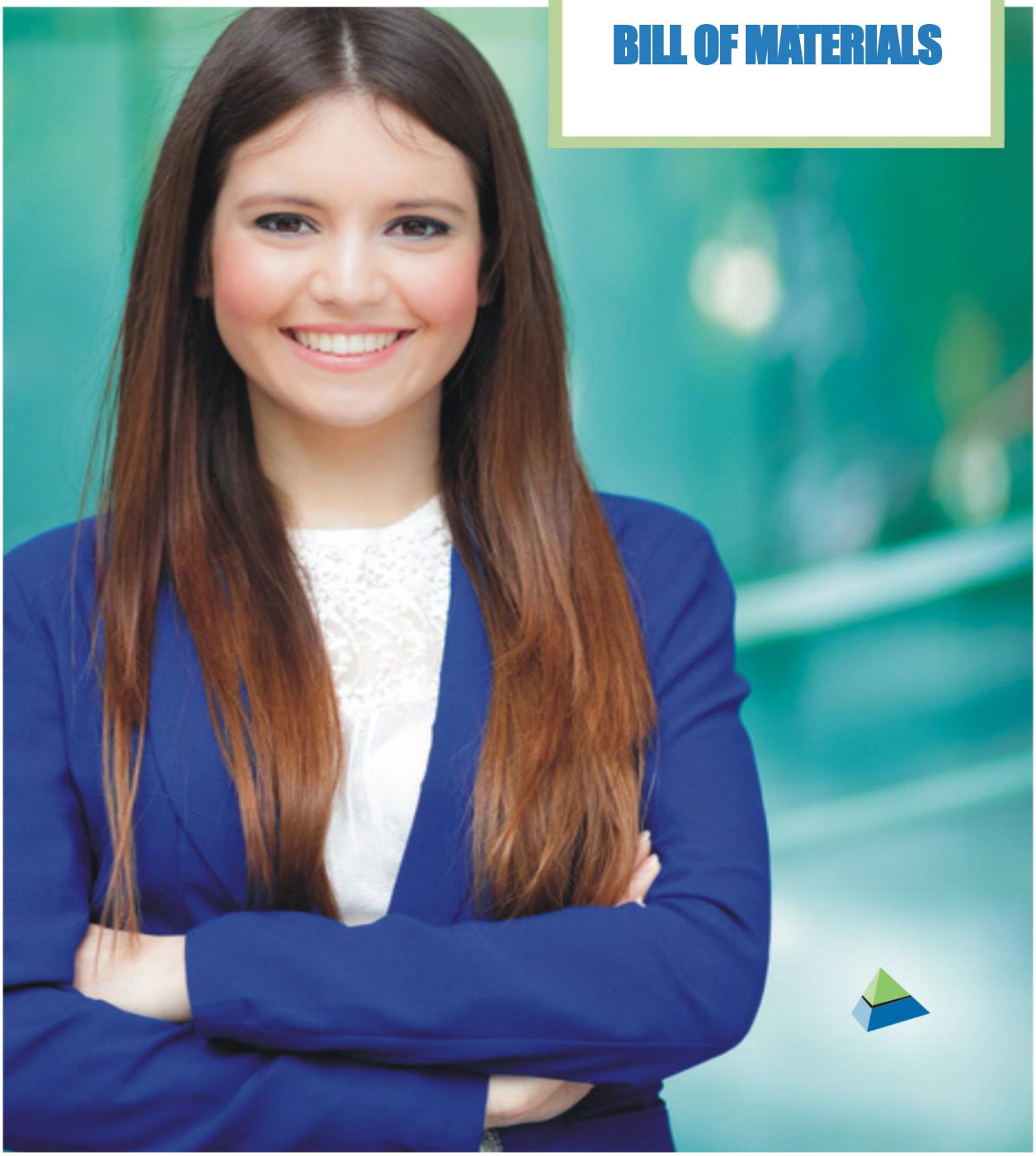
BATCHMASTER® ERP 18.2

User Guide

BatchMaster ERP with SAP Business One
BatchMaster Solutions
for Process Manufacturers

BILL OF MATERIALS



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About the Manual

Symbols & Conventions

Symbol	Description
	Note
	Mandatory setting
	Tips

Convention	Description
Italicized (Sales Order Entry)	Module name, screen name & components
“ ” (“BatchMaster ERP with SAP Business One Hardware and Software Requirements Document”)	Reference document

Abbreviation	Description
BOM	Bill of Materials
FG	Finished Good

Contents

1 DOCUMENT OVERVIEW

This document gives an overview of the Bill of Materials (BOM) function and how BatchMaster ERP can help process manufacturers. It explains features of the system in conversational language using general and industry-specific examples. After reading this you should be able to use the module in at least a basic way.

1.1 What Is This Document All About?

A BOM describes a finished product in terms of its formulas, intermediates, and packaging sub-assemblies. A BOM consists of a list of parts and also forms an essential part of the design and development of any product. It is used to link a formula with a finished good or an intermediate stored in inventory. You can also associate labor and overhead with an intermediate or finished good.

A BOM is the fundamental building block for scheduling, costing, and inventory control. From the *BOM Entry* screen a single formula can be linked to multiple end items. There are three types of BOM: an Intermediate BOM, a Finished Good BOM, and an Assembly BOM

BOM explosion, where-used, and comparison utilities let you quickly and easily verify that your product structures are correct, and the system will drive accurate raw material requirements.

BOM Substitution, with which you can replace any BOM component (Material, Labor, Boilerplate or Text). It is used to add or delete a BOM component, with an edited Quantity if required.

1.2 Who Should Read This Document?

This document is intended for anyone who is implementing the software, learning how to use it, or training another person.

1.3 What's New in this Release?

- Enhancement on BOM Explosion screen – Export All.
- Size with Batch option on Consumable Tab of BOM Entry Screen.
- Backflush feature on BOM Entry Screen.

1.4 Objectives

This document is intended to help the reader:

- Identify the purpose and functioning of the features in BatchMaster ERP.
- Identify the industry-specific utility of each feature.

- Record data in the system perform transactions.
- Explain the purpose of features to others using examples.
- Identify the business uses for reports and inquiries.

2 BOM SETUP

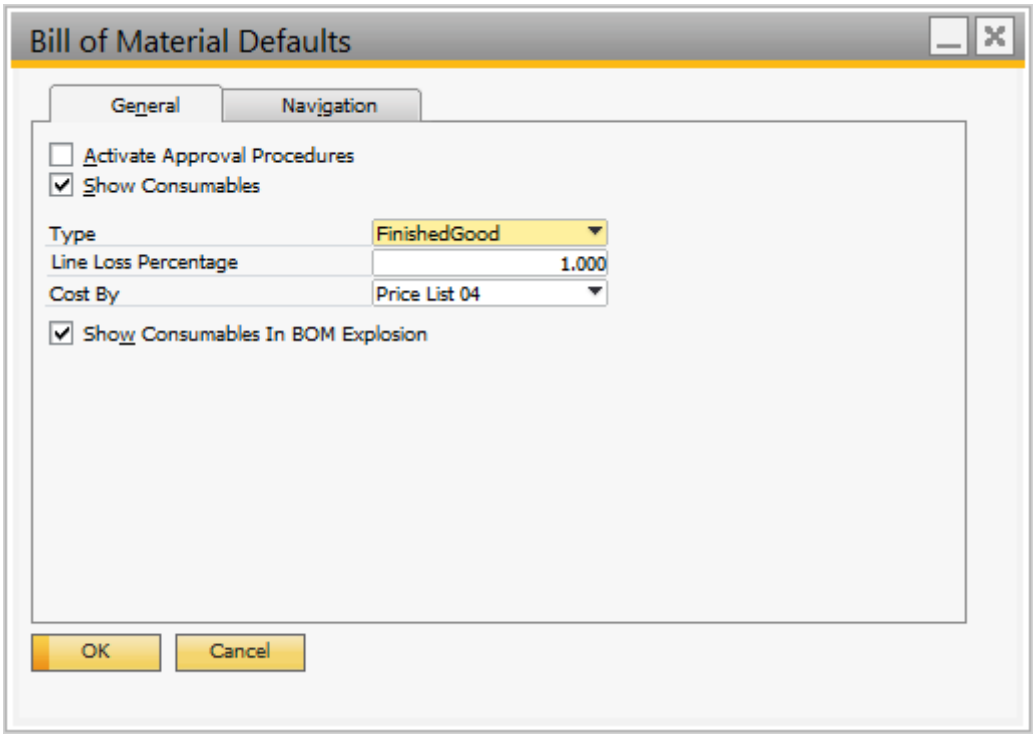
2.1 Bill of Material Defaults

Use the *Bill of Material Defaults* screen to specify whether approvals and consumables are required in BOMs. The system also allows you to define default values when a new BOM is created.

Prerequisites: Item records must first be maintained on the *Item Master Data* screen.

2.1.1 General Tab

Go To: Administration → Setup → Bill of Material → Bill of Material Defaults.



Activate Approval Procedures: Use this field to specify when an approval process is required. If this option is checked, then an approval workflow must be followed when a new BOM version is created.

You cannot uncheck this option until all pending approvals have been processed (either approved or rejected).

Show Consumables: Check this box if you need to list consumable items (other than raw materials) on the BOM. A separate tab appears on the *BOM Entry* screen when this box is checked.

Type: The default BOM type. A value must be entered in this field when you create a new record. Available options are**:**

- ***Intermediate*****:** Intermediate-type BOMs are created using formulas and are used to produce items in bulk quantities. This type of BOM does not usually contain any packaging material. For example, you would use this type of BOM to produce vats of grape jelly.
- ***Finished Good*****:** A finished good-type BOM is created by calling a formula and adding packaging materials. A single formula can be linked to multiple finished good BOMs, eliminating the need to modify multiple BOMs when the formula changes. For example, if we sell grape jelly in three different size jars, filling each jar would require a unique finished good BOM.
- ***Assembly*****:** An assembly-type BOM calls out multiple discrete finished goods; no formula is applicable for this type of BOM. For example, if small jars of grape jelly (a finished good) are packaged with small jars of strawberry jelly (a second finished good) to make an assortment pack, the assortment pack would require an assembly BOM.

Line Loss Percentage: Specify the expected loss percentage of BOM line items. The value you specify here is defaulted as *Line Loss %* on the *BOM Entry* screen.

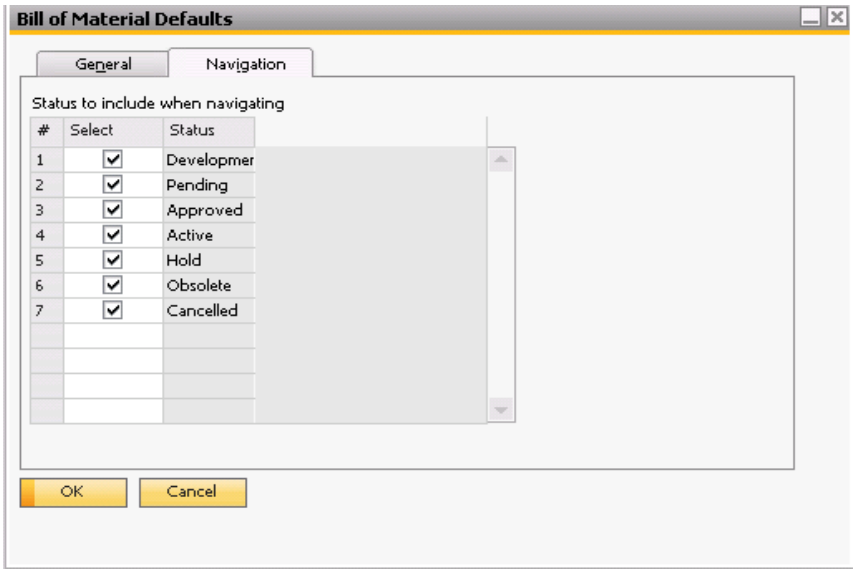
Show Consumables in BOM Explosion: Select this checkbox to display the Formula/BOM consumable in BOM Explosion.

Cost By: A default price list to be used during BOM creation.

OK/Update: Click the *Update* button to save changes made on the screen.

Cancel: Click the *Cancel* button to close the screen without saving the data.

2.1.2 Navigation Tab



Status to include when navigating: Check the box beside each status you want accessible when viewing bills of material. Available options are:

- **Development:** Denotes that the BOM is in the creation process. BatchMaster ERP tracks BOMs by revision, so there can be multiple versions of the same BOM in Development status at a particular time. These can be updated or deleted but cannot be used in production.
- **Pending:** This status is set by the software when a BOM revision has been submitted for approval. No changes can be made to a BOM with Pending status. If the approval process is not activated, this status would not apply.
- **Approved:** Indicates that the BOM revision has been approved by all appropriate reviewers, and it is waiting to be set to Active status. If an 'effective from' date was entered during BOM creation, the revision will be set to Active status when the system date matches the 'effective from' date. If the approval process is not activated, this status does not apply.

  When the *Effective From* field is left blank, the software will make the BOM revision Active immediately after approval. One or more BOM revisions can be approved at a given time, with different effective dates, but only one BOM revision can be Active at any point in time.

- **Active:** The BOM revision is available for use in production activities. There can only be one Active BOM revision at a time. When a revision is made Active, the previous revision is marked as Obsolete. BatchMaster ERP with SAP Business One provides a status update service that will poll periodically to determine if a BOM revision should be Active based on its 'effective from' and 'valid until' dates.
- **Hold:** The BOM revision is temporarily not available for production. No changes can be made to the BOM, but the status can be toggled back to Active when appropriate.

- **Obsolete:** The BOM is no longer available for production. If the system date crosses the 'valid until' date, the application would automatically change the BOM status to Obsolete.
- **Canceled:** The BOM is not available for production. The proposed BOM revision has been rejected by the approval body. No changes are allowed to a cancelled BOM.

Add/Update: Click this button to update any previously saved settings.

Cancel: Click the *Cancel* button to close the screen without saving the data.

2.1.3 Setting up BOM Defaults

1. Open the *Bill of Material Defaults* screen.
2. Check the *Activate Approval Procedure* option to activate the approval process for the BOM.
3. Check the *Show Consumables* option to associate consumable items (other than raw materials) with a BOM.
4. Select the BOM type using the drop-down menu next to the *Type* field. Available options are *Intermediate*, *Finished Good*, and *Assembly*.
5. In the *Scrap Percentage* field, enter the percentage of material scrapped at the end of the production process. (For informational purposes only.)
6. Select the required cost method in the *Cost By* field.
7. Check the *Show Consumables in BOM Explosion* checkbox if you want to display the consumables item of Formula/BOM in BOM Explosion.
8. Switch to the *Navigation* tab. Select the statuses you want to see during navigation.
9. Click the *Update* button to save the record.

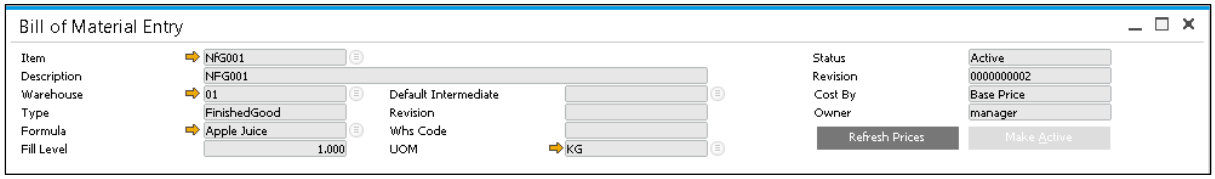
3 BOM MASTER

3.1 BOM Entry

On the *Bill of Material Entry* screen you can create BOMs to define your bulk items and saleable items. The BOMs can vary by warehouse. A single formula can be linked to multiple end items. For instance, if your company sells finished goods in 250 milliliter (ml), 500 ml, and 1 liter containers, then you can define three distinct finished good-type BOMs for 250 ml, 500 ml, and 1 liter of this finished good. The same formula for the bulk item will be used in all three BOMs, but the sub-assembly or packaging items will be different.

Go To: Bill of Material → Bill of Material Entry.

Press Ctrl + A to enter 'Add' mode.



3.1.1 Header Information

Item: Only valid inventoried items will be shown in the lookup.

Description: The system displays the description of the item, taken from its Item Master record.

Warehouse: Specify the warehouse for the item using the lookup next to the *Warehouse* field.

Type: Specify the BOM type using the drop-down menu next to the *Type* field. Available options are:

- ***Finished Good*** *(shown)*: The finished good-type BOM includes a formula that is used to produce a finished good. This type of BOM also includes packaging material, which is entered on the *Items* tab.
- ***Intermediate***: The intermediate-type of BOM is created using a formula that is used to produce an end item in bulk quantities. This type of BOM does not usually include packaging material.
- ***Assembly***: The assembly-type BOM is comprised of assembly items meant for the manufacture of discrete assembly products which are easily countable and identifiable. Formulas are not applicable for assembly-type BOMs.

Formula: Enter the formula from which the finished good or intermediate is to be made.

Fill Level: Define how much finished good is required to make the item. For instance, if the finished good is a 1 kilogram (kg) pack of tomato sauce, then the fill level is 1. The fill level is applicable for finished goods and container-type BOMs.

UOM: The unit of measure for the fill level.

Default Intermediate: Use the lookup function to display the intermediate item(s) that are made using the formula. If more than one intermediate is tied to the formula, you must choose the primary record. This data is used by the MPS and Super Batch functions. The field is enabled only when the BOM is of *Finished Good* type.

Status: This is a system-maintained field that stores the status of the BOM. Possible statuses for a BOM are listed in Section 2.1.2.

Revision: The revision number associated with the BOM. This field is controlled by the system and is auto incremented whenever a new development version of the BOM is created.  The icon indicates that more than one revision of the BOM exists.

Cost By: The drop-down menu next to the *Cost By* field displays all price lists available in the system. Select a price list to view BOM cost based on the applicable cost of BOM items in that price list.

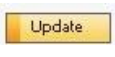
Owner: An identification key for the user who owns the BOM. The drop-down menu next to this field lists all valid users.

Refresh Price: If the price list associated with the BOM items and consumables is modified click this button to view the updated cost.

Make Active: This button is displayed only if the approval procedure **is not** implemented for the *BOM Module*. Click the *Make Active* button to change the Development status of a BOM to Active so it can be used in production activities.

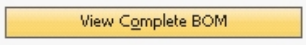
Send for Approval: This button is displayed if the approval procedure **is** implemented for the *BOM Module*. Click the *Send for Approval* button to initiate the approval procedure for a BOM with Development status.

Comments: Enter any notes or remarks in the *Comments* field.



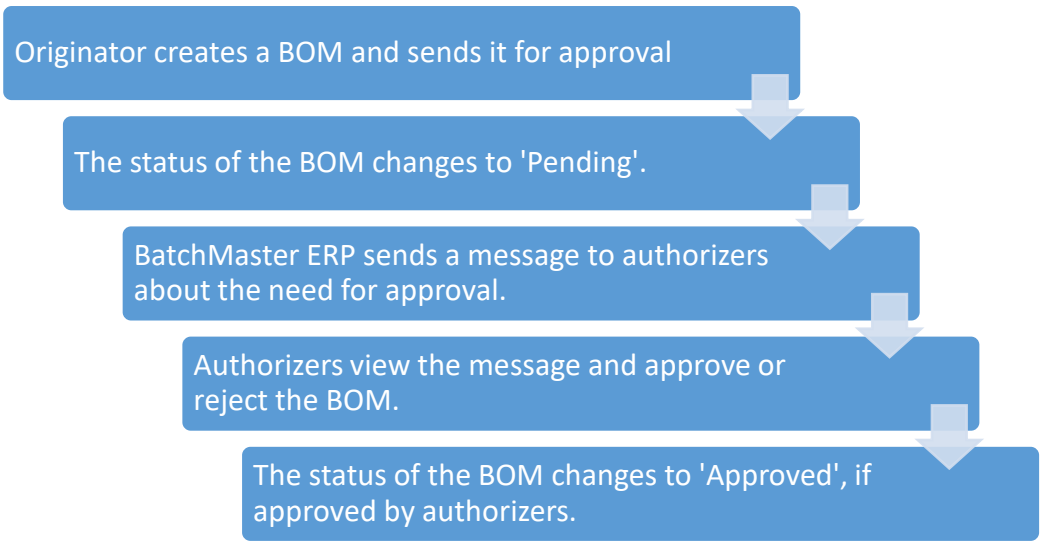
Add/Update: Click the *Add* button to save your changes and update the record.

Cancel: Click the *Cancel* button to close the screen without saving the data.



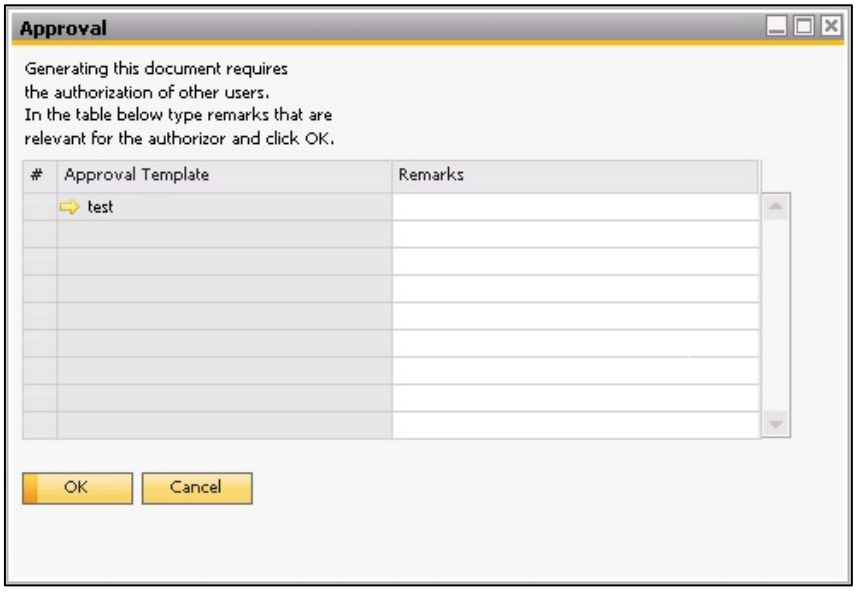
View Complete BOM: Displays the *BOM Explosion* screen showing the BOM hierarchy. See Section 3.1.7 or Section 4.1.

3.1.2 Approval Process (optional)



1. When BOM approval is required for the originator (the user who has created the BOM), then the *Approval* screen will appear when the *Send For Approval* button is clicked.

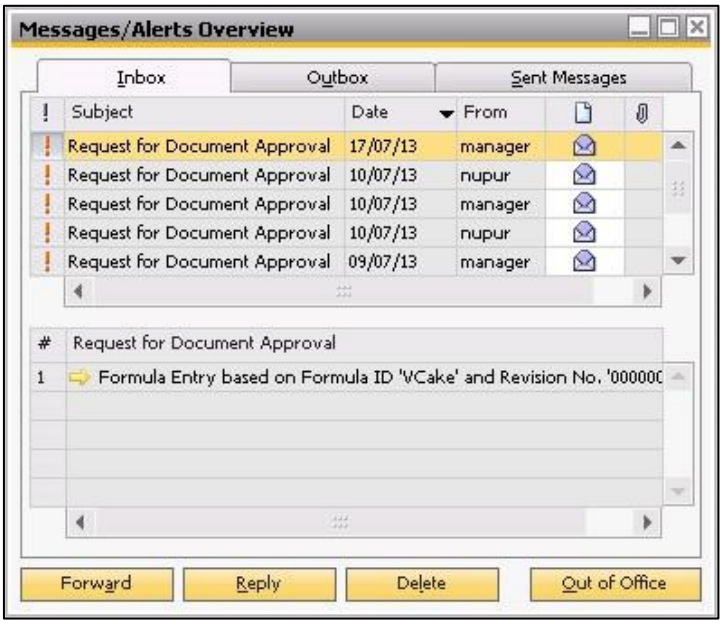
2. When a BOM is sent for approval, its status changes to Pending. This indicates that the document requires authorization.



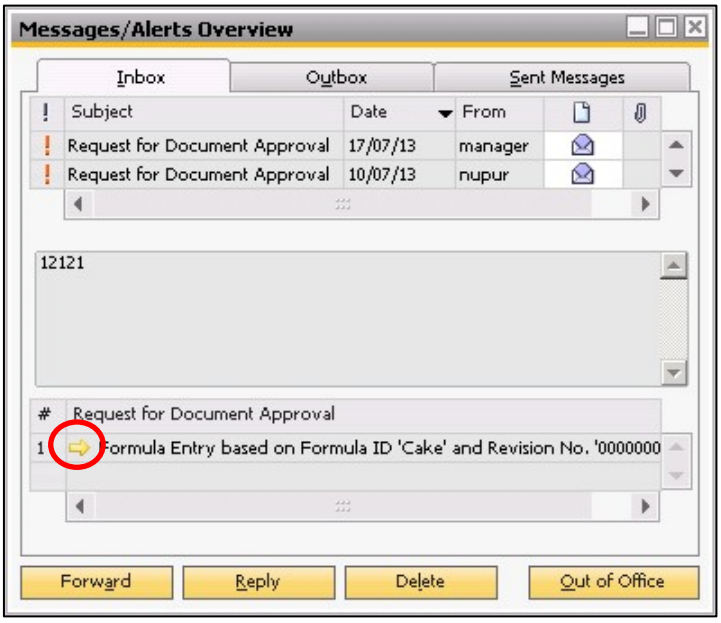
3. Using the *Remarks* column, the originator can add notes for authorizers regarding the BOM. Clicking the *OK* button closes the screen.

4. When an originator creates a document (BOM) that needs approval, BatchMaster ERP sends a message to one or more authorizers who can approve the document (a chain of approvals could be required).

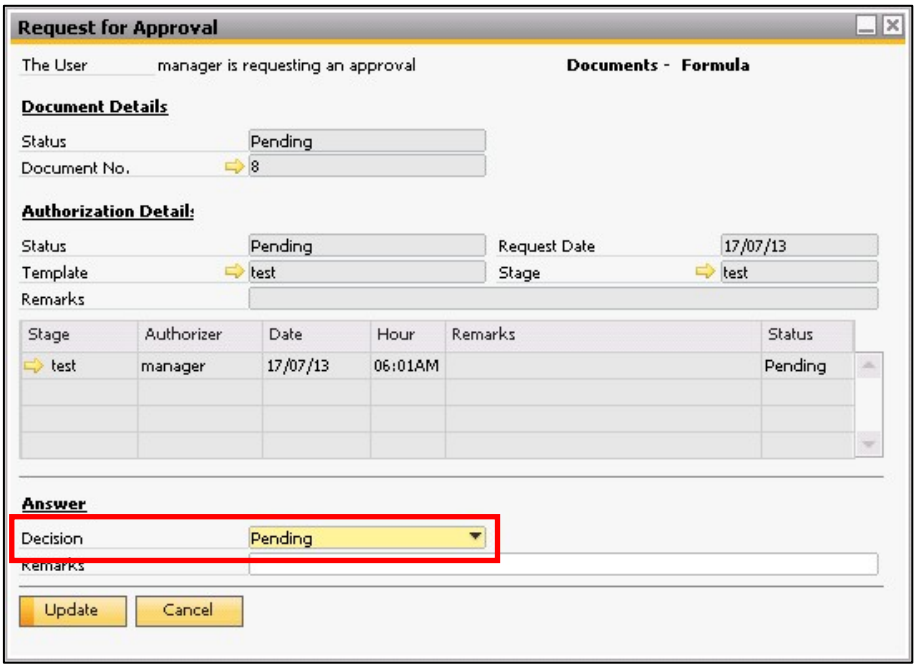
5. An authorizer can approve or reject the document using the *Messages/Alert Overview* screen. If there are alerts pending for the user, this screen would appear when the user logs into the system.



The authorizer can double-click the *Request for Document Approval* field in the *Messages/ Alerts Overview* window to view the details of the document for which approval is pending.



6. The *Messages/Alerts Overview* window provides search lookup capabilities. Clicking the right arrow key in the *Request for Document Approval* grid displays the *Request for Approval* screen.



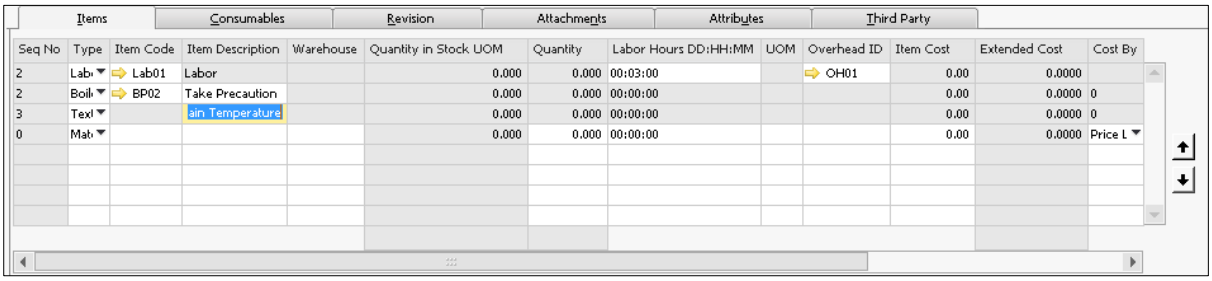
7. The authorizer can view document and authorization details along with any remarks entered by the originator. In the *Answer* section, the authorizer can approve or reject the document using the dropdown next to the *Decision* field. Available options are *Approved*, *Pending*, and *Rejected*.

8. After all required users have approved the BOM, its status will change to Approved.

Add/Update: Click the *Add/Update* button to save the record.

Cancel: Click the *Cancel* button to close the screen without saving your changes.

3.1.3 Items Tab



Type: Using this dropdown you can specify the BOM line *Type* as any of *Material, Labor, Boilerplate* or *Text*. Based on the selected BOM line *Type*, line details can be entered. The information to be entered will vary depending on the line *Type* chosen. The line level labor you attach here will be included in BOM cost.

Item Code: The item code for a valid inventoried item. If you are entering a finished good-type BOM, these items would be packaging materials; for an assembly-type BOM, they would be packaging plus the finished goods to pull from stock to make the assembly (like the grape jelly assortment pack mentioned previously).

Item Description: The description associated with the selected item code.

Warehouse: The warehouse for the item. In a production batch, the assembly or packaging item will be issued from the warehouse specified here.

Refer to the *BME-B1 18.2 Production User Guide* for detailed information about material issues.

Make/Buy: The type of item selected in the *Item Code* field. Choose *Buy* for purchased items or *Make* for manufactured items. Data for both options is pulled from the *Item Master Data* screen.

Quantity: The quantity of the component required to complete one unit of the parent item.

UOM: The unit of measure. This field defaults to the stock UOM but can be edited if needed.

Toggle to UOM: Allows you to toggle the quantity in another unit. For example, choosing DZN (dozen) in this field will convert the quantity into DZN; the *UOM* field will also change to DZN.

Overhead ID: Choose an overhead if you incur additional costs in material handling or processing.

Item Cost: Displays the price based on the price list selected in the *Cost By* field.

Extended Cost: Displays the extended cost for the material/item. This value is computed as a product of item cost and quantity.

Cost By: The drop-down menu next to the *Cost By* field displays all price lists available in the system. The price list specified at the header level is defaulted here. This value can be overridden, if needed.

Lower Tolerance %: You can enable this field from the *Form Settings*. Here you can specify the minimum acceptable percentage value allowed to be issued of the BOM lines below its *Quantity Required*.

Upper Tolerance %: You can enable this field from the *Form Settings*. Here you can specify the maximum acceptable percentage value allowed to be issued of the BOM lines above its *Quantity Required.*

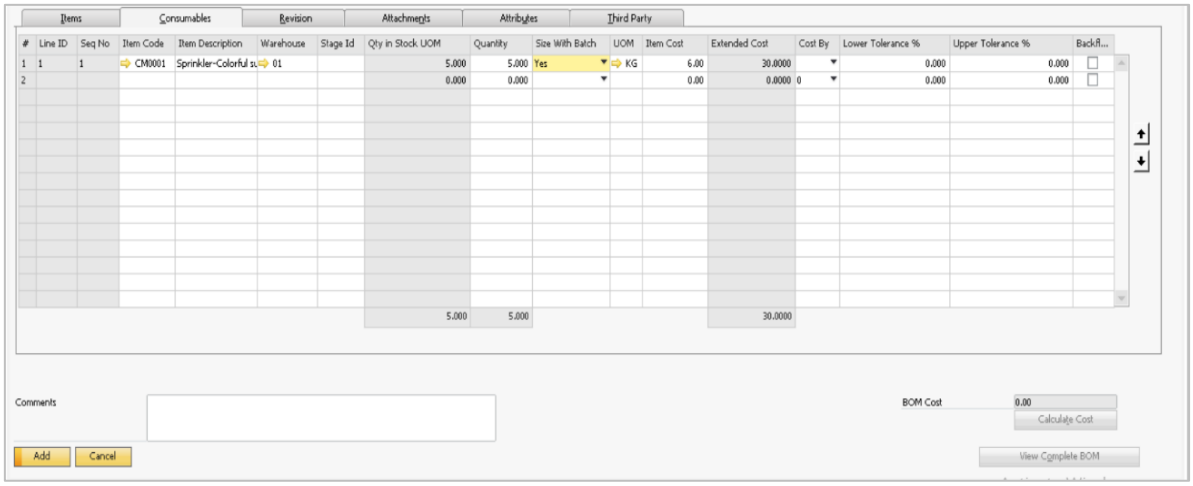
Line Loss %: Specify the percentage value of the expected loss of the BOM line. The value you specify here will be considered while calculating the BOM line quantity required for production.

Ref Designator: Enter any additional comments for a specific line. To enable the *Ref Designator* field, first select the desired row.

Backflush: Check this option to enable backflush feature for the respective Item. If you mark this option, then the system displays auto marked *Backflush* checkbox for the respective item on the *Batch Ticket* screen as well. The Backflush feature is used to automate the consumption of raw materials or components in the production process. Instead of manually issuing materials for each batch, backflushing automatically deducts the required quantities from inventory based on predefined bill of materials (BOM) or production rules.

Notes: Enter any additional information. To enable the *Notes* field, select the desired row.

3.1.4 Consumables Tab (optional)



Item Code: The item key of the item consumed in the formula. The lookup next to this field displays all inventory items.

Item Description: A description of the item selected in the *Item Code* field.

Warehouse: The warehouse location of the item entered in the *Item Code* field.

Quantity: Stores the quantity of the consumable items used.

Size with Batch: This option offers two options as:

- ***Yes*** –The system sizes consumable quantities based on the FG batch size. On creating a new BOM or adding a new consumable item, the default value is set to "Yes". As a result the consumable quantities scale based on the FG batch size.
- ***No*** – The consumable quantities remain static as defined in the BOM.

UOM: The unit of measurement of the item selected in the *Item Code* field.

Item Cost: The cost of the material.

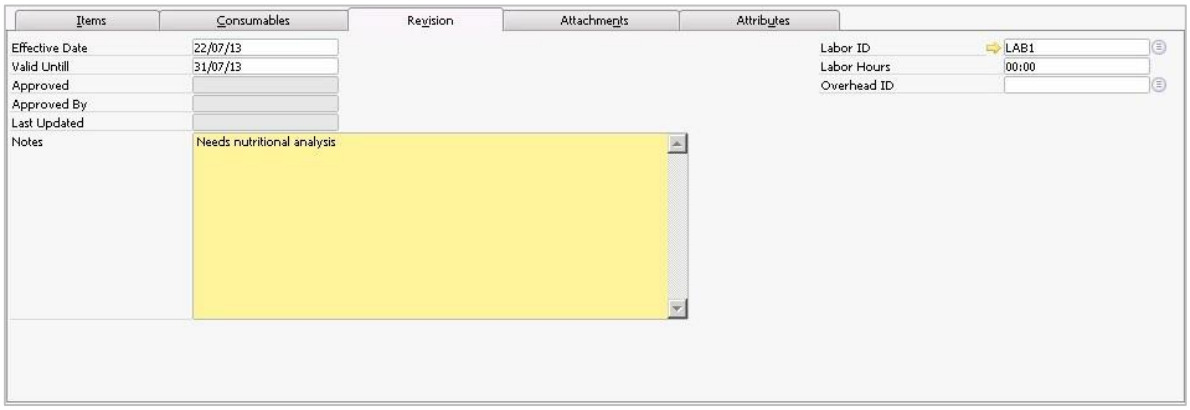
Extended Cost: The extended cost of the item, computed as the product of the *Item Cost* and *Quantity*.

Cost By: The price list for the consumable. The price list selected in this field is the default price list for all formula items and consumables, which can be overridden at item level if needed. This field is used for costing purposes only; changes made in this field will not result in any revisions.

The drop-down menu in this field lists all the defined price lists and options for the *Base Price*, *Last Evaluated Price*, and *Last Purchase Price*.

Backflush: Check this option to enable backflush feature for the respective Item. If you mark this option, then the system displays auto marked *Backflush* checkbox for the respective item on the *Batch Ticket* screen as well. The Backflush feature is used to automate the consumption of raw materials or components in the production process. Instead of manually issuing materials for each batch, backflushing automatically deducts the required quantities from inventory based on predefined bill of materials (BOM) or production rules.

3.1.5 Revision Tab



Effective Date: Specify the date from which the BOM is active (i.e., the date from which the BOM can be used in production). A BOM cannot have Active status if the system date is earlier than the effective date.

The *Effective Date* cannot be changed except when the status of a BOM is Development.

Valid Until: The date until which the BOM is valid; after this date the application will automatically change the status of the BOM to Obsolete. In other words, this is the date until which the BOM is Active. A BOM cannot be Active if the system date is past the date shown in the *Valid Until* field. If this date is null, then the BOM does not have an end date.

The *Valid Until* date cannot be changed except when the status of a BOM is Development.

Approved: The date on which the BOM was approved. This is a system-maintained field.

Approved By: The unique identification key of the user who approved the BOM.

Last Updated: The date on which the BOM was last modified.

Notes: Use this field to enter any remarks.

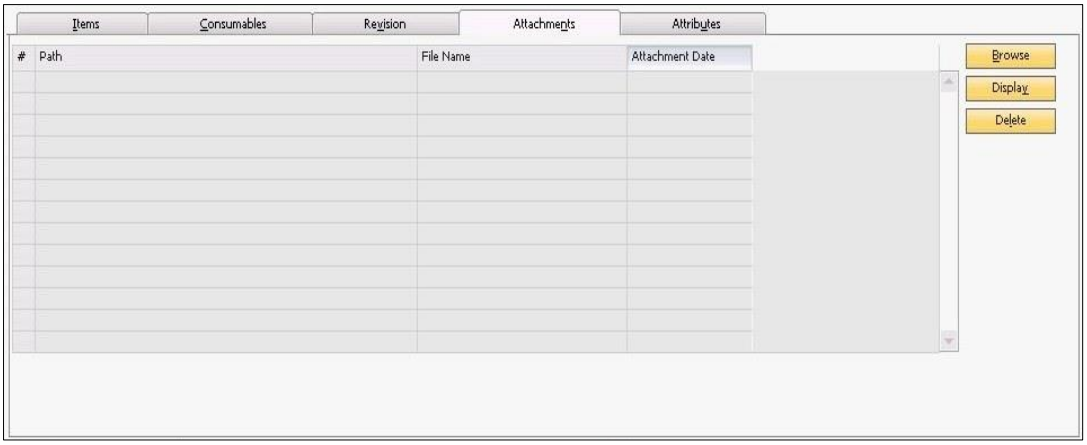
Labor ID: Select a unique ID for labor cost, if applicable, using the lookup next to the *Labor ID* field. Choose a labor ID if you incur any costs in material handling or processing.

Labor Hours: Specify the number of labor hours required.

Overhead ID: Enter an overhead key, if applicable, using the lookup next to the *Overhead ID* field. Choose an overhead key if you incur any additional costs in material handling or processing.

3.1.6 Attachments Tab

Use this tab to attach pictures, specifications, and any other documents that pertain to the BOM.



Path: Specify a path to the document you wish to attach. It is recommended that you specify a network path so that the attachment is accessible to other users as well.

File Name: The file name of the attached document.

Attachment Date: The date on which the document was attached.

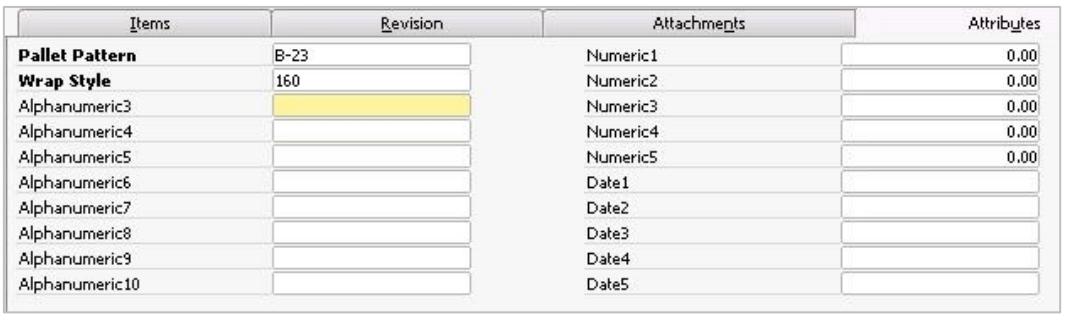
Browse: Click the *Browse* button to select the document.

Display: Use the *Display* button to view the selected document.

Delete: Click the *Delete* button to remove the selected attachment. The attachment will not be deleted from the source.

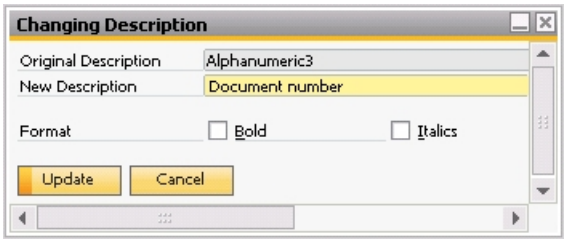
3.1.7 Attributes Tab

The *Attributes* tab is used to specify custom field values that can be used for reporting purposes. You can include the fields on reports in any combination of *Alphanumeric*, *Numeric*, or *Date* type.



The field labels can be customized by hovering over the label, pressing **Shift + Ctrl**, and then double-clicking. Above we see 'Pallet Pattern' and 'Wrap Style' as examples.

Alphanumeric (1...10): A field value composed of a combination of alphabetic characters and numeric values. You can enter a field value using alphabetic characters (A through Z), numeric values (0 through 9), and the underscore character (_).



Numeric (1...5): A field value composed of numeric characters.

Date (1...5): A field value following the convention MM/DD/YY. A calendar function is available.

Active Ingredient: If the *Use Lot of Active Ingredient* option is selected on the *Production Default* Screen, then this button is activated for an Assembly type of BOM. Here you can specify an Active Ingredient of the BOM. The lot number of the active component will be mapped in the batch and can be used throughout the production.

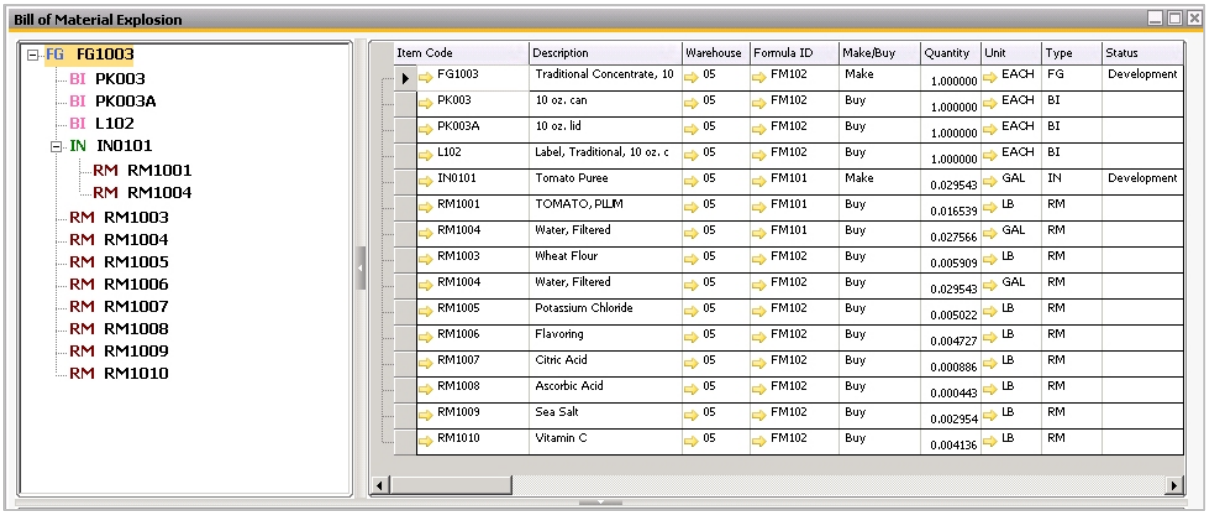
Comments: Enter any notes or remarks in the *Comments* field.

BOM Cost: This field displays the updated cost of the BOM.

It is calculated as the sum of BOM Material Cost + BOM (Header and Line) Labor Cost + BOM (Header and Line) Overhead Cost.

Calculate Cost: Clicking this button executes the *Cost Rollup* and updates the *BOM Cost* on the basis of the *Cost By* option set for the formula items on the *Formula Entry* screen.

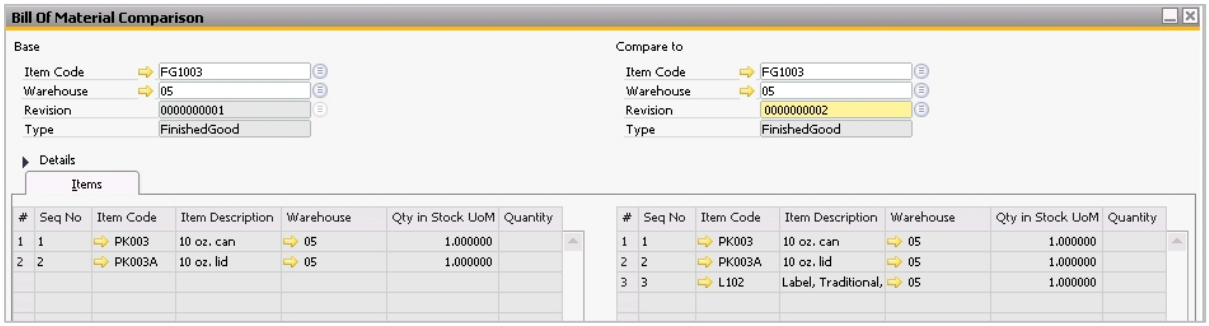
The **View Complete BOM** option lets you see a tree diagram as well as component data.



3.1.8 GoTo Options

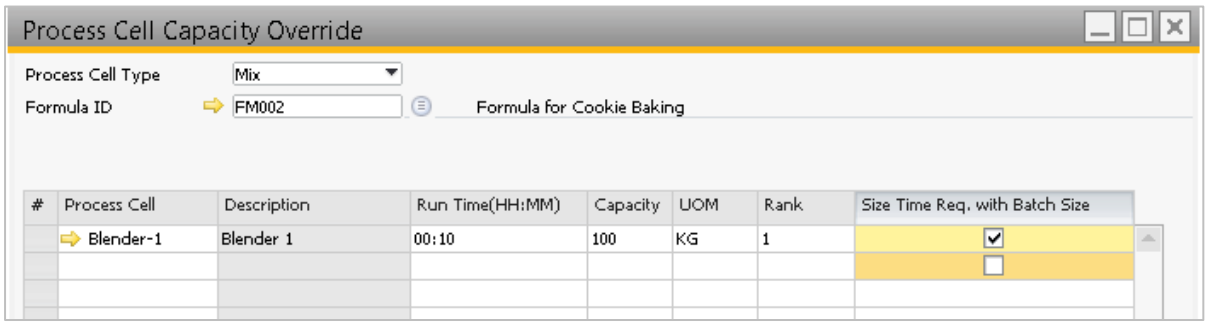
3.1.8.1 Compare Bills

Clicking the *Compare Bills* menu opens the *BOM Comparison* screen displaying the current BOM. Using this screen you can select and compare two distinct BOMs or revisions of the same BOM. The resulting grids are read-only. Refer to Section 4.2 for details.



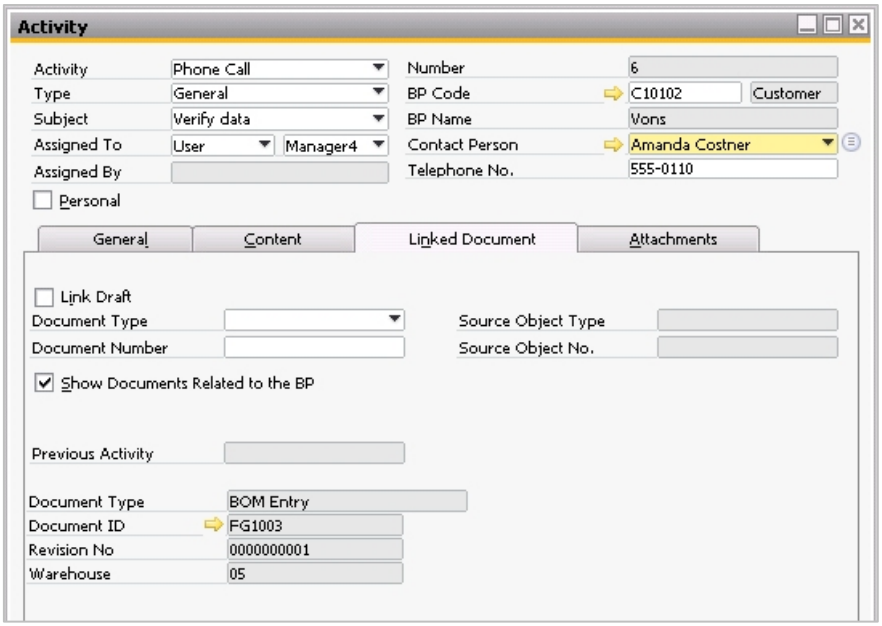
3.1.8.2 Process Cell Capacity Override

Use this screen to associate your formula/finished good or assembly item to a different type of process cell. On this screen, with individual formula/finished good or assembly item, you can attach as many process cells as needed, then specify its ranking, capacity and amount of time required to produce the batch.



3.1.8.3 New Activity

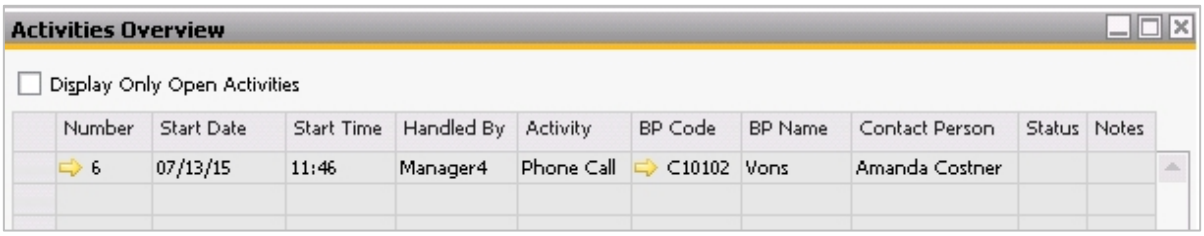
Select the *New Activity* option to go to the *Activity* screen, where you can create and associate activities.



When you access the *Activity* screen using the *GoTo* function for this screen, the system auto-populates the values in the *Document Type* and *Document ID* fields. See the "BatchMaster ERP with SAP Business One 18.2 – Activities SOP" for more information.

3.1.8.4 Related Activities

The *Activities Overview* screen lists activities that have been associated with the BOM.



3.1.8.5 Miscellaneous GoTo

Put on Hold: Temporarily place an Active BOM on Hold to prevent the BOM from being used in production activities.

Make Obsolete: The *Make Obsolete* function changes the status of the BOM to Obsolete. An Obsolete BOM cannot be used in production.

Release Hold: Click the *Release Hold* button to change the status of a BOM from Hold to Active.

Revise BOM: An Active BOM cannot be edited. Choose the *Revise BOM* menu to create a new development revision version of the BOM.

Define QC Tests: Displays the *Item Master Details* screen, which allows you to add QC tests for this finished good.

Refresh Quantities: In the grid, when you change the quantity of an item and right click on the line level, you can choose this option to refresh the *Quantity in Stock UOM, Item Cost,* and *Extended Cost* fields with their new values.

3.1.8.6 Relationship Map

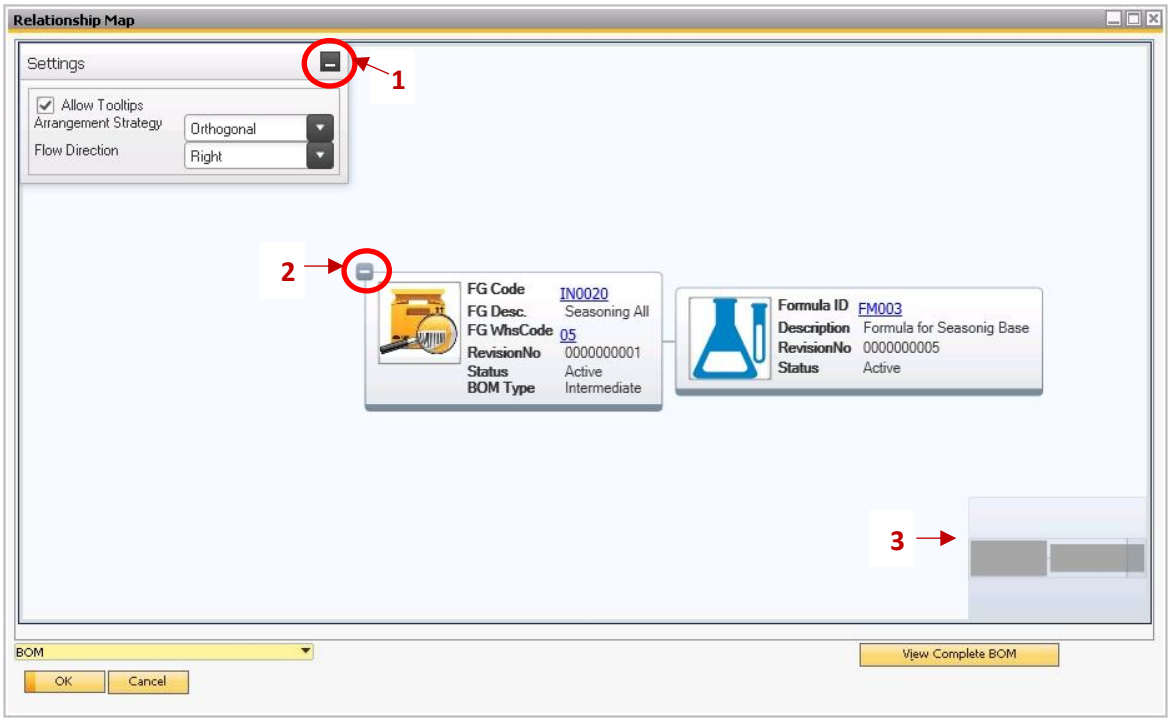
A relationship map is a pictorial representation of all the critical information about its subject. The relationship map for a BOM would display the FG Code, FG Desc, FG Whs Code, BOM Revision No, Status, and BOM Type.

The *Settings* section (labeled '**1**' below) helps you customize the way in which the information is displayed**.** Click the '***+***' button to expand this section, or click the '**–**' button to close.

Allow Tool Tips: View tool tips as you mouse over critical data on the relationship map.

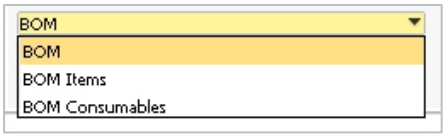
Arrangement Strategy: The way you want to arrange information. Available options are *Orthogonal* and *Stagger*.

Flow Direction: The direction in which the entities containing information should be displayed. Available options are *Above*, *Below*, *Left*, and *Right*.



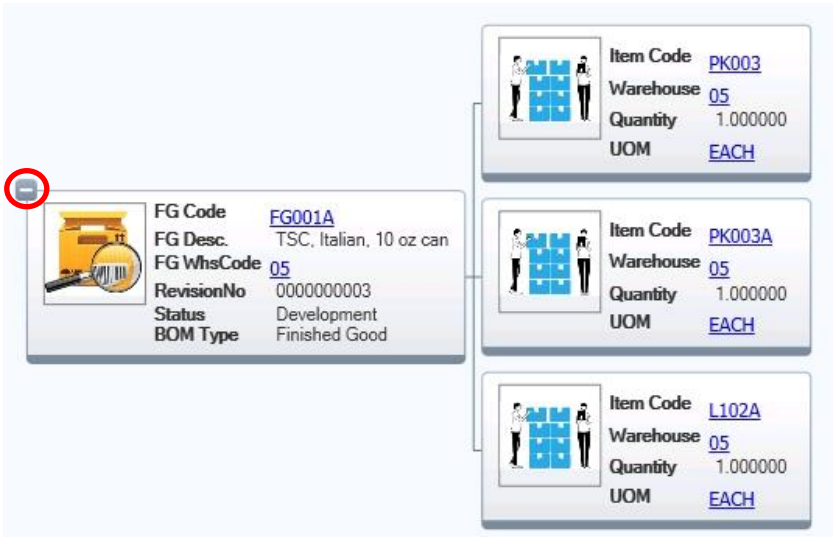
Click the **+/-** sign (labeled '**2**') above to show the formula associated with the intermediate BOM in a separate entity. You can click on the formula ID and view the formula record in the *Formula Entry* screen. You can also click on the FG Code and view the associated Item Master data.

The toolbar labeled '**3**' above is used to change the size of images displayed on the screen.



Notice the dropdown at the lower left side of the mapping window.

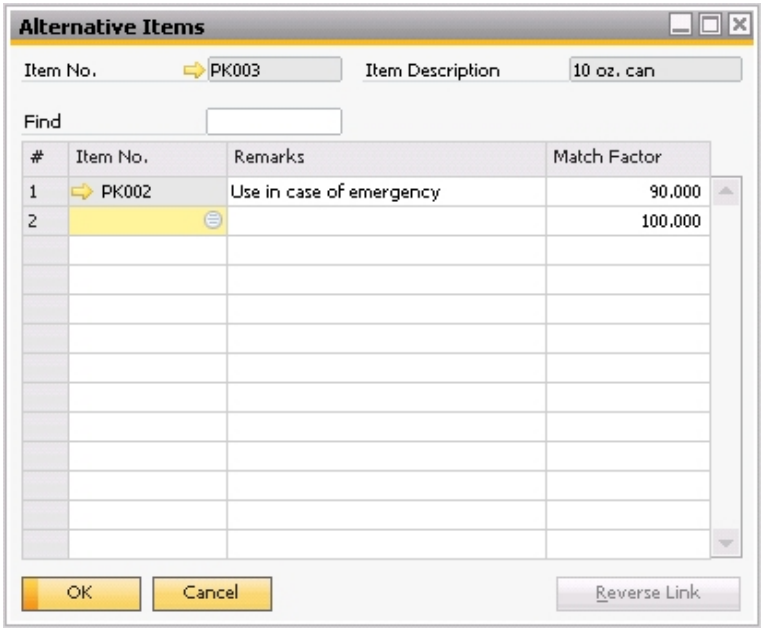
When the record you are viewing is an assembly-type or finished good-type BOM, you can view the packaging and/or finished goods needed to complete the parent item. Choose *BOM Items* from the dropdown, then click the '**+/-**' sign. From the resulting window you can click on the item number(s) to view Item Master data.



When the record you are viewing includes consumable items, you can view them by choosing *BOM Consumables* from the dropdown, then clicking the '**+/-**'sign. From the resulting window you can click on the item number(s) to view Item Master data.

3.1.8.7 Alternative Item

Right-click on the BOM lines in the grid to open the *Alternative Item* screen. From this screen you can select the item that can be used as a substitute for the primary item.



You can add new alternate items at this screen. Press **Ctrl + A** to enter the 'Add' mode.

Item No (header)**:** The unique identification key of the BOM item for which an alternate item is needed.

Item Description: A description of the item.

#: The sequence number of a line in the grid.

Item No. (grid)**:** The unique ID of the available substitute item.

Remarks: Any note or remark related to the alternate item.

Match Factor: Enter the value to specify the matching degree in points. A higher value represents a higher match. In practice you would want to use the item with the highest match factor.

Add (not shown)**:** Click the *Add* button to save the record.

Cancel: Click the *Cancel* button to exit the screen without saving your changes.

Reverse Link: Select one or more alternative items and choose *Reverse Link* to create a reverse relationship between the alternative items and the original item. This means that both items are defined as alternatives for each other.

3.1.9 Maintaining a BOM

1. Open the *BOM Entry* screen.
2. Use the lookup next to the *Item* field to locate the Item Key for which the BOM is to be created. Selecting the item defaults its description at the *Description* field.
3. Select the warehouse associated with the selected item using the lookup next to the *Warehouse* field.
4. Enter the BOM type using the drop-down menu next to the *Type* field. Available options are *Finished Good*, *Intermediate,* and *Assembly*.
5. When the BOM type is Finished Good or Intermediate, attach the appropriate formula using the lookup next to the *Formula Key* field. (This field is disabled for an Assembly-type BOM.)
6. Enter the *Fill Level* for the Finished Good-type of BOM. Also, enter the UOM to be associated with the specified fill level.
7. On the *Items* tab, add sub-assembly items, Labor, Boilerplate, or Text as needed and enter the appropriate details according to the selected line *Type*. (This tab is disabled when the BOM type is Intermediate.)
8. Switch to the *Consumable* tab. Specify the consumable items and other details in their respective fields.
9. Click on the *Revision* tab and enter the appropriate values in the *Effective Date* field, *Valid Until* field, and other applicable fields.
10. Switch to the *Attachments* tab to associate any documents with the BOM.
11. Switch to the *Attributes* tab. Enter the other reportable attributes in their respective fields.
12. Click the *Add* button to save the BOM entry.

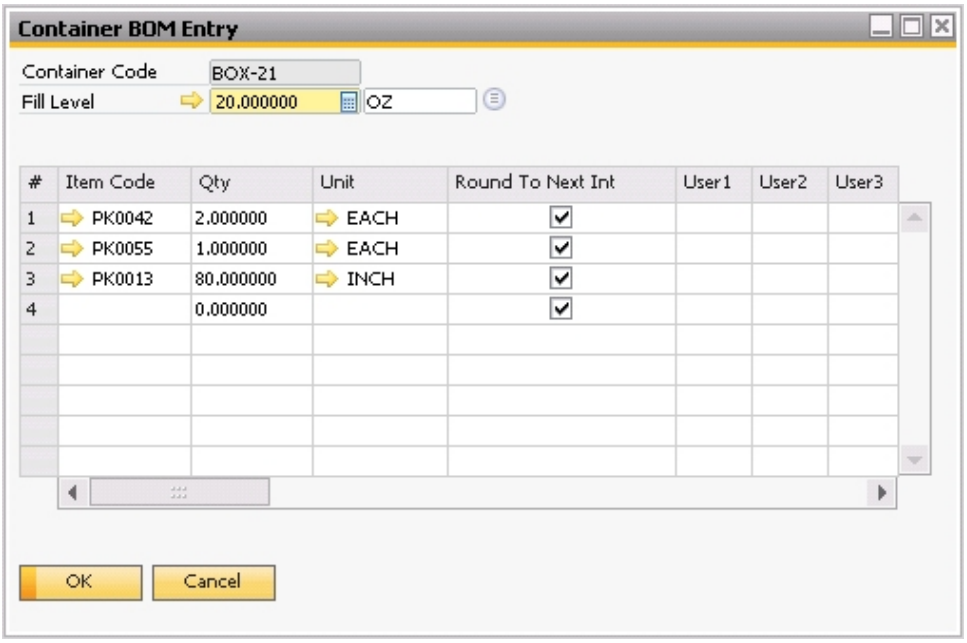
3.2 Container BOM Entry

From the *Container BOM Entry* screen you can define different container sizes for bulk packaging. The feature is especially useful for manufacturers who produce in bulk but need different container sizes while filling and shipping.

In our example we have defined a #21 box, which holds 20 ounces of bulk (intermediate) product. In this example, two labels, one box, and some shrink film are needed to package 20 ounces of product. When we open a production batch, we enter the container BOM code and the system will calculate how much of each packaging component is needed to package the batch quantity.

Go To: Bill of Material → Container BOM Entry.

Press Ctrl + A to enter 'Add' mode.



Container Code: This field holds a unique identifier for the container.

Fill Level: The maximum quantity that can be filled in the container. Specify the quantity unit in the adjacent field as well.

Item Code: The code for the packaging item. (Note that each packaging item must be a valid inventoried item.)

Qty: The quantity of each packaging item per container.

Unit: The quantity unit. The system will default to the packaging item's stock UOM, which can be edited if required.

Round to Next Int: Selecting this option allows the system to round off the packaging quantity to the next whole number while calculating requirements for a batch. In our example, this avoids issuing half a box to the batch.

Add: Click the *Add* button to save the data on the screen.

Cancel: Click the *Cancel* button to close the screen without saving your changes.

3.2.1 Maintaining a Container BOM

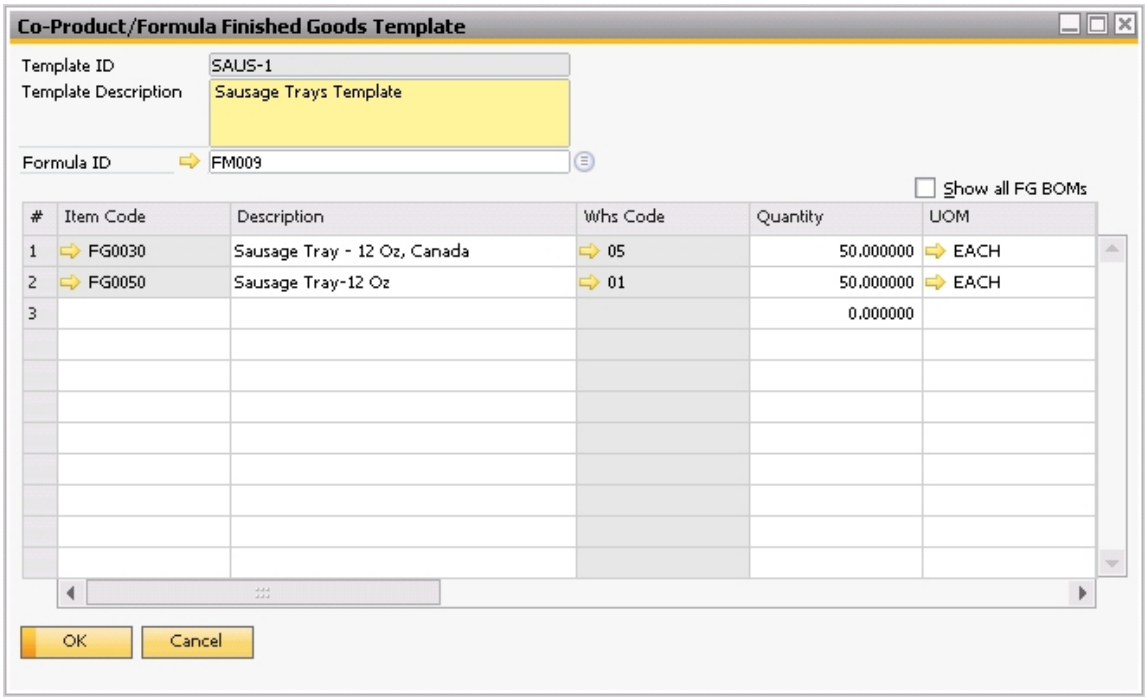
1. Open the *Container BOM* screen. Press **Ctrl + A** for 'Add' mode.
2. In the *Fill Level* field, enter the maximum quantity of the item that can be filled in a container.
3. Specify the UOM for the quantity listed in the *Fill Level* field.
4. In the grid, select the desired container item.
5. Selecting the item will default the associated UOM at the *Unit* field of the grid.
6. Specify the quantity required to fill one unit measurement of the item.
7. Check the *Round to Next Integer* checkbox, if required.
8. Click the *Add* button to save the record.

3.3 Co-product/Formula Finished Good Template

The *Co-Product/Formula Finished Good Template* is useful for creating a batch if your production process results in multiple finished goods being produced, or if you regularly produce more than one finished good or intermediate in a production batch. You can save time by choosing a template instead of manually keying in item numbers at the time of batch entry.

Go To: Bill of Material → Co-Product/Formula Finished Goods Template.
Press Ctrl + A to enter 'Add' mode.

In our example, we want to open one batch to package sausage trays for both the Canadian market and the US market.



The *FG Template ID* field is visible in the *Batch Entry* screen only when the *Show Co-Product/ FG Template* option is checked on the *Production Defaults* screen.

Header

Template ID: Enter a unique template code.

Template Description (optional)**:** A description for the template.

Formula ID: The formula for which the template is applicable.

Show all FG BOM (not recommended)**:** When the *Show all FG BOM* option is checked, clicking the *Add* button will display all finished good- and intermediate-type BOMs in your company database. Otherwise, the lookup is limited to the BOMs created using the *Formula ID* selected above.

Item Details

Item Code: A valid finished good-type BOM. The appropriate value can be selected using the lookup next to the *Item Code* field.

Description: The description of the item.

Whs Code: The warehouse code associated with the BOM. The system populates this field as soon as you choose the BOM item.

Quantity: The quantity of the item to be produced using this template. This data defaults to the *Batch Entry* screen and can be modified there.

UOM: The unit of measurement for the item to be produced.

ADD/OK: Click the *Add* button to save the record.

Cancel: Click the *Cancel* button to close the screen without saving the record.

3.3.1 Maintaining the Co-product/Formula Finished Good Template

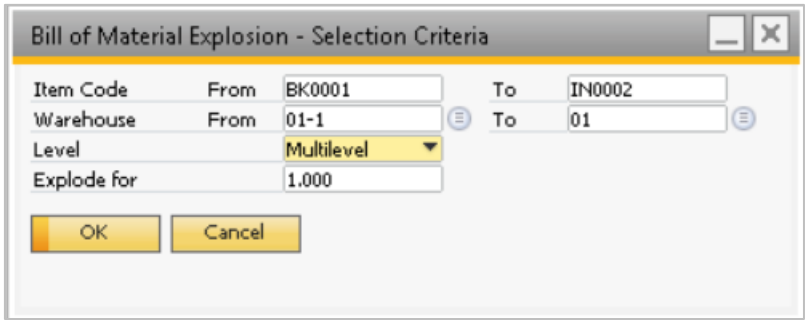
1. In the *Template ID* field, enter a unique identification code for the template to be created.
2. Briefly explain the template ID in the *Template Description* field.
3. In the *Formula ID* field, select the formula for which the template is being defined.
4. Check or uncheck the *Show all FG BOM* option, as needed.
5. Enter an item in the *Item Code* field. The description and warehouse for the selected item are defaulted in their respective fields.
6. Enter the quantity of the item that is to be produced when the batch for this item will be created using this template.
7. Add more items (one in each row), if required.
8. Click the *Add* button to save the record.

4 BOM UTILITIES

4.1 BOM Explosion

The *Bill of Material Explosion* utility allows you to see the complete BOM hierarchy.

Go To: Bill of Material → BOM Utilities → Bill of Material Explosion.



If the *Top Level Finished Good to be created as* field of the *Planning Defaults* screen is set to *Fill*, then the BOM explosion would display the formula items of the intermediates present in the finished goods.

Item Code From and To: The range of finished goods on which to perform the BOM explosion. Leave these fields blank when you wish to explode the entire range.

Warehouse From and To: The range of warehouses on which to perform the BOM explosion. Leave these fields blank when you wish to explode BOMs for all warehouses.

Level: The level that the system should display in the BOM hierarchy. Available options are:

- **Multilevel:** The system will explode the complete BOM and formulas down to the last level.
- **Singlelevel:** The system will display only the sub-items present in the level immediately below the level of the item selected. The system will not explode the BOM and associated formulas further.

Explode for: Specify the quantity of the finished good item for which the BOM explosion should be performed. The system will display the quantities of materials, consumables, and intermediates needed, as well as the quantity of any by-products that will result from producing the 'explode for' quantity.

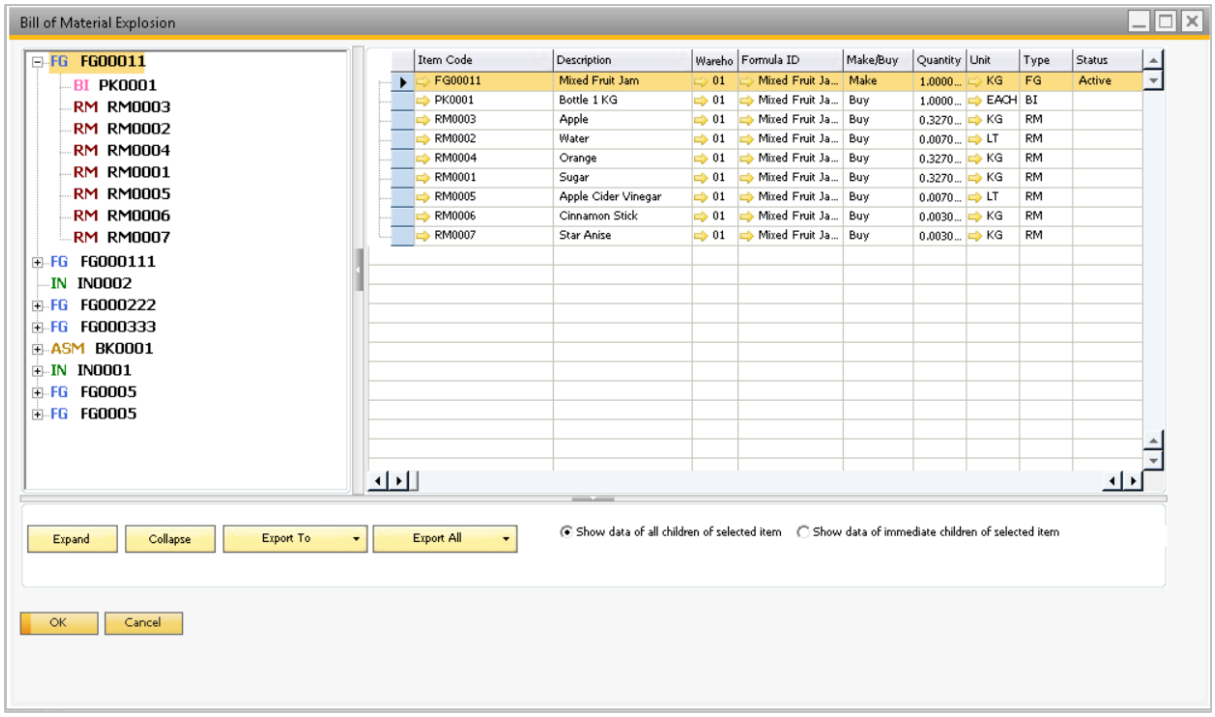
OK: Click the *OK* button to open a screen that displays the data in a hierarchical format.

Cancel: Click the *Cancel* button to close the screen without performing a BOM explosion.

4.1.1 BOM Explosion - Hierarchical Format

The *Bill of Material (BOM) Explosion* screen provides a detailed breakdown of the components required to produce a finished product. It displays the structure of a BOM, showing raw materials, subassemblies, and finished goods in a hierarchical view. Further it also displays consumables based on the *Size with Batch* setting.

This screen is useful for viewing the components of a product, understanding material dependencies, and exporting BOM data for further analysis.



Item Code: Displays the unique identifier for the item in the BOM hierarchy.

Description: Provides the name of the item or material.

Warehouse Code: Indicates the warehouse location where the item is stored.

Formula ID: Represents the formula or recipe associated with the BOM item.

Make/Buy: Specifies whether the item is manufactured (*Make*) or procured (*Buy*).

Quantity: Shows the quantity required for the production process.

Unit: Displays the unit of measurement (e.g., KG, EACH, LT).

Type: Categorizes the item as *Finished Goods (FG)*, *Raw Material (RM)*, *Inventory (IN)*, or *Assembly (ASM)*.

Status: Indicates if the item is currently *Active* in the BOM.

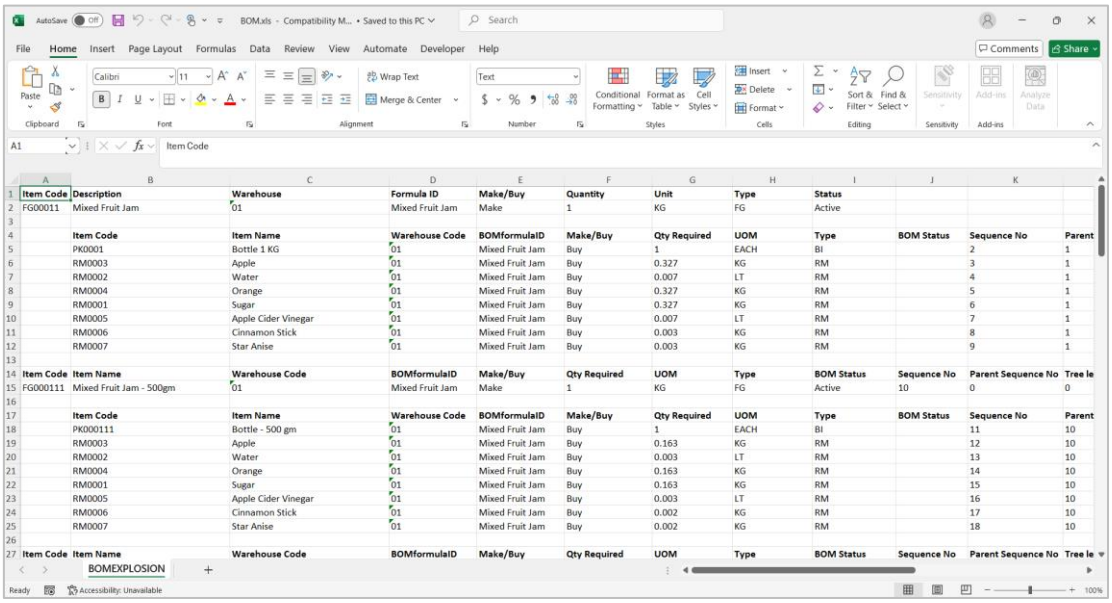
Expand: Expands all items in the BOM hierarchy to show their components.

Collapse: Collapses the BOM hierarchy to show only top-level items.

Export To: Exports the BOM data to various formats (Excel & PDF).

Export All: Exports the entire BOM structure i.e. with all hierarchical levels. It allows users to transfer the displayed content into either a spreadsheet (Excel) or a portable document (PDF) format.

- **Export to Excel:**
    - This option typically extracts the data from the BOM Explosion grid, table, or chart and arranges it into rows and columns within an Excel spreadsheet. Export all hierarchical levels of BOM data.
    - Include all relevant columns in the export.
    - Maintain the hierarchical structure as per the explosion results.
    - Users can then perform further calculations, create charts, or manipulate the data within Excel.



Item Code	Description	Warehouse	Formula ID	Make/Buy	Quantity	Unit	Type	Status
FG00011	Mixed Fruit Jam	01	Mixed Fruit Jam	Make	1	KG	FG	Active

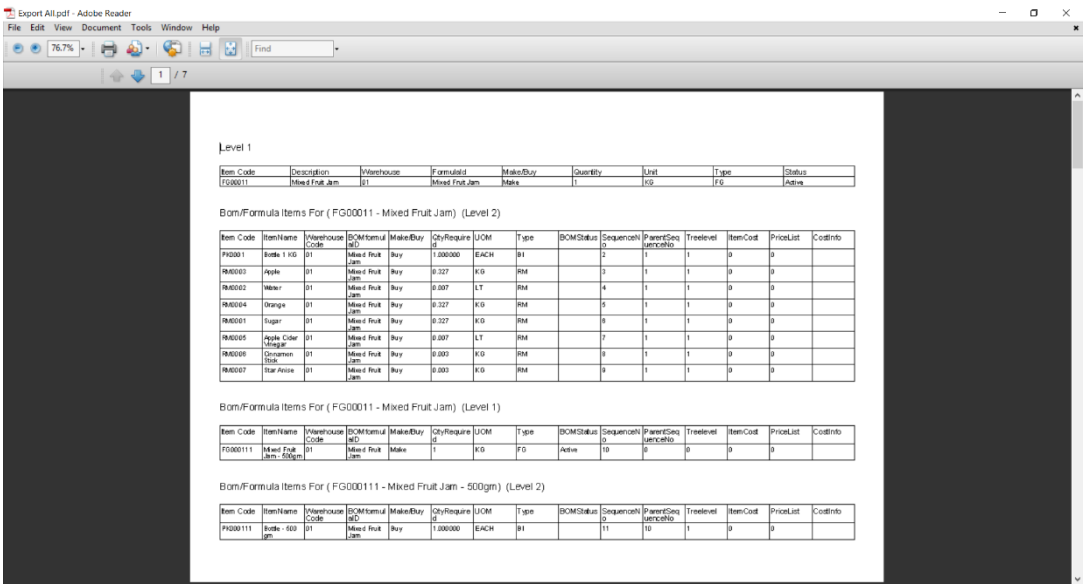
Item Code	Item Name	Warehouse Code	BOMformulaID	Make/Buy	Qty Required	UOM	Type	BOM Status	Sequence No	Parent
	PK0001	Bottle 1 KG	01	Mixed Fruit Jam	Buy	1	EACH	BI	2	1
	RM0003	Apple	01	Mixed Fruit Jam	Buy	0.327	KG	RM	3	1
	RM0002	Water	01	Mixed Fruit Jam	Buy	0.007	LT	RM	4	1
	RM0004	Orange	01	Mixed Fruit Jam	Buy	0.327	KG	RM	5	1
	RM0001	Sugar	01	Mixed Fruit Jam	Buy	0.327	KG	RM	6	1
	RM0005	Apple Cider Vinegar	01	Mixed Fruit Jam	Buy	0.007	LT	RM	7	1
	RM0006	Cinnamon Stick	01	Mixed Fruit Jam	Buy	0.003	KG	RM	8	1
	RM0007	Star Anise	01	Mixed Fruit Jam	Buy	0.003	KG	RM	9	1

Item Code	Item Name	Warehouse Code	BOMformulaID	Make/Buy	Qty Required	UOM	Type	BOM Status	Sequence No	Parent Sequence No	Tree le
FG000111	Mixed Fruit Jam - 500gm	01	Mixed Fruit Jam	Make	1	KG	FG	Active	10	0	0

Item Code	Item Name	Warehouse Code	BOMformulaID	Make/Buy	Qty Required	UOM	Type	BOM Status	Sequence No	Parent
	PK000111	Bottle - 500 gm	01	Mixed Fruit Jam	Buy	1	EACH	BI	11	10
	RM0003	Apple	01	Mixed Fruit Jam	Buy	0.163	KG	RM	12	10
	RM0002	Water	01	Mixed Fruit Jam	Buy	0.003	LT	RM	13	10
	RM0004	Orange	01	Mixed Fruit Jam	Buy	0.163	KG	RM	14	10
	RM0001	Sugar	01	Mixed Fruit Jam	Buy	0.163	KG	RM	15	10
	RM0005	Apple Cider Vinegar	01	Mixed Fruit Jam	Buy	0.003	LT	RM	16	10
	RM0006	Cinnamon Stick	01	Mixed Fruit Jam	Buy	0.002	KG	RM	17	10
	RM0007	Star Anise	01	Mixed Fruit Jam	Buy	0.002	KG	RM	18	10

Item Code	Item Name	Warehouse Code	BOMformulaID	Make/Buy	Qty Required	UOM	Type	BOM Status	Sequence No	Parent Sequence No	Tree le

- **Export to PDF (Portable Document Format):**
    - This option creates a static document that represents the displayed content.
    - It preserves the layout, formatting, and visual appearance of the data or report.
    - PDFs are ideal for sharing documents that need to be viewed consistently across different platforms and devices.



OK: Confirms the selections and closes the screen.

Cancel: Discards any changes and exits the screen.

4.1.2 Recap: Steps to Use the BOM Explosion Screen

1. Access the BOM Explosion Screen.
2. Select a BOM Item, from the left panel, choose the finished product (FG) whose BOM details you wish to view.
3. The right panel displays all components, including raw materials (RM), inventory items (IN), and assemblies (ASM).
4. Click Expand to view all levels of the BOM.

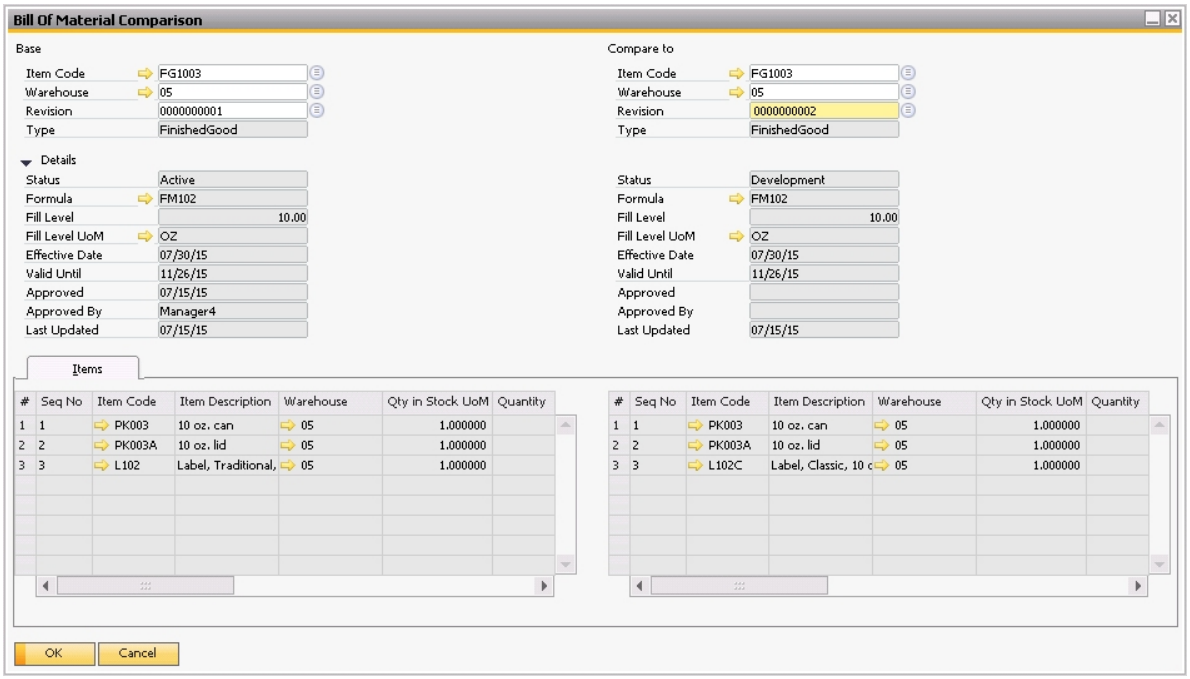
The explosion reflects the sizing settings done on the *BOM Entry* screen– *Consumable* Tab. If opted it displays consumables quantities based on the FG batch size.

5. Click Collapse to hide *sub-level details.*
6. *Use the Export To or Export All* buttons to download the BOM structure.
7. Click *OK* to confirm or *Cancel* to close the screen.

4.2 BOM Comparison

From the *Bill of Material Comparison* screen you can select and compare two distinct BOMs or two revisions of the same BOM. Information is displayed in the *Details*, *Items,* and (optional) *Consumables* grids, which are read-only.

Go To: Bill of Material → BOM Utilities → Bill of Material Comparison.



Item Code: Enter the BOM code for the 'base' item (left side of the screen), then tab out of the field. When more than one revision of the BOM exists, a second window will appear from which you can choose the base item. The system will auto-populate the *Warehouse*, *Revision*, and *Type* fields. The *Warehouse* and *Revision* fields can be overridden, if needed. Repeat this process for the 'compare to' item (right side of the screen).

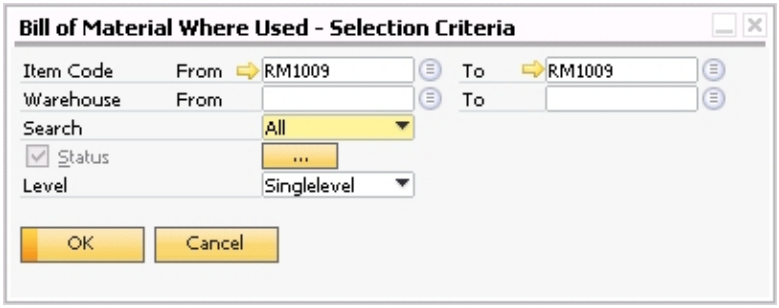
Details (click ▸ to display)**:** The system will display the status, formula, and so on for the 'base' and 'compare to' formulas. To review the descriptions of these fields, refer to Section 3.1 on BOM Entry.

Items Tab and optional Consumables Tab: The system displays data such as Item Code, Description, Warehouse, and Quantity. This data is read-only. To review descriptions of these fields, refer to Section 3.1.2 and Section 3.1.4, respectively.

4.3 Bill of Material Where Used

Go To: Bill of Material → BOM Utilities → Bill of Material Where Used.

Use this utility to trace usage of a raw material or packaging item in BOMs and associated formulas. For example, you may want to know where a raw material, say wheat flour, is being used.



Item Code From and To: The lower and upper limits, respectively, of the range of items for which the report is to be generated.

Warehouse From and To: The lower and upper limits, respectively, of the range of warehouses associated with the item selected above.

Search: Select the desired value using the drop-down menu next to the *Search* field. Available options are *BOM*, *Formula*, and *All*.

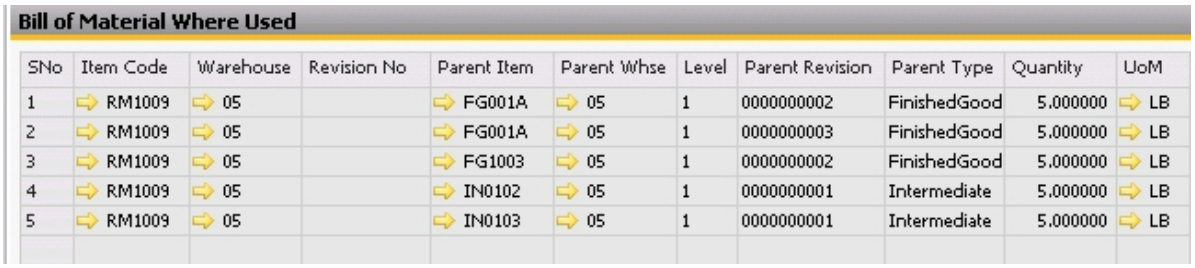
Status: Choose one or more BOM statuses to include in the results grid. For an explanation of each status, see Section 2.1.2.

Level: Select the BOM hierarchy level. Available options are *Singlelevel* and *Multilevel*.

- **Singlelevel:** The system will display only the sub-items present in the level immediately below the level of the item selected.
- **Multilevel:** The system will reverse-explode the complete BOM and/or formulas up to the top level.

OK: Click the *OK* button to show usage of raw materials or packaging items in a hierarchical view.

Cancel: Click the *Cancel* button to close the screen without showing any data.

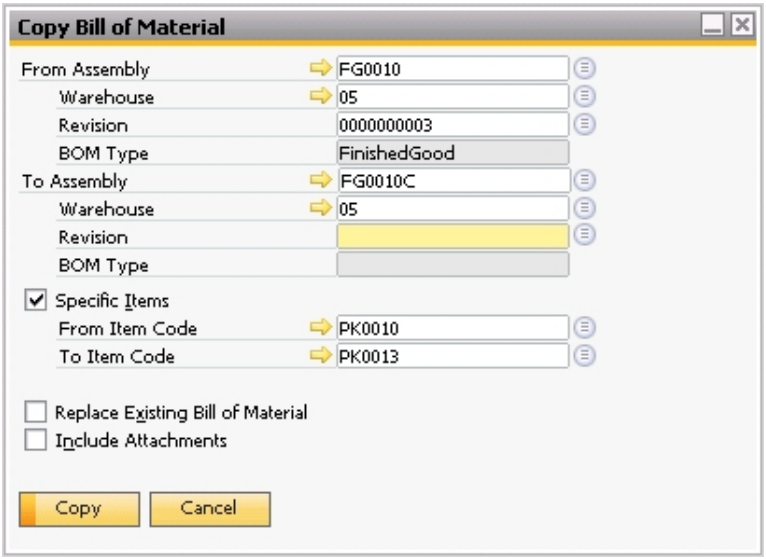


SNo	Item Code	Warehouse	Revision No	Parent Item	Parent Whse	Level	Parent Revision	Parent Type	Quantity	UoM
1	RM1009	05		FG001A	05	1	0000000002	FinishedGood	5.000000	LB
2	RM1009	05		FG001A	05	1	0000000003	FinishedGood	5.000000	LB
3	RM1009	05		FG1003	05	1	0000000002	FinishedGood	5.000000	LB
4	RM1009	05		IN0102	05	1	0000000001	Intermediate	5.000000	LB
5	RM1009	05		IN0103	05	1	0000000001	Intermediate	5.000000	LB

4.4 Copy Bill of Material

Go To: Bill of Material → BOM Utilities → Bill of Material Where Used.

The *Copy Bill of Material* screen lets you replicate the BOM structure. You can copy all or part of a BOM (as required) between items.



From

Assembly: The item (intermediate or finished good) whose BOM is to be copied.

Warehouse: The warehouse associated with the selected item. When more than one warehouse is associated with the selected item, a pop-up window will appear from which you can make the appropriate selection.

Revision: The revision number(s) for the selected BOM. When there is more than one revision for the selected BOM, a pop-up window will appear from which you can make the appropriate selection.

BOM Type: The type of BOM associated with the selected item.

To:

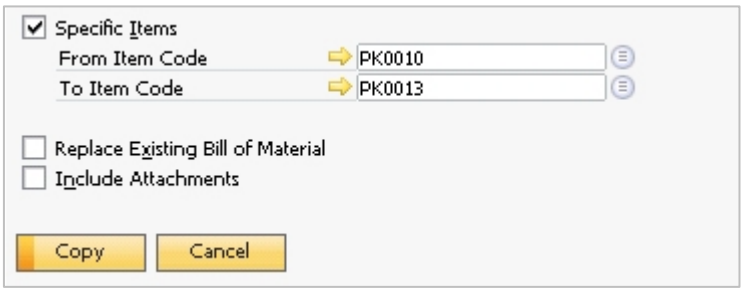
Assembly: The intermediate or finished good item who's BOM will be created or modified when the copy is complete.

Warehouse: The warehouse for which the copy will apply.

Revision:

- If the *Copy BOM* function is being used to create the very first BOM for the *To* item, leave this field blank.
- Otherwise, select the revision number to which the copy will apply.
    - When the revision you choose has *Development* status and you check the *Replace Existing BOM* option (explained below), the copied BOM will have the same revision number.
    - When the revision you choose has any other status and you check the *Replace Existing* BOM option, the copied BOM will have a new revision number with Development status and a previous Active revision will be marked Obsolete.

BOM Type: The type of BOM associated with the selected top assembly item. This field will be blank if the *Copy BOM* function is being used to create the very first BOM for the *To* item.



Specific Items: Checking this option lets you copy only a selected portion of the *From* BOM to the *To* BOM.

From/To Item Code: The lower and upper limits, respectively, of the range of items to be copied.

Replace Existing Bill Of Materials: Checking this option will replace an existing BOM with the copied one. (See the discussion under *Revision*, above.) Otherwise, the copy will be given a new revision number with Development status.

Include Attachments: Choose this option to copy attachments as well.

Copy: Click the *Copy* button to execute the copy as defined.

Cancel: Click the *Cancel* button to leave the screen.

4.5 BOM Substitution

The BOM Substitution screen lets you replace existing BOM items. This might be useful in business scenarios that require Material / Labor / Boilerplate/ Text substitutions during the production process.

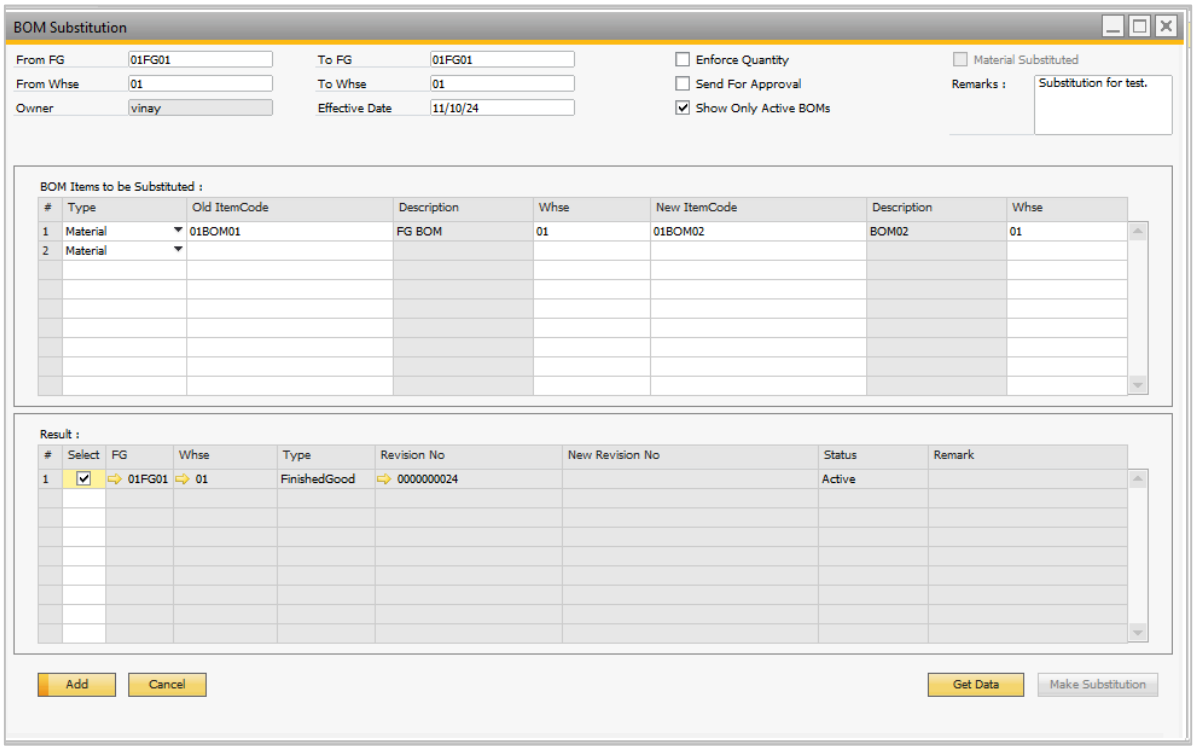
Some conditions that may require substituting materials:

- To replace a discontinued material with a new one.
- To replace one packaging material with multiple packaging items, or converge multiple packaging items into one.

You can replace all items or a single item of multiple BOMs (as required). You can establish the filter criteria to select BOMs where substitutions are to be made, including the required Finished Goods and specific Warehouses.

The substitute item quantity is the quantity needed to replace the full component quantity. The quantity can differ from the component usage quantity. BatchMaster ERP reports these substitutes on the Bill of Materials. After the substitution, each BOM will be saved as a new revision with *Development* status. The system asks you for a confirmation for each substitution.

Go To: Bill of Material → BOM Utilities → BOM Substitution.



From FG: The lower range of finished goods to perform the BOM substitution. Leave this field blank when you wish to substitute across the entire range of BOMs.

To FG: The upper range of finished goods to perform the BOM substitution. Leave this field blank when you wish to substitute across the entire range of BOMs.

From Whse: The lower range of warehouses associated with the selected FG. When more than one warehouse is associated with the selected FG, a pop-up window will appear from which you can make the appropriate selection.

To Whse: The upper range of warehouses associated with the selected FG. When more than one warehouse is associated with the selected FG, a pop-up window will appear from which you can make the appropriate selection.

Owner: Displays the SAP user who performs a substitution in the BOM. This data is read-only.

Effective Date: Specify the date when the new BOM revision should become effective i.e., Active.

 You can enter the Effective Date as current date or any future date.

Enforce Qty: Mark this option if you want to split the quantity of a single BOM component i.e., replace the full component quantity with several BOM components quantity and vice versa. For example, if you want to replace a quantity of 1 of Rigid Plastic Packaging with a quantity 10 of Flexible Plastic Packaging.

Send for Approval: If the approval procedure is not implemented for the BOM undergoing substitution, leave this checkbox unmarked. If the approval procedure is implemented, marking this option starts the approval process for the BOM.

Show Only Active BOMs: Mark this checkbox to filter the Active BOMs that are currently active and use in production.

- If this checkbox is marked, you can filter out inactive or obsolete BOMs that are no longer relevant to current production processes. This allows you to focus on only the active BOMs, simplifying navigation and decision-making.
- If this checkbox is unmarked, the system displays all status BOMs i.e., including Inactive BOMs.

Material Substituted: The system automatically marks this option after a successful BOM Substitution. Before BOM substitution this field remains unmarked.

Remarks: Any extra remarks or comments related to the BOM Substitution can be entered in this field.

BOM Items to be Substituted:

Type: Select the required line type to substitute. Available options are *Materials*, *Labor*, *Boilerplate*, and *Text*.

Old Item Code: The material that will be replaced.

Description: A name or a description of the material or item selected.

Whse: The warehouse of the *old* raw material in which it exists.

New ItemCode: The new raw material ID.

Description: A name or a description of the new BOM item.

Whse: The warehouse of the 'new' raw material.

Result

Select: Check the box corresponding to a material to select that Finished Good for BOM substitution.

FG: The Finished Goods item in which you can substitute in the BOM.

Whse: The warehouse of the Finished Goods used for substituting in the BOM.

Type: The type of material used.

Revision No: This is a system-maintained field.

New Revision No: In this field, the system by default auto generates a new revision of the same Finished Goods for each BOM Substitution. This new revision is with *Development* status over a Finished Goods revision with Active status.

Status: A system-maintained field that displays the status of the Finished Goods.

Remark: A system-maintained field that displays the associated remark or comment.

Add/ Update: Click this button to save the record. To open a list of the Finished Goods based on the selection criteria, it is mandatory to add the record. Once saved, on clicking the *Get Data* button, the system lists all the Finished Goods.

Cancel: Click the *Cancel* button to close the screen without saving your changes.

Get Data: Click the *Get Data* button to display in the lower grid the Finished Goods that meet your selection criteria.

Make Substitution: Click the *Make Substitution* button to implement the BOM substitutions. Once done, the system displays a confirmation message for them.

5 GLOSSARY

Glossary Term	Definition
Assembly Type Good	Finished goods created by physically combining other finished goods already in stock.
BOM	(Bill of Materials) A list of the raw materials, intermediate assemblies, consumables, and packaging materials needed to produce quantity '1' of a finished good or intermediate item.
By-product	A secondary product of a manufacturing process. A by-product can be sold, used in some other process, or scrapped.
Fill Type Good	Finished goods that are manufactured by filling an intermediate good into a container.
Finished Good	An inventoried item that results at the end of a manufacturing process and is ready to be sold.
Fixed Costs	Costs that are related to production but independent of the quantity of goods produced.
Formula	A list of ingredients, their proportions, and instructions for making an intermediate or finished product.
Intermediate Good	A 'bulk' item produced and inventoried for later use in the manufacture of another product.
Mix Type Good	A good manufactured by mixing, blending, or processing of materials using a formula.
Overhead	Indirect costs of running the business, such as office staff salaries or insurance premiums.
Process Cell	A group of one or more machines with a common purpose. Used in planning and scheduling as well as to define and monitor capacity.
Raw Material	An inventoried item, purchased from a supplier, which has not been modified by your process.
Setup Cost	Cost involved in preparing the machinery and location for the manufacturing process, such as cleaning the machinery.
Variable Cost	A term used to indicate costs that vary with the quantity of goods manufactured, such as direct labor.