

# 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

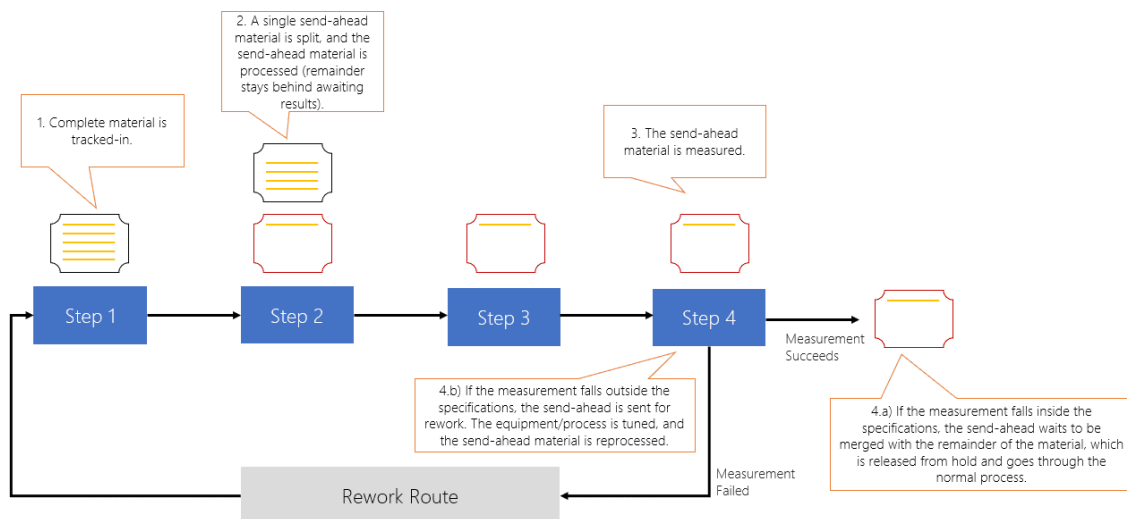
To have a functioning **Send-Ahead Run**, you have to set up other Critical Manufacturing MES entities as shown in the following table:

Step Number	Step	Description
1	Create a Flow	Create a <b>Flow</b> with <b>Steps</b> .
2	Create a Material	Create a <b>Material</b> .
3	Create a Reason	Create a <b>Reason</b> of type <b>Hold</b> 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

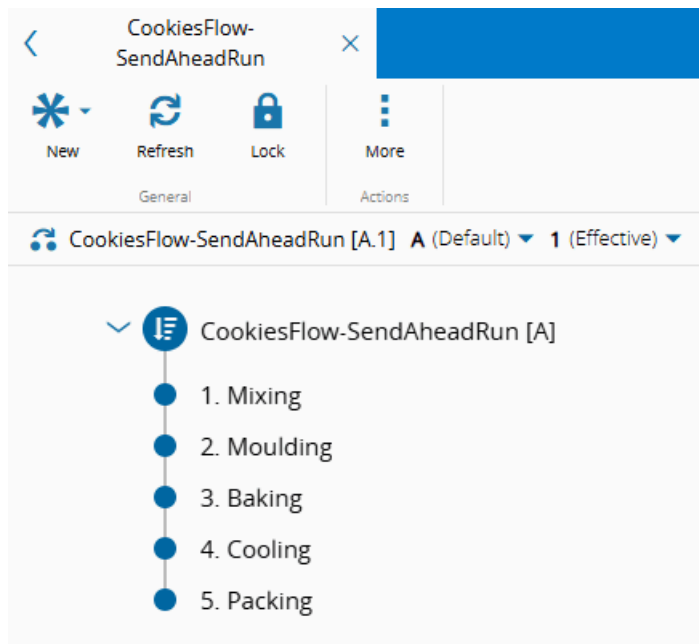
The image below provides an example of a basic **Send-Ahead Run** scenario:



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**:

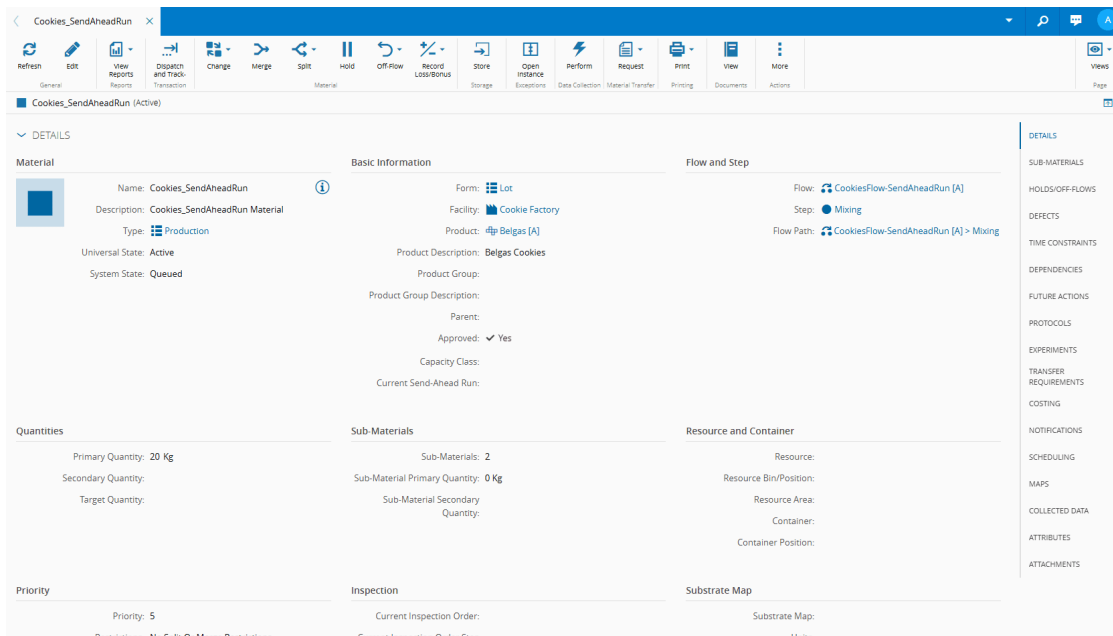


#### Note

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

☒ User Configs Display By: LATEST CHANGES Type: ALL Search Fields: ALL

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

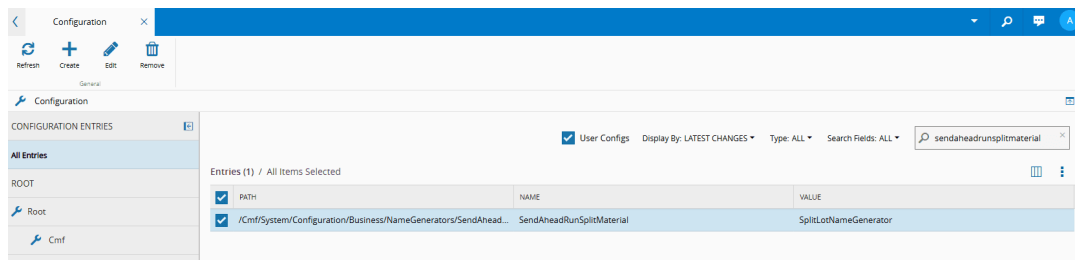
Value:

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:

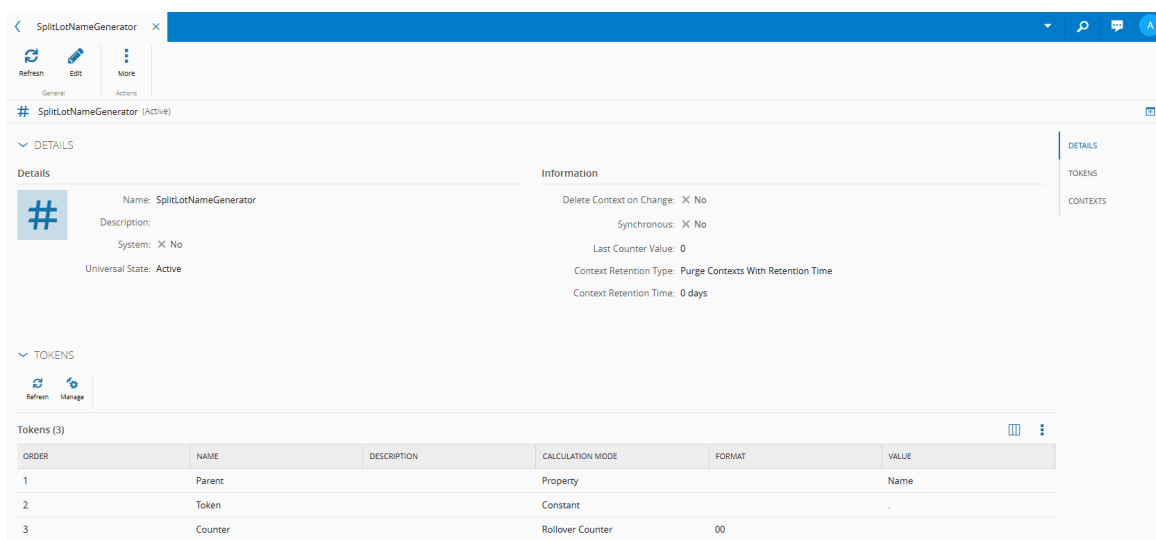
- `/Cmf/System/Configuration/Business/NameGenerators/SendAheadRunSplitMaterial/`



### 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**:



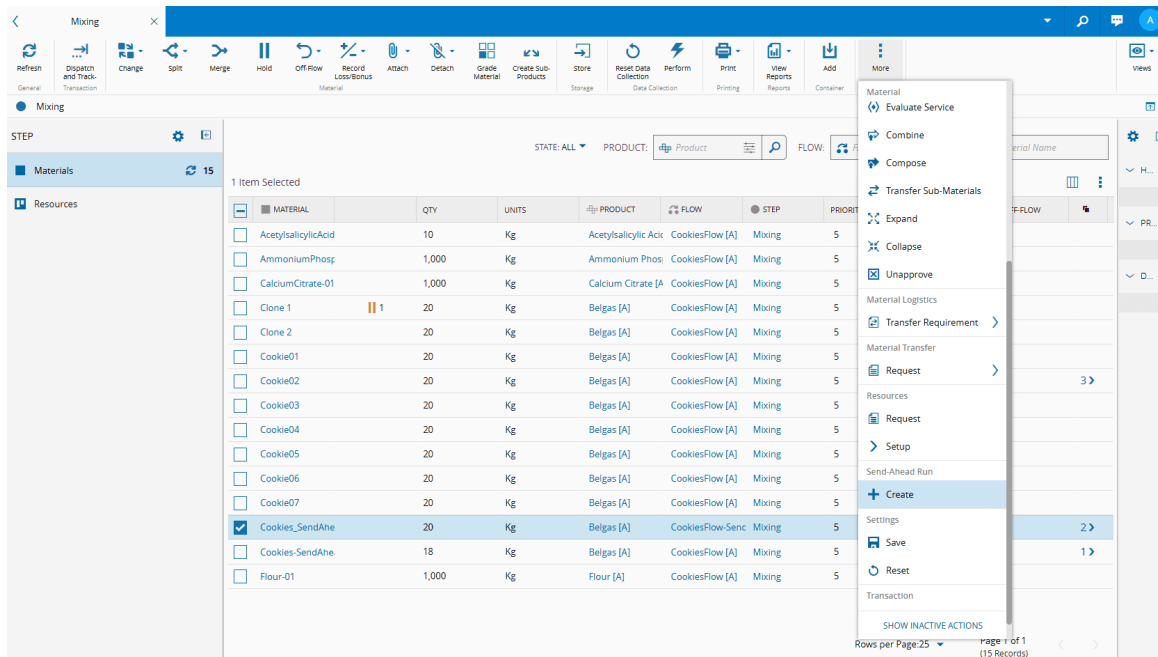
## Using Send-Ahead Run

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.

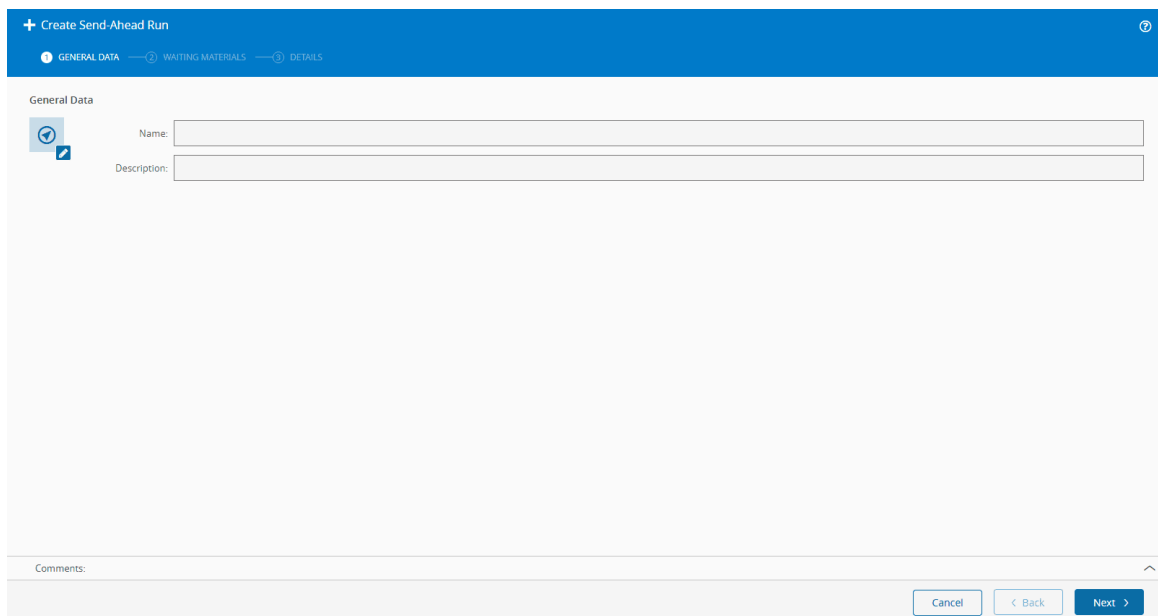
### Create the Send-Ahead Run

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:

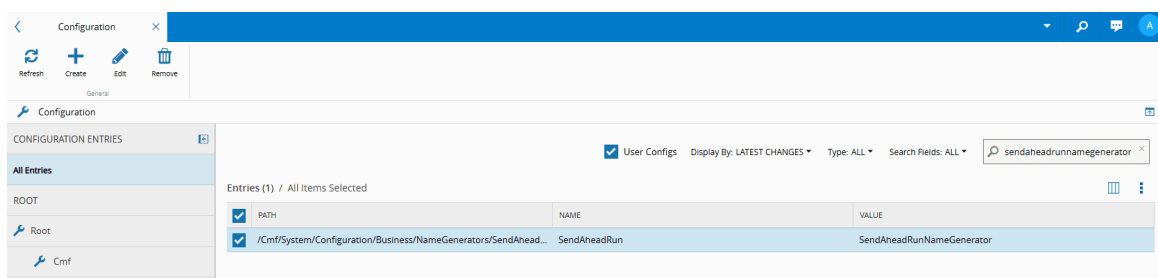


On selecting **Create** under **Send-Ahead Run**, the wizard opens:



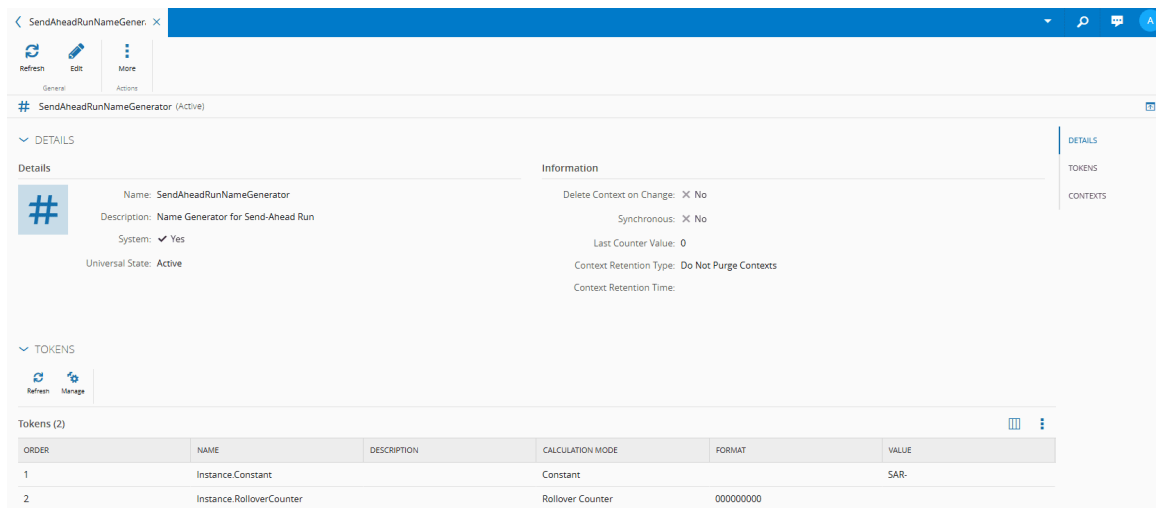
Before moving on, you could configure the **NameGenerator** for the **Send-Ahead Run** by going to **Administration** followed by **Configuration**. Find and select the following key to be able to **Edit** it:

- `/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 window for the **SendAheadRunNameGenerator**. It includes a **DETAILS** section with the following information:

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

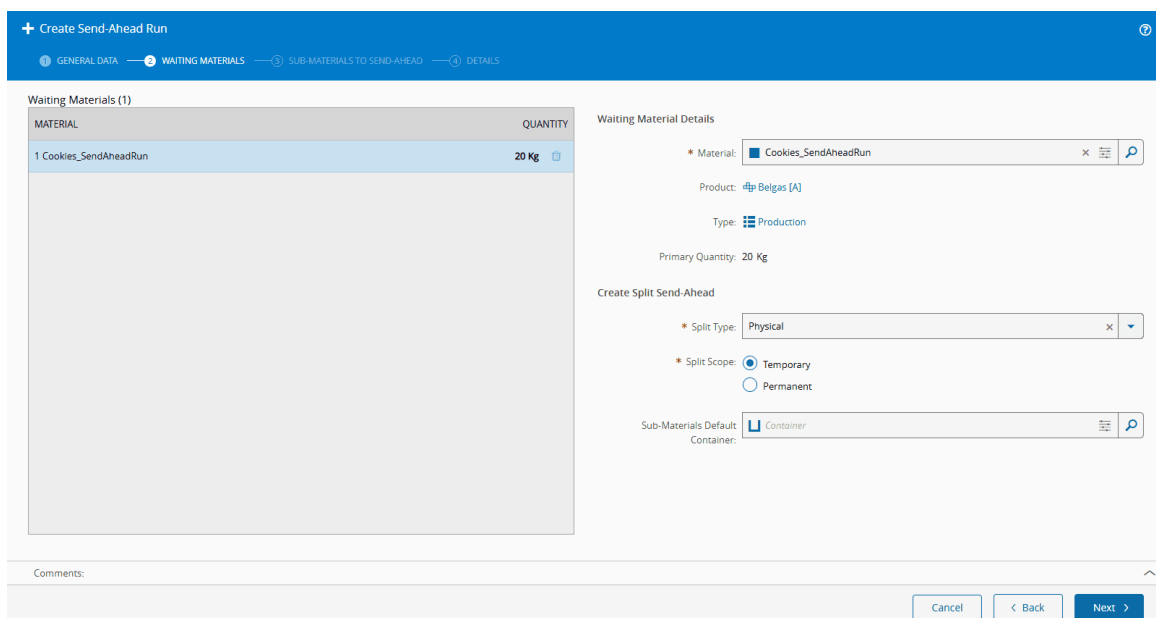
The **Information** section includes:

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

The **TOKENS** section shows a table with 2 tokens:

ORDER	NAME	DESCRIPTION	CALCULATION MODE	FORMAT	VALUE
1	Instance.Constant		Constant		SAR-
2	Instance.RolloverCounter		Rollover Counter	000000000	

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** window, specifically the **WAITING MATERIALS** step. It includes a table for **Waiting Materials (1)**:

MATERIAL	QUANTITY
1 Cookies_SendAheadRun	20 Kg

The **Waiting Material Details** section includes:

- \* Material:** Cookies\_SendAheadRun
- Product:** Belgas [A]
- Type:** Production
- Primary Quantity:** 20 Kg

The **Create Split Send-Ahead** section includes:

- \* Split Type:** Physical
- \* Split Scope:** ☒ Temporary, ☐ Permanent
- Sub-Materials Default Container:** Container

At the bottom, there are **Cancel**, **< Back**, and **Next >** buttons.

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



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Create Send-Ahead Run

?

1

GENERAL DATA

2

WAITING MATERIALS

3

SUB-MATERIALS TO SEND-AHEAD

4

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: dtp 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](#).

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Create Send-Ahead Run

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1

GENERAL DATA

2

WAITING MATERIALS

3

SUB-MATERIALS TO SEND-AHEAD

4

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

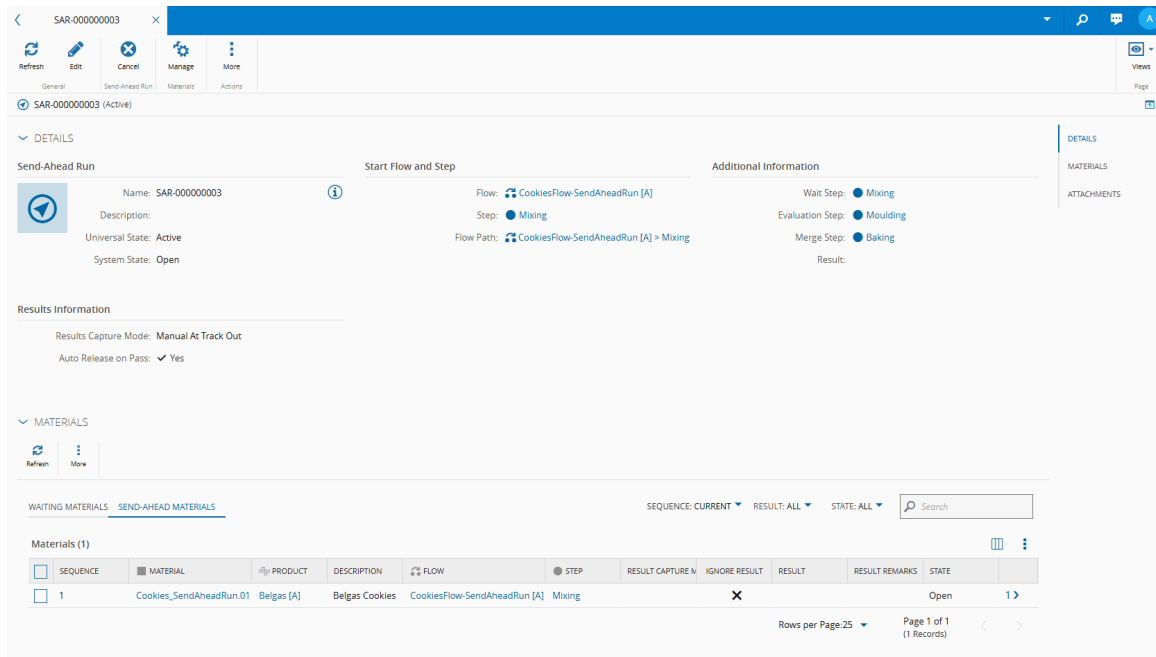
Create

### 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:
- 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:

**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					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:

Cookies\_SendAheadRun

Refresh Edit View Reports Change Split Hold Release Record Loss/Bonus Store Open Instance Perform Request Print View More

General Material Storage Exceptions Data Collection Material Transfer Printing Documents Actions

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: 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:

Details

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

## Process the Material

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

Cookies\_SendAheadRun.01

Refresh Edit View Reports Dispatch and Track-In Change Merge Split Hold Off-Flow Record Loss/Bonus Store Open Instance Perform Request Print View More

General Material Storage Exceptions Data Collection Material Transfer Printing Documents Actions

Details

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:

Details

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

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

**Dispatch and Track-In Material**

RESOURCE

Cookies\_SendAheadRun.01 (Queued) / 4tr Belgas [A] (Belgas Cookies) / ● Mixing / 0 Kg

Available Resources

- Mixer-02  
Mixer-02 Resource
- Mixer-03  
Mixer-03 Resource
- Mixer-04  
Mixer-04 Resource
- Mixer-05  
Mixer-05 Resource
- Mixer-01  
Mixer-01 Resource

Resource Details

Name: Mixer-02

Description: Mixer-02 Resource

Area: Cookie Manufacturing

Priority: 2

Material(s) Dispatched: 0

Material(s) In Process: 0

Running Mode:

Service: Mixing

State: Standby

Resource State

New State:

Comments:

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:

**Move Material to Next Step**

NEXT STEP

Cookies\_SendAheadRun.01 (Processed) / 4tr Belgas [A] (Belgas Cookies) / ● Mixing / 0 Kg

Flow Path: CookiesFlow-SendAheadRun [A] > Moulding

IF CookiesFlow-SendAheadRun [A]

- 1. Mixing
- 2. Moulding
- 3. Baking
- 4. Cooling
- 5. Packing

Comments:

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**:

**Track-Out Material**

RESOURCE STATE — RECORD LOSS/BONUS — RECORD SEND-AHEAD RUN RESULTS

Cookies\_SendAheadRun.01 (InProcess) / Belgas [A] (Belgas Cookies) / Moulding / 0 Kg / 0 Cookies

Send-Ahead Run Materials (1)

ITEM	RESULT
1 Cookies_SendAheadRun.01 Cookies_SendAheadRun Material	Pass

Send-Ahead Run Materials Result

Result: ✓ Pass

Fail

Remarks: Material is as specified. Approved

Comments:

Cancel < Back Track-Out

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:

SAR-000000003

Refresh Edit Cancel Extend Release More

General Send-Ahead Run Actions

SAR-000000003 (Active)

DETAILS

Send-Ahead Run

Name: SAR-000000003

Description:

Universal State: Active

System State: Open

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: No

MATERIALS

Refresh More

WAITING MATERIALS SEND-AHEAD MATERIALS

SEQUENCE: CURRENT RESULT: ALL STATE: ALL Search

SEQUENCE	MATERIAL	PRODUCT	DESCRIPTION	FLOW	STEP	RESULT CAPTURE MOD	IGNORE RESULT	RESULT	RESULT REMARKS	STATE
1	Cookies_SendAhea	Belgas [A]	Belgas Cookies	CookiesFlow-Send	Moulding	Manual At Track ...	✗	Pass		Closed

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

### 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:

Cookies\_SendAheadRun

Waiting for 1 Material(s) to proceed with the merge: Cookies\_SendAheadRun.01

Refresh Edit View Reports

General Exceptions Data Collection Material Transfer Printing Documents Actions

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**:

Cookies\_SendAheadRun

Sub-MATERIALS

Sub-Materials (2)

MATERIAL	FORM	TYPE	PRODUCT	PRODUCT DESCRIPTION	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

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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