



Critical
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Send-Ahead Run

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Send-Ahead Run

Estimated time to read: 9 minutes

A **Send-Ahead Run** represents a scenario where a given **Sub-Material** from a specific **Material** undergoes certain defined processing steps while the remaining lot becomes a Waiting Material that is held at a Wait Step.

Info

For Materials without Sub-Materials you need to Expand one or more units of that Material so you can create a Send-Ahead Run. Another alternative to create a Send-Ahead Run for Materials without Sub-Materials is to use the Send-Ahead Run Entity, and not the Material directly.

This document will guide you through the required configurations and set up for the **Send-Ahead Run** functionality.

Overview

The **Send-Ahead Run** functionality is used with **Material** for tracking, connecting, and checking purposes. This is, from a certain material group, a material or a small set of materials are sent ahead to check for equipment and process correctness, while the rest of the material group is put on hold automatically in the waiting step until the results are available. When the processing of the materials that were sent ahead is checked successfully, the rest of the material group can proceed. However, if the send-ahead material processing fails, the send-ahead materials can be sent to rework, scrapped or just stay in the step, and a new send-ahead material can be used - ignoring/clearing or not the result of the first send-ahead material.

Note

You can also define a Send-Ahead Run via [Future Actions](#) or as part of an [Experiment](#).

Setting up Send-Ahead Run

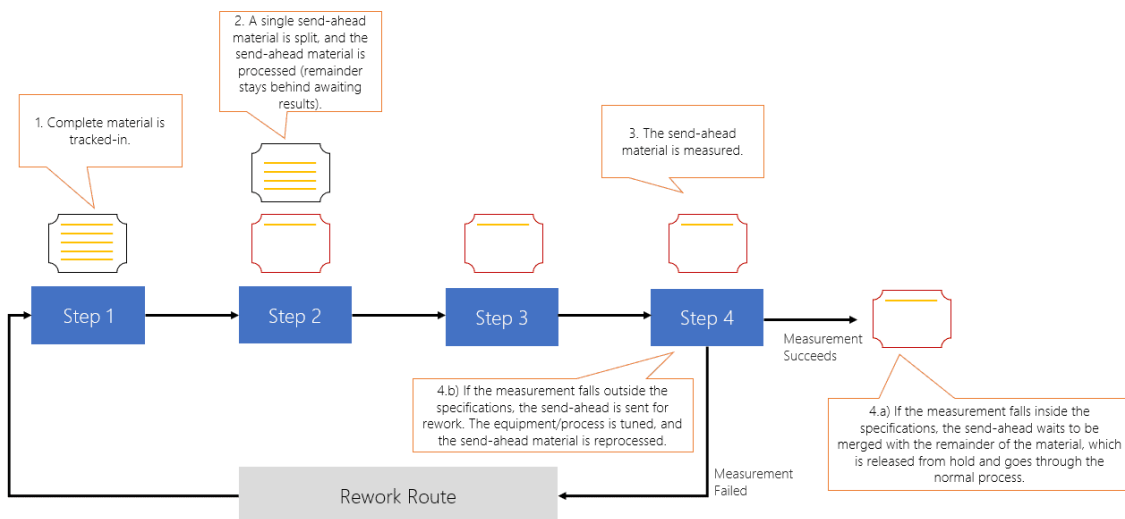
To have a functioning **Send-Ahead Run**, you have to set up other Critical Manufacturing [MES](#) entities as shown in the following table:

Step Number	Step	Description
1	Create a Flow	Create a Flow with Steps .
2	Create a Material	Create a Material .
3	Create a Reason	Create a Reason of type Hold and configure it.

Step Number	Step	Description
4	Create a Data Collection with Limit Set	Only if Results Capture Mode equals Data Collection Within Limits.
5	Create an SPC with an SPC Rule	Only if Results Capture Mode equals SPC With No Violation.
6	Link Data Collection, Data Collection Limit Set, and SPC to the Step	Only if any of the two Capture Modes above are used.

Table: Steps to set up the Send-Ahead Run-related Entities

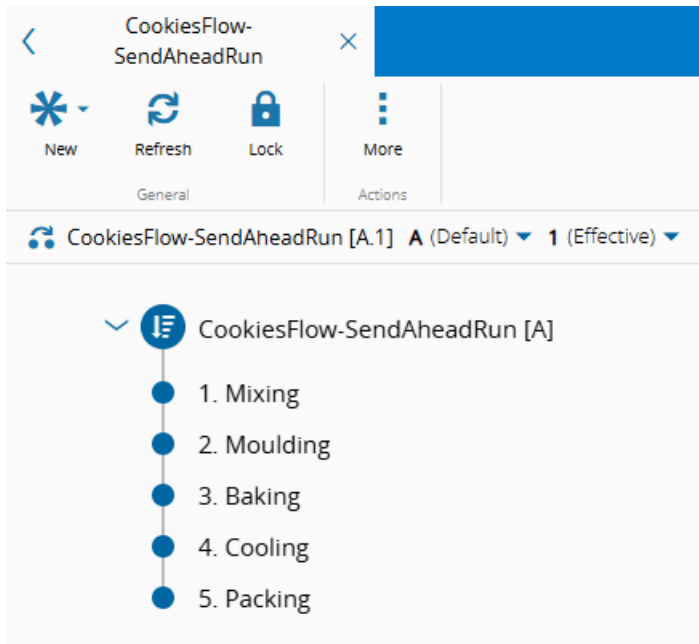
The image below provides an example of a basic **Send-Ahead Run** scenario:



The next sub-sections will cover the required configuration steps in more detail.

Step 1: Create a Flow

1. Create a **Flow** and make sure that it has **Steps**. This tutorial will use three different **Steps** for the Wait, Evaluate, and Merge steps in the **Send-Ahead Run**:

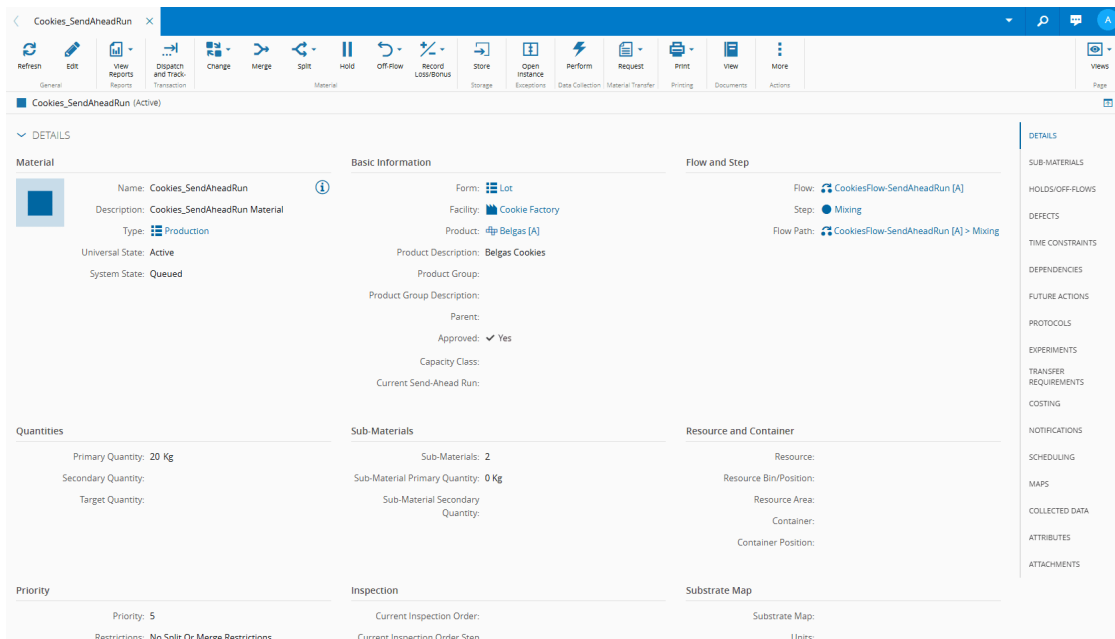


Note

It is not mandatory to have different Steps.

Step 2: Create a Material

1. Create a **Material** and make sure that it is configured to use the **Flow** you created. For this tutorial the **Material** is configured with **Sub-Materials**, one of which will be sent ahead:



Step 3: Create a Reason

1. Create a **Reason**, give it a Name, to use for configuration purposes, and select **Create**:

Create New Reason

GENERAL DATA

General Data

Name:

Description:

Information

* Type:

Category:

Security Role:

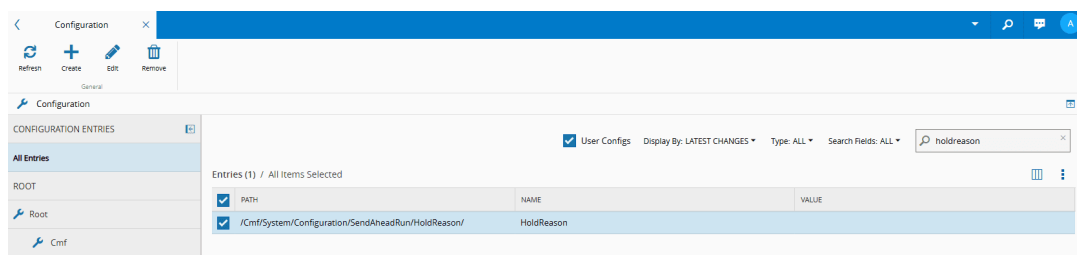
Enable Concurrent Instances:

Distribution List:

Comments:

2. Configure the **Reason** by going to **Administration** followed by **Configuration**. Find and select the following key to be able to **Edit** it:

- `/Cmf/System/Configuration/SendAheadRun/HoldReason/`



Configuration

Refresh Create Edit Remove

Configuration

CONFIGURATION ENTRIES

All Entries

ROOT

Root

Cmf

Entries (1) / All Items Selected

PATH	NAME	VALUE
<input checked="" type="checkbox"/>	/Cmf/System/Configuration/SendAheadRun/HoldReason/	HoldReason

3. Select **Edit**, complete the **Value** field with the Name of your **Reason**, and select **Save**:

Edit Configuration Entry

General Data

Path: `/Cmf/System/Configuration/SendAheadRun/HoldReason/`

Name:

Type:

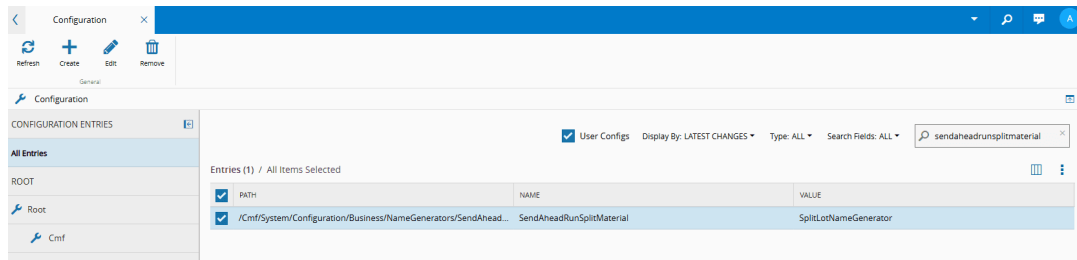
Value:

Confidential:

Comments:

4. Optionally, configure the **NameGenerator** for the **Send-Ahead Run** Split Material by going to **Administration** followed by **Configuration**. Find and select the following key to be able to **Edit** it:

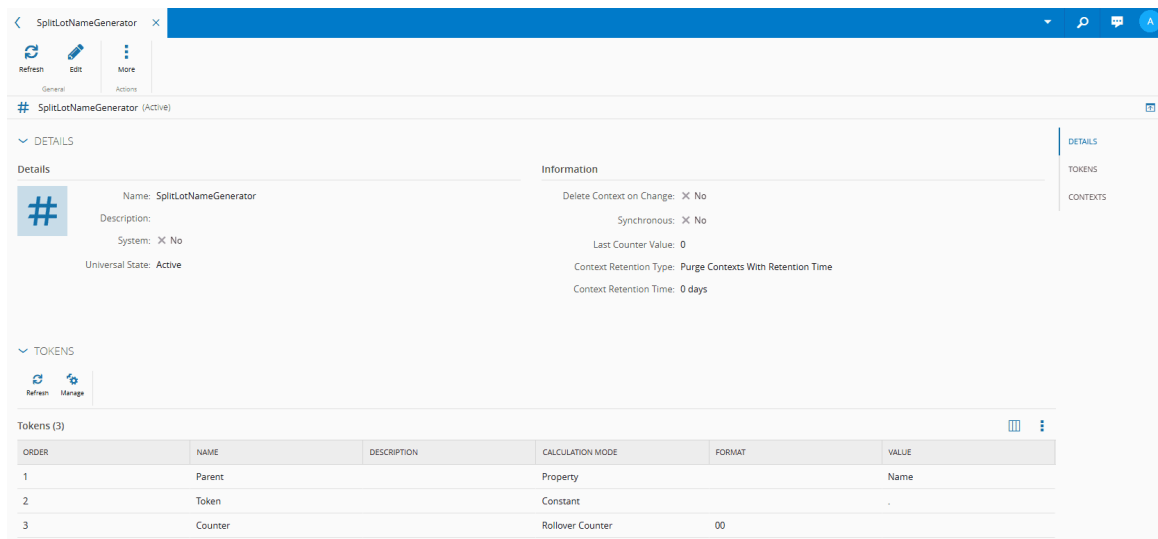
- `/Cmf/System/Configuration/Business/NameGenerators/SendAheadRunSplitMaterial/`



Note

You can only edit a Configuration if it is selected. For more information, see [Configuration](#).

Here is an example of the configured **Name Generator**:



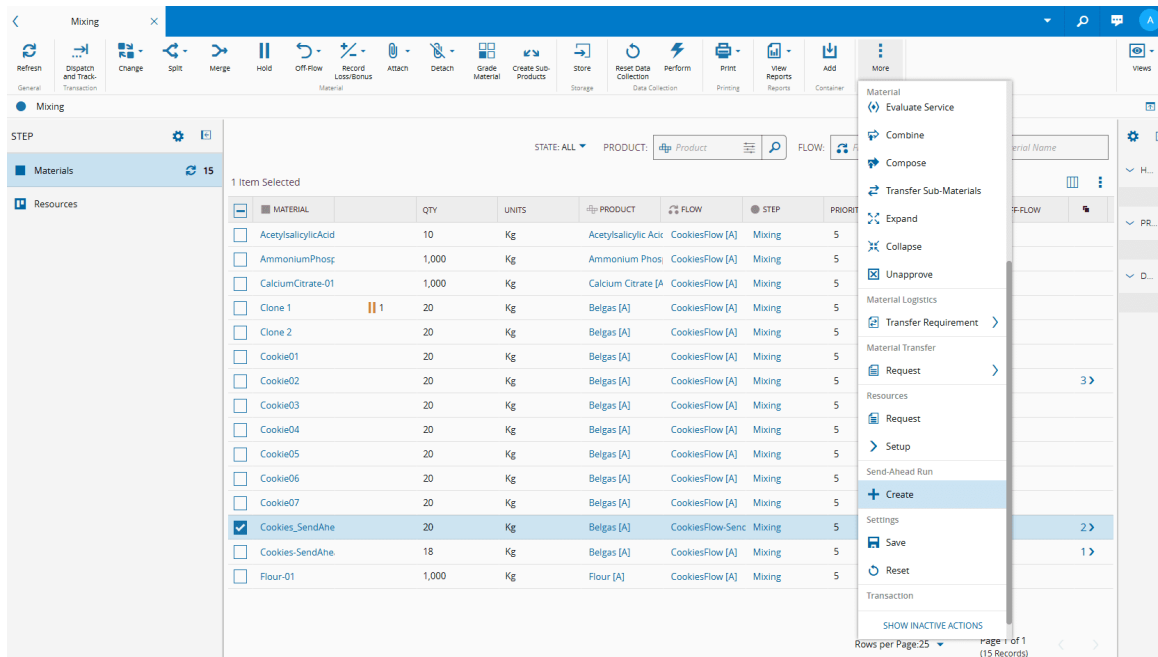
Using Send-Ahead Run

After setting up the required configurations mentioned above, you can create the **Send-Ahead Run** and use it to process your **Material**, as described in the next sections.

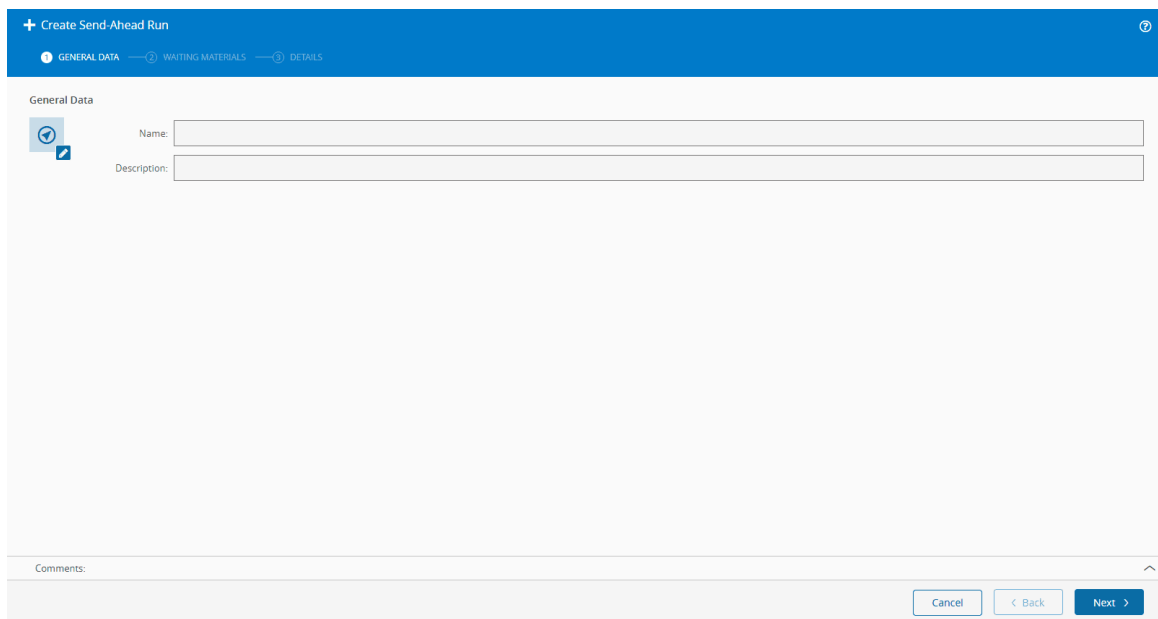
Create the Send-Ahead Run

You can create the [Send-Ahead Run](#) directly from the **Material**, **Step** or **Resource** view.

For the purpose of this tutorial, the **Send-Ahead Run** will be created from the **Step** view:

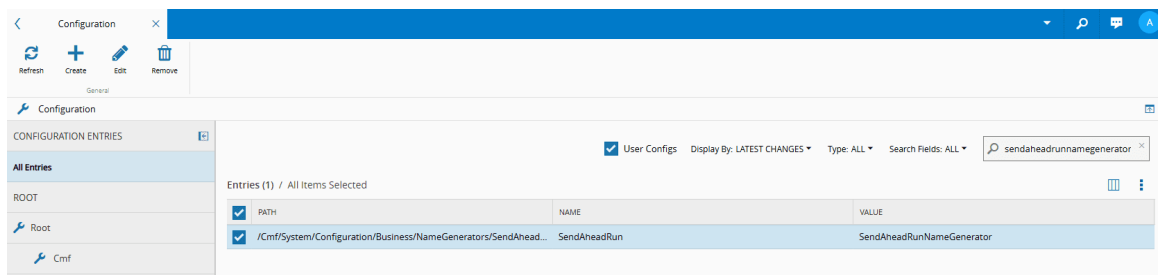


On selecting **Create** under **Send-Ahead Run**, the wizard opens:



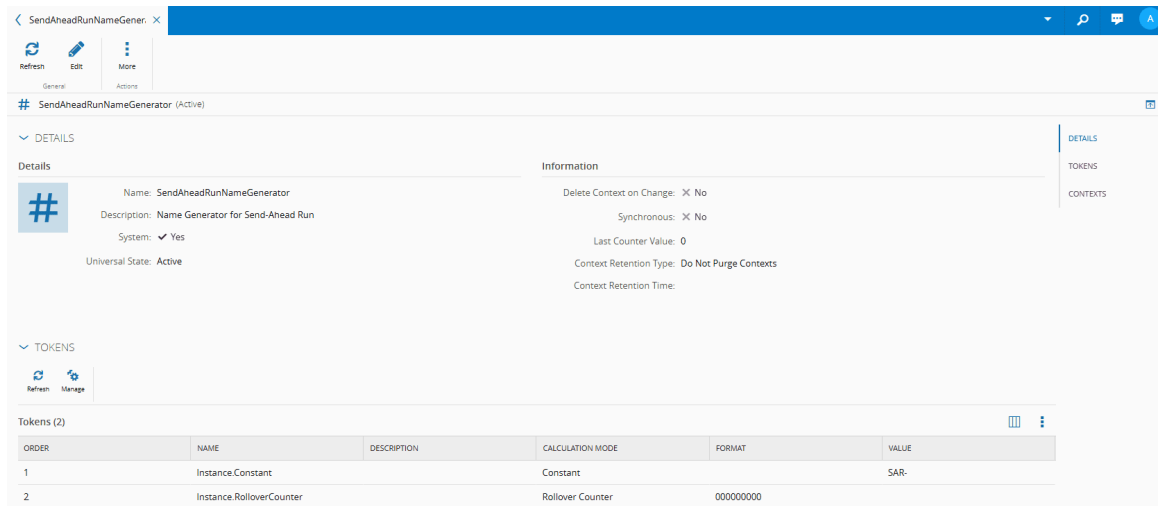
Before moving on, you could configure the **NameGenerator** for the **Send-Ahead Run** by going to **Administration** followed by **Configuration**. Find and select the following key to be able to **Edit** it:

- `/Cmf/System/Configuration/Business/NameGenerators/SendAheadRun/`



Since for this tutorial the **NameGenerator** was configured, select **Next** in the **General Data** step.

Out of curiosity, this is how the **NameGenerator** for the **Send-Ahead Run** was configured:



The screenshot shows the configuration page for the **SendAheadRunNameGenerator**. It is divided into two main sections: **Details** and **Information**.

Details:

- Name: SendAheadRunNameGenerator
- Description: Name Generator for Send-Ahead Run
- System: Yes
- Universal State: Active

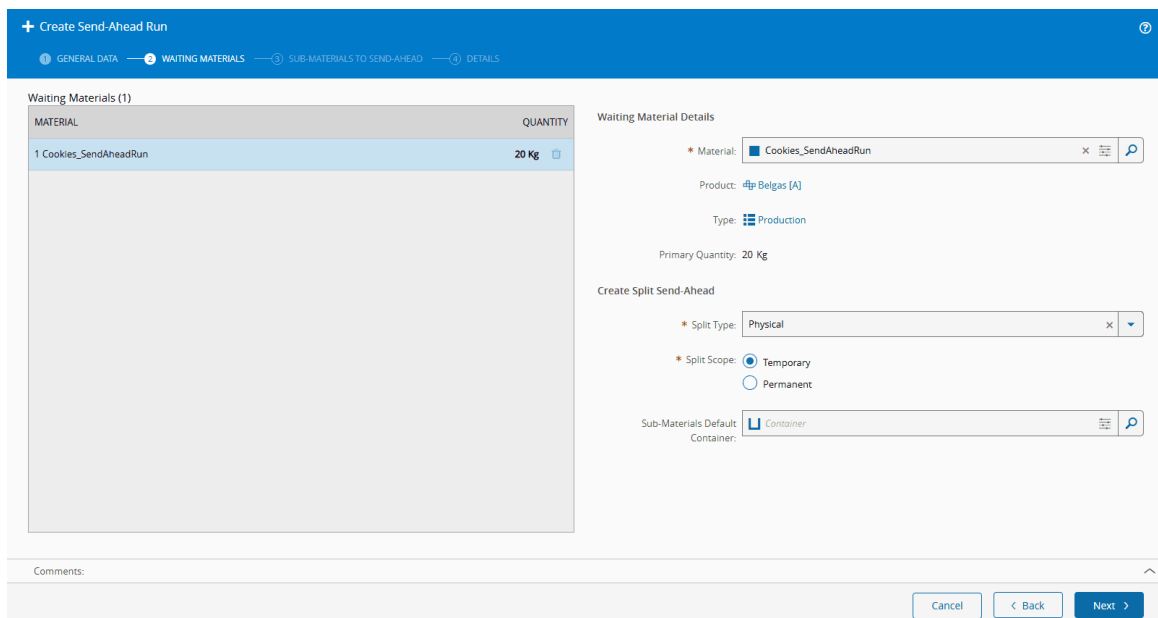
Information:

- Delete Context on Change: No
- Synchronous: No
- Last Counter Value: 0
- Context Retention Type: Do Not Purge Contexts
- Context Retention Time:

TOKENS (2):

ORDER	NAME	DESCRIPTION	CALCULATION MODE	FORMAT	VALUE
1	Instance.Constant		Constant		SAR-
2	Instance.RolloverCounter		Rollover Counter	00000000	

In the **Waiting Materials** step, select **Physical** for the Split Type and **Temporary** for the Split Scope:



The screenshot shows the **Create Send-Ahead Run** interface, specifically the **Waiting Materials** step. The interface is divided into two main sections: **Waiting Materials (1)** and **Waiting Material Details**.

Waiting Materials (1):

MATERIAL	QUANTITY
1 Cookies_SendAheadRun	20 Kg

Waiting Material Details:

- * Material: Cookies_SendAheadRun
- Product: Belgas [A]
- Type: Production
- Primary Quantity: 20 Kg
- Create Split Send-Ahead:
 - * Split Type: Physical
 - * Split Scope: Temporary, Permanent
- Sub-Materials Default Container: Container

At the bottom of the interface, there are three buttons: **Cancel**, **< Back**, and **Next >**.

Select **Next** to move to the **Sub-Materials to Send-Ahead** step, and select the desired **Sub-Material**, followed by **Next**:

+ Create Send-Ahead Run

GENERAL DATA — WAITING MATERIALS — SUB-MATERIALS TO SEND-AHEAD — DETAILS

Select Sub-Materials for Each Split Material / 1 Item selected

MATERIAL	QUANTITY	SUB-MATERIALS
1 Cookies_SendAheadRun (Split)	20 Kg >	<input checked="" type="checkbox"/> SAR-SubMaterial-01 Cookies_SendAheadRun Material <input type="checkbox"/> SAR-SubMaterial-02 Cookies_SendAheadRun Material

Sub-Material Details

Material: SAR-SubMaterial-01
 Product: Belgas [A]
 Type: Production

Comments:

Cancel < Back Next >

For the **Details** step be sure to complete the following:

- Wait Step - where the main **Material** will be put on hold, and hold reason is assigned. For more information, see [Manage Reasons](#).
- Evaluate Step - where you will evaluate the **Material** that was sent ahead.
- Merge Step - where the main **Material** and the **Material** that was sent ahead will merge, and only if the Split Scope is different from `Permanent`.
- Results Capture Mode - when results are recorded. For more information on the available options, see [Create Send-Ahead Run](#).

+ Create Send-Ahead Run

GENERAL DATA — WAITING MATERIALS — SUB-MATERIALS TO SEND-AHEAD — DETAILS

Start Flow and Step Details

Flow: CookiesFlow-SendAheadRun [A]
 Step: Mixing
 Flow Path: CookiesFlow-SendAheadRun [A] > Mixing

Additional Information

Selection Mode: Step

* Wait Step: Mixing

* Evaluate Step: Moulding

* Merge Step: Baking

Result Options

* Results Capture Mode: Manual At Track Out

Auto Release on Pass:

Comments:

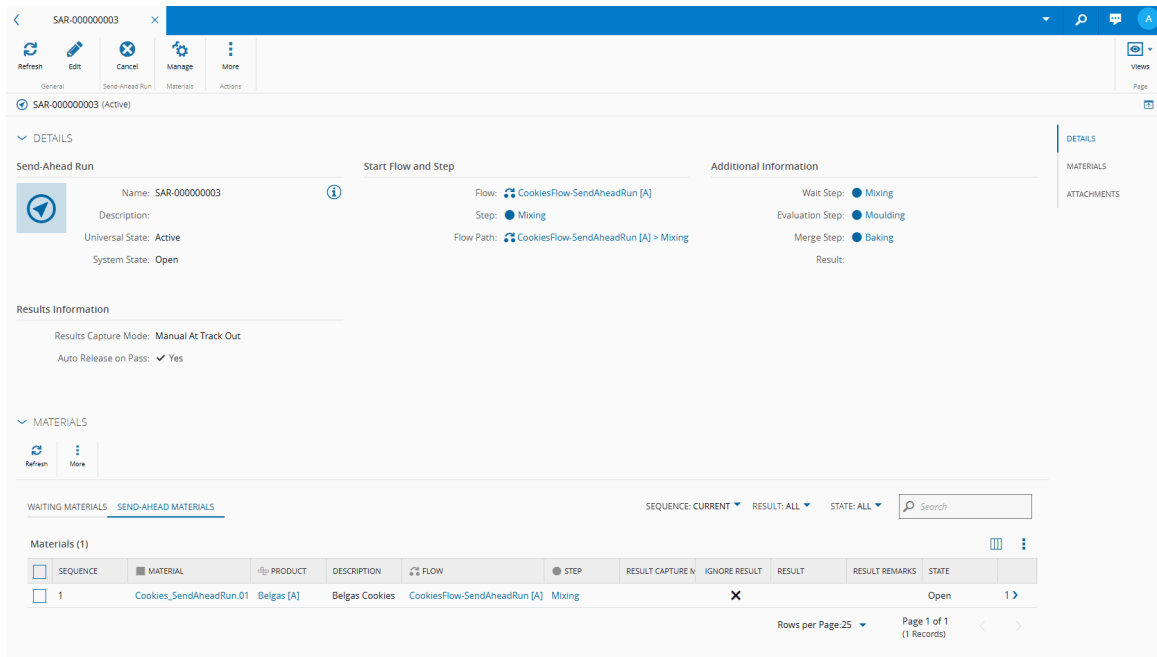
Cancel < Back Create

Info

The default of the Results Capture Mode is Manual. For this tutorial it is Manual at Track-Out so you can see how it works.

The default of the Auto Release on Pass is `true`. For this tutorial it is `false` so you can see the manual release workflow.

When created, the **Send-Ahead Run** page contains all your configurations including details on the **Send-Ahead Materials**:



Send-Ahead Run Details:

- Name: SAR-000000003
- Description: [Info icon]
- Universal State: Active
- System State: Open
- Flow: CookiesFlow-SendAheadRun [A]
- Step: Mixing
- Flow Path: CookiesFlow-SendAheadRun [A] > Mixing
- Wait Step: Mixing
- Evaluation Step: Moulding
- Merge Step: Baking
- Result: [Empty]

Results Information:

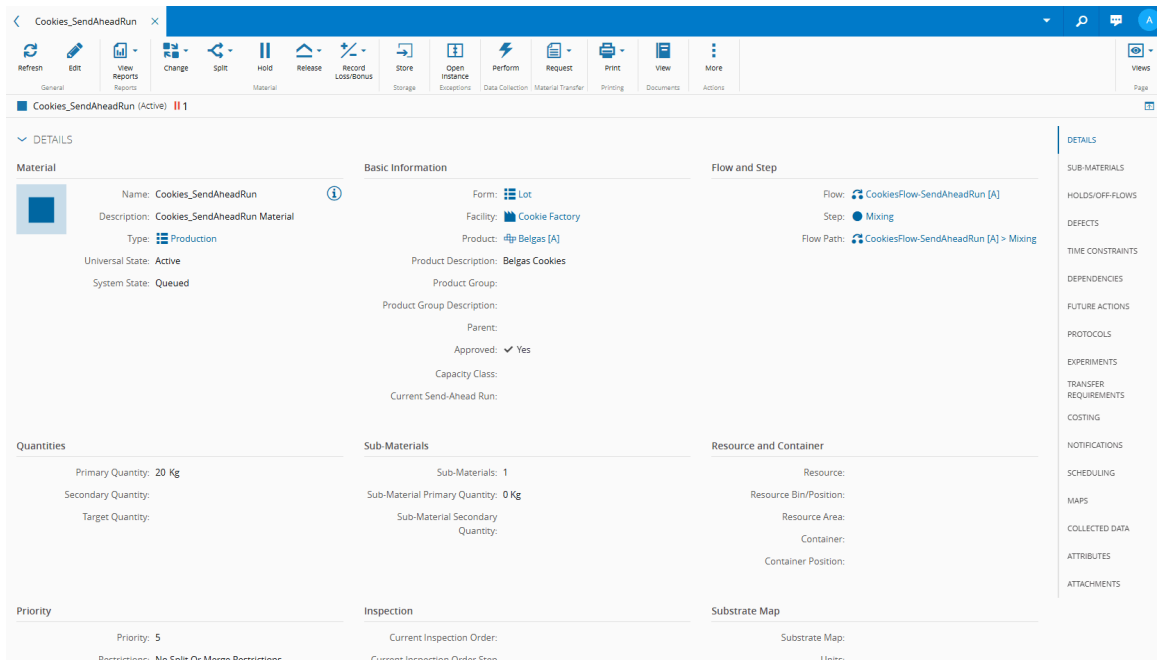
- Results Capture Mode: Manual At Track Out
- Auto Release on Pass: Yes

Materials (1):

SEQUENCE	MATERIAL	PRODUCT	DESCRIPTION	FLOW	STEP	RESULT CAPTURE M	IGNORE RESULT	RESULT	RESULT REMARKS	STATE
1	Cookies_SendAheadRun.01	Belgas [A]	Belgas Cookies	CookiesFlow-SendAheadRun [A]	Mixing		X			Open

For more information, see [Cancel Send-Ahead Run](#), [Change Send-Ahead Run Materials](#), [Manage Send-Ahead Run Materials](#), [Clear Send-Ahead Run Result](#), and [Ignore Send-Ahead Run Result](#).

Moreover, notice how, as defined in the Wait Step of the **Send-Ahead Run**, the main **Material** is on hold at the **Mixing** step:



Material

Name: Cookies_SendAheadRun
 Description: Cookies_SendAheadRun Material
 Type: Production
 Universal State: Active
 System State: Queued

Basic Information

Form: Lot
 Facility: Cookie Factory
 Product: Belgas [A]
 Product Description: Belgas Cookies
 Product Group:
 Product Group Description:
 Parent:
 Approved: Yes
 Capacity Class:
 Current Send-Ahead Run:

Flow and Step

Flow: CookiesFlow-SendAheadRun [A]
 Step: Mixing
 Flow Path: CookiesFlow-SendAheadRun [A] > Mixing

Quantities

Primary Quantity: 20 Kg
 Secondary Quantity:
 Target Quantity:

Sub-Materials

Sub-Materials: 1
 Sub-Material Primary Quantity: 0 Kg
 Sub-Material Secondary Quantity:

Resource and Container

Resource:
 Resource Bin/Position:
 Resource Area:
 Container:
 Container Position:

Priority

Priority: 5
 Restrictions: No Split Or Merge Restrictions

Inspection

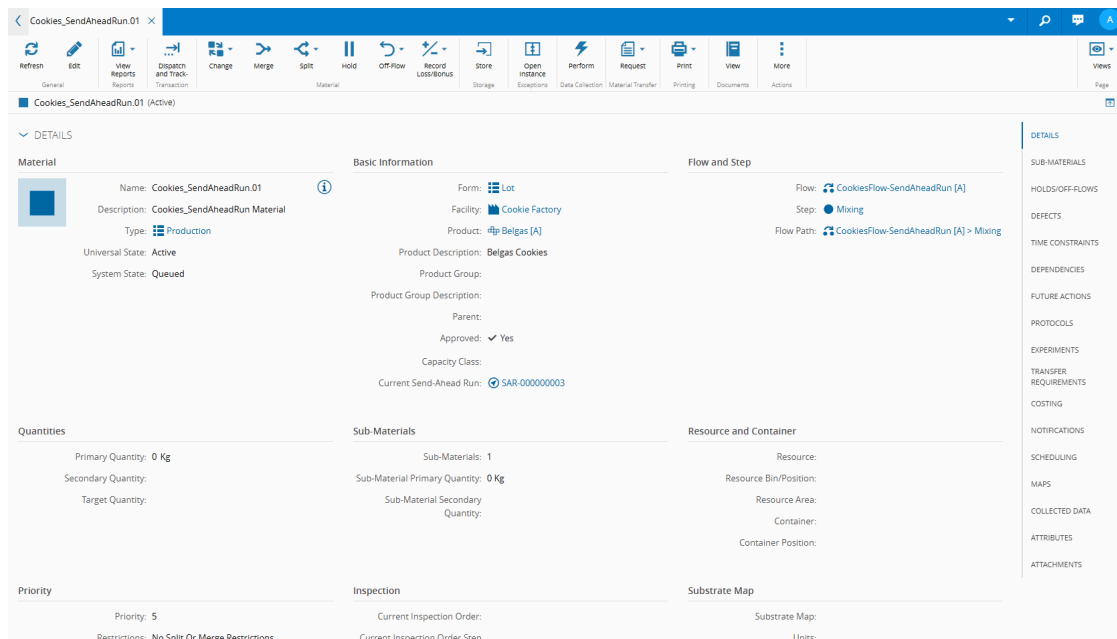
Current Inspection Order:
 Current Inspection Order Step:

Substrate Map

Substrate Map:
 Units:

Process the Material

1. From the **Material** to be sent ahead, select **Dispatch and Track-In**.



Material

Name: Cookies_SendAheadRun.01
 Description: Cookies_SendAheadRun Material
 Type: Production
 Universal State: Active
 System State: Queued

Basic Information

Form: Lot
 Facility: Cookie Factory
 Product: Belgas [A]
 Product Description: Belgas Cookies
 Product Group:
 Product Group Description:
 Parent:
 Approved: Yes
 Capacity Class:
 Current Send-Ahead Run: SAR-000000003

Flow and Step

Flow: CookiesFlow-SendAheadRun [A]
 Step: Mixing
 Flow Path: CookiesFlow-SendAheadRun [A] > Mixing

Quantities

Primary Quantity: 0 Kg
 Secondary Quantity:
 Target Quantity:

Sub-Materials

Sub-Materials: 1
 Sub-Material Primary Quantity: 0 Kg
 Sub-Material Secondary Quantity:

Resource and Container

Resource:
 Resource Bin/Position:
 Resource Area:
 Container:
 Container Position:

Priority

Priority: 5
 Restrictions: No Split Or Merge Restrictions

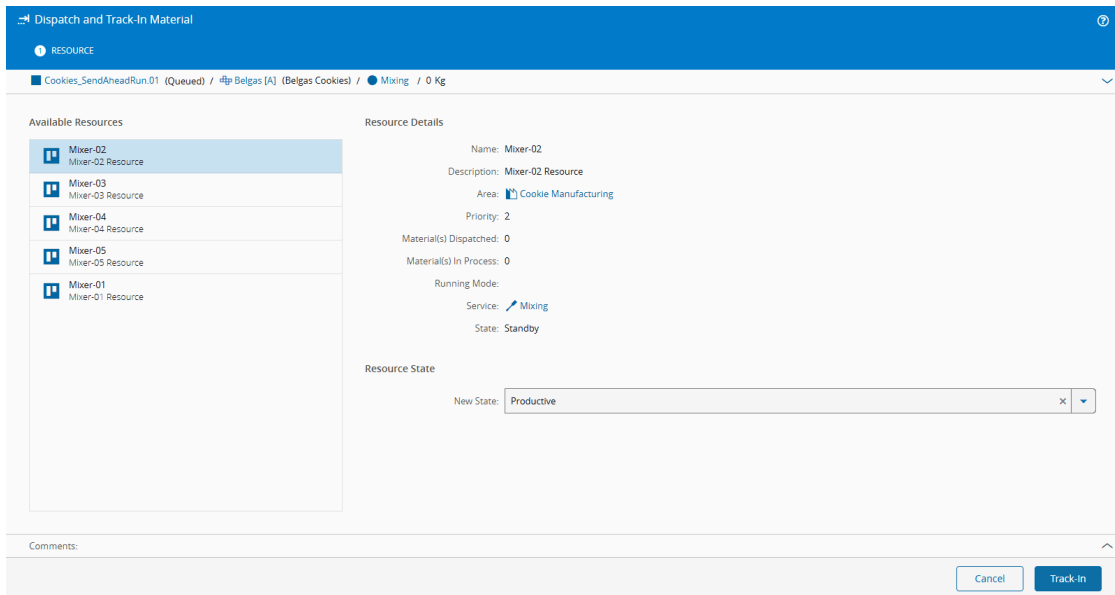
Inspection

Current Inspection Order:
 Current Inspection Order Step:

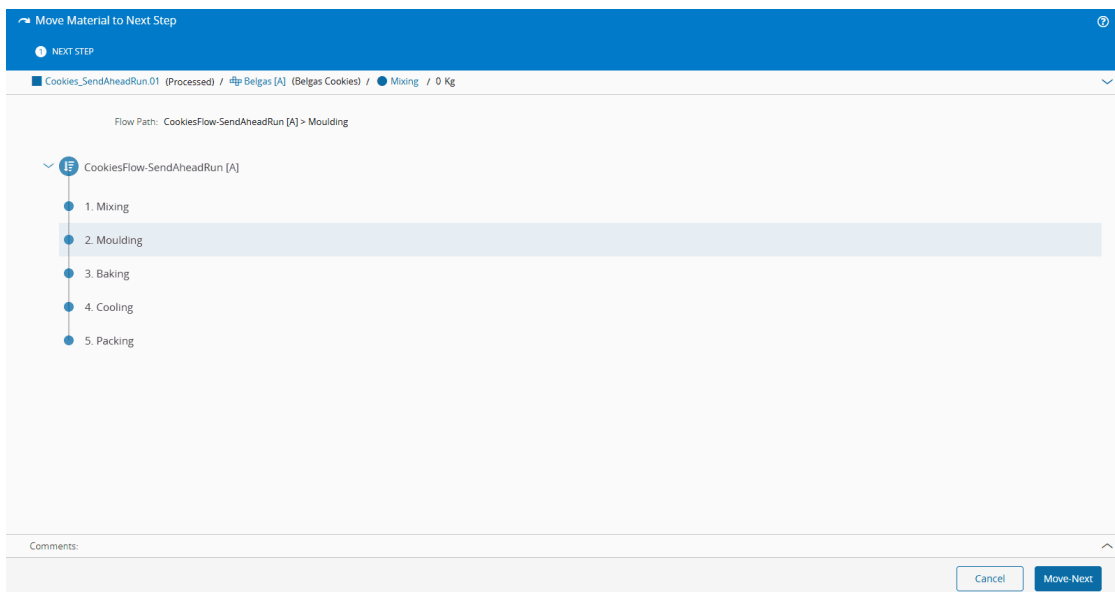
Substrate Map

Substrate Map:
 Units:

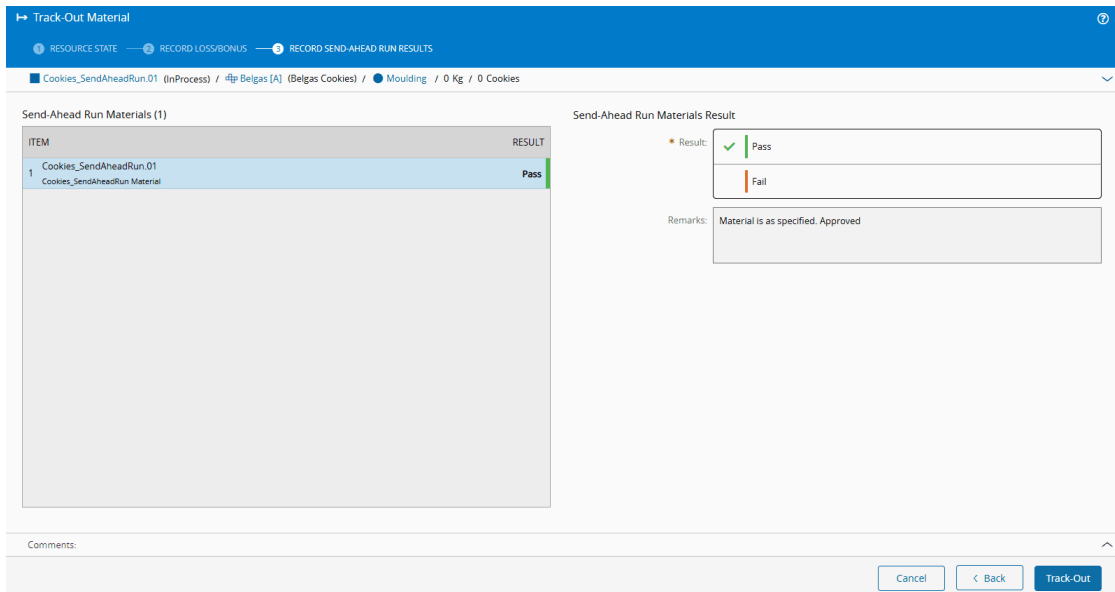
2. Select an available resource and **Track-In**:



3. Select **Track-Out** and perform the necessary steps in the **Track-Out Material** wizard to **Track-Out**.
4. Select **Move-Next** on the top ribbon, and then again in the **Move Material to Next Step** wizard to move the **Material** to the **Evaluate Step**. In this case, Moulding:

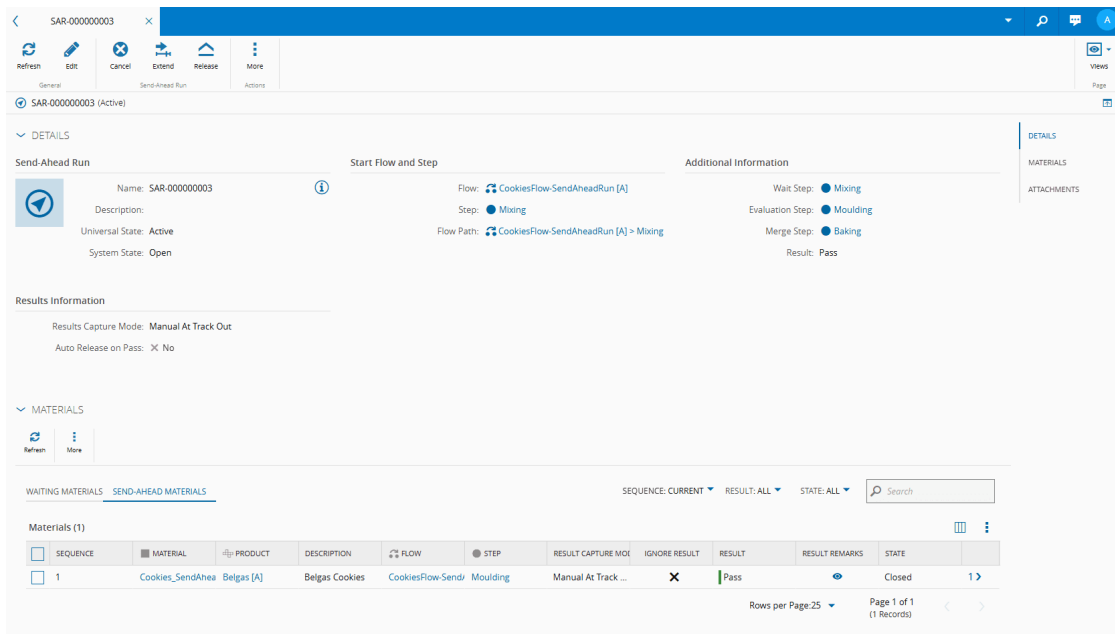


5. The **Material** is now in Moulding, the configured **Evaluate Step**, and you need to repeat the **Dispatch and Track-In** and **Track-Out** process.
6. Since you selected **Manual** at **Track-Out** as the **Results Capture Mode**, the last step of the **Track-Out Material** wizard is when you manually record the **Send-Ahead Run Materials Result**. The available options are **Pass** or **Fail**, and you can include **Remarks**:



7. Select **Track-Out** and your **Material** is tracked out successfully.

8. Return to the **Send-Ahead Run** and select **Release** on the top ribbon:



Note

A Material can be released directly in the Material entity, Resource View or Step View.

Information regarding the Send-Ahead Materials is updated.

This operation is not needed if the Auto Release on Pass is set to `true` when creating the Send-Ahead Run.

And again in the **Release Waiting Material** wizard:

Release Waiting Materials

SAR-000000003 (Open)

All waiting materials will be released.

Materials (1)

MATERIAL	PRODUCT	DESCRIPTION	FLOW	STEP
Cookies_SendAheadRun	Belgas [A]	Belgas Cookies	CookiesFlow-SendAheadRun [A]	Mixing

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

Comments:

Cancel Release

9. Now you need to perform **Dispatch and Track-In, Track-Out**, and **Move-Next** to your main **Material** (no longer on hold) until it reaches the **Merge Step** (Baking), at which point it will be waiting for merge:

Waiting for 1 Material(s) to proceed with the merge:

Material: Cookies_SendAheadRun (Active) 81

DETAILS

Material

Name: Cookies_SendAheadRun
Description: Cookies_SendAheadRun Material
Type: Production
Universal State: Active
System State: Queued

Basic Information

Form: Lot
Facility: Cookie Factory
Product: Belgas [A]
Product Description: Belgas Cookies
Product Group:
Product Group Description:
Parent:
Approved: Yes
Capacity Class:
Current Send-Ahead Run:

Flow and Step

Flow: CookiesFlow-SendAheadRun [A]
Step: Baking
Flow Path: CookiesFlow-SendAheadRun [A] > Baking

Quantities

Primary Quantity: 4,000 Cookies
Secondary Quantity:
Target Quantity:

Sub-Materials

Sub-Materials: 1
Sub-Material Primary Quantity: 0 Cookies
Sub-Material Secondary Quantity:

Resource and Container

Resource:
Resource Bin/Position:
Resource Area:
Container:
Container Position:

Priority

Priority: 5
Restrictions: No Split Or Merge Restrictions

Inspection

Current Inspection Order:
Current Inspection Order Step:

Substrate Map

Substrate Map:
Units:

DETAILS

- SUB-MATERIALS
- HOLDS/OFF-FLOWS
- DEFECTS
- TIME CONSTRAINTS
- DEPENDENCIES
- FUTURE ACTIONS
- PROTOCOLS
- EXPERIMENTS
- TRANSFER REQUIREMENTS
- COSTING
- NOTIFICATIONS
- SCHEDULING
- MAPS
- COLLECTED DATA
- ATTRIBUTES
- ATTACHMENTS

10. Go to the **Material** that was sent ahead, **Move-Next** and the **Materials** will be merged:

Move Material to Next Step

RESULTS

Cookies_SendAheadRun.01 (Processed) / Belgas [A] (Belgas Cookies) / Moulding / 0 Kg / 0 Cookies

- Material(s) was/were moved to next Step successfully.
- Material(s) was/were merged successfully.
- Material(s) merged to main material:
 - Cookies_SendAheadRun.01
- Main material:
 - Cookies_SendAheadRun
- Cookies_SendAheadRun.01 data changed:
 - Step: Baking
 - PrimaryUnits: Cookies
 - Secondary units are no longer tracked in the new Step.
 - MaterialSystemState: Queued

Close

11. The **Sub-Material** that was used for the **Send-Ahead Run** process has returned to the main **Material**:

Sub-Materials (2)

MATERIAL	FORM	TYPE	PRODUCT	PRODUCT DESCRIPTIC	FLOW	STEP	PRIMARY QTY	PRIMARY UNITS	CONTAINER	CONTAINER POSITION	STATE
SAR-SubMaterial-0	Cookie	Production	Belgas [A]	Belgas Cookies	CookiesFlow-Send	Baking	0	Cookies			Queued
SAR-SubMaterial-0	Cookie	Production	Belgas [A]	Belgas Cookies	CookiesFlow-Send	Baking	0	Cookies			Queued

Rows per Page: 25 Page 1 of 1 (2 Records)

12. The **Send-Ahead Run** is Terminated and Closed:

SAR-000000003 (Terminated)

Send Ahead Run

Name: SAR-000000003

Description:

Universal State: Terminated

System State: Closed

Start Flow and Step

Flow: CookiesFlow-SendAheadRun [A]

Step: Mixing

Flow Path: CookiesFlow-SendAheadRun [A] > Mixing

Additional Information

Wait Step: Mixing

Evaluation Step: Moulding

Merge Step: Baking

Result: Pass

Results Information

Results Capture Mode: Manual At Track Out

Auto Release on Pass: X No

Info

When the result of the Send-Ahead Run is a **Pass**, you can Extend Send-Ahead Run. For more information, see [Extend Send-Ahead Run](#).



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