# Send-Ahead Run

## 11.2

February 2026

# 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.

> ℹ️ **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:
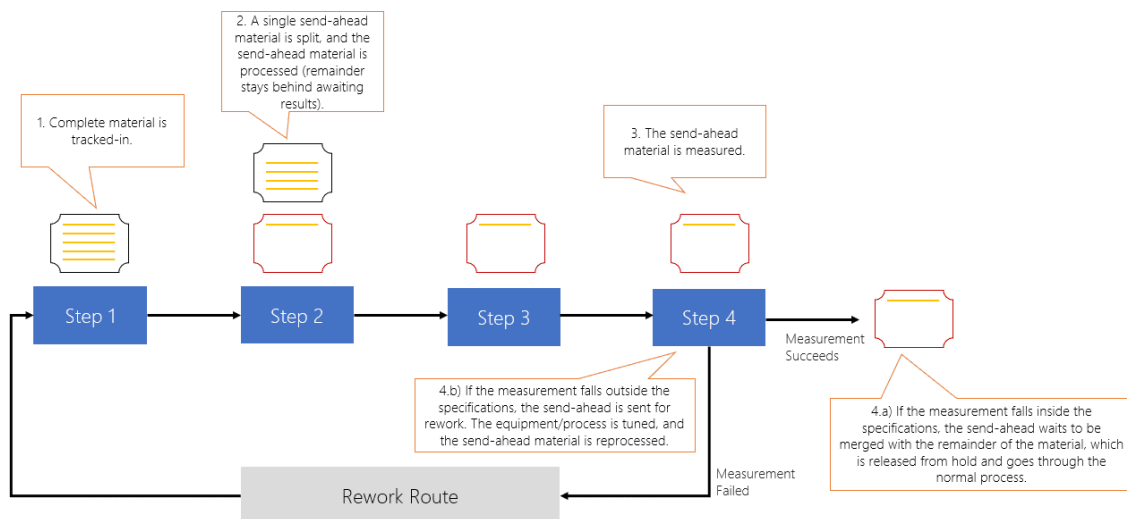


The next sub-sections will cover the required configuration steps in more detail.

## 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**:
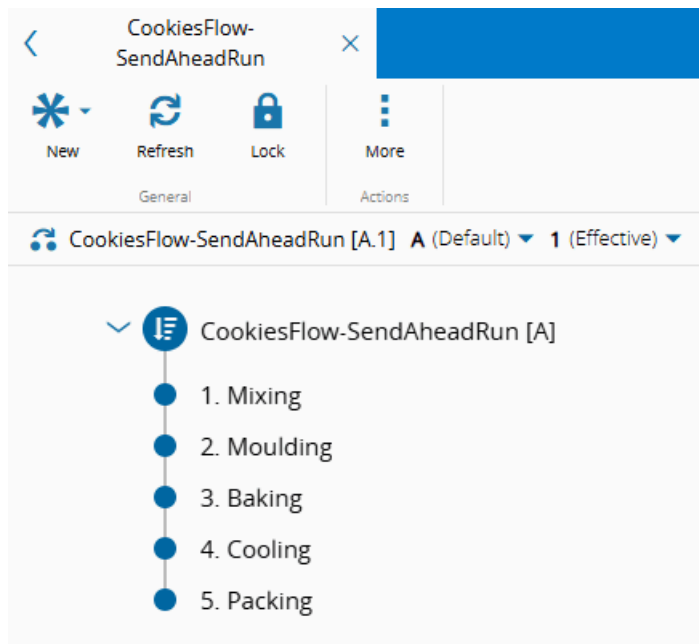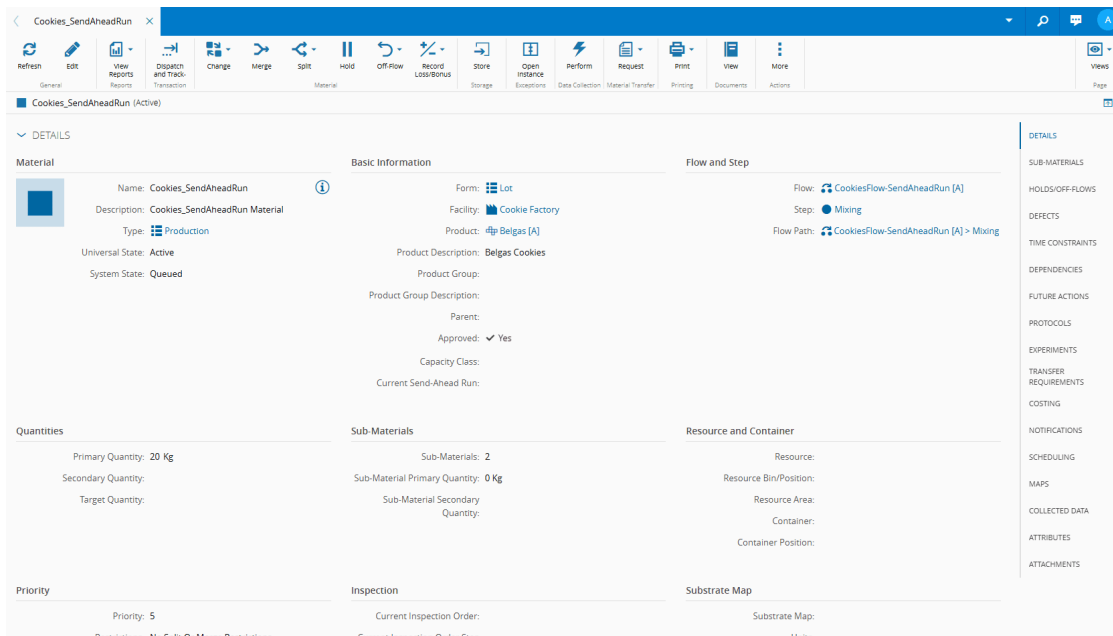
> **📝 Note**
>
> It is not mandatory to have different Steps.

## 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**:

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/`



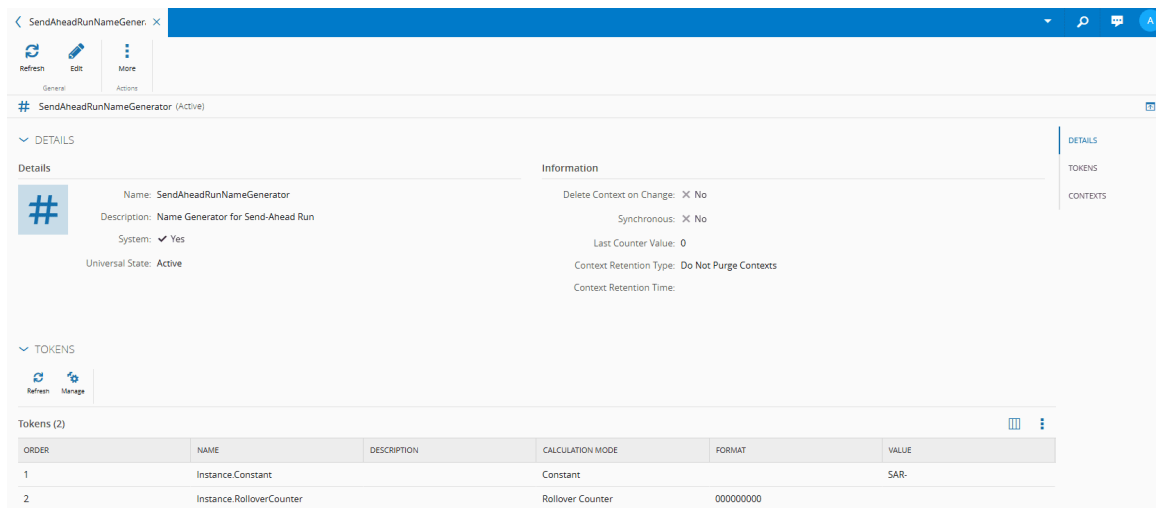3. Select **Edit**, complete the **Value** field with the Name of your **Reason**, and select **Save**:



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/`
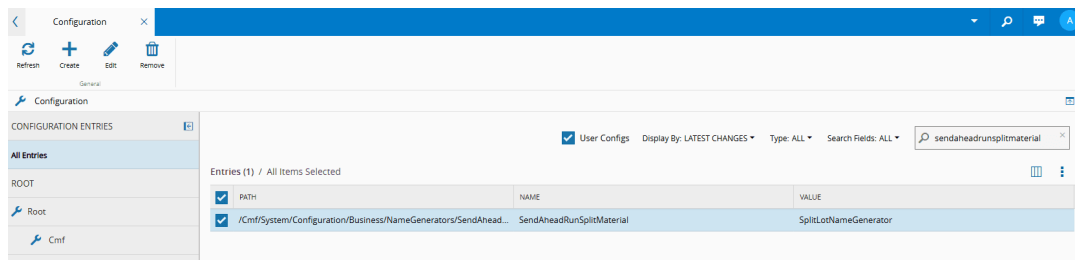
> ✏️ **Note**
>
> You can only edit a Configuration if it is selected. For more information, see Configuration.

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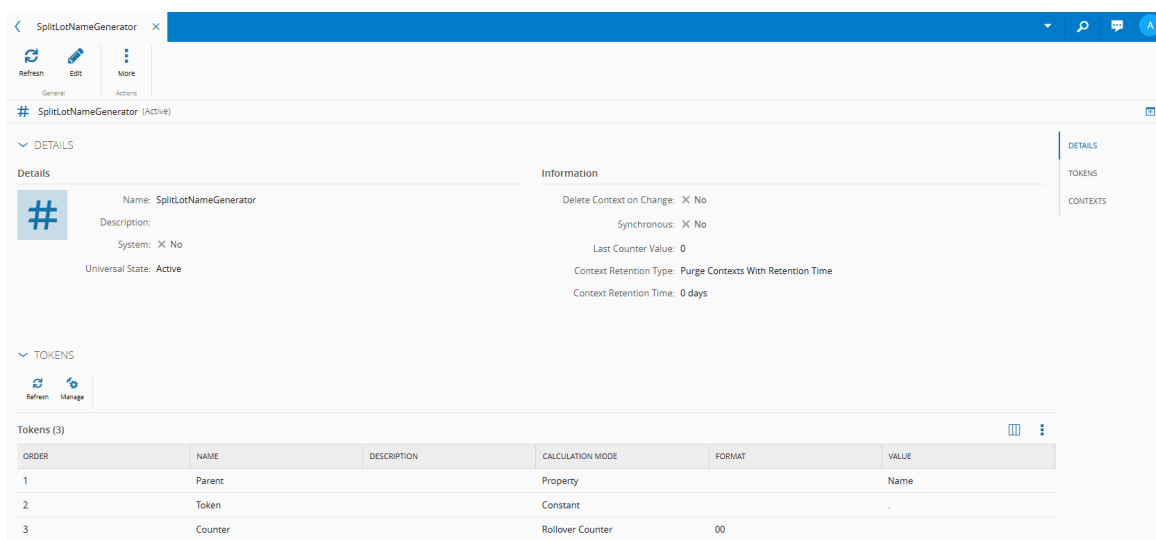


## Using Send-Ahead Run

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.
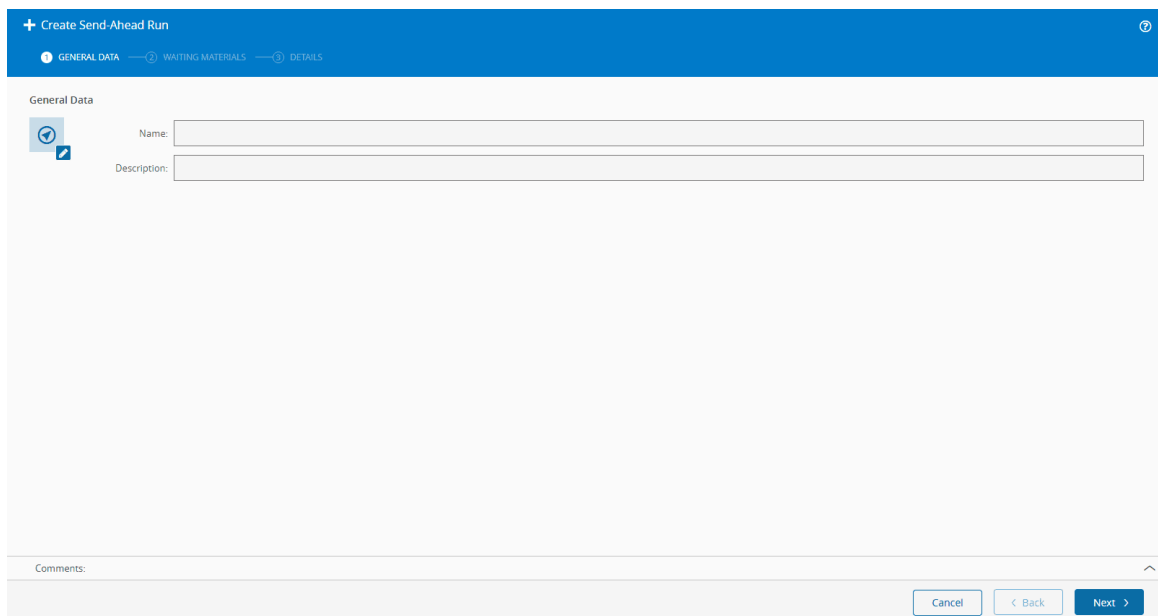
### Create the Send-Ahead Run

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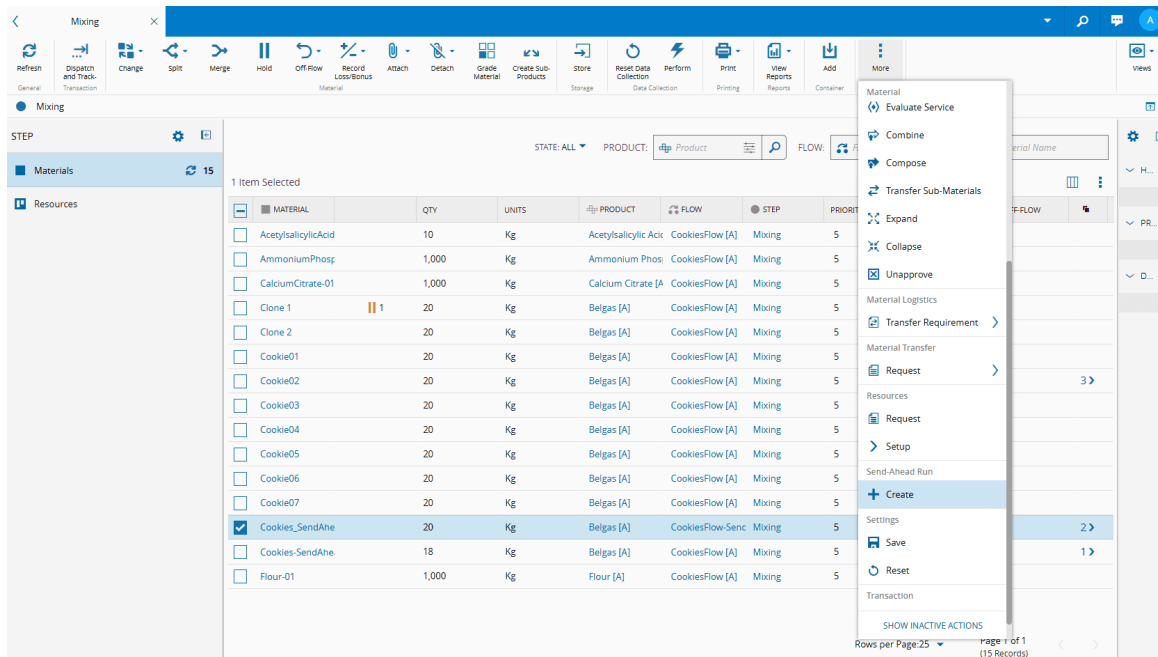
On selecting Create under **Send-Ahead Run**, the wizard opens:



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/`
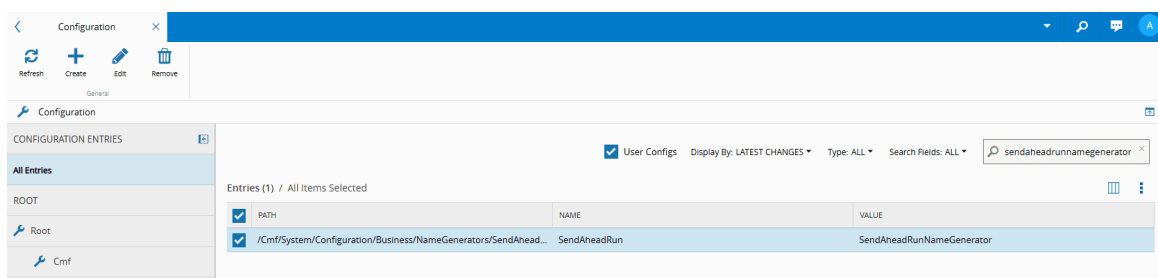


Since for this tutorial the **NameGenerator** was configured, select **Next** in the **General Data** step.

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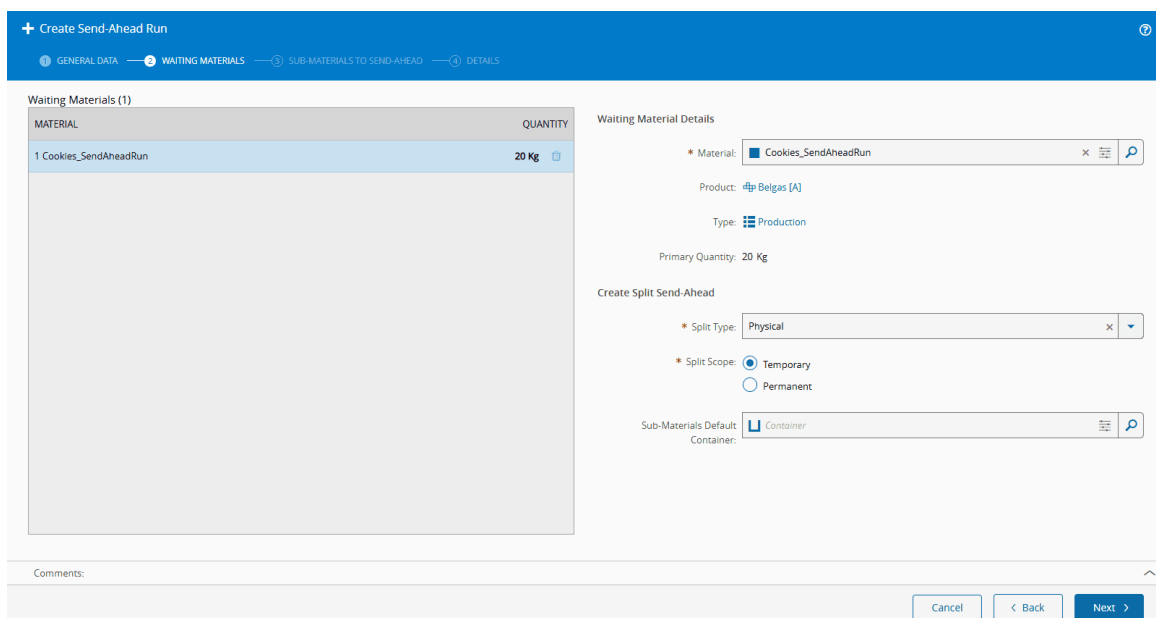


In the **Waiting Materials** step, select `Physical` for the Split Type and `Temporary` for the Split Scope:



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

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



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:

## Process the Material

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



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:

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:



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

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



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



> **ℹ️ 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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