or 2013

Installation

1. Unzip package to a temporary location.
   Ex. c:\tmp\FlexSyncFormulation
2. Back up the database.
3. Run **ApplyScripts.exe** package against the PLM4P database (See "ApplyScripts" section below for detailed instructions).
4. Run **FlexSyncFormulationSetup.exe** and follow the on-screen instructions to perform the installation.

Upgrade

The upgrade procedure replaces the Oracle-provided Excel templates. This was done to correct a bug that affects users of Microsoft Office 2010. See Patch 16890774 for more information.

1. Unzip package to a temporary location.
   Ex. c:\tmp\FlexSyncFormulation
2. Back up your existing templates.
   Ex. c:\plm4p.xlsm*
3. Back up the database.
4. Run **ApplyScripts.exe** package against the PLM4P database (See "ApplyScripts" section below for detailed instructions).
5. Run **FlexSyncFormulationSetup.exe** and follow the on-screen instructions to perform the upgrade.
6. If you made changes to the Oracle-provided templates, merge your changes with the new templates.

ApplyScripts

To run ApplyScripts, follow these steps.

1. Open a command prompt.
2. Change directory to Scripts directory of this patch.

   prompt> cd C:\tmp\FlexSyncFormulation\Database\

3. Call **ApplyScripts.exe** with correct parameters:

```
    -c connectstring   (copy from EnvironmentVariables.config)
```

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```
     -f filename        (MS SQL ex. -f FlexSyncFormulation.xml) (Oracle ex. -f
FlexSyncFormulation-orcl.xml)
     -dbvendor dbtype   (MS SQL ex. -dbvendor msft) (Oracle ex. -dbvendor orcl)


ex.  MSSQL prompt> ApplyScripts.exe -c
"server=customerServer.domain.com;uid=UserName;pwd=Password;database=prodikaCatalog"
-f FlexSyncFormulation.xml -dbvendor msft
ex.  ORCL prompt> ApplyScripts.exe -c "user id=user;password=password;data source=PLM4P"
-f FlexSyncFormulation-orcl.xml -dbvendor orcl
```

Template Location

Currently, all report templates are copied to c:\ plm4p\Templates\. If this is not the desired location, you will need to update the TemplateLocation field in the flexReports table. Once your DB update is committed, you will need to move your templates to the new location on the file system.

For further details around what the installer actually did see Appendix C.

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Chapter 5—Configuration

Report templates can be easily modified to allow for additional nutrients and extended attributes.

Important Note: When modifying a report template, ensure the value for 'Already Initialized' is set to 0 on the System worksheet before saving.

Adding Additional Nutrients

Out of the box the reports display Calories, Fat and Sodium. Additional nutrients can be easily added to any report template using out of the box Nutrient Value functions. Out of the box functions know how to pull nutrient values from the "From PLM4P" sheet by referencing their unique InFoods ID.

Single Formula Reports

Create 2 new columns on the report template using the NutrientValue() and OracleMultiply() functions

For example, the business wants to see Carbohydrates represented as a column.

1. Insert 2 new columns or copy an existing nutrient column and nutrient contribution column.
2. Modify the header row of the new nutrient column as 'Carbohydrates'.
3. Modify the header row of the new nutrient contribution column as 'Carbohydrates Contribution'.
4. Assign a formula to the cell on the BOM input row of the 'Carbohydrates' column. The formula will be:
   `=NutrientValue(B5, "CHOCDF", TRUE)`
5. Assign a formula to the cell on the BOM input row of the 'Carbohydrates Contribution' column. The formula will be:
   `=OracleMultiply(NutrientValue(B5, "CHOCDF"), H5*0.01)`
6. Format the cells to be consistent with the grid.
7. Save & Close the report.

Prototype Experiments Reports

Create a new row on the report template using the GetNutrientTotal() function.

For example, the business wants to see Protein represented in the Key Values grid.

1. Insert a new row or copy an existing nutrient row in the Key Values grid.

   Note: Make sure the PrototypeExperimentsQty.KeyValues.Value named range is not broken by this action

2. Assign a formula to the cell contained by PrototypeExperimentsQty.KeyValues.Value (Control column). The formula will be:
   `=GetNutrientTotal(PrototypeExperimentsQty.InputKey,PrototypeExperiments Qty.Quantity, PrototypeExperimentsQty.UOM, "PROCNT")`

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3. Assign a formula to the cell in each Prototype column. You will have to modify the input range for each column, but the formula for Prototype column 1 will be:
   `=GetNutrientTotal(PrototypeExperimentsQty.InputKey,$G$6, PrototypeExperimentsQty.UOM, "PROCNT")`
4. Format the cells to be consistent with the grid.
5. Save & Close the report.

Adding Additional Extended Attributes

Out of the box only distinct extended attributes with the "Is Design Attribute" tag are exported. The working sheets display extended attributes with the ID of 15 and 87. These will probably not match extended attributes in your system. You can customize these columns by adjusting the IDs referenced in the functions. You can also add additional extended attributes that you are interested in.

Single Formula Reports

Create 2 new columns on the report template using the EAValue() and OracleMultiply() functions.

For example, the business wants to see distinct EA with the EA ID of 'Brix' represented as a column.

1. Insert 2 new columns or copy an existing EA column and EA contribution column.
2. Modify the header row of the new EA column as 'Brix'.
3. Modify the header row of the new nutrient contribution column as 'Brix Contribution'.
4. Assign a formula to the cell on the BOM input row of the 'Carbohydrates' column. The formula will be:
   `=EAValue(B5, "Brix", TRUE)`
5. Assign a formula to the cell on the BOM input row of the 'Carbohydrates Contribution' column. The formula will be:
   `=OracleMultiply(EAValue(B5, "Brix"), H5*0.01)`
6. Format the cells to be consistent with the grid.
7. Save & Close the report.

Prototype Experiments Reports

Create a new row on the report template using the GetEATotal() function.

For example, the business wants to see the Distinct Input EA with the EA ID of 'Brix'

1. Insert a new row or copy an existing EA row in the Key Values grid.

   Note: Make sure the PrototypeExperimentsQty.KeyValues.Value named range is not broken by this action

2. Assign a formula to the cell contained by PrototypeExperimentsQty.KeyValues.Value (Control column). The formula will be:
   `=GetEATotal(PrototypeExperimentsQty.InputKey, PrototypeExperimentsQty.Quantity, PrototypeExperimentsQty.UOM, "Brix")`

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3. Assign a formula to the cell in each Prototype column. You will have to modify the input range for each column, but the formula for Prototype column 1 will be:
   `=GetEATotal(PrototypeExperimentsQty.InputKey, $G$6, PrototypeExperimentsQty.UOM, "Brix")`
4. Format the cells to be consistent with the grid.
5. Save & Close the report.

Report Navigation

By default reports are added to the action menu and appear when a user is on any formulation specification. However, you have complete control over these links. You can allow users to quickly access the reports by adding action icons to specific reports and the report import action.

Customizing Reports for Specific Groups

You can do something simple like only show the Single Formula Report Quantity report to users in specific user groups. Or you can do something more complex and create report templates for specific product categories. Where users in the "Beverages" group see a report template that displays Calories, Total Sugars, Vitamin C and Brix extended attribute, while users in the "Sauces" group see Calories, Fat, Sodium and the Acidity extended attribute.

For more information around how to add and adjust navigation see the *Agile Product Lifecycle Management for Process Navigation Configuration Guide*.

For Performance

To improve performance of the export process, you can remove named ranges deemed unnecessary to the business. These named ranges will then be ignored during the export process. For instance, the out of the box template exports distinct EAs. If you do not need this data, then the section and the corresponding named ranges can be removed from the template. FlexSync checks the report, and if the named range isn't there, it will not waste time gathering this data from the system.

Trust Relationship

By default, Excel does not automatically enable macros when downloading from an Internet source. In newer versions of Excel, editing is also disabled. For a better user experience, we recommend setting up a trust relationship to eliminate the need to enable editing and enable content every time a report is exported.

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Chapter 6—Creating New Reports

Additional Reports can be created easily by using the out of the box reports as a starting point. For more information around how to set up new reports, including copying of existing reports, see the *Agile Product Lifecycle Management for Process FlexSync Foundation User Guide*.

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Appendix A—Oracle Functions

Several out of the box VBA functions are available and can be re-used in custom templates.

	Function
Spec Name	GetSpecName(specId As String, inputId As String, Optional isInput As Boolean = True)
Spec Number	GetSpecNumber(specId As String, inputId As String, Optional isInput As Boolean = True)
Spec Issue	GetSpecIssue(specId As String, inputId As String, Optional isInput As Boolean = True)
Step Number	GetStepNumber(specId As String, inputId As String, Optional isInput As Boolean = True)
Quantity	QuantityValue(inputId As String, Optional treatNullAsEmpty As Boolean = False, Optional isInput As Boolean = True)
UOM	QuantityUOMValue(specId As String, inputId As String)
Total Solids	SolidsValue(inputId As String, Optional treatNullAsEmpty As Boolean = False, Optional isInput As Boolean = True)
Total Moisture	MoistureValue (inputId As String, Optional treatNullAsEmpty As Boolean = False, Optional isInput As Boolean = True)
% Batch	PercentBatchValue(inputId As String, qty As Double, qtyUOM As String, totalQty As Double, Optional totalQtyUOM As String = "")
Base Cost	CostValue(inputId As String, Optional treatNullAsEmpty As Boolean = False)
Nutrient Name	NutrientName(inputId As String, nutrientId As String, Optional isInput As Boolean = True)
Nutrient Value	NutrientValue(inputId As String, nutrientId As String, Optional treatNullAsEmpty As Boolean = False, Optional customNullValue As Variant, Optional isInput As Boolean = True)
Nutrient UOM	NutrientUOMValue(specId As String, inputId As String, Optional isInput As Boolean = True)
Extended Attribute Name	EAName(inputId As String, eaId As String, Optional isInput As Boolean = True)
Extended Attribute Value	EAValue(inputId As String, eaId As String, Optional treatNullAsEmpty As Boolean = False, Optional customNullValue As Variant, Optional isInput As Boolean = True)
Extended Attribute UOM	EAUOMValue (specId As String, inputId As String, Optional isInput As Boolean = True)
Input Gain/Loss	MaterialGainLossValue(inputId As String, Optional treatNullAsEmpty As Boolean = False, Optional customNullValue As Variant)
Inputs Array	GetInputKeys() As Variant
Outputs Array	GetOutputKeys() As Variant
Input Spec ID	GetInputSpecID(inputId As String) As String
Output Spec ID	GetOutputSpecID(outputId As String) As String
Total Quantity	GetQuantityTotal(rOwner As Range, rQuantity As Range, rUOM As Range, Optional toUOM As String = "")
Total Moisture	GetMoistureTotal(ownerRange As Range, batchRange As Range, uom As Variant, Optional treateNullAsZero As Boolean = True)

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	Function
Total Nutrient	GetNutrientTotal(ownerRange As Range, batchRange As Range, uom As Variant, nutrientId As String, Optional treateNullAsZero As Boolean = True, Optional customNullValue As Variant)
Total Extended Attribute	GetEATotal(ownerRange As Range, batchRange As Range, uom As Variant, eaId As String, Optional treateNullAsZero As Boolean = True, Optional customNullValue As Variant)
Cost Book Array	GetCostBooks()
Cost Value from Cost Book	CostValueFromLibrary(specId As String, costType As String, costSet As String, Optional treatNullAsEmpty As Boolean = False)
Convert Quantity	UOMConvert(inputId As String, fromValue As Double, fromUOMAbbr As String, Optional toUOMAbbr As String = "", Optional toValue As Double = 1#, Optional treatNullAsZero As Boolean = True)
Preferred Quantity UOM	GetPrefUOM()
Preferred Cost UOM	GetPrefCostUOMUOM()
Preferred Cost Per Value	GetPrefCostUOMValue(Optional treatNullAsEmpty As Boolean = False)
Preferred Cost Currency	GetPrefCostUOMCurrency()
Preferred Cost Type and Set	GetPrefCostTypeAndSet()

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Appendix B—Data Dictionary

The FlexSync Formulation reports export formulation data across many dimensions. The purpose of this appendix is to explain what data is provided and how it is sourced.

Summary

The Summary section of the export data contains general summary data for the formulation spec.

Spec Name	Specification name.
Short Name	The multi-lingual text of the short name.
Spec #	The specification number (does not include issue number).
Issue #	The revision number of the specification.
Status	Name of the spec's workflow status
Category	Formulation Spec's Category within the Spec Category hierarchy.
Sub Category	Formulation Spec's Sub Category within the Spec Category hierarchy.
Group	Formulation Spec's Group within the Spec Category hierarchy.

Preferences

The Preferences section of the export data contains settings set directly on the formulation spec.

UOM	Formulation preferred UOM setting
Calc Path	Formulation preferred Calc Path setting
Density Mass UOM	Formulation preferred Calc Path setting
Density Vol UOM	Formulation preferred Calc Path setting
Combine Like Items	Formulation Combine Like Items setting
Set New Outputs As Fixed	Formulation Set New Outputs As Fixed setting
Assign Pack Size	Formulation Assign Pack Size setting
Cross Ref	Formulation preferred Cross Reference setting

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Cost UOM Currency	Formulation preferred Cost UOM Currency setting
Cost UOM Value	Formulation preferred Cost UOM Value setting
Cost UOM UOM	Formulation preferred Cost UOM UOM setting
Cost Type	Formulation preferred Cost Type setting
Cost Set	Formulation preferred Cost Set setting

Cross References

The Cross References section of the export data is a collection representing the Cross References directly associated with the formulation spec.

Key	The unique id (pkid) of the cross reference.
System Name	The external system name (e.g. JDE, SAP, etc.)
System ID	The external system code (e.g. USBPCS, USSAP, etc.)
Equivalent	The actual external system identifier value.
Status	Name of the cross reference's status.

Steps

The Steps section of the export data is a collection representing the formulation steps.

Key	The unique id (pkid) of the formulation step.
Step #	The conceptual processing flow order of the steps.
Step Name	The given user or generated name of this step.
Step Instructions	Instructions associated with the Step

Simple EAs

The Simple EAs section of the export data is a collection representing extended attributes attached directly to the formulation spec.

Key	The unique id (pkid) of the extended attribute instance

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EA Name	The name of the extended attribute type
EA ID	Unique ID for attribute
EA Value	EA value associated with the formulation spec
EA UOM	UOM for the EA Value
Notes	Comments associated with the extended attribute type.

BOM Inputs

The BOM Inputs section of the export data is a collection representing the formulation's material specification inputs.

Key	The unique id (pkid) of the input
Spec PKID	The unique id (pkid) of the material spec
Line Order	Unique sequential number for the input
Step #	Step number the input is associated with
Spec Number	The material specification number (does not include issue number).
Spec Issue	The revision number of the material specification.
Name	Name of the material specification.
Comment	Comment associated with the input.
% batch	Percent of the batch size
Quantity	Input Quantity
UOM	Quantity UOM
Base Qty(g)	Quantity in grams
Base Qty (ml)	Quantity in milliliters
G/L	Gain Loss associated with the input
Yield	Input Yield
Yield UOM	Input Yield UOM

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USD/100g	Input cost in US Dollars per 100g
Ext Cost	External Cost
Volume	Input Volume
Volume UOM	Volume UOM
Volume in Base UOM (ml)	Volume converted to milliliters
Mass	Input Mass
Mass UOM	Mass UOM
Mass in Base UOM (g)	Mass in grams
Total Solids	Total solids

Consume from Step

The Consume From Step section of the export data is a collection representing the formulation's inputs that are consumed from other steps.

Key	The unique id (pkid) of the input
Spec PKID	The unique id (pkid) of the material spec
Line Order	Unique sequential number for the input
Step #	Step number the input is associated with
Spec Number	The material specification number (does not include issue number).
Spec Issue	The revision number of the material specification.
Name	Name of the material specification.
Comment	Comment associated with the input.
% batch	Percent of the batch size
Quantity	Input Quantity
UOM	Quantity UOM
Base Qty(g)	Quantity in grams

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Base Qty (ml)	Quantity in milliliters
G/L	Gain Loss associated with the input
Yield	Input Yield
Yield UOM	Input Yield UOM
USD/100g	Input cost in US Dollars per 100g
Ext Cost	External Cost
Volume	Input Volume
Volume UOM	Volume UOM
Volume in Base UOM (ml)	Volume converted to milliliters
Mass	Input Mass
Mass UOM	Mass UOM
Mass in Base UOM (g)	Mass in grams
Total Solids	Total solids

BOM Outputs

The BOM Outputs section of the export data is a collection representing all the formulation's outputs, regardless of type.

Key	The unique id (pkid) of the output
Spec PKID	The unique id (pkid) of the material spec
Line Order	Unique sequential number for the input
Output of Step #	Step number the output is associated with
Input to Step #	Step number of the input that consumes this output
Number	The material specification number (does not include issue number).
Spec Issue	The revision number of the material specification.
Name	Name of the material specification.

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Quantity	Input Quantity
Quantity UOM	Quantity UOM
Base Qty(g)	Quantity in grams
Base Qty (ml)	Quantity in milliliters
Process G/L	Process Gain Loss associated with the output
Water G/L	Output's water gain/loss
Yld	Input Yield
Yld UOM	Input Yield UOM
Output Type	Output Type
Product Type	Product Type
Volume	Output Volume
Volume UOM	Volume UOM
Volume in Base UOM (ml)	Volume converted to milliliters
Mass	Output Mass
Mass UOM	Mass UOM
Mass in Base UOM (g)	Mass in grams
Total Solids	Total solids

Formulation Tags

The Formulation Tags section of the export data is a collection representing the tags associated with the formulation spec's inputs.

Key	Combination of the input pkid and the tag pkid
Owner	The unique id (pkid) of the input
ID	The unique id (pkid) of the tag
Tag Name	The name of the tag

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Cross References – Inputs

The Input Cross Reference section of the export data is a collection of cross references associated with the formulation's inputs.

Key	Combination of the cross ref pkid and input pkid
Spec Pkid	The unique id (pkid) of the input
System Name	The external system name (e.g. JDE, SAP, etc.)
System ID	The external system code (e.g. USBPCS, USSAP, etc.)
Equivalent	The actual external system identifier value.
Status	Name of the cross reference's status.
Description	Cross Reference description
UOMs	| separated list of UOMs associated with the cross reference.

Cross References – Outputs

The Input Cross Reference section of the export data is a collection of cross references associated with all the formulation's outputs.

Key	Combination of the cross ref pkid and input pkid
Spec Pkid	The unique id (pkid) of the input
System Name	The external system name (e.g. JDE, SAP, etc.)
System ID	The external system code (e.g. USBPCS, USSAP, etc.)
Equivalent	The actual external system identifier value.
Status	Name of the cross reference's status.
Description	Cross Reference description
UOMs	| separated list of UOMs associated with the cross reference.

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Extended Attributes– Inputs

The Extended Attributes Inputs section of the export data is a collection of extended attributes associated with the formulation's material inputs. These extended attributes must be distinct and have the "Is Design Attribute" tag.

Key	The unique id (pkid) of the extended attribute instance combined with the input pkid
Owner	The unique id (pkid) of the input
EA Name	The name of the extended attribute type
EA ID	Unique ID for attribute
EA Value	EA value associated with the formulation spec
EA UOM	UOM for the EA Value
Notes	Comments associated with the extended attribute type.

Extended Attributes – Outputs

The Extended Attributes Inputs section of the export data is a collection of extended attributes associated with the formulation's outputs. In the case of referenced material outputs, the EAs are pulled from the material spec. With all other outputs, the EAs are pulled from the output's theoretical EAs while taking overrides into account. These extended attributes must be distinct and have the "Is Design Attribute" tag.

Key	The unique id (pkid) of the extended attribute instance combined with the input pkid
Owner	The unique id (pkid) of the input
EA Name	The name of the extended attribute type
EA ID	Unique ID for attribute
EA Value	EA value associated with the formulation spec
EA UOM	UOM for the EA Value
Notes	Comments associated with the extended attribute type.

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Nutrients – Inputs

The Nutrients Inputs section of the export data is a collection of nutrients associated with the formulation's inputs.

Key	The unique id (pkid) of the nutrient combined with the input pkid
Owner	The unique id (pkid) of the input
Nutrient ID	Nutrient InFoodsID
Nutrient Name	Nutrient Name
Nutrient Value	Nutrient value for this input
Nutrient Value UOM	UOM for the Nutrient Value

Nutrients – Outputs

The Nutrients Inputs section of the export data is a collection of nutrients associated with the formulation's outputs.

Key	The unique id (pkid) of the nutrient combined with the output pkid
Owner	The unique id (pkid) of the output
Nutrient ID	Nutrient InFoodsID
Nutrient Name	Nutrient Name
Nutrient Value	Nutrient value for this input
Nutrient Value UOM	UOM for the Nutrient Value

Costs – Inputs

The Costs Inputs section of the export data is a collection of costs associated with each input material's cross references.

Key	Combination of the input pkid and the cost item pkid
Spec Pkid	The unique id (pkid) of the input material
Equivalent Key	The unique id (pkid) of the cross reference equivalent

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Facility Name	The name of the cost item facility.
Cost Type	The cost item's cost type
UOM	UOM associated with the cost item
Currency	Currency the cost is reported in
Cost	The actual cost item cost

Costs – Outputs

The Costs Outputs section of the export data is a collection of costs associated with each output material's cross references.

Key	Combination of the output pkid and the cost item pkid
Spec Pkid	The unique id (pkid) of the output material
Equivalent Key	The unique id (pkid) of the cross reference equivalent
Facility Name	The name of the cost item facility.
Cost Type	The cost item's cost type
UOM	UOM associated with the cost item
Currency	Currency the cost is reported in
Cost	The actual cost item cost

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Appendix C—What did the Installer do?

The installer will perform the following tasks for you:

- Backup all files to PRODIKA_HOME\SolutionPacksBackup\FlexSync\FlexSyncFormulation
- Copy FlexSyncFormulationLib.dll to PRODIKA_HOME\web\gsm\bin\
- Copy reports to c:\prodika\templates\
- Update SiteMap-DisplayOrder.xml and SiteMap-Extensions.xml to add FlexSync Formulation Pack Menu Items to the GSM Menu

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