



Critical
manufacturing
an ASM PT company

Material Reservation Mode

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DOCUMENT ACCESS

Public

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Material Reservation Mode

Estimated time to read: 5 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

1 CHANGE SET — 2 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:

Information

* Scope: Materials

Product: Product

* 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 [A,2] / AA-BOM-01

BOM Items

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

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,Z] / 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:

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)

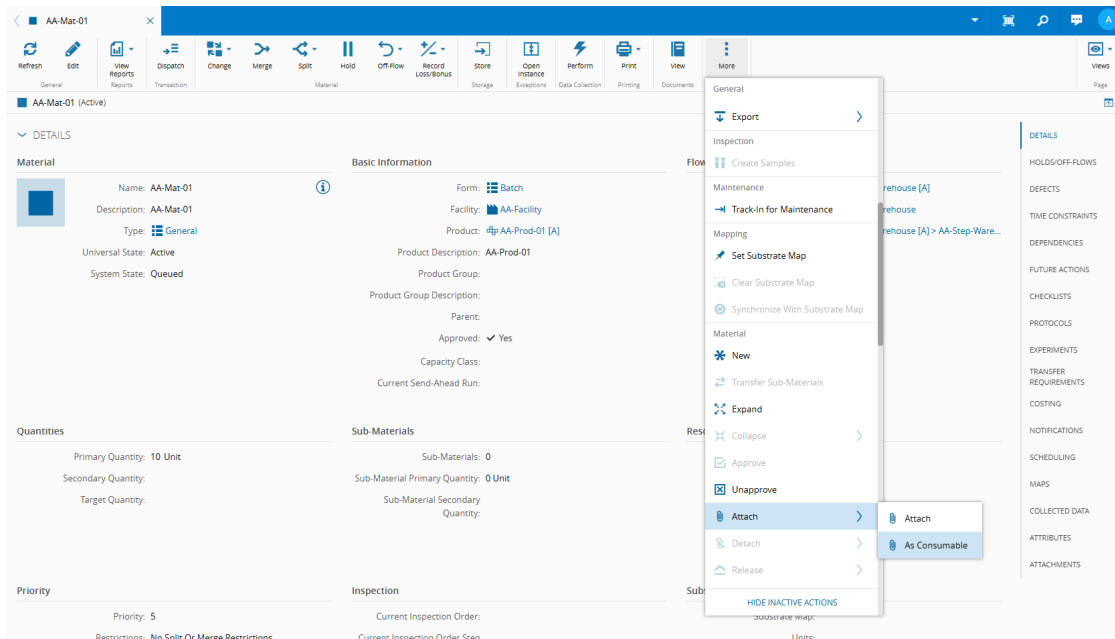
BOMContext (Active)

Record(s)	BOM Context
Record #1 Step: AA-Step-Mixing BOM: AA-BOM-01 AssemblyType: AutomaticAtTrackOut TrackInCheckMode: None Trac	<p>Step: AA-Step-Mixing</p> <p>Logical Flow Path:</p> <p>Product: Product</p> <p>Product Group: Product Group</p> <p>Flow: Flow</p> <p>Material: Material</p> <p>Production Order: Production Order</p> <p>BOM: AA-BOM-01</p> <p>Assembly Type: Automatic At Track Out</p> <p>Track-In Check Mode: None</p> <p>Track-Out Losses Mode: Before Assembly</p> <p>Weigh And Dispense Mode:</p>

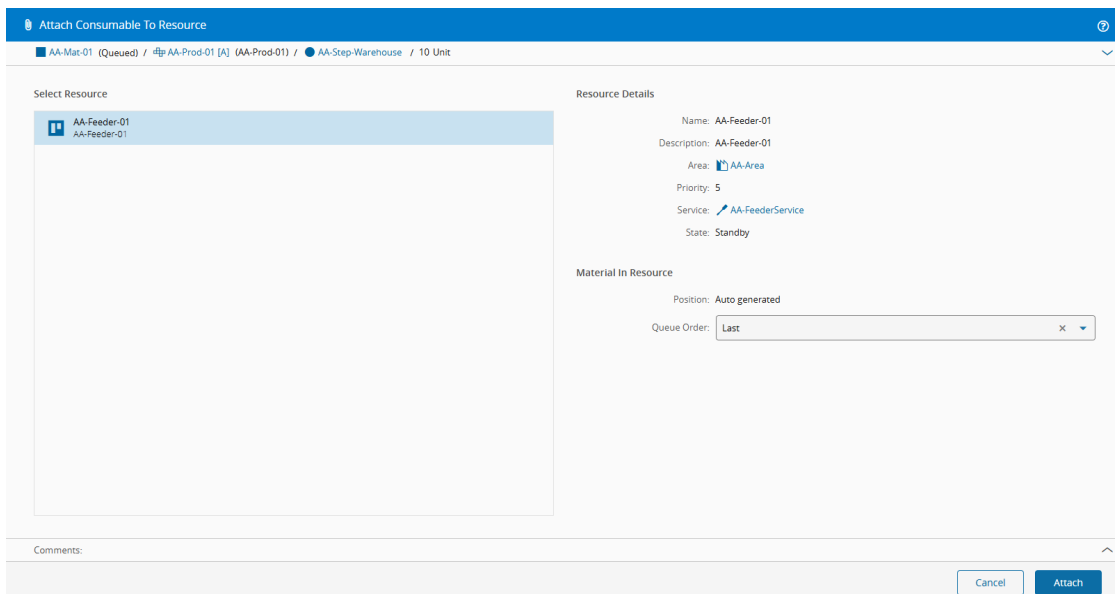
Comments:

Cancel Add

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



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



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
- 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
- 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
- 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

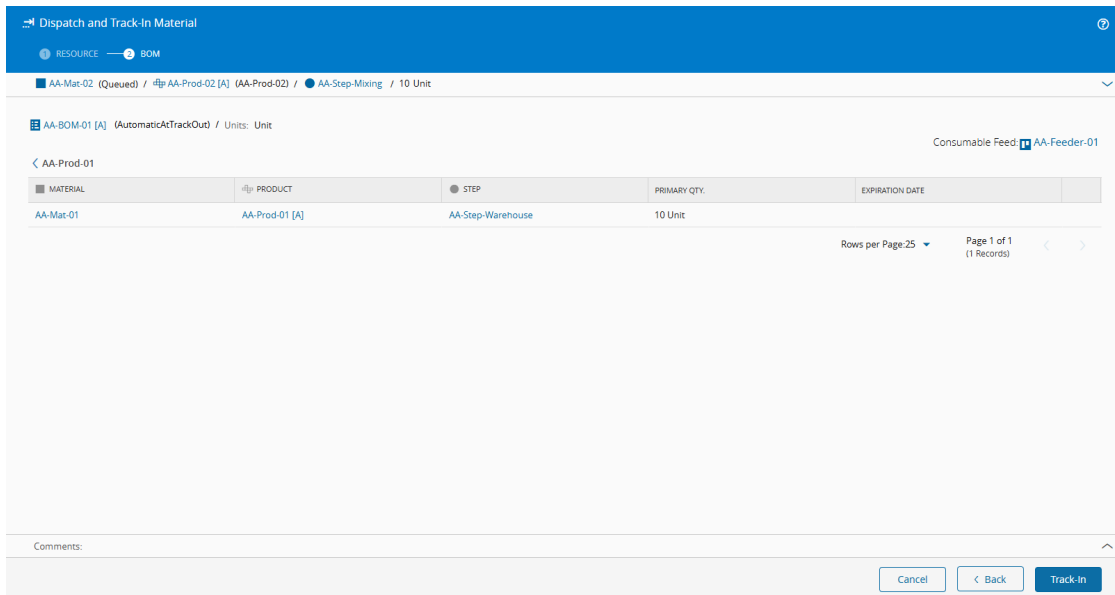
BOM

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-Warehous	1 Unit	X	X	X	10 Unit	10 Unit	0 Unit

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

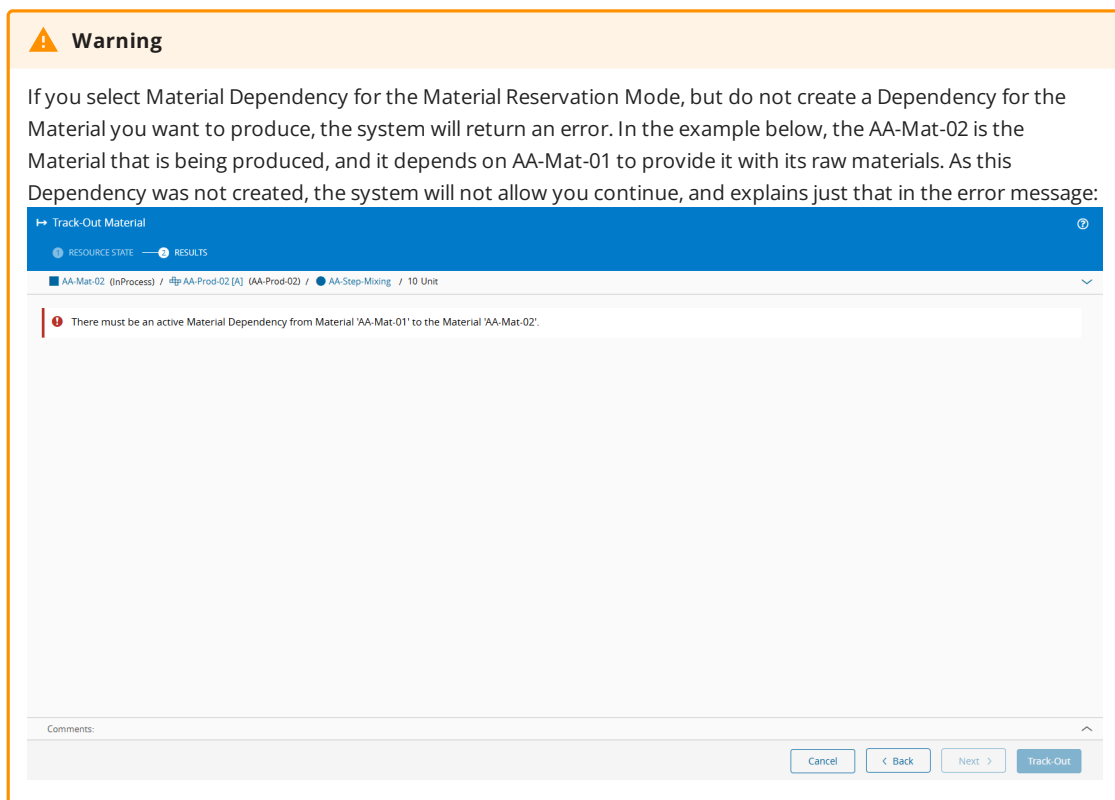
Comments:

Cancel < Back Track-In



10. Select **Track-In**.

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



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:

Information

* Scope: Materials

Product: Product

* 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
No Position	

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) <i>No Position</i>	1 Unit

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)	BOM Context
Record #1 Step: AAA-Step-Mixing BOM: AAA-BOM-01 AssemblyType: AutomaticAtTrackOut TrackInCheckMode: None Tr	<p>* Step: AAA-Step-Mixing</p> <p>Logical Flow Path: <input type="text"/> <input type="button" value="Browse"/></p> <p>Product: <input type="text"/></p> <p>Product Group: <input type="text"/></p> <p>Flow: <input type="text"/></p> <p>Material: <input type="text"/></p> <p>Production Order: <input type="text"/></p> <p>* BOM: AAA-BOM-01</p> <p>* Assembly Type: Automatic At Track Out</p> <p>Track-In Check Mode: None</p> <p>Track-Out Losses Mode: Before Assembly</p> <p>Weigh And Dispense Mode: <input type="text"/></p>

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

* Product: AAA-Prod-021A1

Comments:

Cancel Create

Create Production Order

GENERAL DATA

* Product: AAA-Prod-02[A]

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

Browse

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

* Quantity: 10

* Units: Unit

* Under Delivery Tolerance (%): 0 Minimum Quantity: 10

* Over Delivery Tolerance (%): 0 Maximum Quantity: 10

Product Yield (%): 100

Yield Adjusted Quantity: 10

Scheduling

* Due Date: 06/30/2025 04:31 PM

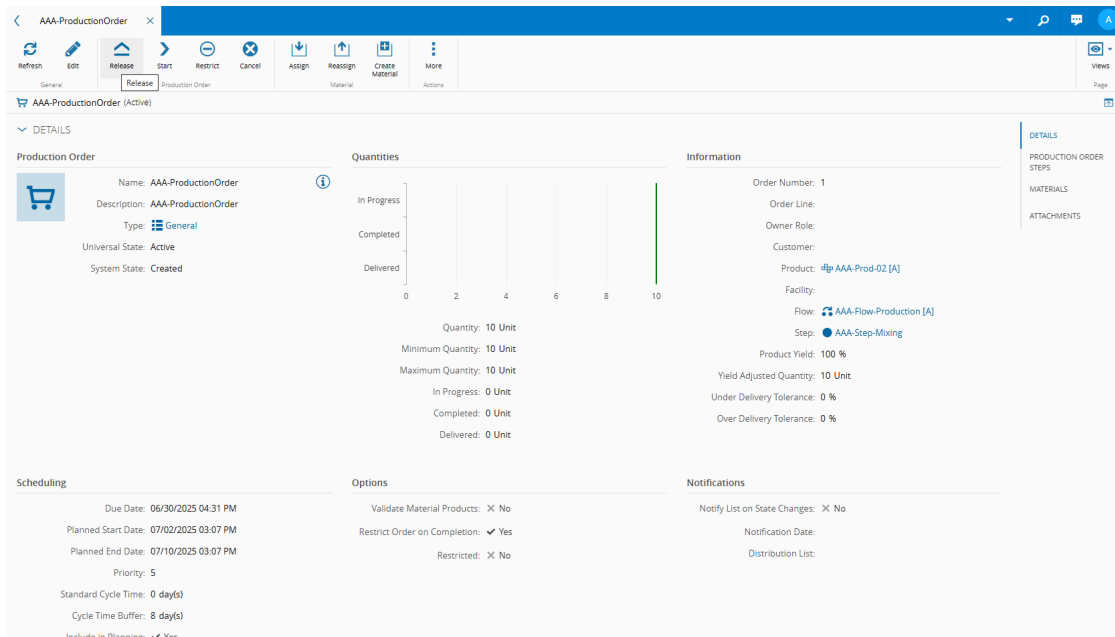
* Priority: 5

Planned Start Date: MM/dd/yyyy HH:mm PP

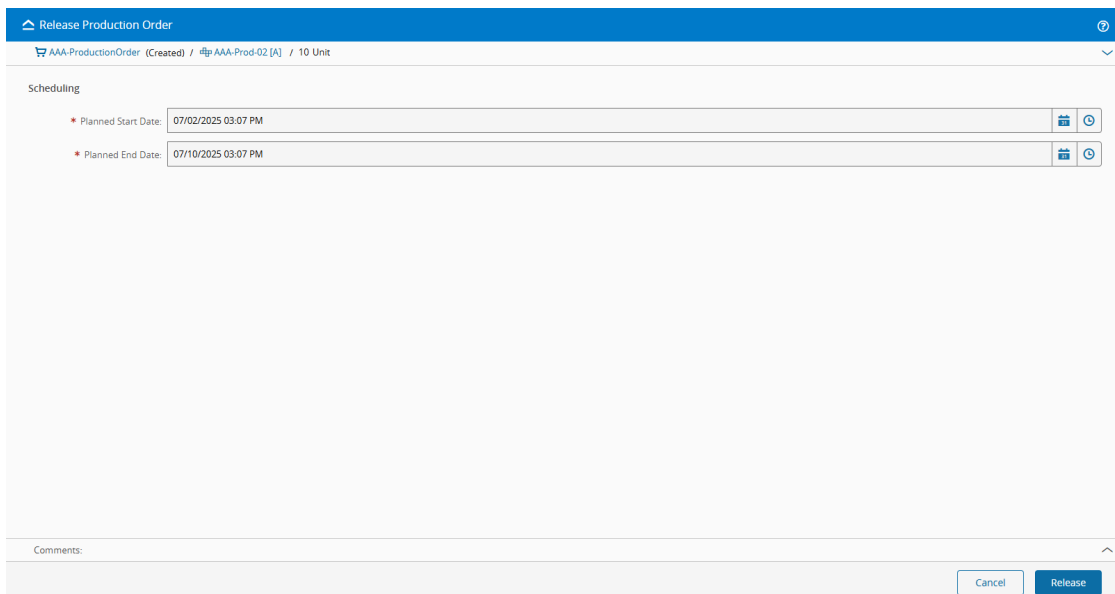
Comments:

Cancel Create

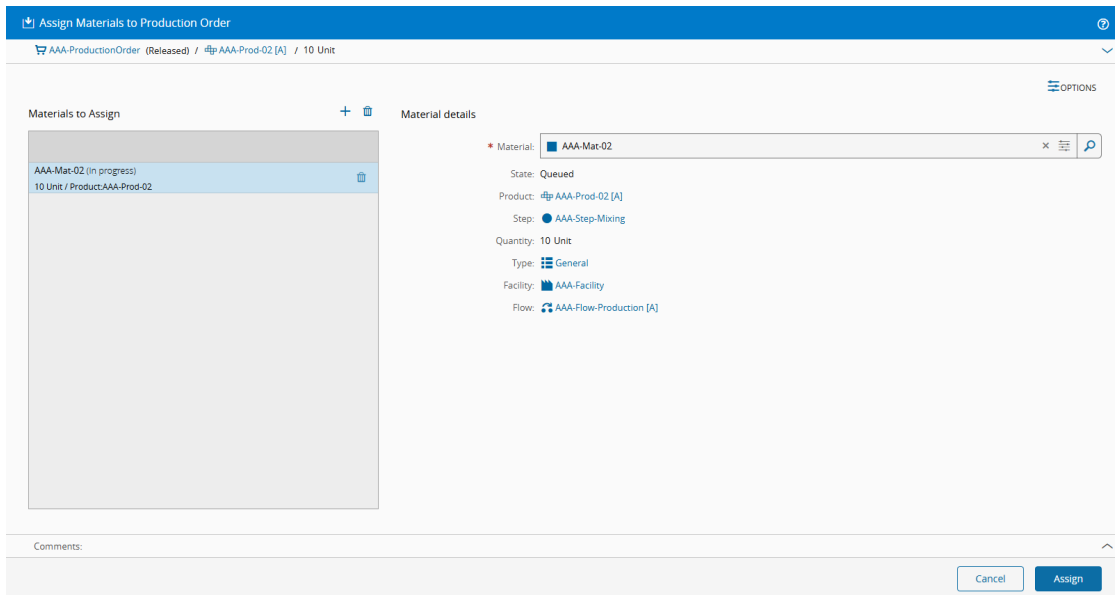
6. On the top ribbon of your **Production Order**, select **Release**:



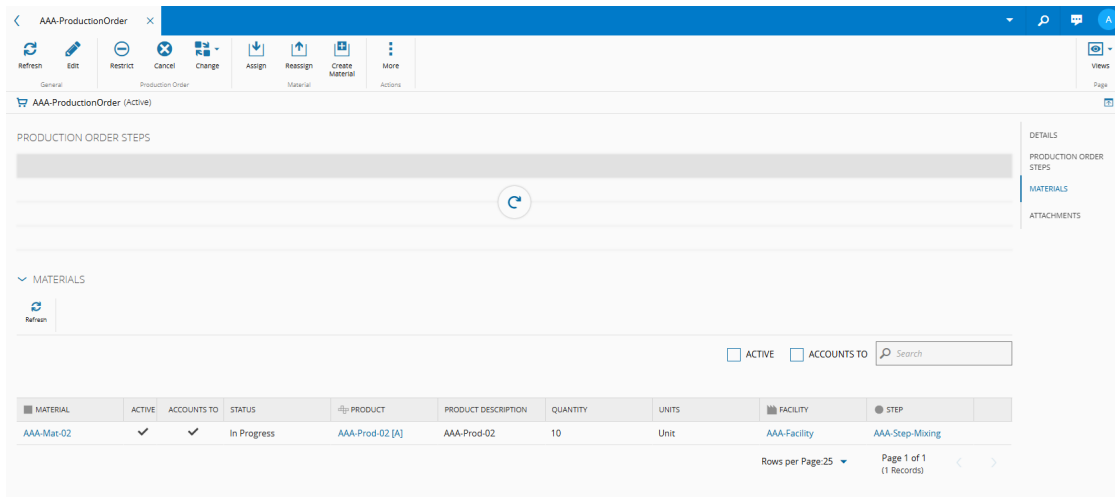
7. Enter the needed dates and select **Release**:



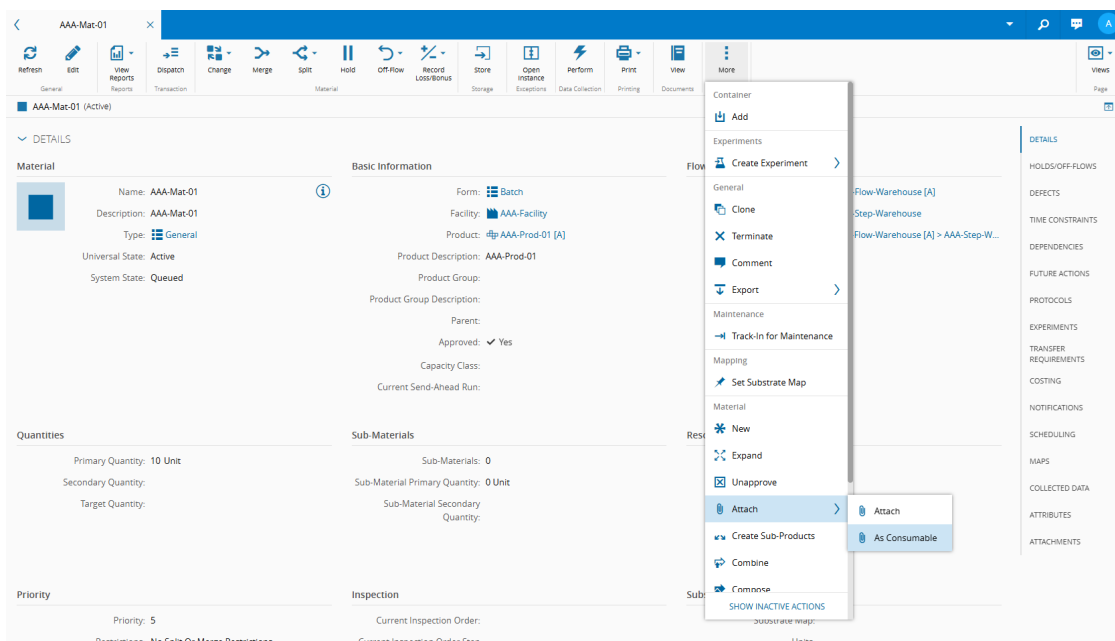
8. In the **Production Order**, select the **Materials** section followed but the **Assign** button on the top ribbon to assign your main **Material**:



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



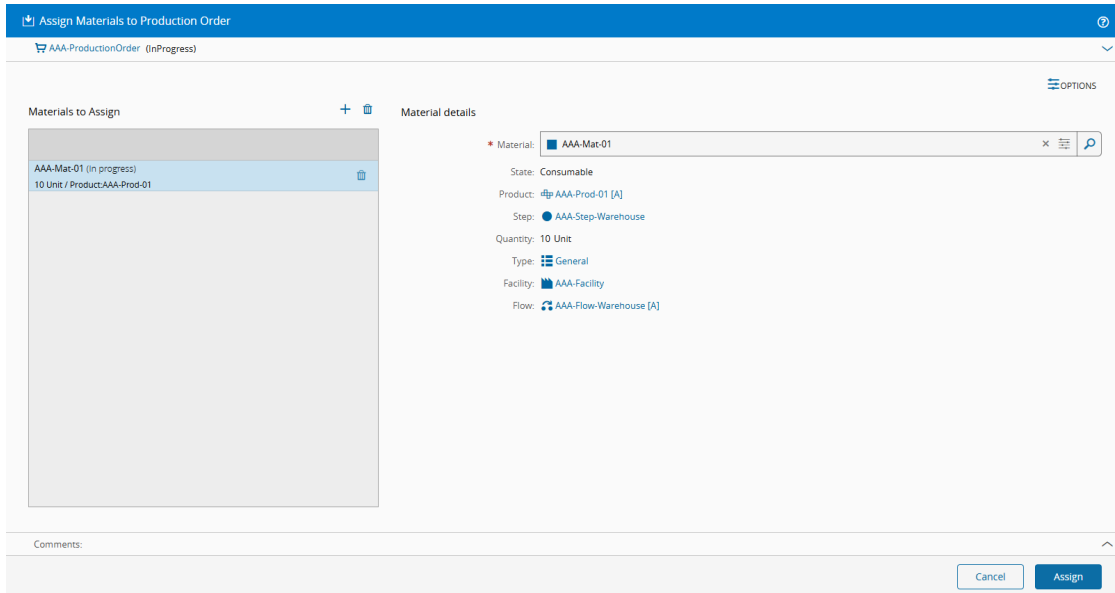
10. Now, attach your consumable **Material** as shown below:



Note

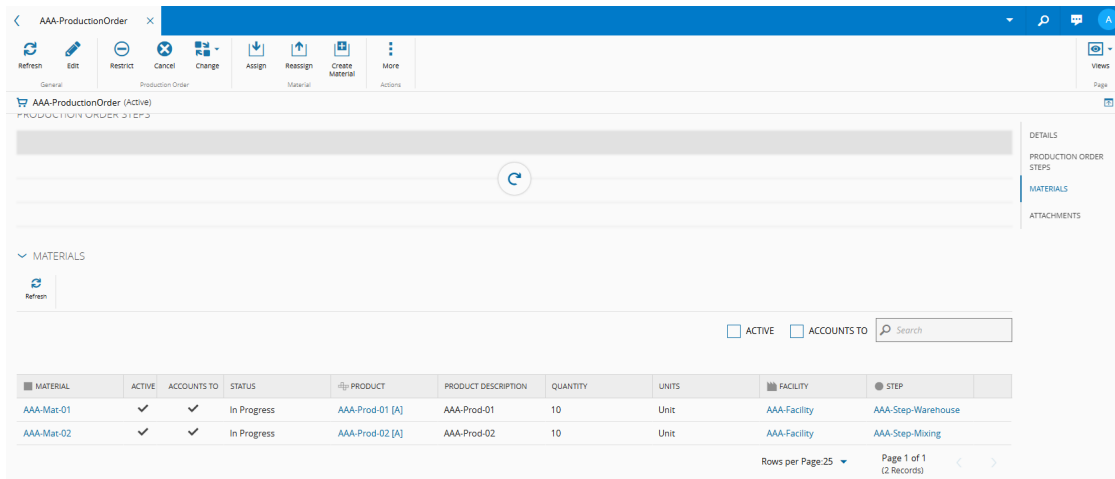
This step is only needed because in this example we set the assembly Type of the BOM as Automatic at Track Out.

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



The screenshot shows the 'Assign Materials to Production Order' dialog box. On the left, under 'Materials to Assign', there is a list with one entry: 'AAA-Mat-01 (In progress)' with a quantity of '10 Unit / Product:AAA-Prod-01'. On the right, under 'Material details', the following information is displayed: Material: AAA-Mat-01, State: Consumable, Product: AAA-Prod-01 [A], Step: AAA-Step-Warehouse, Quantity: 10 Unit, Type: General, Facility: AAA-Facility, and Flow: AAA-Flow-Warehouse [A]. At the bottom right, there are 'Cancel' and 'Assign' buttons.

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



The screenshot shows the 'Materials' section of a production order. It features a table with the following data:

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

Below the table, there are filters for 'ACTIVE' and 'ACCOUNTS TO', a search box, and pagination information: 'Rows per Page: 25', 'Page 1 of 1 (2 Records)'.

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 DESCRPT...	STEP	QUANTITY	REFERENCE	PRODUCT MIX	DISCRETE	REQUIRED QTY.	CURRENT QTY.	DELTA
1			AAA-Prod-01 [A]	AAA-Prod-01	AAA-Step-Warehou	1 Unit	✗	✗	✗	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

Refresh Edit Restrict Cancel Change Assign Reassign Create Material More

General Production Order Material Actions

AAA-ProductionOrder (Active)

PRODUCTION ORDER STEPS

MATERIALS

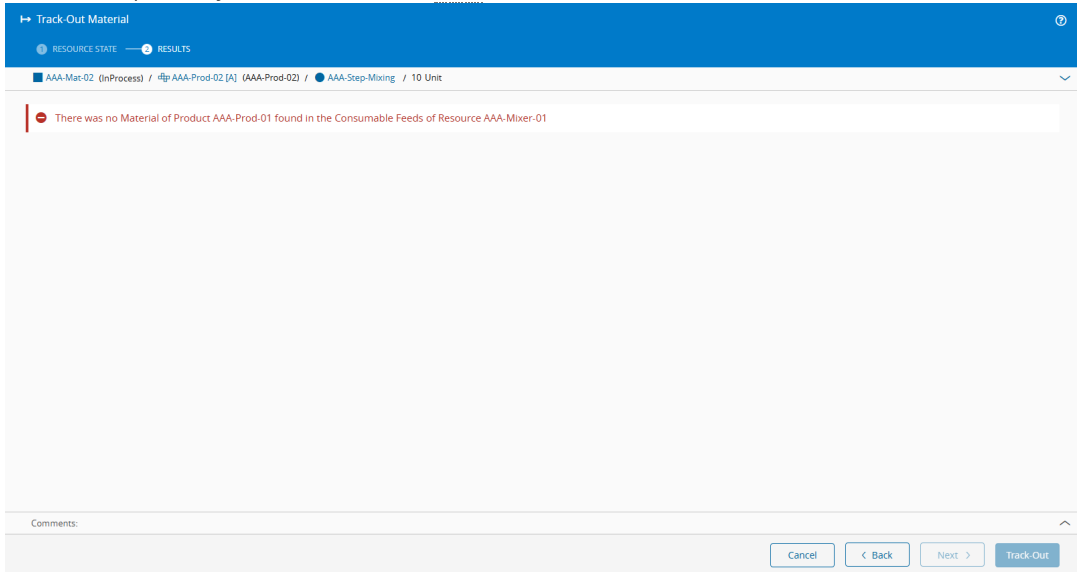
ACTIVE ACCOUNTS TO Search

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

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 the SAP 'Track-Out Material' dialog box. The title bar reads 'Track-Out Material'. Below the title bar, there are two tabs: 'RESOURCE STATE' and 'RESULTS', with 'RESULTS' being the active tab. The breadcrumb navigation shows the path: 'AAA-Mat-02 (InProcess) / AAA-Prod-02 [A] (AAA-Prod-02) / AAA-Step-Mixing / 10 Unit'. The main content area displays a red error message: 'There was no Material of Product AAA-Prod-01 found in the Consumable Feeds of Resource AAA-Mixer-01'. At the bottom of the dialog, there is a 'Comments:' field and four buttons: 'Cancel', '< Back', 'Next >', and 'Track-Out'.



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