

# Da Vinci Smart Manufacturing

## BRD S04.04 Master Data Grading Plan

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1.0	Leopoldo Rivera Sahana Badal	S04.04 First draft	04/06/2025

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## 1. Grading Plan List Screen

This is designed to provide a comprehensive and user-friendly interface for managing Grading plans, including the ability to display a list of grading plans for a selected furnace, allowing users to view, search, and manage grading plans effectively. Only one grading plan can be active at any given time for each furnace. Below is a detailed layout for this screen.

### 1.1. Header Section

The header must always be visible and contains the following:

- **Title:** "Grading Plan"
- **Stats Section:** Total count of Active | Inactive
- **Search Bar:** Tooltip text: Search by Variant ID (GP\_ Furnace ID\_Incremental No.) | Variant Name
- **Filters -**
  - Furnace ID -
    - Multiselect Dropdown:
    - All furnaces for which Grading plan exists.
  - Status -
    - Multiselect Dropdown:
    - Values: Active / Inactive
- **Action Buttons in Header:**
  - **Add Grading Plan:** Button to create a new grading plan.

### 1.2. Grading Plan List

The main area of the screen will feature a data table displaying the grading plans for a particular or multiple furnaces.

- The first grading plan created for a particular furnace will be by default active.
- All subsequent grading plans created for the same furnace will be created in the inactive state.
- Only one grading plan can be active at a time for each furnace. Other plans will be inactive.
- An active grading plan cannot be deactivated directly. To deactivate the current active plan, a new grading plan must be activated. Activating a new plan will automatically override and deactivate the current active plan.

**Table Default Sorting :** All active grading plans in the ascending order of furnace.

The data table will have the following columns:

- Variant ID:

- System-generated ID in the format (GP\_Furnace ID\_Incremental Number from 1).
- Sorting: Yes
- Frozen - Yes
- Hyperlink - Yes
- Furnace ID:
  - The furnace number for which grading plan is created
  - Sorting: Yes
  - Frozen: No
- Variant Name:
  - Entered when adding a grading plan
  - Sorting: Yes
  - Frozen - No
- Activated On:
  - Displays the most recent date of activation of the plan, System-generated, when grading plan was activated
  - Sorting: Yes
  - Frozen - No
- Updated On:
  - Displays the most recent updated date, System-generated
  - Sorting: Yes
  - Frozen - No
- Updated By:
  - Displays the User ID | First Name +Last Name of the most recent update
  - Sorting: Yes
  - Frozen - No
- Status:
  - Indicates if the plan is Active or Inactive.
  - Sorting: Yes
  - Frozen - No

**Action Buttons:** Depending on the status, system allows users perform following actions,

- **Active**
  - View – Opens a detailed view of the grading plan, displaying all its information
  - Edit – Opens an edit form pre-filled with the grading plan's details, allowing users to modify the information. Changes can be saved to update the grading plan.
  - Clone:
    - Any active or inactive grading can be cloned.
    - Once the clone button is clicked it will move to the add grading plan screen in edit mode with the same Furnace ID that cannot be edited.
    - User can enter Variant Name and Comments.

- The data regarding the list of materials contained in the original grading plan from which it was cloned will be populated with the same materials, priorities and qualities but they can be edited if the user has the permission.

Material ID	Material Name	Priority	Bulk Pile	Quality
BIF2_281	PSSI Refusion BIF2	1	AS02	Target
BIF2_282	PSSI Refusion BIF2	2	AS02	On Grade
BIF2_283	PSSI Refusion BIF2	3	AS02	Off Grade

## • Inactive

- View – Opens a detailed view of the grading plan, displaying all its information
- Edit – Opens an edit form pre-filled with the grading plan's details, allowing users to modify the information. Changes can be saved to update the grading plan.
- Delete – Prompts the user to confirm deletion of the grading plan. “Are you sure you want to delete the grading plan “Variant Name” ? Once confirmed, the grading plan is removed from the list and a soft delete from DB.
- Activate -
  - Prompts the user to confirm activation of the grading plan. “Are you sure you want to activate the grading plan “Variant Name” ? This will deactivate the existing active grading plan.”
  - **Validation:** When activating a grading plan, check that all materials associated with the plan are currently actively mapped to the furnace in furnace configuration screen. If any material is not mapped, the system should prompt an error or warning message, and the activation process should be halted until all materials are active.
- Clone:
  - Any active or inactive grading can be cloned.
  - Once the clone button is clicked it will move to the add grading plan screen in edit mode with the same Furnace ID that cannot be edited.
  - User can enter Variant Name and Comments.
  - The data regarding the list of materials contained in the original grading plan from which it was cloned will be populated with the

same materials, priorities and qualities but they can be edited if the user has the permission.

Note: Horizontal scroll is required to be able to navigate through all columns and visualize all data but always respecting the frozen columns.

**Pagination Controls:** Navigation buttons to browse through multiple pages of records, if applicable (for more than 10 records).

- Rows Per page : Default 10, Dropdown values: 10, 20, 30, 40, 50

**Export:** Exports to csv/excel file the list that is currently shown on screen based on the combined results of filter selection, sort and search criteria. with the following details:  
**Furnace ID, Variant ID, Variant Name, Activation Date, Updated On, Updated By, Status.**

Variant ID	Variant Name	Furnace ID	Activation Date	Updated On	Updated By	Status
GP_14_3	Grading Plan 1	1	01/05/2025 11:55	01/05/2025 11:55	sbadal I Sahana Badal	Active
GP_14_2	Grading Plan 2	1	01/05/2025 11:55	01/05/2025 11:55	sbadal I Sahana Badal	Inactive

**Exported File Name:** List of Grading Plans

**Customize Columns:**

- Users can enable or disable all columns based on their preference.
- Only the enabled columns will be visible in the list.
- Columns marked as 'frozen' will be enabled by default and cannot be modified.

Grading Plan						
Active 5 Inactive 35						
<button>Add Grading Plan</button>						
<input type="text"/> Search <span>Filters</span> <span>Export</span>						
Variant ID	Variant Name	Furnace ID	Activated On	Updated On	Updated By	Status
GP_14_3	Plan 1	1	26/03/2025   02:52 PM	26/03/2025   02:52 PM	sbadal   Sahana Badal	Active
GP_1_2	Plan 2	1	26/03/2025   02:52 PM	26/03/2025   02:52 PM	sbadal   Sahana Badal	Inactive

## 2. Add Grading Plan

The screen for adding a new grading plan allows users to input and manage grading plan records, organized into two sections: Basic Information and Grading Material. Mandatory fields will be marked with an asterisk (\*). Below is a detailed layout incorporating the requirements, it is designed to provide a comprehensive and user-friendly interface for managing grading plans, including the ability to display a list of grading plans for a selected furnace.

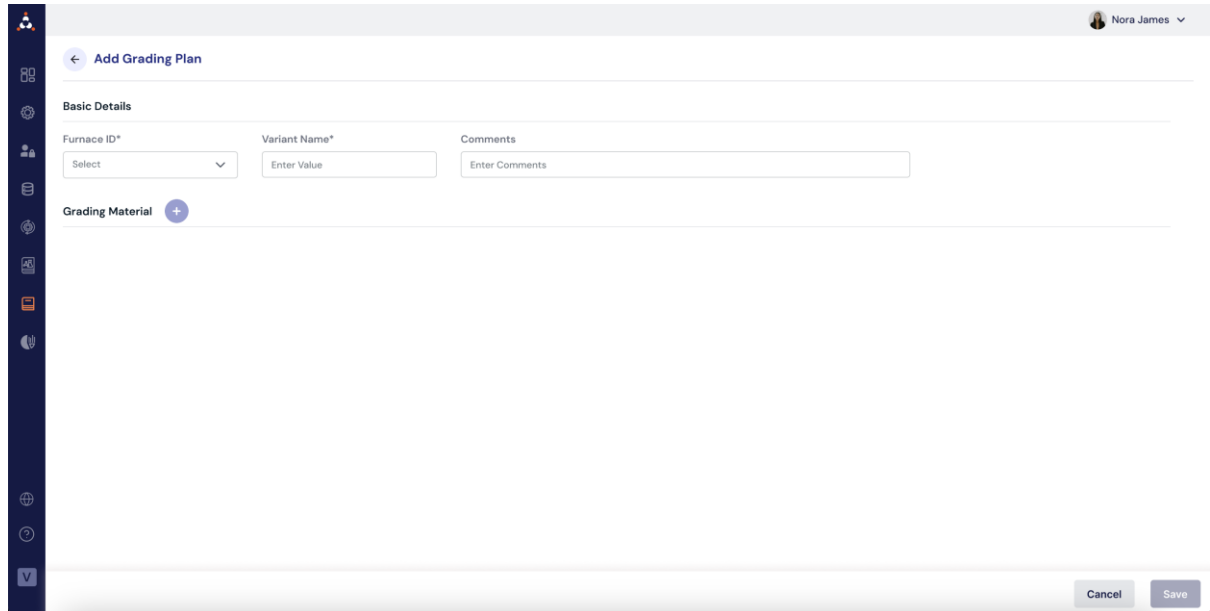
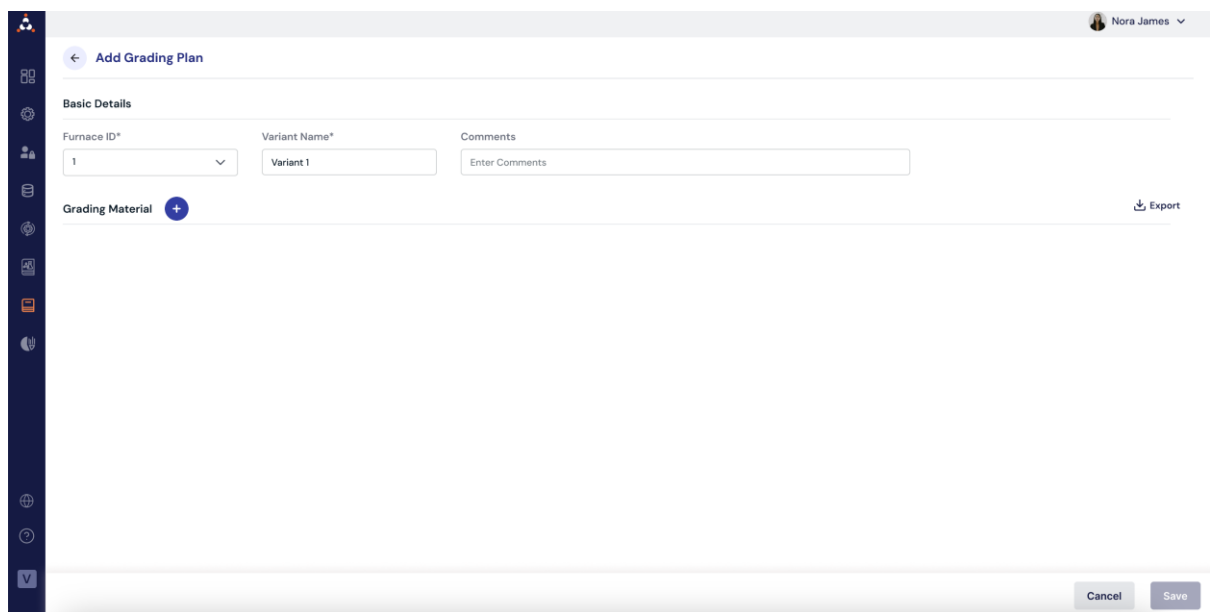
**Header:** Back Icon | Add Grading Plan

When adding a grading plan, users must input several key details:

### 2.1. Basic Information Section:

- Furnace ID\*
  - Select the furnace ID associated with the grading plan from a dropdown menu.
  - Mandatory - Yes
  - Default value - No
  - Field Type - Single Select Dropdown Values: All active furnaces
  - Validation - No
- Variant Name\*
  - User inputs the name for the grading plan.
  - Mandatory - Yes
  - Default value - No
  - Field Type - User input
  - **Field Validation** - All (Including special characters) max 30 characters, min 1

- Comments
  - Users can input any additional comments.
  - Mandatory - No
  - Default Value - None
  - Field Validation - All (Including special characters), 100 characters

## 2.2. Grading Material Section:

This section allows users to add and manage multiple materials associated with the grading plan.



### 2.2.1. Add Grading Material

Click the "Add" icon to open a slider for adding new materials. New material details are added to the list, list has to be saved separately for changes to be committed to database. Will be disabled until all mandatory input are provided.

Slider Details:

- **Material\***
  - Displays all active WIP materials (both Material ID and Material Name) that are mapped to the selected furnace, as configured in the furnace configuration screen. Users can select the relevant material from this list.
  - Mandatory - Yes
  - Default value - No
  - Field Type - Single Select Dropdown Values: active WIP materials (both Material ID and Material Name) that are mapped to the selected furnace
  - Validation - No
- **Priority\*:**
  - An auto-incrementing, system-generated value starting from 1. This field indicates the priority of the material in the grading plan.
  - Mandatory - Yes
  - Default Value - Auto populated
  - Validation - No
- **Bulk Pile\***
  - Dropdown menu populated with bulk pile details from master data. Select the relevant bulk pile associated with the material.
  - Mandatory - Yes
  - Default value - No
  - Field Type - Single Select Dropdown
  - Values: 1 to 30
  - Validation - No
- **Quality\***
  - Dropdown with options including On grade, Target, and Off grade. Select the appropriate quality classification for the material.
  - Mandatory - Yes
  - Default value - No
  - Field Type - Single Select Dropdown Values: "Target | On-grade | Off Grade"
  - Validation - No
- **Specifications: View Only**
  - When a material is selected, the specification values associated with the selected material in the material master data will be automatically populated in view mode within the popup. This information will be displayed for review and cannot be edited.

### 2.2.2. Slider Action Buttons

- Save – Adds the material to the list.
- Cancel – Redirects to add grading plan screen without making any changes

Once these details have been saved they are added to the gradin material list on this page. This list has the following details.

The screenshot shows the 'ADD GRADING MATERIAL' form with the following fields:

- Material\***: Select (dropdown)
- Priority\***: 1 (text input)
- Bulk Pile\***: Select (dropdown)
- Quality\***: Select (dropdown)
- Furnace ID\***: 1 (text input)
- Variant**: Variant (text input)
- Grading Material**: + (button)

At the bottom right, there are 'Cancel' and 'Save' buttons.

The screenshot shows the 'ADD GRADING MATERIAL' form with the following fields:

- Material\***: B111\_145 PSSI 8030 Ht Ph (dropdown)
- Priority\***: 1 (text input)
- Bulk Pile\***: Select (dropdown)
- Quality\***: Select (dropdown)
- Furnace ID\***: 1 (text input)
- Variant**: Variant (text input)
- Grading Material**: + (button)

Below the form fields is the 'Elements Specification' table:

Elements (in %)	Low	Aim	High	Warning Tolerance	Control
Al	0.0000	0.0000	0.0000	0.0000	✓
B	0.0000	0.0000	0.0000	0.0000	—
C	0.0000	0.0000	0.0000	0.0000	—
Ca	0.0000	0.0000	0.0000	0.0000	✓
Cr	0.0000	0.0000	0.0000	0.0000	—
Fe	0.0000	0.0000	0.0000	0.0000	✓
Mn	0.0000	0.0000	0.0000	0.0000	—
Ni	0.0000	0.0000	0.0000	0.0000	—
O	0.0000	0.0000	0.0000	0.0000	—
P	0.0000	0.0000	0.0000	0.0000	—

At the bottom right, there are 'Cancel' and 'Save' buttons.

### 2.2.3. Grading Material List

**Table Default Sorting** : Priority ascending order.

- **Material ID:**
  - Material ID of the WIP material added to grading plan
  - Frozen: Yes

- Sorting: No
- **Material Name**
  - Material Name of the WIP material added to grading plan
  - Frozen: No
  - Sorting: No
- **Priority:**
  - Priority of the material in the grading plan.
  - Frozen: No
  - Sorting: No
- **Bulk Pile**
  - Relevant bulk pile associated with the material.
  - Frozen: No
  - Sorting: No
- **Quality**
  - Appropriate quality classification for the material.
  - Frozen: No
  - Sorting: No
- **Action Buttons:**
  - View: Opens a slider with detailed view of the material, showing all its information including specifications.
  - Edit: Opens the slider form pre-filled with the material's details, allowing users to modify and update the details
    - Material
      - Non-editable and pre-populated with the existing value.
      - Default value - None
      - Mandatory: Yes
    - Priority
      - Non-editable and pre-populated with the existing value.
      - Default value - None
      - Mandatory: Yes
    - Bulk Pile
      - Editable and pre-populated with the existing value.
      - Default value - None
      - Mandatory: Yes
    - Quality
      - Editable and pre-populated with the existing value.
      - Default value - None
      - Mandatory: Yes
  - Delete: Prompts the user to confirm deletion of the material.
- **Reshuffle Grading Material**
  - Allows users to reorder materials in the list based on priority.
  - Drag and Drop: Users can click and drag materials using a drag-and-drop icon to change their order in the list.
  - Save: After reshuffling the order, click the "Save" button to update and save the new priority order of materials.

### 2.3. Grading Plan Action Buttons:

- Save – Saves the changes made to the grading plan. Save button will be enabled only when target material is added to the material list.
- Cancel – Redirects to list screen without making any changes

### Validation on Add:

- At least one material must be added to the grading plan to save it. This ensures that every grading plan has associated materials. There has to be mandatory one target material created to create a grading plan.
- The first grading plan created for a furnace will be automatically activated. Any subsequent grading plans will be created in an inactive state. Users must manually activate these plans if needed.
- Prevent Duplicate Target Materials: When a user tries to add a grading material, the system should first check if a material with the “Target” quality already exists in the current list of grading materials. If the system detects an existing grading material with the “Target” quality, it should prevent the addition of another material with the same quality. Display a prompt or message to the user, such as: “Target quality already exists.”

Elements (in %)	Low	Aim	High	Warning Tolerance	Control
Al	0.0000	0.0000	0.0000	0.0000	✓
B	0.0000	0.0000	0.0000	0.0000	—
C	0.0000	0.0000	0.0000	0.0000	—
Ca	0.0000	0.0000	0.0000	0.0000	✓
Cr	0.0000	0.0000	0.0000	0.0000	—
Fe	0.0000	0.0000	0.0000	0.0000	✓
Mn	0.0000	0.0000	0.0000	0.0000	—
Ni	0.0000	0.0000	0.0000	0.0000	—
O	0.0000	0.0000	0.0000	0.0000	—
n	0.0000	0.0000	0.0000	0.0000	—

### 2.2.2. List Grading Material

Displays a table listing all materials currently associated with the grading plan.

The data table will have the following columns:

- **Material ID:** Unique identifier for each material, used for reference and selection. Entered during addition of grading material.
- **Material Name:** The name of the material as recorded in the system.
- **Priority:** A number indicating the material's order of importance.
- **Bulk Pile:** Displays the bulk pile details selected from master data, relevant to the material.
- **Quality:** Shows the quality classification of the material, which can be Ongrade, Target, or Offgrade.
- **Action Buttons:**
  - **View:** Opens a popup with detailed view of the material, showing all its information including specifications.
  - **Edit:** Opens the popup form pre-filled with the material's details, allowing users to modify and update the material information.
  - **Delete:** Prompts the user to confirm deletion of the material.

### 2.2.3. Reshuffle Grading Material

Allows users to reorder materials in the list based on priority.

- **Drag and Drop:** Users can click and drag materials using a drag-and-drop icon to change their order in the list.
- **Save:** After reshuffling the order, click the "Save" button to update and save the new priority order of materials.

## 3. Edit Grading Plan

The form allows the user to update specific details of the grading plan. Clicking on edit icon opens a detailed form for editing the grading plan.

**Header:** Back Icon | Edit Variant ID | Variant Name : GP\_14\_3 | Variant 1

### 3.1. Basic Information:

- **Furnace ID.:**
  - Non-editable and pre-populated with the existing value.
  - Default value - No
  - Mandatory: Yes
- **Variant Name**
  - Editable and pre-populated with the existing value.
  - Default value- No
  - Mandatory: Yes
- **Comments:**
  - Editable and pre-populated with the existing value.
  - Default value - None
  - Mandatory: No
  - Field Validation All (Including special characters), 100 characters

### 3.2. Grading Material Section:

Pre-populated with list of existing material list values. Individual grading materials can be edited in the list

#### 3.2.1. Edit Grading Material

This screen provides interface for editing existing values, allowing users to update editable fields while keeping essential identifying information non-editable. Clicking edit icon on the materials list opens a detailed slider form for editing the material.

System allows the user to update specific details of the material within the grading plan.

- **Material**
  - Non-editable and pre-populated with the existing value. Displays the unique identifier for the material.
  - Default value - None
  - Mandatory: Yes
- **Priority**
  - Non-editable and pre-populated with the existing value. Shows the current priority of the material within the grading plan.
  - Default value - None
  - Mandatory: Yes
- **Bulk Pile**
  - Editable and pre-populated with the existing value.
  - Default value - None
  - Mandatory: Yes
- **Quality**
  - Editable and pre-populated with the existing value.
  - Default value - None
  - Mandatory: Yes

- Specifications: This information will be displayed for review and cannot be edited directly in the popup
- Action Buttons
  - Save: Updates the edited values in the grading material list, they need to be saved in grading plan details screen for changes to be committed to database.
  - Cancel: Cancels the current operation and returns to the list screen

**EDIT GRADING MATERIAL**

Material\*  Priority\*  Bulk Pile\*  Quality\*

**Elements Specification**

Elements (in %)	Low	Aim	High	Warning Tolerance	Control
Al	0.0000	0.0000	0.0000	0.0000	✓
B	0.0000	0.0000	0.0000	0.0000	—
C	0.0000	0.0000	0.0000	0.0000	—
Ca	0.0000	0.0000	0.0000	0.0000	✓
Cr	0.0000	0.0000	0.0000	0.0000	—
Fe	0.0000	0.0000	0.0000	0.0000	✓
Mn	0.0000	0.0000	0.0000	0.0000	—
Ni	0.0000	0.0000	0.0000	0.0000	—
O	0.0000	0.0000	0.0000	0.0000	—
P	0.0000	0.0000	0.0000	0.0000	—

Buttons: Cancel, Save

**Edit GP\_14\_3 | Variant 1**

Furnace ID\*  Variant Name\*  Comments

**Grading Material**

Material ID	Material Name	Priority	Bulk Pile	Quality
B1F2_281	PSSI Refusion B1F2	1	AS02	Target
B1F2_282	PSSI Refusion B1F2	2	AS02	On Grade
B1F2_283	PSSI Refusion B1F2	3	AS02	Off Grade

Buttons: Cancel, Save

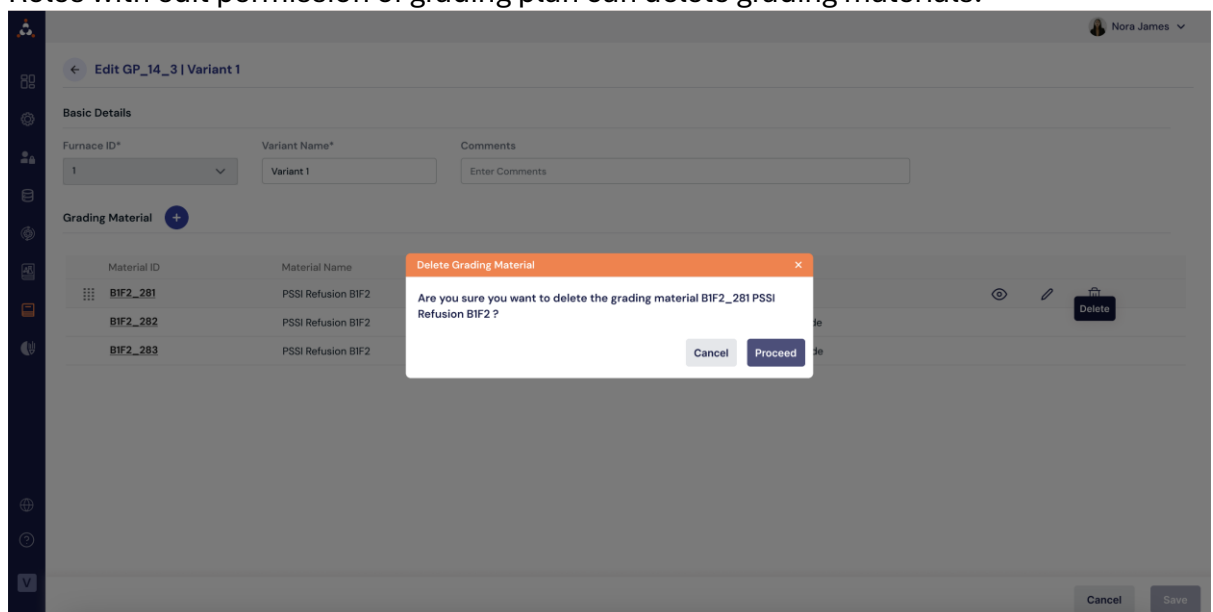
### 3.2.2. Reshuffle Grading Material

- Allows users to reorder materials in the list based on priority.
- Drag and Drop: Users can click and drag materials using a drag-and-drop icon to change their order in the list.

- Save: After reshuffling the order, click the "Save" button to update and save the new priority order of materials.

### 3.2.3. Delete Grading Material

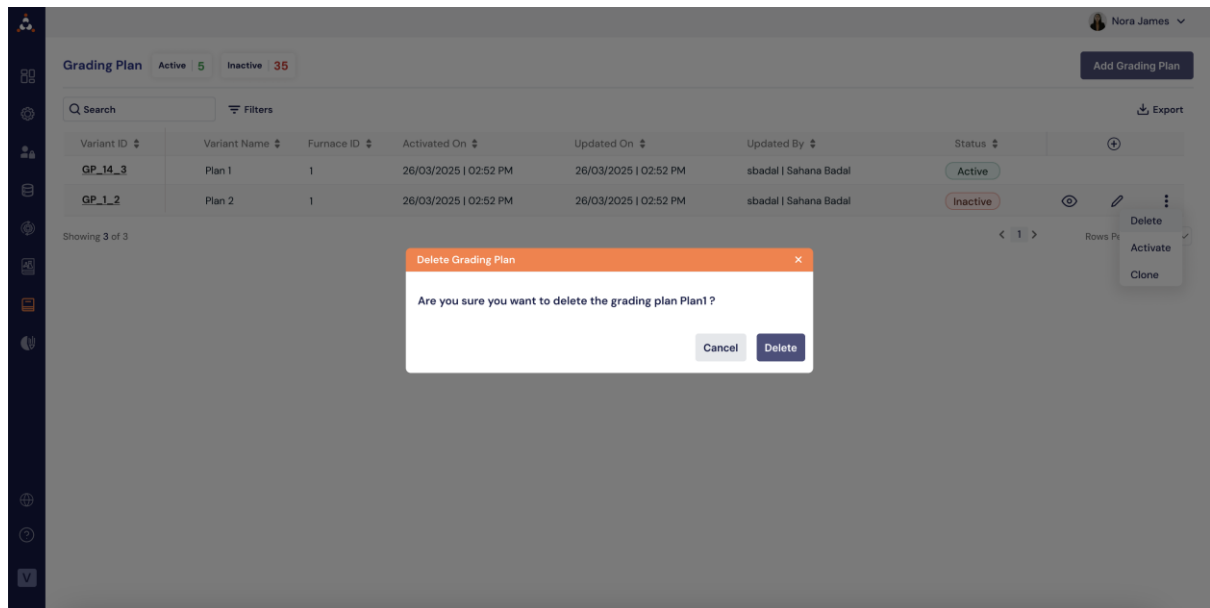
- The Delete icon appears when the user hovers over a specific material in the list screen. Clicking on this icon triggers a confirmation prompt. Are you sure you want to delete “B111\_145 PSSI 8030 Ht Ph” from the grading plan ?
- If the user confirms the deletion, the material is removed from the list. The user has to save changes in the grading material details screen for it to be deleted from the grading plan.
- If the user cancels the action, the material remains in the list and no changes are made.
- Roles with edit permission of grading plan can delete grading materials.



## 4. Delete Grading Plan

- Roles with permission to delete grading plan will be allowed to perform this action
- This removes the grading plan from the system if confirmed. The system does not display the delete icon for active grading plans, ensuring that only inactive plans can be deleted.
- The Delete icon appears when the user hovers over a specific inactive grading plan in the list screen. Clicking on this icon triggers a confirmation prompt. “Are you sure you want to delete the grading plan “Variant Name” ?
- If the user confirms the deletion, the grading plan is removed from the list.
- If the user cancels the action, the grading plan remains in the list and no changes are made.





## 5. Activate Grading Plan

The Activate icon appears when the user hovers over a specific grading plan in the list screen. Clicking on this icon triggers a prompt message. Sets the grading plan as Active. (Only available if the grading plan is Inactive).

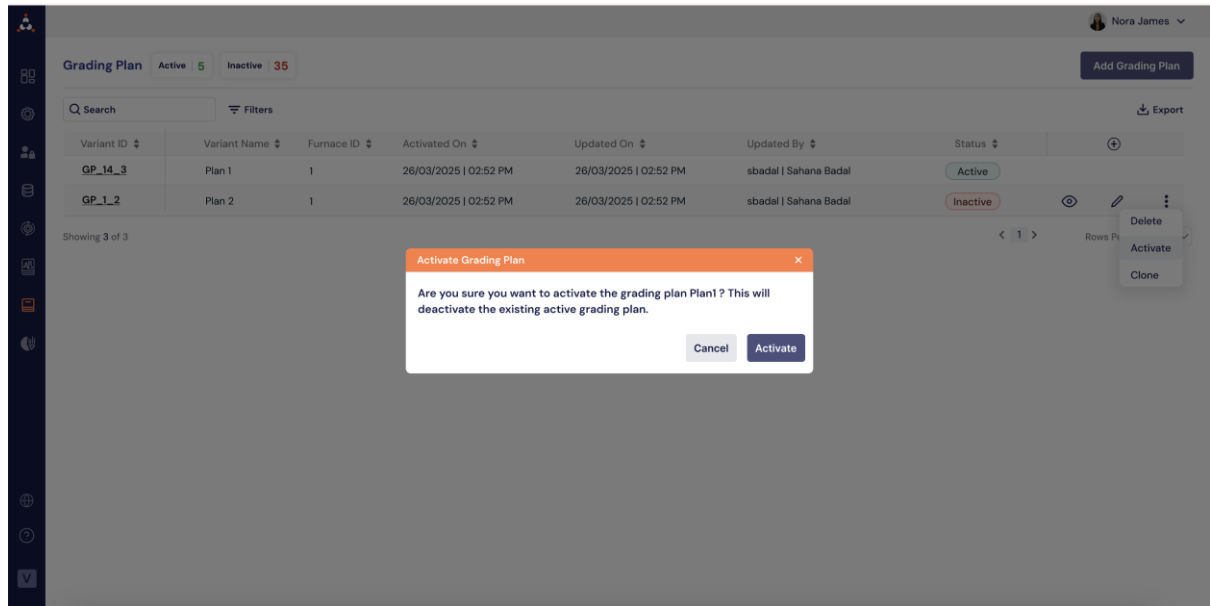
**Prompt:** When attempting to activate a grading plan, a confirmation prompt will appear

“Are you sure you want to activate the grading plan “Variant Name” ? This will deactivate the existing active grading plan.”

If confirmed, the current active grading plan will be deactivated, and the selected grading plan will be activated. These changes will be updated in the backend and reflected in the list.

**Validation:** There can only be one plan active for a furnace at a given point of time. When activating a grading plan, check that all materials associated with the plan are currently actively mapped to the furnace in furnace configuration screen. If any material is not mapped, the system should prompt an error or warning message, and the

activation process should be halted until all materials are active.



## 5. View Grading Plan

This screen allows users to **view details** of an existing grading plan. All fields are displayed in **read-only mode** by default. Users have access to additional utilities for editing and exporting.

### Header Section

- Back Icon | Variant ID | Variant Name : GP\_14\_3 | Variant 1 | **Edit Icon**: Allows users to switch from view mode to edit mode to update the record.
- **Export Icon**:
  - Enables users to export the analysis details as a CSV file.
  - The tooltip should read “Download CSV”.
  - Downloads the record in CSV format.
  - The file must include the following headers and display the values as the following example:
  - **Export File Name**: Composed by the following elements:
    - Grading Plan
    - “Materials”

Example: GP\_14\_3\_Variant 1\_Materials

Material ID	Material Name	Priority	Bulk Pile	Quality
-------------	---------------	----------	-----------	---------

B1F2_281	PSSI Refusion B1F2	1	AS02	Target
B1F2_282	PSSI Refusion B1F2	2	AS02	On Grade
B1F2_283	PSSI Refusion B1F2	3	AS02	Off Grade












### 5.1. Basic Details (Read-Only)


- **Furnace ID:** Displays the selected furnace from which the sample was taken.
- **Variant Name:** Displays the variant name entered by user
- **Comments:** Displays any user-provided notes, supporting special characters (max 100 characters)

### 5.2. Grading Material (Read-Only)

**Table Default Sorting :** Priority ascending order.


- **Material ID:**
  - Material ID of the WIP material added to grading plan
  - Frozen: Yes
  - Sorting: No
- **Material Name**
  - Material Name of the WIP material added to grading plan
  - Frozen: No
  - Sorting: No
- **Priority:**
  - Priority of the material in the grading plan.
  - Frozen: No
  - Sorting: No
- **Bulk Pile**
  - Relevant bulk pile associated with the material.
  - Frozen: No
  - Sorting: No
- **Quality**
  - Appropriate quality classification for the material.
  - Frozen: No
  - Sorting: No

GP\_14\_3 | Variant 1 

Basic Details

Furnace ID	Variant Name	Comments
1	Variant 1	

Grading Material 

Material ID	Material Name	Priority	Bulk Pile	Quality
BIF2_281	PSSI Refusion BIF2	1	ASO2	Target
BIF2_282	PSSI Refusion BIF2	2	ASO2	On Grade
BIF2_283	PSSI Refusion BIF2	3	ASO2	Off Grade