VPSS 3i Material Explorer

Users Guide

Ver. 2.03

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1. Introduction of Material Explorer

This product is a software application which manages data related to sheet metal materials and supports your manufacturing.
It consists of mainly the following functions.

- Material information management
  Material and material type information can be registered and managed, which are used by CAD/CAM systems and manufacturing machines.

- Sheet information management
  Sheet information can be registered and managed, which are used by CAD/CAM systems and manufacturing machines.

- Bend deduction management
  Bend deduction information can be registered and managed, which are used by CAD/CAM systems and manufacturing machines.

2. Common Menu

Top level Application menu contains the following functions.

Function	Explanation
Application button	Application menu is displayed.
Help button	Help document is displayed.
User's guide button	User's guide is displayed.
Reload button	The latest data is downloaded from the server and is displayed on the screen.
Save button	Current data is saved.

Operate in the following procedure in order to use the application menu.

1. Click [Application Button].
2. Choose one of the menu items displayed.

2.1. Start and Exit Application

There are two ways to exit Material Explorer.

Mode	Operation	Explanation
Stand-By	Push "X" button at the top-right corner of Material Explorer window.	MX moves to stand-by mode so that it starts up faster next time. ※Stand-by state ends when the user logs off or the date changes.
Shutdown	Go to [Application Menu]→[Exit Application].	MX terminates itself completely. It takes almost the same time to run MX as it starts just after log-on.

2.2. Reloading Data

The latest data is downloaded from the server and is displayed on the screen.
When the data has changed since the last download and has not been saved yet, a confirmation dialog is displayed to ask if it is OK to discard the change. Reloading data starts if the answer is yes.

2.3. Saving Data

Current data is saved and uploaded to the server which is designated in option settings.
When the data has changed on the server, a confirmation dialog is displayed to ask if it is OK to replace them by the current data. Saving data starts if the answer is yes.

2.4. Application Menu

Application menu contains the following items.

- Import
- Export
- Backup
- Restoration
- Maintenance

2.4.1. Import

Material Explorer can import data created by other applications.
Import menu contains the following items.

- Import from AP100
- Import from Dr.ABE
- Import from PX
- Import from CSV file
- Import from DXF file

You can choose one of the following import methods.

Method	Explanation
Add	The data whose key is not in the existing data are imported.
Replace	All target data are imported and they overwrite the existing data.

2.4.1.1. Import from AP100

Material Explorer can import the following data created by AP100.

Target	Explanation
Material	Material type, material, and sheet data are imported at once.
Bend Deduction	Both simple and standard bend deduction data can be imported. Customers need to choose which to import.

Configure the AP100 server settings before importing data from AP100.

2.4.1.2. Import from Dr.ABE

Material Explorer can import the following data from a Dr.ABE backup file.

- Material type
- Material
- Sheet

※ All film data attached to a sheet are converted into the following film.
Name: Dr.ABE
Color: White
Thickness: 0.1 [mm]

※ All colored data attached to a sheet are converted into the following colored steel.
Name: Dr.ABE
Color: White

2.4.1.3. Import from PX

Material Explorer can import the following data from a Parameter Explorer (PX) backup file.

- Material type
- Material
- Skeleton material
- Bend record (imported as bend deduction)

2.4.1.4. Import from CSV File

Material Explorer can import the following data from a CSV file.

Target	Remark
Material type	Material type data are imported.
Material	Material data are imported. In addition film and colored steel data accompanying material data can be imported at the same time.
Sheet format	Sheet data are imported. In addition film and colored steel data accompanying sheet data can be imported at the same time.
Film	Film data are imported.
Colored steel	Colored steel data are imported.
Normal Bend Property (SheetWorks)	Elongation value table of SheetWorks outputting CSV is imported in normal bend property.

You can import data stored in a CSV file into MX in the following direction.

1. Click [Application button] → [Import] → [CSV Import], and then choose the target data, for instance [Material]. File open dialog will appear.
2. Specify a CSV file to import in the dialog, and the import dialog will appear.
3. Choose [Setting Name] which you would like to use.
4. Configure [Basic Settings] and [Data Settings] if necessary, and then press [OK] button.
5. Choose one of the import methods on the confirmation dialog.

Display will be updated when import has completed.

※ Setting names can be added or deleted at step 3. When [+] button is pressed and a new setting name is input, a new setting will be created and available. When [-] button is pressed, the current setting name will be deleted.
※ CSV format can be configured with listed data items at step 4. When [→] button is pressed, the selected data items in [Data Items] field will move to CSV format. When [←] button is pressed, the selected data items in [CSV Format] field will be removed from CSV format.
※ The sequence of data items in CSV file can be configured with [↑] and [↓] button.
※ Data item with (*) is a mandatory data in CSV file, therefore it cannot be removed from CSV format.
※ Data item such as “Arbitrary Data” can be included more than one time in CSV file. Those data are not removed from [Data Items] field even when [→] is pressed.
※ Invalid data, for example its name includes prohibited characters or a portion of the data is missing, are not imported.
※ With respect to importing normal bend property import, data that a material and material type are not registered in the material/material type data of 3i are not imported.

2.4.1.5. Import from DXF File

Material Explorer can import skeleton sheet data from a DXF file with sheet information which needs to be additionally specified.

2.4.2. Export

Material Explorer can export data into a file so that other applications can make use of it.
Export menu contains the following items.

- Print
- Export to CSV file
- Export to DXF File

2.4.2.1. Print

Material Explorer can print out the following data.

Target	Remark
Material type	Material type data are printed out.
Material	Material data are printed out.
Sheet format	Sheet format data are printed out.
Film	Film data are printed out.
Colored steel	Colored steel data are printed out.

You can print out the above data in the following direction.

1. Click [Application button] → [Export] → [Print], and then choose the target data, for instance [Material], and the preview dialog will appear.
2. Click print icon and then the data are printed out.

※ Print orientation is landscape only.

2.4.2.2. Export to CSV File

Material Explorer can export the following data into a CSV file.

Target	Remark
Material type	Material type data are exported.
Material	Material data are exported.
Sheet format	Sheet format data are exported.
Film	Film data are exported.
Colored steel	Colored steel data are exported.

You can export the above data into a CSV file in the following direction.

1. Click [Application button] → [Export] → [CSV Export], and then choose the target data, for instance [Material]. File save dialog will appear.
2. Specify a CSV file to export in the dialog, and the export dialog will appear.
3. Choose [Setting Name] which you would like to use.
4. Configure [Basic Settings] and [Data Settings] if necessary, and then press [OK] button.
5. Press [OK] button on the confirmation dialog.

※ Setting names can be added or deleted at step 3. When [+] button is pressed and a new setting name is input, a new setting will be created and available. When [-] button is pressed, the current setting name will be deleted.
※ CSV format can be configured with listed data items at step 4. When [→] button is pressed, the selected data items in [Data Items] field will move to CSV format. When [←] button is pressed, the selected data items in [CSV Format] field will be removed from CSV format.
※ The sequence of data items in CSV file can be configured with [↑] and [↓] button.
※ Data item with (*) is a mandatory data in CSV file, therefore it cannot be removed from CSV format.
※ Data item such as “Arbitrary Data” can be included more than one time in CSV file. Those data are not removed from [Data Items] field even when [→] is pressed.

2.4.2.3. Export to DXF File

The shape data of the sheet format registered in Material Explorer are output to the DXF file.
The following data can be output.

Object item	Explanation
Sheet Format (Skeleton)	The shape data of the skeleton material and the remnant are output.

You can export the above data into a DXF file in the following direction.

1. Click [Application button].
2. Select [Export]→[DXF Export]→[Sheet Format (Skeleton)].
3. Since the list of skeleton and remnants of the sheet format is displayed, check a sheet to be output and press [OK] button.
4. Select a folder to be output in the Output Destination Folder Selection dialog and press [OK] button.

2.4.3. Backup

A backup file of Material Explorer is created.

※ When the server setting is [local connection], a backup file will be created from the data in the local computer.
※ Whereas another computer is designated as the server, a backup file will be created from the data in the server computer.

2.4.4. Restoration

A backup data is restored, i.e. all the current data is discarded and replaced with the data in a designated backup file.
Create a backup file beforehand if you would like to keep the current data for some reason, c

※ This function is available only when the server setting is [local connection].

2.4.5. Maintenance

Maintenance menu contains the following items.

- Unlock
- Material Master Initialization
- Log File Output
- Cache Clear
- Database Clear
- Database Initialization

2.4.5.1. Unlock

You sometimes come across the message “Another program is updating the data. Wait for a while and try again.” In this case it is recommended to wait until the updating has finished.
But if this situation lasts for a long time or no one is using Material Explorer at the time, the server might be locked accidentally. This function solves the problem by unlocking all the data in the server and it will be possible to update data.

2.4.5.2. Material Master Initialization

Material master data is initialized by replacing the current data with the designated country’s default master data.

2.4.5.3. Log File Output

Application log is output to a designated file.

2.4.5.4. Cache Clear

If the latest data cannot be reloaded by pushing [Reload] button for some reason, this function could resolve the problem.
It clears the cached data first, and then the latest data is downloaded from the server and is displayed on the screen.

2.4.5.5. Database Clear

All data which Material Explorer manages are deleted. Once the data is deleted, it is never recovered.

2.4.5.6. Database Initialization

Application reverts to the shipment state.

2.5. Option Settings

Option settings contain the following items.

- System settings
- Server settings
- Function settings
- Version

2.5.1. System Settings

System settings contain the following items.

- Beahavior
- Display unit
- Security

2.5.1.1. Behavior

Display language in Material Explorer can be set to one of the following languages.

- English
- Japanese
- Simplified Chinese
- Traditional Chinese
- Italian
- French
- Spanish
- German
- Korean
- Polish
- Portuguese
- Russian
- Hungarian

2.5.1.2. Display Unit

Display unit and some significant digits can be configured.

Item	Explanation
Display Unit	Metric (mm) or Yard-Pound (inch) unit system can be chosen.
Significant Digit	Significant digit of length and angle can be configured.
Display Significant Digit	It can be chosen whether or not zero is filled till the range of significant digit.

2.5.1.3. Security

Password can be set and changed.
Once password is set, password input is required when you start the following operations.

- Save
- Restoration
- Import

< Setting Password >

1. Click [Application button] → [Option] button on the option settings dialog and go to [System Settings] → [Security] page.
2. Click [Change] button, and [Input Password] dialog is displayed.
3. Set a new password and input it again for confirmation.
4. Click [OK] button, and the password is set.

< Changing Password >

1. Click [Application button] → [Option] button on the option settings dialog and go to [System Settings] → [Security] page.
2. Click [Change] button, and [Input Password] dialog is displayed.
3. As the current password is requested, input it and click [OK] button. If the password is confirmed, [Input Password] dialog is displayed.
4. Set a new password and input it again for confirmation.
5. Click [OK] button, and the password is set.

< Deleting Password >

1. Click [Application button] → [Option] button on the option settings dialog and go to [System Settings] → [Security] page.
2. Click [Clear] button, and [Input Password] dialog is displayed.
3. As the current password is requested, input it and click [OK] button.
4. Press [Yes] button on the confirmation dialog, and the password is deleted.

2.5.2. Server Settings

Server computers can be designated.

< Material Server >

It can be configured whether the computer operates as the server or a client.
Just after the installation, “localhost” is chosen in the server settings as the default. If you would like to get data from the server, change the settings into “server” and set the valid host name.

※ Server-Client system means that data communication is done via network between the server computer in charge of managing and providing data and the client computers on which Material Explorer runs.
※ If “localhost” is chosen in the server settings, the computer operates as the server to share the data with other clients or standalone. On the other hand, the computer operates as a client if “server” is chosen in the server settings and valid host name is set.

< AP100 Server >

AP100 server needs to be specified when you try to import data from AP100. Set the valid host name, login user name, and password in order to connect to AP100 server.

2.5.3. Function Settings

Some functions of Material Explorer can be configured here.

Option	Explanation
Use sheet code	Set this option ON when you would like to use mainly sheet code for material handling. When you set it OFF, material name is used as default. According to this setting, size and additional information treatment changes. < This option: ON > Size and additional information are edited and displayed in sheet tab. < This option: OFF > Size and additional information are edited and displayed in material tab under material master tab. In addition, the initial material selection changes in CAM application. For example, if this option is set ON, sheet code is used in order to specify the target material. For more detail, see the user's guide or help document of the CAM application.
Output sheet code	Set this option ON if you want to output sheet code as part of process setup information.

2.5.4. Version

Current version and copyright of Material Explorer are displayed.

3. Material Master Tab

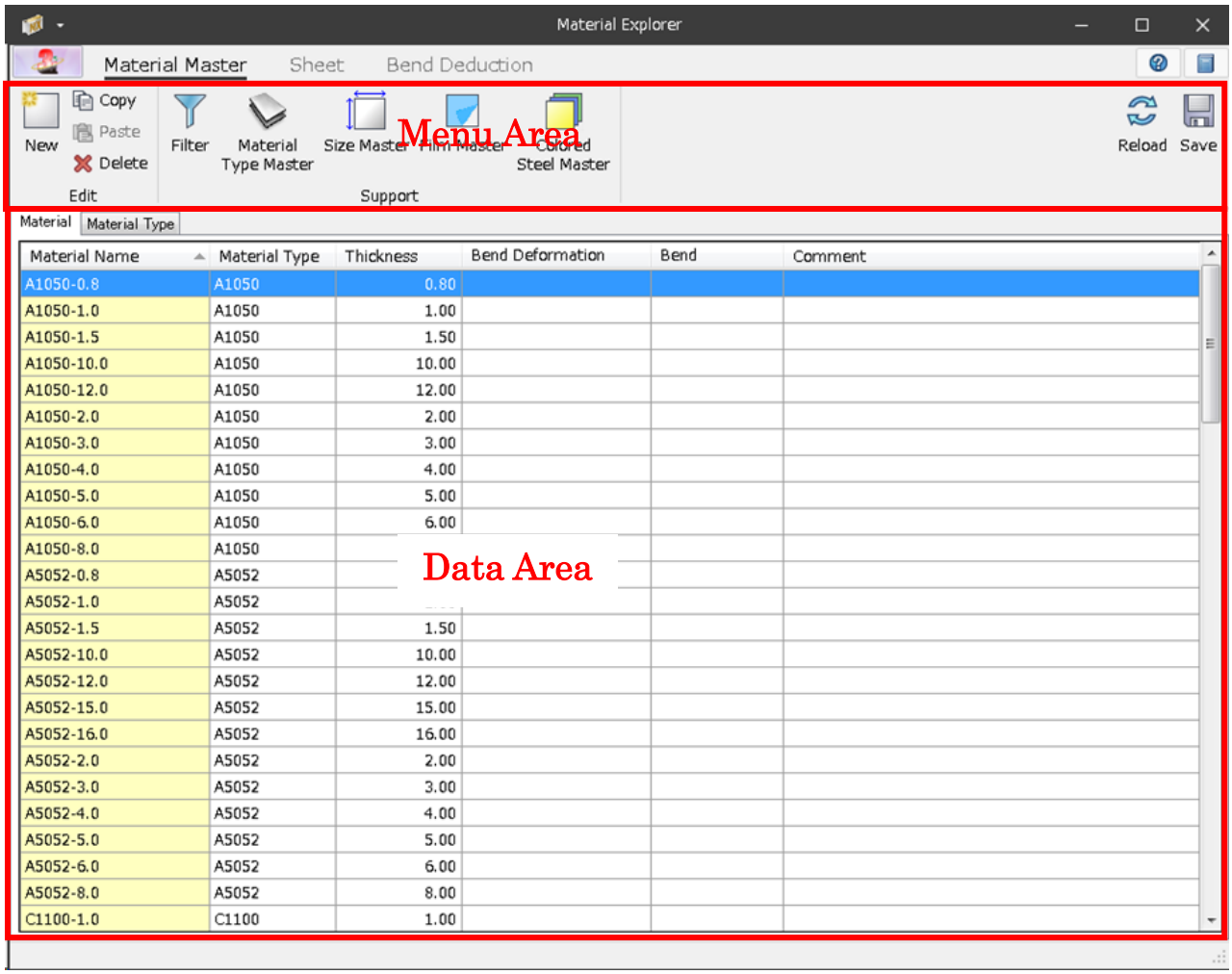
On material master tab, the following data can be managed.

- Material type
- Material

3.1. Screen Composition and Menu

3.1.1. Screen Composition

Material master tab is composed as the image below.



- Menu area
  Available functions and menu are displayed.

- Data area
  List of material types or materials is displayed.

3.1.2. Menu and Function

Menu area on material master tab contains the following functions and menu

Function	Explanation
Edit menu	Refer to "Editing Material Type" and "Editing Material".
Filter button	Refer to "Filtering Material Type" and "Filtering Material".
Material Master button	Refer to "Changing Material Type Master".
Size Master button	Refer to "Setting Material Sizes".
Film Master button	Refer to "Setting Additional Information 1 (Film)".
Colored Steel Master button	Refer to "Setting Additional Information 2 (Colored Steel)".

※ Refer to Common Menu with regard to the functions which are common in Material Explorer.
※ Size Master, Film Master, and Colored Steel Master buttons are displayed only when "Use sheet code as default operational mode" option is off in the functions settings.

3.2. Material Type Tab

On material type tab, you are able to view and edit the registered material type data.
Following data can be registered as part of material type.

- Material type name
- Standard material type name
- Specific gravity
- Tensile strength
- Magnetic
- Young's module
- Poisson's ratio
- Yield stress
- Work-hardening rate: F
- Work-hardening exponent: n
- r-value
- Comment

3.2.1. Editing Material Type

Edit menu on material type consists of the following functions.

Function	Explanation
New	A new item is created.
Copy	A selected item is copied.
Paste	The copied item is pasted.
Delete	Selected items are deleted.
Edit	A selected item becomes editable. (This function can only be accessed from context menu.)

< New >

A new material type is created in one of the following ways.

- Clicking [New] button in menu area
- Clicking the right mouse button in data area → choosing [New] in context menu

< Copy >

A selected material type is copied in one of the following ways.

- Choosing a material type in data area → clicking [Copy] button in menu area
- Choosing a material type in data area → clicking the right mouse button → choosing [Copy] in context menu

※ When a material type has been copied, the data is memorized and [Paste] function becomes available.

< Paste >

The copied material type is pasted in one of the following ways.

- Clicking [Paste] button in menu area
- Clicking the right mouse button in data area → choosing [Paste] in context menu

※ [Paste] function is available only when a material type has been copied beforehand.

< Delete >

Selected material types are deleted in one of the following ways.

- Choosing one or more material type in data area → clicking [Delete] button in menu area
- Choosing one or more material type in data area → clicking the right mouse button → choosing [Delete] in context menu

< Edit >

Selected material types become editable in one of the following ways.

Single edit mode:

- Double-clicking a material type in data area
- Choosing a material type in data area → clicking the right mouse button → choosing [Edit] in context menu

Multi edit mode:

- Choosing two or more material types in data area → clicking the right mouse button → choosing [Edit] in context menu

※ In multi edit mode, data items which are unable to edit are not displayed.
※ A string "***" in each data field means no change. When you change it into empty or an arbitrary string, the value will be changed.
※ Black-painted "Magnetic" check box means no change. When you check it on or off, the value will be changed.

3.2.2. Customization of List

Display of the material type list in data area is customized.

< Width of Column >

If you would like to change the width of a certain column on the list, click the left mouse button on the column header cell's right border and drag it.

< Position of Column >

If you would like to change the position of a certain column on the list, click the left mouse button on the column header cell and drag it to the target position. Position of key item (material type name) cannot be changed.

< Displayed or Hidden >

If you would like to switch the display state of a certain column on the list, click the right mouse button on the column header, and a switching dialog will appear. You can check the column on or off on the dialog. Checked columns only are displayed on the list.

3.2.3. Filtering Material Type

Material type data can be filtered by the following items.

- Material type name
- Standard material type

Click [Filter] button in menu area, and a filter dialog will appear. On the dialog you can specify one or more items listed above to filter data. You can also use wild card character "*" which matches arbitrary string.

Ex) A, A*, *A, *A*

When the data is filtered, the image of [Filter] button changes as follows.

Not Filtered	Filtered
	

In order to cancel filtering, click [Clear] button in the filter dialog and then press [OK] button.

3.2.4. Changing Material Type Master

Master list of standard material types which are used when creating or editing material type data can be modified.

It can be conducted in the following direction.

1. Click [Material Type Master] button, and a material type master dialog appears.
2. Choose standard material types (country names) you would like to use by clicking the checkbox.
3. Click [OK] button, and the selected standard material types are available.

※ When you try to remove the used standard material types, a message like "Changing masters could cause data inconsistency" is displayed. Click [OK] button if it is OK to continue, or click [Cancel] button to cancel the changes.

※ If a material type data becomes inconsistent because of the change of material type master, the data is highlighted in red. Correct the data if it occurs.

3.3. Material Tab

On material tab, you are able to view and edit the registered material data.
Following data can be registered as part of material.

- Material name
- Material type name
- Thickness
- Additional information 1 (film)
- Additional information 2 (colored steel)
- Bend deformation width
- Bend deformation height
- Comment
- User defined

※ Additional information 1 and 2 are accessible from material master tab only when [Use sheet code as default operational mode] option is off. You can access the option by [Application] button → [Option] → [Function Settings].

3.3.1. Editing Material

Edit menu on material consists of the following functions.

Function	Explanation
New	A new item is created.
Copy	A selected item is copied.
Paste	The copied item is pasted.
Delete	Selected items are deleted.
Edit	A selected item becomes editable. (This function can only be accessed from context menu.)

< New >

A new material is created in one of the following ways.

- Clicking [New] button in menu area
- Clicking the right mouse button in data area → choosing [New] in context menu

< Copy >

A selected material is copied in one of the following ways.

- Choosing a material in data area → clicking [Copy] button in menu area
- Choosing a material in data area → clicking the right mouse button → choosing [Copy] in context menu

※ When a material has been copied, the data is memorized and [Paste] function becomes available.

< Paste >

The copied material is pasted in one of the following ways.

- Clicking [Paste] button in menu area
- Clicking the right mouse button in data area → choosing [Paste] in context menu

※ [Paste] function is available only when a material has been copied beforehand.

< Delete >

Selected materials are deleted in one of the following ways.

- Choosing one or more material in data area → clicking [Delete] button in menu area
- Choosing one or more material in data area → clicking the right mouse button → choosing [Delete] in context menu

< Edit >
Selected materials become editable in one of the following ways.

Single edit mode:
- Double-clicking a material in data area
- Choosing a material in data area → clicking the right mouse button → choosing [Edit] in context menu

Multi edit mode:
- Choosing two or more materials in data area → clicking the right mouse button → choosing [Edit] in context menu

※ In multi edit mode, data items which are unable to edit are not displayed.
※ A string "***" in each data field means no change. When you change it into empty or an arbitrary string, the value will be changed.

3.3.2. Customization of List

Display of the material list in data area is customized.

< Width of Column >
If you would like to change the width of a certain column on the list, click the left mouse button on the column header cell's right border and drag it.

< Position of Column >
If you would like to change the position of a certain column on the list, click the left mouse button on the column header cell and drag it to the target position. Position of key item (material name) cannot be changed.

< Displayed or Hidden >
If you would like to switch the display state of a certain column on the list, click the right mouse button on the column header, and a switching dialog will appear. You can check the column on or off on the dialog. Checked columns only are displayed on the list.

3.3.3. Filtering Material

Material data can be filtered by the following items.
- Material name
- Material type
- Thickness

Click [Filter] button in menu area, and a filter dialog will appear. On the dialog you can specify one or more items listed above to filter data. You can also use wild card character "*" which matches arbitrary string in order to specify a material name and material typ.
Ex) A, A*, *A, *A*
And to specify a thickness, you can input a value or a range by connecting two values with hyphen.
Ex) 1.0, 1.0-2.0
When the data is filtered, the image of [Filter] button changes as follows.

Not Filtered	Filtered
	

In order to cancel filtering, click [Clear] button in the filter dialog and then press [OK] button.

3.3.4. Setting Material Sizes

Following operations are available with regard to sheet size.

- Setting size data to material
- Adding a new size to size master
- Removing sizes from size master

※ Material size data is accessible from material master tab only when [Use sheet code as default operational mode] option is off. You can access the option by [Application] button → [Option] → [Function Settings].

< Setting size data to material >

Size data can be set to material in the following procedure.

1. Click […] button in the [size] field of material dialog which appears when you create or edit a material, and a size list dialog appears.
2. Choose one of the sizes you would like to set by clicking the checkbox.
3. Click [OK] button, and the selected size is set to the material.

< Adding a new size to size master >

A new sheet size can be added to size master in the following direction.

1. Click [Size Master] button on the menu area, and a size list dialog appears.
2. Click [+] button on the size list dialog, and a size dialog appears.
3. Input [Size X] and [Size Y]. If the size is a standard sheet size, then put the checkmark on [Standard Size] check box.
4. Click [OK] button, and the new size is added to size master and shown in the size list.

< Removing sizes from size master >

Sheet sizes can be removed from size master in the following direction.

1. Choose sizes you would like to remove.
2. Click [-] button on the dialog, and a confirmation dialog appears.
3. Click [OK] button on the confirmation dialog if it is OK to remove the selected sizes. If not, click [Cancel] button.

3.3.5. Setting Additional Information 1 (Film)

Following operations are available with regard to film.

- Setting additional information about film to material
- Adding a new film to film master
- Removing films from film master

※ Additional information 1 (Film) data is accessible from material master tab only when [Use sheet code as default operational mode] option is off. You can access the option by [Application] button → [Option] → [Function Settings].

< Setting additional information about film to material >

Film data can be set to material in the following procedure.

1. Click […] button in the [additional info. 1 (film)] field of material dialog which appears when you create or edit a material, and an additional information 1 dialog appears.
2. Choose which side to add a film and its name.
3. Click [OK] button, and the configured information is set to the material.

< Adding a new film to film master >

A new film data can be added to film master in the following direction.

1. Click [Film Master] button on the menu area or [Edit Master] button on the additional info. 1 dialog, and a film list dialog appears.
2. Click [+] button on the film list dialog, and a film dialog appears.
3. Input [Name], [Color] and [Thickness] of film data.
4. Click [OK] button, and the film is added to film master and shown in the film list.
5. Click [OK] button to finish editing film master.

< Removing films from film master >

Films can be removed from size master in the following direction.

1. Click [Film Master] button on the menu area or [Edit Master] button on the additional info. 1 dialog, and a film list dialog appears.
2. Choose films you would like to remove.
3. Click [-] button on the dialog, and a confirmation dialog appears.
4. Click [OK] button on the confirmation dialog if it is OK to remove the selected films. If not, click [Cancel] button.
5. Click [OK] button to finish editing film master.

3.3.6. Setting Additional Information 2 (Colored Steel)

Following operations are available with regard to colored steel.

- Setting additional information about colored steel to material
- Adding a new color to colored steel master
- Removing colors from colored steel master

※ Additional information 2 (Color) data is accessible from material master tab only when [Use sheet code as default operational mode] option is off. You can access the option by [Application] button → [Option] → [Function Settings].

< Setting additional information about colored steel to material >

Colored steel data can be set to material in the following procedure.

1. Click […] button in the [additional info. 2 (color)] field of material dialog which appears when you create or edit a material, and an additional information 2 dialog appears.
2. Choose which side to set a color and its name.
3. Click [OK] button, and the configured information is set to the material.

< Adding a new color to colored steel master >

A new color data can be added to colored steel master in the following direction.

1. Click [Colored Steel Master] button on the menu area or [Edit Master] button on the additional info. 2 dialog, and a surface color list dialog appears.
2. Click [+] button on the surface color list dialog, and a surface color dialog appears.
3. Input [Name], and [Color] or [Texture] of color data.
4. Click [OK] button, and the color is added to colored steel master and shown in the surface color list.
5. Click [OK] button to finish editing colored steel master.

< Removing colors from colored steel master >

Colors can be removed from colored steel master in the following direction.

1. Click [Colored Steel Master] button on the menu area or [Edit Master] button on the additional info. 2 dialog, and a surface color list dialog appears.
2. Choose films you would like to remove.
3. Click [-] button on the surface color list dialog, and a confirmation dialog appears.
4. Click [OK] button on the confirmation dialog if it is OK to remove the selected colors. If not, click [Cancel] button.
5. Click [OK] button to finish editing colored steel master.

3.3.7. Setting Bend Deformation

Bend deformation occurs when a sheet metal is bent. Here bend deformation width and height information can be set to material. This information makes it possible to create relief curve on the bend line region and is effective to avoid the error of the dimension or collision.
Following operations are available with regard to bend deformation.

- Setting bend deformation data to material
- Deleting bend deformation data from material

< Setting bend deformation data to material >

Bend deformation data can be set to material in the following procedure.

1. Click […] button in the [bend deformation width] or [bend deformation height] field of material dialog which appears when you create or edit a material, and an bend deformation dialog appears.
2. Choose [Material Type] (SPC or SUS) and input [Thickness].
3. Click [Calculate] button on the dialog, and the result is shown in the dialog.
4. When you would like to correct the data, change data in [Percentage] field.
5. Click [OK] button, and the configured information is set to the material.

< Deleting bend deformation data from material >

Bend deformation data can be deleted from material in the following direction.

1. Click […] button in the [bend deformation width] or [bend deformation height] field of material dialog which appears when you create or edit a material, and a bend deformation dialog appears.
2. Click [Clear] button on the dialog.
3. Click [OK] button, and the bend deformation data is deleted from the material.

4. Sheet Tab

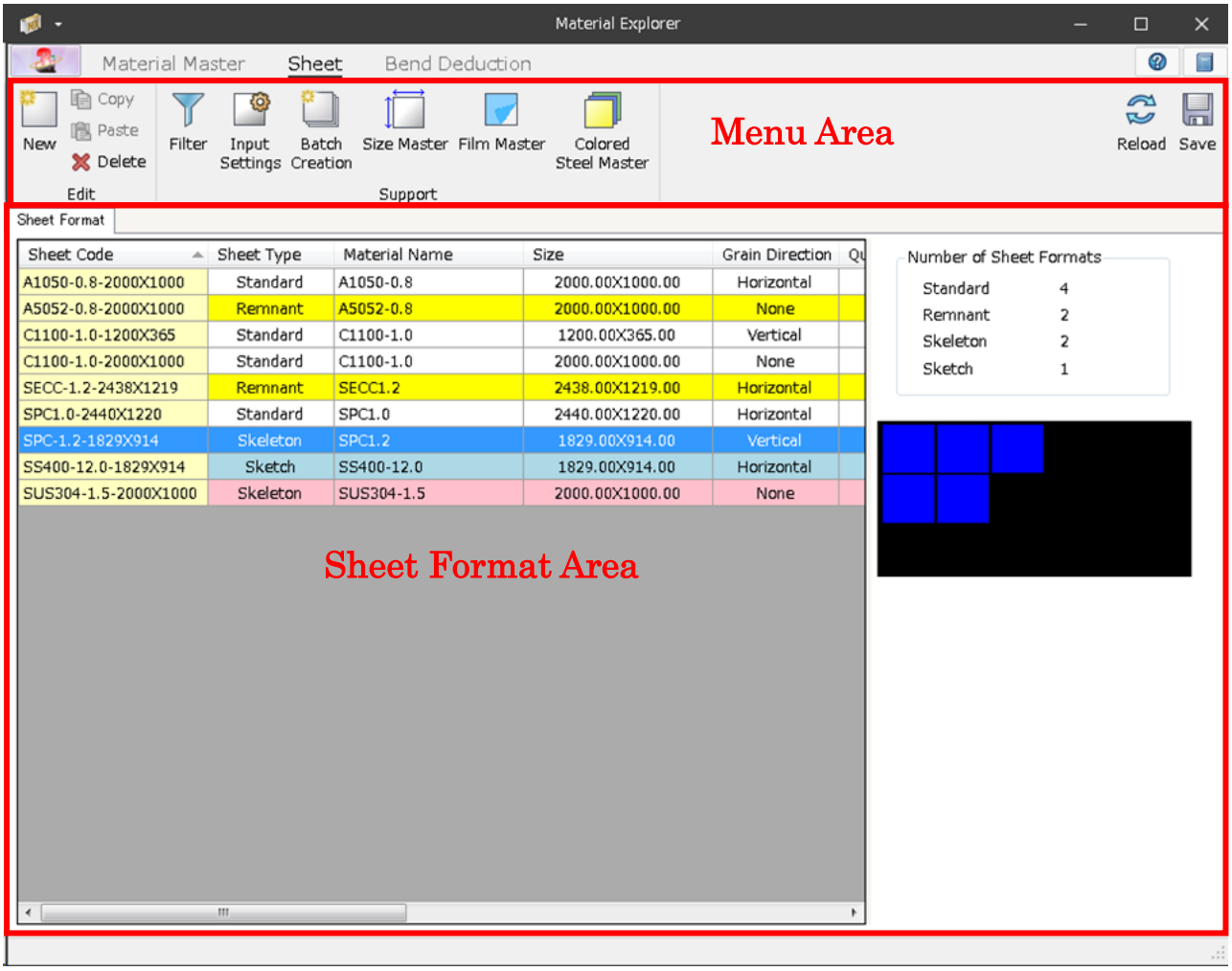
On sheet tab, the following data can be managed.

- Sheet format

4.1. Screen Composition and Menu

4.1.1. Screen Composition

Sheet tab is composed as the image below.



- Menu area
  Available functions and menu are displayed.

- Sheet format area
  List of sheet formats is displayed.

4.1.2. Menu and Function

Menu area on sheet tab contains the following functions and menu

Function	Explanation
Edit menu	Refer to "Editing Sheet Format".
Filter button	Refer to "Filtering Sheet Format".
Input Setting button	Refer to "Configuring Input Settings".
Batch Creation button	Refer to "Batch Sheet Format Creation".
Size Master button	Refer to "Setting Sheet Size".
Film Master button	Refer to "Setting Additional Information 1 (Film)".
Colored Steel Master button	Refer to "Setting Additional Information 2 (Colored Steel)".

※ Refer to Common Menu with regard to the functions which are common in Material Explorer.
※ Size Master, Film Master, and Colored Steel Master buttons are displayed only when "Use sheet code as default operational mode" option is on in the functions settings.

4.2. Sheet Format Tab

On sheet format tab, you are able to view and edit the registered sheet format data.
Following data can be registered as part of sheet format.

- Sheet code
- Sheet type
- Material name
- Material type
- Thickness
- Size
- Grain direction
- Quantity
- Available quantity
- Price
- Priority
- Additional information 1 (film)
- Additional information 2 (colored steel)
- Updated date
- Comment

※ Updated date is automatically recorded and users cannot edit it directly.

4.2.1. Editing Sheet Format

Edit menu on sheet format consists of the following functions.

Function	Explanation
New	A new item is created.
Copy	A selected item is copied.
Paste	The copied item is pasted.
Delete	Selected items are deleted.
Edit	A selected item becomes editable. (This function can only be accessed from context menu.)
Rotation/Reverse	A selected item is rotated/inverted. (This function can only be accessed from context menu.)
DXF Import	A shape is imported from a DXF file to a selected sheet item. (This function can only be accessed from context menu.)

< New >

A new sheet format is created in one of the following ways.

- Clicking [New] button in menu area
- Clicking the right mouse button in sheet format area → choosing [New] in context menu

< Copy >

A selected sheet format is copied in one of the following ways.

- Choosing a sheet format in sheet format area → clicking [Copy] button in menu area
- Choosing a sheet format in sheet format area → clicking the right mouse button → choosing [Copy] in context menu

※ When a sheet format has been copied, the data is memorized and [Paste] function becomes available.

< Paste >

The copied sheet format is pasted in one of the following ways.

- Clicking [Paste] button in menu area
- Clicking the right mouse button in sheet format area → choosing [Paste] in context menu

※ [Paste] function is available only when a sheet format has been copied beforehand.

< Delete >

Selected sheet formats are deleted in one of the following ways.

- Choosing one or more sheet formats in sheet format area → clicking [Delete] button in menu area
- Choosing one or more sheet formats in sheet format area → clicking the right mouse button → choosing [Delete] in context menu

< Edit >
Selected sheet formats become editable in one of the following ways.

Single edit mode:
- Double-clicking a sheet format in sheet format area
- Choosing a sheet format in sheet format area → clicking the right mouse button → choosing [Edit] in context menu

Multi edit mode:
- Choosing two or more sheet formats in data area → clicking the right mouse button → choosing [Edit] in context menu

※ In multi edit mode, data items which are unable to edit are not displayed.
※ A string "***" in each data field means no change. When you change it into empty or an arbitrary string, the value will be changed.
※ Black-painted "Do not consider quantity" check box means no change. When you check it on or off, the value will be changed.
※ Quantity of skeleton sheet cannot be changed.

< Rotation/Reverse >
A selected sheet format is rotated/reversed in one of the following ways.
- Choosing a sheet format in sheet format area → clicking the right mouse button → choosing [Rotation/Reverse] in context menu

※ Rotation/Reverse can be executed with a skeleton material/remnant.
※ Either one of None/90 degree/180 degree/270 degree can be specified as a rotation angle. The rotation direction is the counterclockwise direction.
※ Either one of None/X axis/Y axis can be specified as an inversion axis. The inversion is executed after rotated.
※ A material code name can be specified after rotated/Reversed. If the material code name is the same as the original material code name, the sheet format shape is overwritten with the rotated/Reversed shape. If a material code name is changed from the original material code name, its sheet format is added and registered. In such case, Delete for the original sheet format can be selected.

< DXF Import>
There is the following method for importing a shape from a DXF file to the sheet format shape.
- Choosing a sheet format in sheet format area → clicking the right mouse button → choosing [DXF Import] in context menu

※ DXF Import can be executed with a skeleton material.
※ The sheet format shape is overwritten to a shape imported from a DXF file.
※ If the dimension of the sheet format is different from the dimension of the imported DXF file, it is not imported.

4.2.2. Customization of List

Display of the sheet format list in data area is customized.

< Width of Column >

If you would like to change the width of a certain column on the list, click the left mouse button on the column header cell's right border and drag it.

< Position of Column >

If you would like to change the position of a certain column on the list, click the left mouse button on the column header cell and drag it to the target position. Position of key item (sheet code) cannot be changed.

< Displayed or Hidden >

If you would like to switch the display state of a certain column on the list, click the right mouse button on the column header, and a switching dialog will appear. You can check the column on or off on the dialog. Checked columns only are displayed on the list.

4.2.3. Filtering Sheet Format

Sheet format data can be filtered by the following items.

- Sheet code
- Material name
- Material type
- Thickness
- Sheet type

Click [Filter] button in menu area, and a filter dialog will appear. On the dialog you can specify one or more items listed above to filter data. You can also use wild card character "*" which matches arbitrary string in order to specify a sheet code, material name and material type.

Ex) A, A*, *A, *A*

And to specify a thickness, you can input a value or a range by connecting two values with hyphen.

Ex) 1.0, 1.0-2.0

When the data is filtered, the image of [Filter] button changes as follows.

Not Filtered	Filtered
	

In order to cancel filtering, click [Clear] button in the filter dialog and then press [OK] button.

4.2.4. Configuring Input Settings

Input settings define the default values of new sheet format at creation time.
The settings can be configured in the following procedure.

< Sheet Code Setting >

1. Click [Input Settings] button in menu area, and an input settings dialog appears.
2. Choose one of sheet types.
3. Double-click the items in the [Available Items] list which you would like to include in sheet code. The selected items are shown in the [Sheet Code Format] field.
4. If you would like to reset the sheet code format, click [Delete] button and reconfigure the settings.
5. Click [OK] button, and the settings become available from the next sheet format creation.

If you would like to insert the delimiter between items, input an arbitrary string in [Delimiter] field and double-click it in [Available Items] list.
If you would like to add your preferable string as prefix or suffix of sheet code for instance, input an arbitrary string in [Special Name] field and double-click it in [Available Items] list.
Sheet code will be generated according to the settings when you create a new sheet format.
Input settings can be stored against each sheet type respectively.

< Other Settings >

1. Click [Input Settings] button in menu area, and an input settings dialog appears.
2. Choose one of sheet types.
3. Choose the default grain direction.
4. If you would like to manage sheet quantity, input the default quantity and set [Do not consider quantity] off. If not, set [Do not consider quantity] on.
5. Input the default priority.
6. Click [OK] button, and the settings become available from the next sheet format creation.

4.2.5. Batch Sheet Format Creation

Several sheet formats can be created at once with the simple operation as follows. This function is useful especially it is the first time for you to create sheet formats.

1. Click [Batch Creation] button in menu area, and a batch creation dialog appears.
2. Choose material names and sizes you would like to use.
3. Click [OK] button, and sheet formats are created for all the combination of chosen material names and sizes.

※ It is convenient to use the check-box below the item list when you would like to set or reset all items on the list. In addition, the context menu appears when you select multiple items on the list and click with the right mouse button.

4.2.6. Setting Sheet Size

Following operations are available with regard to sheet size.

- Setting size data to sheet format
- Adding a new size to size master
- Removing sizes from size master

< Setting size data to sheet format >

Size data can be set to sheet format in the following procedure.

In case that you would like to use a registered size:

1. Click […] button in the [size] field of sheet format dialog which appears when you create or edit a sheet format, and a size list dialog appears.
2. Choose one of the sizes you would like to set by clicking the checkbox.
3. Click [OK] button, and the selected size is set to the sheet format.

In case that you would like to input a size directly:

1. Input size string in the [size] field of sheet format dialog which appears when you create or edit a sheet format.

※ The format of size string is "[number]X[number]", for example "1000X2000".
※ The size which is input directly in the [size] field is not registered in the size master.

< Adding a new size to size master >

A new sheet size can be added to size master in the following direction.

1. Click [Size Master] button on the menu area, and a size list dialog appears.
2. Click [+] button on the size list dialog, and a size dialog appears.
3. Input [Size X] and [Size Y]. If the size is a standard sheet size, then put the checkmark on [Standard Size] check box.
4. Click [OK] button, and the new size is added to size master and shown in the size list.

< Removing sizes from size master >

Sheet sizes can be removed from size master in the following direction.

1. Choose sizes you would like to remove.
2. Click [-] button on the dialog, and a confirmation dialog appears.
3. Click [OK] button on the confirmation dialog if it is OK to remove the selected sizes. If not, click [Cancel] button.

4.2.7. Setting Additional Information 1 (Film)

Following operations are available with regard to film.

- Setting additional information about film to sheet format
- Adding a new film to film master
- Removing films from film master

※ Additional information 1 (Film) data is accessible from sheet tab only when [Use sheet code as default operational mode] option is on. You can access the option by [Application] button → [Option] → [Function Settings].

< Setting additional information about film to sheet format >

Film data can be set to sheet format in the following procedure.

1. Click […] button in the [additional info. 1 (film)] field of sheet format dialog which appears when you create or edit a sheet format, and an additional information 1 dialog appears.
2. Choose which side to add a film and its name.
3. Click [OK] button, and the configured information is set to the sheet format.

< Adding a new film to film master >

A new film data can be added to film master in the following direction.

1. Click [Film Master] button on the menu area or [Edit Master] button on the additional info. 1 dialog, and a film list dialog appears.
2. Click [+] button on the film list dialog, and a film dialog appears.
3. Input [Name], [Color] and [Thickness] of film data.
4. Click [OK] button, and the film is added to film master and shown in the film list.
5. Click [OK] button to finish editing film master.

< Removing films from film master >

Films can be removed from size master in the following direction.

1. Click [Film Master] button on the menu area or [Edit Master] button on the additional info. 1 dialog, and a film list dialog appears.
2. Choose films you would like to remove.
3. Click [-] button on the dialog, and a confirmation dialog appears.
4. Click [OK] button on the confirmation dialog if it is OK to remove the selected films. If not, click [Cancel] button.
5. Click [OK] button to finish editing film master.

4.2.8. Setting Additional Information 2 (Colored Steel)

Following operations are available with regard to colored steel.

- Setting additional information about colored steel to sheet format
- Adding a new color to colored steel master
- Removing colors from colored steel master

※ Additional information 2 (Color) data is accessible from sheet tab only when [Use sheet code as default operational mode] option is on. You can access the option by [Application] button → [Option] → [Function Settings].

< Setting additional information about colored steel to sheet format >

Colored steel data can be set to sheet format in the following procedure.

1. Click […] button in the [additional info. 2 (color)] field of sheet format dialog which appears when you create or edit a sheet format, and an additional information 2 dialog appears.
2. Choose which side to set a color and its name.
3. Click [OK] button, and the configured information is set to the sheet format.

< Adding a new color to colored steel master >

A new color data can be added to colored steel master in the following direction.

1. Click [Colored Steel Master] button on the menu area or [Edit Master] button on the additional info. 2 dialog, and a surface color list dialog appears.
2. Click [+] button on the surface color list dialog, and a surface color dialog appears.
3. Input [Name], and [Color] or [Texture] of color data.
4. Click [OK] button, and the color is added to colored steel master and shown in the surface color list.
5. Click [OK] button to finish editing colored steel master.

< Removing colors from colored steel master >

Colors can be removed from colored steel master in the following direction.

1. Click [Colored Steel Master] button on the menu area or [Edit Master] button on the additional info. 2 dialog, and a surface color list dialog appears.
2. Choose films you would like to remove.
3. Click [-] button on the surface color list dialog, and a confirmation dialog appears.
4. Click [OK] button on the confirmation dialog if it is OK to remove the selected colors. If not, click [Cancel] button.
5. Click [OK] button to finish editing colored steel master.

5. Bend Deduction Tab

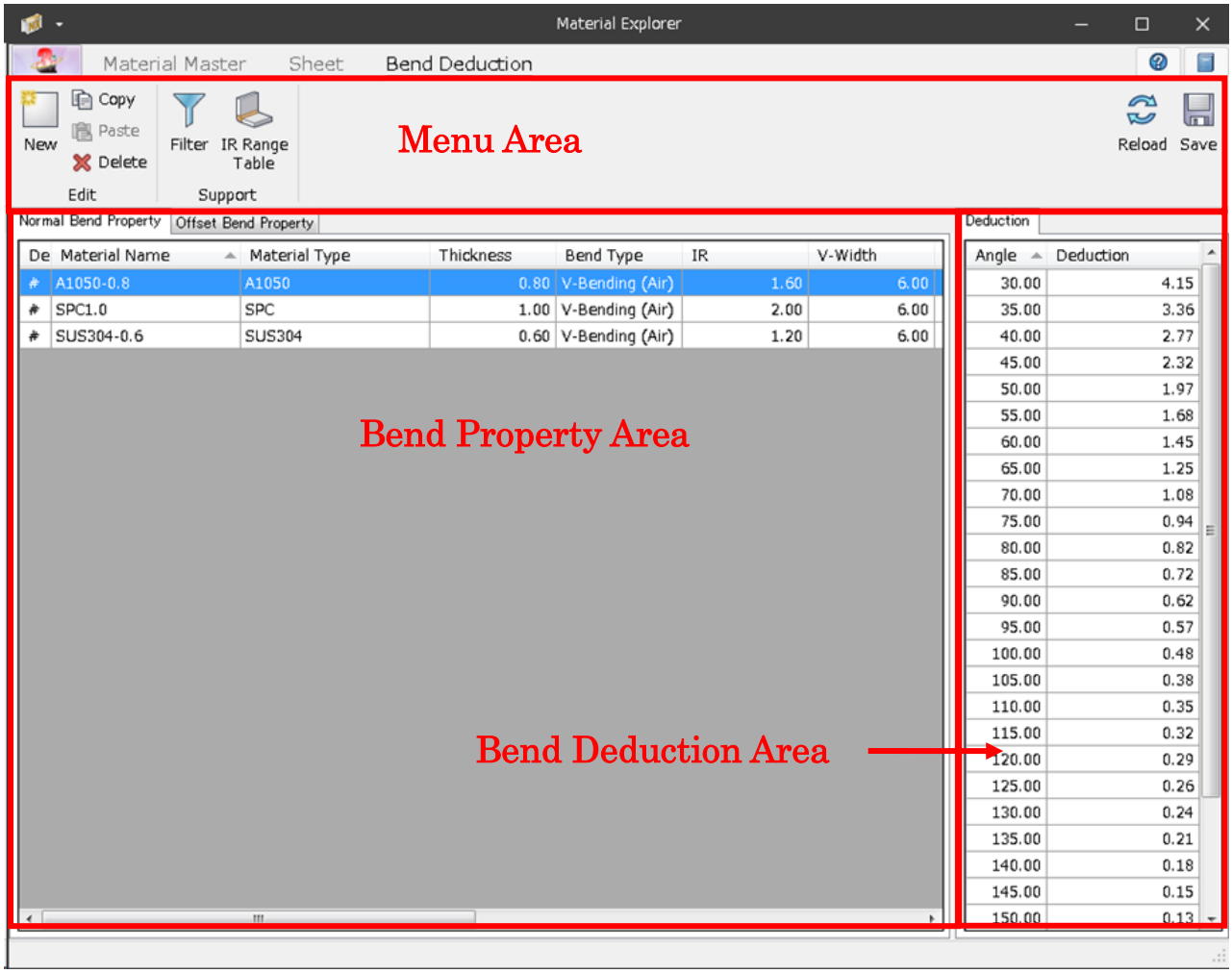
On bend deduction tab, the following data can be managed.

- Normal bend property
- Offset bend property

5.1. Screen Composition and Menu

5.1.1. Screen Composition

Bend deduction tab is composed as the image below.



- Menu area
  Available functions and menu are displayed.

- Bend property area
  List of bend properties is displayed.

- Bend deduction area
  List of bend deductions related to a chosen bend property in bend property area is displayed.

5.1.2. Menu and Function

Menu area on bend deduction tab contains the following functions and menu

Function	Explanation
Edit menu	Refer to "Editing Normal Bend Property" and "Editing Offset Bend Property".
Filter button	Refer to "Filtering Normal Bend Property" and "Filtering Offset Bending Property".
IR Range Table button	Refer to "Setting IR Range".

※ Refer to Common Menu with regard to the functions which are common in Material Explorer.

5.2. Normal Bend Property Tab

On bend deduction tab, you are able to view and edit the registered bend property and deduction data for V-bending and R-bending.
Following data can be registered as part of bend property.

- Material name
- Material type
- Thickness
- Bending type
- IR
- V-width
- R-bend count
- Remaining thickness (effective only when bending type is "V-Bending (Air & V-Cut)")
- Bottom radius (effective only when bending type is "V-Bending (Air & V-Cut)")
- V-cut angle (effective only when bending type is "V-Bending (Air & V-Cut)")
- In/Out dimension
- Both/One side
- Detail settings
- Comment

In addition, following data can be registered as part of bend deduction.

- Angle
- Bend deduction

5.2.1. Editing Normal Bend Property

Edit menu on bend property consists of the following functions.

Function	Explanation
New	A new item is created.
Copy	A selected item is copied.
Paste	The copied item is pasted.
Delete	Selected items are deleted.
Edit	A selected item becomes editable. (This function can only be accessed from context menu.)

< New >

A new bend property is created in one of the following ways.

- Clicking [New] button in menu area
- Clicking the right mouse button in bend property area → choosing [New] in context menu

< Copy >

A selected bend property is copied in one of the following ways.

- Choosing a bend property in bend property area → clicking [Copy] button in menu area
- Choosing a bend property in bend property area → clicking the right mouse button → choosing [Copy] in context menu

※ When a bend property has been copied, the data is memorized and [Paste] function becomes available.

< Paste >
The copied bend property is pasted in one of the following ways.
- Clicking [Paste] button in menu area
- Clicking the right mouse button in bend property area → choosing [Paste] in context menu

※ [Paste] function is available only when a bend property has been copied beforehand.

< Delete >
Selected bend properties are deleted in one of the following ways.
- Choosing one or more bend properties in bend property area → clicking [Delete] button in menu area
- Choosing one or more bend properties in bend property area → clicking the right mouse button → choosing [Delete] in context menu

< Edit >
A selected bend property becomes editable in one of the following ways.
- Double-clicking a bend property in bend property area
- Choosing a bend property in bend property area → clicking the right mouse button → choosing [Edit] in context menu

5.2.2. Detail Setting of Normal Bend Property

For each bend property, detail settings are available as an option. In order to set detail information, press [Detail] button on the bend property dialog.
These settings are effective when other applications like Production Designer refer to bend deduction data. If the bend deduction data which matches the conditions specified by the application does not exist, Material Explorer is able to calculate the data according to the detail settings.

※ Material Explorer and other applications are operable without setting details, but detail settings could improve the precision of bend deduction calculation.

Detail settings contain the following items.
- Precise IR
- Tool filtering conditions
  - Punch information (tip radius)
  - Die information (v-width)
- Tool settings for acute angle bending
  - Punch information (punch number, type, tip angle, tip radius, height)
  - Die information (die number, type, height, v-width)
- Tool settings for obtuse angle bending
  - Punch information (punch number, type, tip angle, tip radius, height)
  - Die information (die number, type, height, v-width)

When you selects the punch or die number, Material Explorer refers the punch or die information which is registered in Parameter Explorer.

※ If you edit the punch or die information on Parameter Explorer, the existing detail settings of bend property are not automatically changed. If you would like to synchronize the detail settings of the bend property with editing the punch or die information, select the punch or die number again.

In order to clear the settings, click [Clear] button in the dialog and then press [OK] button.

5.2.3. Setting Default Normal Bend Property

Several bend property data can have the same material type and thickness values. You can choose one of those bend property data as a default for each pair of material type and thickness.
These settings are effective when other applications like Production Designer refer to bend deduction data. If there are the bend property data which match the conditions specified by the application, the application is able to use the default data as priority.

You can change the settings of default bend property in the following procedure.

1. Choose a bend property data which you would like to set as a default.
2. Click the right mouse button → Choose [Set as Default].

※ A character "#" is displayed to the bend property data which is set as a default.

5.2.4. Editing Normal Bend Deduction

While editing a bend property, you are able to edit bend deduction on the bend property dialog.

Function	Explanation
New	A new bend deduction is created.
Delete	Selected bend deductions are deleted.
Edit	A selected bend deduction becomes editable.
Calculate	Bend deductions are calculated and added automatically according to the specified conditions.

※ When the specified angle is zero, In/Out dimension is handled as outside 2 regardless of the setting of the bend property.

When you go into the calculation, the following items must be designated in order to generate the estimated bend deductions.

- Range
  - Start angle
  - End angle
  - Pitch
- Specific angle
  - Angle
- Tool filtering conditions
  - Punch information (tip radius)
  - Die information (v-width)
- Tool settings
  - Punch information (punch number, type, tip angle, tip radius, height)
  - Die information (die number, type, height, v-width)

When you specifies the range of the angle, bend deductions are calculated with considering the every pitch between start and end angle and added to the bend property. When you specifies the specific angle, a bend deduction is calculated and added to the bend property.

※ Bend deduction calculation is not available when the bending type is FR bending.

5.2.5. Filtering Normal Bend Property

Bend property data can be filtered by the following items.

- Material name

- Material type
- Thickness
- Inside Radius (IR)

Click [Filter] button in menu area, and a filter dialog will appear. On the dialog you can specify one or more items listed above to filter data. You can also use wild card character "*" which matches arbitrary string in order to specify a material name and material type.

Ex) A, A*, *A, *A*

And to specify a thickness and IR, you can input a value or a range by connecting two values with hyphen.

Ex) 1.0, 1.0-2.0

When the data is filtered, the image of [Filter] button changes as follows.

Not Filtered	Filtered
	

In order to cancel filtering, click [Clear] button in the filter dialog and then press [OK] button.

5.2.6. Setting IR Range

IR range means that an arbitrary inside radius (IR) value from minimum till maximum boundaries is regarded as the specified IR value. For instance, if you define 0.25 [mm] as the IR value from 0.1 till 0.5 [mm], then the system treats all IR values within that range as 0.25 [mm].

IR range table can be displayed in the following direction.

1. Click [IR range table] button on the Bend Deduction tab, and IR range table dialog appears.
2. Choose one of the material types.
3. Choose one of the thickness values, and the IR range table for the selected material type and thickness is displayed. If a thickness value which you would like to use is not listed in the thickness field, choose (New) in order to create an IR range table.

The following operations are available when material type and thickness are specified.

< Adding a new IR range to the table >

A new IR range data can be added to the IR range table in the following direction.

1. Click [+] button on the IR range table dialog, and an IR range dialog appears.
2. Input [IR], [Minimum], and [Maximum] of IR range data. An arbitrary IR data from [Minimum] till [Maximum] is regarded as [IR] value.
3. Click [OK] button, and the added data is set to the IR range table.

< Removing IR ranges from the table >

IR range data can be removed from the IR range table in the following direction.

1. Choose IR ranges you would like to remove.
2. Click [-] button on the dialog, and a confirmation dialog appears.
3. Click [OK] button on the confirmation dialog if it is OK to remove the selected IR ranges. If not, click [Cancel] button.

< Editing an IR range >

An IR range data can be edited in the following direction.

1. Double-click an IR range in the IR range tables, and an IR range dialog appears.
2. Edit [Minimum] and [Maximum] of the IR range data.
3. Click [OK] button, and the configured information is set to the IR range.

5.3. Offset Bend Property Tab

On bend deduction tab, you are able to view and edit the registered bend property and deduction data for offset bending.
Following data can be registered as part of bend property.

- Material name
- Material type
- Thickness
- Bending type
- Punch number (effective only when bending type is “Offset Bending”)
- Die number (effective only when bending type is “Offset Bending”)
- Tool name (effective only when bending type is “Roller Offset”)
- Offset deduction type
- In/Out dimension (effective only when offset bending type is “Partial”)
- Both/One side (effective only when offset bending type is “Partial”)
- Comment

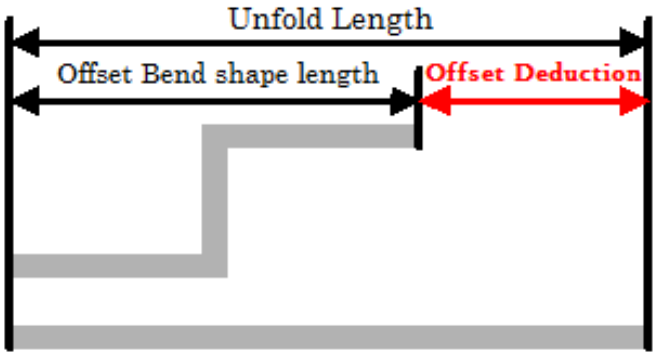
In addition, following data can be registered as part of bend deduction.

- Offset
- Bend deduction

[Total] and [Partial] can be set for Offset Deduction Type. The values registered to Deduction vary depending on settings of Offset Deduction Type.

・Total

In case of [Total], a value corresponding to “Offset Deduction” as shown in the figure below is registered.
※ The Deduction set here is represented as a name of “Z-Bend D” in Production Designer.

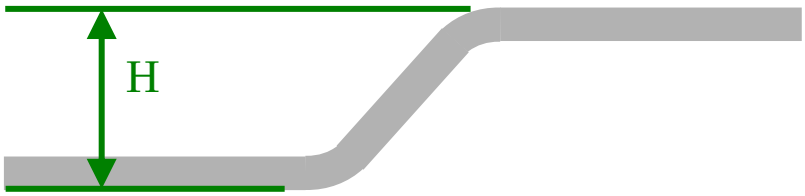


・Partial

In case of [Partial], it is considered that the Offset Bending Shape consists of two Bend Lines which Bend Deductions are the same, and “Bend Deduction” of one Bend Line is registered.
※ Deduction set here is represented as a name of “BD” in Production Designer.

・Offset Height

The value of H as shown in the figure below is Offset Height, which is a dimension being sandwiched in a direction perpendicular to the surface.



5.3.1. Editing Offset Bend Property

Edit menu on bend property consists of the following functions.

Function	Explanation
New	A new item is created.
Copy	A selected item is copied.
Paste	The copied item is pasted.
Delete	Selected items are deleted.
Edit	A selected item becomes editable. (This function can only be accessed from context menu.)

< New >

A new bend property is created in one of the following ways.

- Clicking [New] button in menu area
- Clicking the right mouse button in bend property area → choosing [New] in context menu

< Copy >

A selected bend property is copied in one of the following ways.

- Choosing a bend property in bend property area → clicking [Copy] button in menu area
- Choosing a bend property in bend property area → clicking the right mouse button → choosing [Copy] in context menu

※ When a bend property has been copied, the data is memorized and [Paste] function becomes available.

< Paste >

The copied bend property is pasted in one of the following ways.

- Clicking [Paste] button in menu area
- Clicking the right mouse button in bend property area → choosing [Paste] in context menu

※ [Paste] function is available only when a bend property has been copied beforehand.

< Delete >

Selected bend properties are deleted in one of the following ways.

- Choosing one or more bend properties in bend property area → clicking [Delete] button in menu area
- Choosing one or more bend properties in bend property area → clicking the right mouse button → choosing [Delete] in context menu

< Edit >
A selected bend property becomes editable in one of the following ways.

- Double-clicking a bend property in bend property area
- Choosing a bend property in bend property area → clicking the right mouse button → choosing [Edit] in context menu

5.3.2. Setting Default Offset Bend Property

Several bend property data can have the same material type and thickness values. You can choose one of those bend property data as a default for each pair of material type and thickness.
These settings are effective when other applications like Production Designer refer to bend deduction data. If there are the bend property data which match the conditions specified by the application, the application is able to use the default data as priority.

You can change the settings of default bend property in the following procedure.

1. Choose a bend property data which you would like to set as a default.
2. Click the right mouse button → Choose [Set as Default].

※ A character "#" is displayed to the bend property data which is set as a default.

5.3.3. Editing Offset Bend Deduction

While editing a bend property, you are able to edit bend deduction on the bend property dialog.

Function	Explanation
New	A new bend deduction is created.
Delete	Selected bend deductions are deleted.
Edit	A selected bend deduction becomes editable.

5.3.4. Filtering Offset Bend Property

Bend property data can be filtered by the following items.

- Material name
- Material type
- Thickness

Click [Filter] button in menu area, and a filter dialog will appear. On the dialog you can specify one or more items listed above to filter data. You can also use wild card character "*" which matches arbitrary string in order to specify a material name and material type.
Ex) A, A*, *A, *A*
And to specify a thickness, you can input a value or a range by connecting two values with hyphen.
Ex) 1.0, 1.0-2.0
When the data is filtered, the image of [Filter] button changes as follows.

Not Filtered	Filtered
	

In order to cancel filtering, click [Clear] button in the filter dialog and then press [OK] button.

6. Caution for printing

When printing the help document, some images cannot be printed properly. Therefore print the user's guide (PDF) instead.