



Material Reservation Mode

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Material Reservation Mode

Estimated time to read: 7 minutes

When you are working with BOMs, and their Scope is Durables, Materials, Packing, or Weigh And Dispense, you will have to define whether the BOM Products include Material Reservations, and how Material Reservations are handled for the BOM Items.

Material Reservation is the process of allocating specific quantities of raw materials, components, or subassemblies from inventory to a specific production or work order. This ensures that those Materials are not consumed by other orders and are available when production begins.

The Material Reservation Mode property has three options to select from:

- Material Dependency
- None (default)
- Production Order

This tutorial will show you how to can use the Material Reservation Mode property in relation to the Material Dependency and Production Order options.

For both Material Dependency and Production Order you must ensure that you have your Critical Manufacturing MES structure configured which will allow you to set up these modes.

For the example scenario below, you will need to create:

- Steps
- Flows
- Products
- Materials
- BOMs
- Resources
- Services

For the purpose of this tutorial all new entities, including the ones above, were created and can be uploaded via the following Master Data files:

- [Material Dependency](#)
- [Production Order](#)

The provided Master Data files will allow you to undertake the paths and instructions provided below.

For more information, see [Manage BOM Items](#).

Material Dependency

1. Create a BOM and set its Scope as Materials:

* Create New BOM

CHANGE SET — GENERAL DATA

General Data

Name:	AA-BOM-01
Revision:	Name can be automatically generated or you can enter a name of your choice
Description:	AA-BOM-01
* Type:	General
Data Group:	None

Information

* Scope:	Materials
Product:	AA-Prod-01
* Base Quantity:	1
* Units:	Unit
Drawing:	Drag file to upload or Browse File

Comments:

Cancel Back Create

2. Select the section **BOM Items** and then select **Manage**:

Manage BOM Items

BOM ITEMS — SUBSTITUTES

AA-BOM-01 [A2] / AA-BOM-01

BOM Items

PRODUCT	QTY
AA-Prod-01 [A] (AA-Prod-01)	1 Unit

BOM Items Details

* Product:	AA-Prod-01 [A]
Product Description:	AA-Prod-01
* Quantity:	1
Units:	Unit
Location:	
Position:	
Named Position:	
* Source Step:	AA-Step-Warehouse
Designator:	
Assembly Step:	AA-Step-Mixing

Comments:

Cancel Back Next >

3. Be sure to enter the necessary information, and set the Material Reservation Mode property to Material Dependency:

Manage BOM Items

BOM ITEMS SUBSTITUTES

AA-BOM-01 [A.2] / AA-BOM-01

PRODUCT	QTY
AA-Prod-01 [A] (AA-Prod-01)	1 Unit
AA-Prod-01	

Source Step: AA-Step-Warehouse

Designator:

Assembly Step: AA-Step-Mixing

Logical Flow Path:

Browse

Reference:

Product Mix Allowed:

Material Reservation Mode: Material Dependency

Condition

Characteristic: Browse

Value:

Comments:

Cancel Back Next

4. Define the **BOMContext** Smart Table by adding the **Step** when the **BOM** will be used, and the other necessary information:

+ Add BOM Context Record(s)

BOMContext (Active)

Record(s)
Record #1 Step: AA-Step-Mixing BOM: AA-BOM-01 AssemblyType: AutomaticAtTrackOut TrackInCheckMode: None TrackOutLossesMode: Before Assembly

BOM Context

Step: AA-Step-Mixing

Logical Flow Path: Browse

Product: Product

Product Group: Product Group

Flow: Flow

Material: Material

Production Order: Production Order

BOM: AA-BOM-01

Assembly Type: Automatic At Track Out

Track-In Check Mode: None

Track-Out Losses Mode: Before Assembly

Weigh And Dispense Mode:

Comments:

Cancel Add

5. Attach your consumable **Material** as shown below:

The screenshot shows the Material point of view for AA-Mat-01. The main view displays basic information, quantities, priority, and inspection details. A context menu is open on the right, with the 'Resource' section expanded. The 'Attach' option is highlighted, indicating the next step in the process.

6. Confirm the information and select **Attach**:

The dialog box shows the 'Attach Consumable To Resource' step. It lists the resource 'AA-Feeder-01' and provides details about it. The 'Attach' button is visible at the bottom right.

7. Go to the **Dependencies** section, select **Manage**, and select the **To** tab if you are creating the dependency from the main **Material** point of view:

Manage Material Dependencies

FROM TO

AA-Mat-02 (Queued) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

Dependencies

Material Dependency Details

* From Material: AA-Mat-01

* From Step: AA-Step-Mixing

From Flow Path: AA-Flow-Production [A] > AA-Step-Mixing

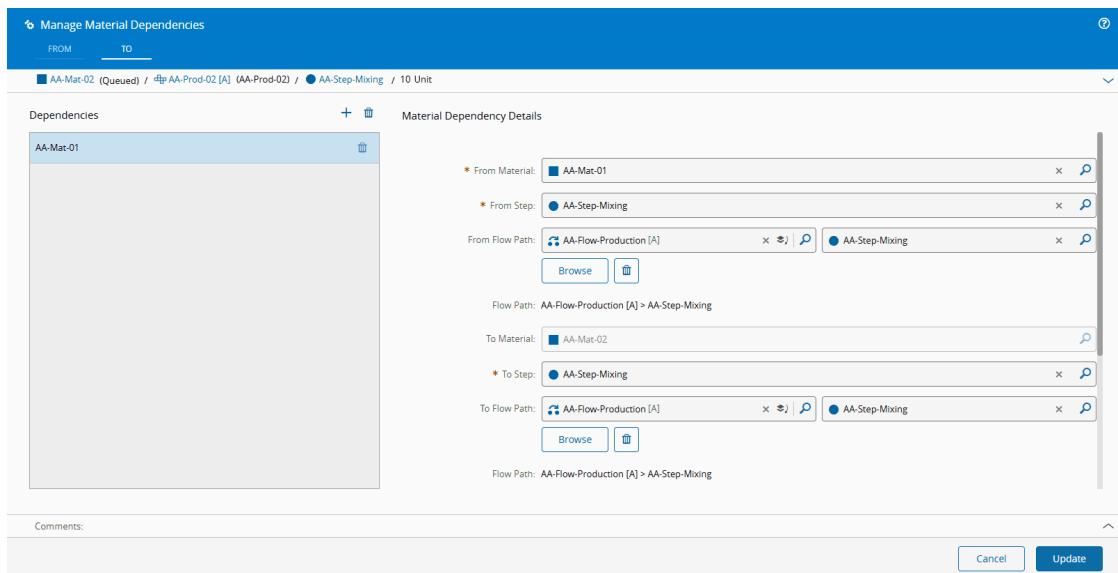
To Material: AA-Mat-02

* To Step: AA-Step-Mixing

To Flow Path: AA-Flow-Production [A] > AA-Step-Mixing

Comments:

Cancel Update



8. Complete the necessary information and make sure the System State property is set to Closed:

Manage Material Dependencies

FROM TO

AA-Mat-02 (Queued) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

Dependencies

Material Dependency Details

* To Step: AA-Step-Mixing

To Flow Path: AA-Flow-Production [A] > AA-Step-Mixing

From Quantity:

From Units: Units

To Quantity:

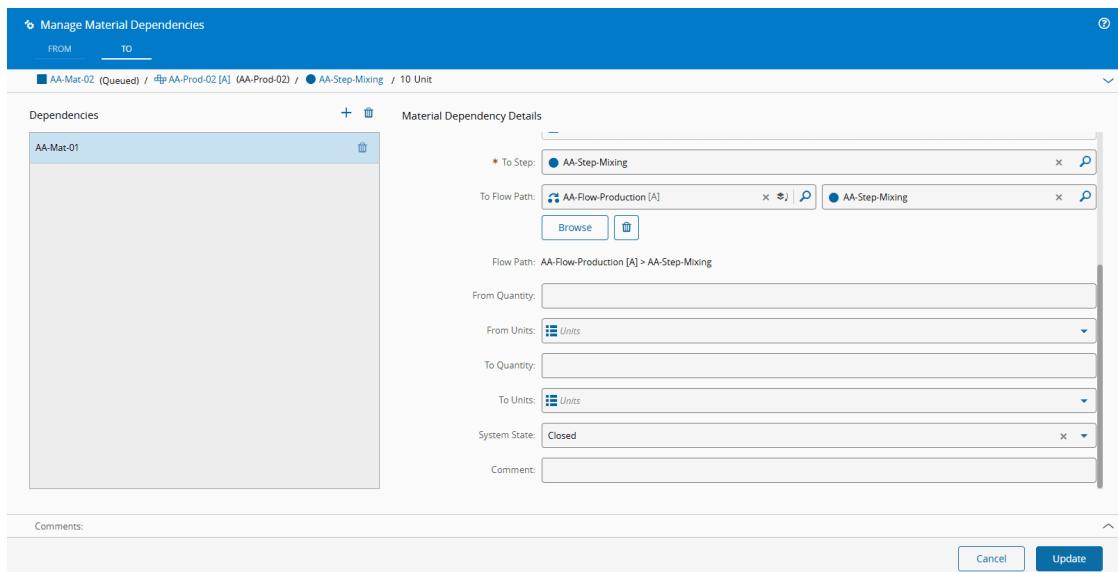
To Units: Units

System State: Closed

Comment:

Comments:

Cancel Update



 **Note**

If the System State property is set to Open, the system will return the following error when you try to Track-In:

Dispatch and Track-In Material

RESOURCE BOM RESULTS

AA-Mat-02 (Queued) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

 The object AA-Mat-02 of type Material has dependencies on object AA-Mat-01 of type Material.

Comments:

Cancel < Back Next > Track-In

9. You can now Dispatch and Track-In your main **Material** and verify the **BOM** information:

Dispatch and Track-In Material

RESOURCE BOM

AA-Mat-02 (Queued) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

AA-BOM-01 [A] (AutomaticAtTrackOut) / Units: Unit

BOM

ITEM	LOCATION	POSITION	PRODUCT	PRODUCT DESCRIPT...	STEP	QUANTITY	REFERENCE	PRODUCT MIX	DISCRETE	REQUIRED QTY.	CURRENT QTY.	DELTA
1			AA-Prod-01 [A]	AA-Prod-01	AA-Step-Warehouse	1 Unit	X	X	X	10 Unit	10 Unit	0 Unit

Rows per Page: 25 Page 1 of 1 (1 Records)

Comments:

Cancel < Back Track-In

Dispatch and Track-In Material

RESOURCE BOM

AA-Mat-02 (Queued) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

AA-BOM-01 [A] (AutomaticAtTrackOut) / Units: Unit

Consumable Feed AA-Feeder-01

AA-Prod-01

MATERIAL	PRODUCT	STEP	PRIMARY QTY.	EXPIRATION DATE
AA-Mat-01	AA-Prod-01 [A]	AA-Step-Warehouse	10 Unit	

Rows per Page: 25 Page 1 of 1 (1 Records)

Comments:

Cancel < Back **Track-In**

10. Select Track-In.

11. When you then select **Track-Out**, the whole **Material** will be consumed.

Warning

If you select Material Dependency for the Material Reservation Mode, but do not create a Dependency for the Material you want to produce, the system will return an error. In the example below, the AA-Mat-02 is the Material that is being produced, and it depends on AA-Mat-01 to provide it with its raw materials. As this Dependency was not created, the system will not allow you continue, and explains just that in the error message:

Track-Out Material

RESOURCE STATE RESULTS

AA-Mat-02 (InProcess) / AA-Prod-02 [A] (AA-Prod-02) / AA-Step-Mixing / 10 Unit

There must be an active Material Dependency from Material 'AA-Mat-01' to the Material 'AA-Mat-02'.

Comments:

Cancel < Back Next > **Track-Out**

Production Order

1. Create a **BOM** and set its Scope as Materials:

* Create New BOM

CHANGE SET — GENERAL DATA

General Data

Name:	AAA-BOM-01
Revision:	Name can be automatically generated or you can enter a name of your choice
Description:	AAA-BOM-01
* Type:	General
Data Group:	4

Information

* Scope:	Materials
Product:	AAA-Prod-01
* Base Quantity:	1
* Units:	Unit
Drawing:	Drag files to upload or Browse Files

Comments:

Cancel Back Create

2. Select the section **BOM Items** and then select **Manage**:

* Manage BOM Items

BOM ITEMS — SUBSTITUTES

AAA-BOM-01 [A.1] / AAA-BOM-01

BOM Items

PRODUCT	QTY
AAA-Prod-01 [A] (AAA-Prod-01)	1 Unit

BOM Items Details

* Product:	AAA-Prod-01 [A]
Product Description:	AAA-Prod-01
* Quantity:	1
Units:	Unit
Location:	
Position:	
Named Position:	
* Source Step:	AAA-Step-Warehouse
Designator:	
Assembly Step:	AAA-Step-Mixing

Comments:

Cancel Back Next >

3. Be sure to enter the necessary information, and set the Material Reservation Mode property to Production Order:

Manage BOM Items

BOM ITEMS SUBSTITUTES

AAA-BOM-01 [A.1] / AAA-BOM-01

PRODUCT	QTY
AAA-Prod-01 [A] (AAA-Prod-01)	1 Unit
No Position	

Named Position:

* Source Step: AAA-Step-Warehouse

Designator:

Assembly Step: AAA-Step-Mixing

Logical Flow Path:

Reference:

Product Mix Allowed:

* Material Reservation Mode: Production Order

Condition

Characteristic:

Value:

Comments:

4. Define the **BOMContext** Smart Table by adding the **Step** when the **BOM** will be used, and the other necessary information:

+ Add BOM Context Record(s)

BOMContext: (Active)

Record(s)

Record #1
Step: AAA-Step-Mixing | BOM: AAA-BOM-01 | AssemblyType: AutomaticAtTrackOut | TrackInCheckMode: None | Tr

Step	BOM	AssemblyType	TrackInCheckMode
AAA-Step-Mixing	AAA-BOM-01	AutomaticAtTrackOut	None

BOM Context

* Step: AAA-Step-Mixing

Logical Flow Path:

Product: Product

Product Group: Product Group

Flow: Flow

Material: Material

Production Order: Production Order

* BOM: AAA-BOM-01

* Assembly Type: Automatic At Track Out

Track-In Check Mode: None

Track-Out Losses Mode: Before Assembly

Weigh And Dispense Mode:

Comments:

5. Create a **Production Order** with the **Product** to be produced and all the other necessary information:

* Create Production Order

GENERAL DATA

General Data

Name:	AAA-ProductionOrder
Description:	AAA-ProductionOrder
* Type:	General
System State:	Created
Data Group:	
* System State:	Created

Information

* Order Number:	1
Order Line:	
Owner Role:	
Customer:	Business Partner
Facility:	Facility
* Previous:	AAA-Prod-02[A]

Comments:

* Create Production Order

GENERAL DATA

Product:

* Product:	AAA-Prod-02[A]
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Flow Path:

* Flow Path:	AAA-Flow-Production [A] > AAA-Step-Mixing
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Flow Path: AAA-Flow-Production [A] > AAA-Step-Mixing

Quantity:

* Quantity:	10
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Units:

* Units:	Unit
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Under Delivery Tolerance (%):

* Under Delivery Tolerance (%):	0
---------------------------------	---

Minimum Quantity: 10

Over Delivery Tolerance (%):

* Over Delivery Tolerance (%):	0
--------------------------------	---

Maximum Quantity: 10

Product Yield (%): 100

Yield Adjusted Quantity: 10

Scheduling

* Due Date:	06/30/2025 04:31 PM
* Priority:	5
Planned Start Date:	MM/dd/yyyy HH:mm PP

Comments:

6. On the top ribbon of your **Production Order**, select **Release**:

7. Enter the needed dates and select **Release**:

8. In the **Production Order**, select the **Materials** section followed but the **Assign** button on the top ribbon to assign your main **Material**:

9. Select **Assign** and your **Production Order** will have the main **Material** assigned to it:

10. Now, attach your consumable **Material** as shown below:

Note

This step is only needed because in this example we set the assembly Type of the BOM as Automatic at Track Out.

11. Next, in the **Production Order**, you will need to assign the consumption **Material** and then select **Assign**:

Materials to Assign

Material details

* Material: AAA-Mat-01

State: Consumable

Product: AAA-Prod-01 [A]

Step: AAA-Step-Warehouse

Quantity: 10 Unit

Type: General

Facility: AAA-Facility

Flow: AAA-Flow-Warehouse [A]

Comments:

Cancel Assign

12. At this point, you can see your consumption **Material** and production information in the **Materials** section of your **Production Order**:

MATERIAL	ACTIVE	ACCOUNTS TO	STATUS	PRODUCT	PRODUCT DESCRIPTION	QUANTITY	UNITS	FACILITY	STEP
AAA-Mat-01	✓	✓	In Progress	AAA-Prod-01 [A]	AAA-Prod-01	10	Unit	AAA-Facility	AAA-Step-Warehouse
AAA-Mat-02	✓	✓	In Progress	AAA-Prod-02 [A]	AAA-Prod-02	10	Unit	AAA-Facility	AAA-Step-Mixing

13. You can now Dispatch and Track-In your main **Material** and verify the **BOM** information:



Dispatch and Track-In Material

RESOURCE — BOM

AAA-Mat-02 (Queued) / AAA-Prod-02 [A] (AAA-Prod-02) / AAA-Step-Mixing / 10 Unit

AAA-BOM-01 [A] (AutomaticAtTrackOut) / Units: Unit

BOM

ITEM	LOCATION	POSITION	PRODUCT	PRODUCT DESCRIPTION	STEP	QUANTITY	REFERENCE	PRODUCT MIX	DISCRETE	REQUIRED QTY.	CURRENT QTY.	DELTA
1			AAA-Prod-01 [A]	AAA-Prod-01	AAA-Step-Warehouse	1 Unit	X	X	X	10 Unit	10 Unit	0 Unit

Rows per Page: 25 Page 1 of 1 (1 Records)

Comments:

Cancel Back Track-In

Dispatch and Track-In Material

RESOURCE — BOM

AAA-Mat-02 (Queued) / AAA-Prod-02 [A] (AAA-Prod-02) / AAA-Step-Mixing / 10 Unit

AAA-BOM-01 [A] (AutomaticAtTrackOut) / Units: Unit

Consumable Feed: AAA-Feeder-01

AAA-Prod-01

MATERIAL	PRODUCT	STEP	PRIMARY QTY.	EXPIRATION DATE
AAA-Mat-01	AAA-Prod-01 [A]	AAA-Step-Warehouse	10 Unit	

Rows per Page: 25 Page 1 of 1 (1 Records)

Comments:

Cancel Back Track-In

14. Select **Track-In**.

15. When you then select **Track-Out**, the whole **Material** will be consumed, as can be seen in the **Production Order**:

AAA-ProductionOrder

Production Order

AAA-ProductionOrder (Active)

PRODUCTION ORDER STEPS

DETAILS

PRODUCTION ORDER STEPS

MATERIALS

ATTACHMENTS

REFRESH

ACTIVE ACCOUNTS TO

SEARCH

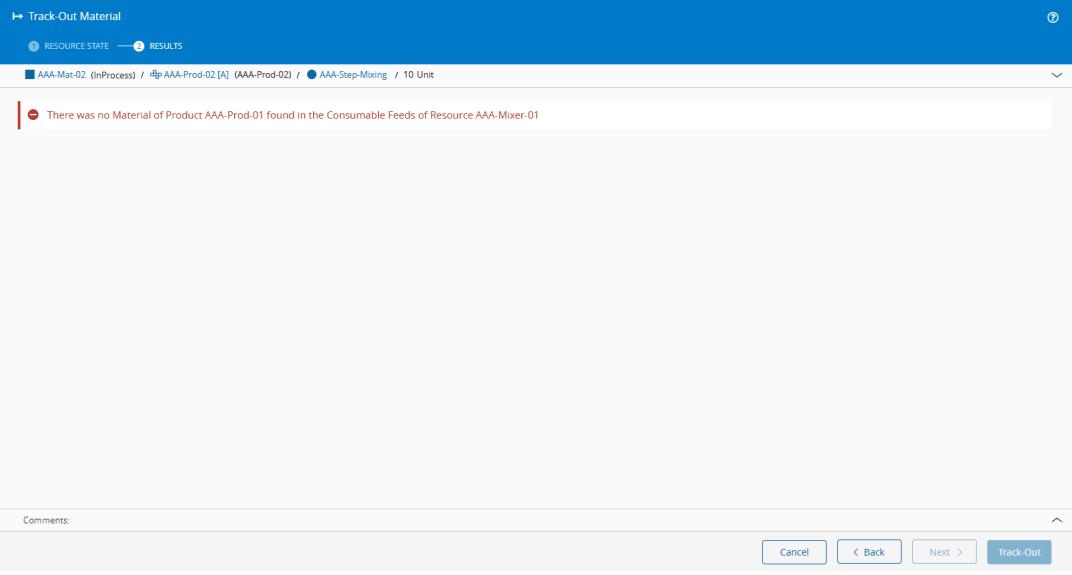
MATERIAL ACTIVE ACCOUNTS TO STATUS PRODUCT PRODUCT DESCRIPTION QUANTITY UNITS FACILITY STEP

AAA-Mat-02	✓	✓	In Progress	AAA-Prod-02 [A]	AAA-Prod-02	10	Unit	AAA-Facility	AAA-Step-Mixing
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Rows per Page: 25 Page 1 of 1 (1 Records)

⚠ Warning

If the consumable Material is not assigned to the Production Order, the system will return an error. This error is due to the dependency that is defined in the BOM which is used in the Production Order:



The screenshot shows a software interface titled "Track-Out Material". At the top, there are two tabs: "RESOURCE STATE" and "RESULTS". Below the tabs, a breadcrumb navigation shows: AAA-Mat-02 (InProcess) / AAA-Prod-02 [A] (AAA-Prod-02) / AAA-Step-Mixing / 10 Unit. A red error message box contains the text: "There was no Material of Product AAA-Prod-01 found in the Consumable Feeds of Resource AAA-Mixer-01". At the bottom of the interface, there is a "Comments:" text input field and a set of buttons: "Cancel", "< Back", "Next >", and "Track-Out".



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