



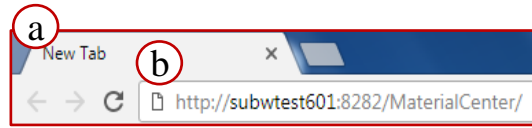
MaterialCenter User Guide



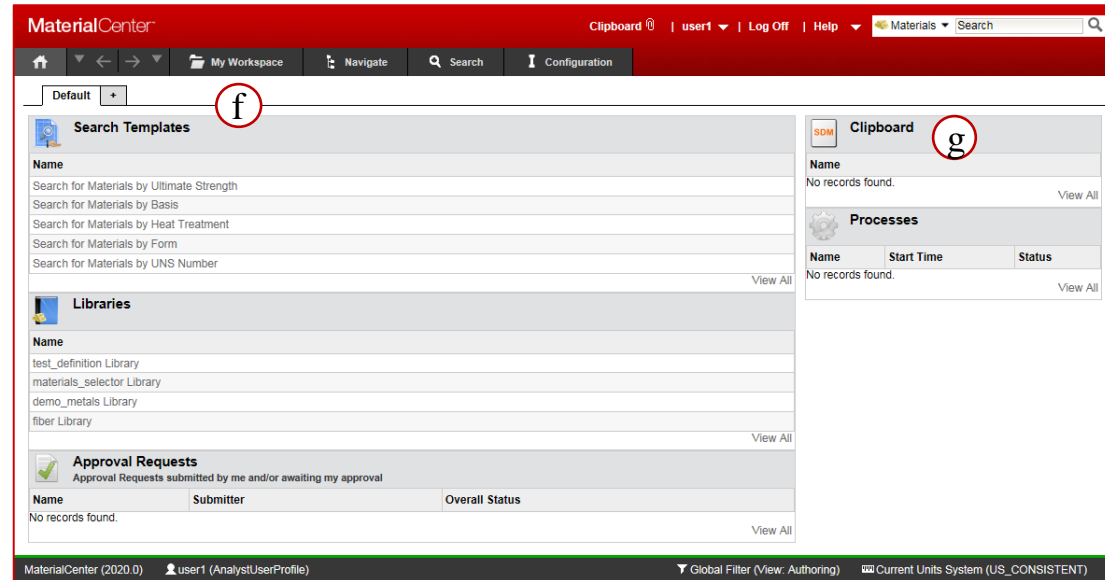
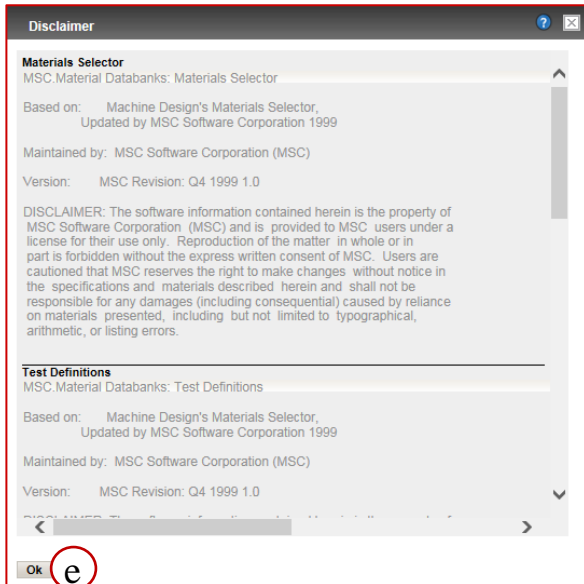
Step 1. Log in and Personalize Your Homepage

Let us log in to MaterialCenter and explore the home page.

- Open a web browser (such as Internet Explorer, Mozilla Firefox, or Google Chrome).
- Type the URL for your MaterialCenter server in the address bar.
- At the login screen, enter **user1** for User Name and **sdm** for Password.
- Click **Login**.
- Dismiss the Disclaimer by clicking **OK**.
- The homepage is displayed.
- Note the arrangement of the homepage gadgets (Clipboard, Libraries, etc).



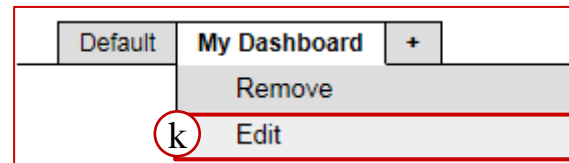
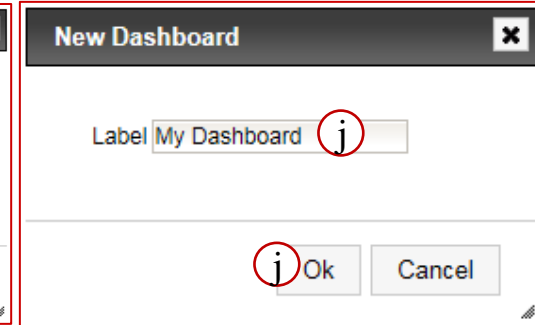
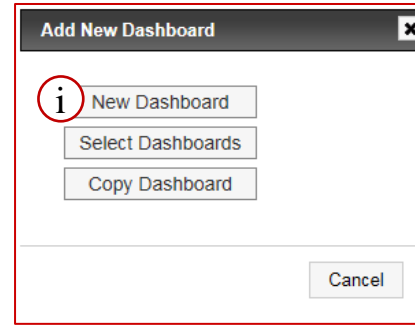
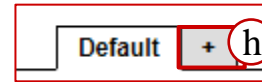
Obtain the MaterialCenter URL from your instructor or system administrator.



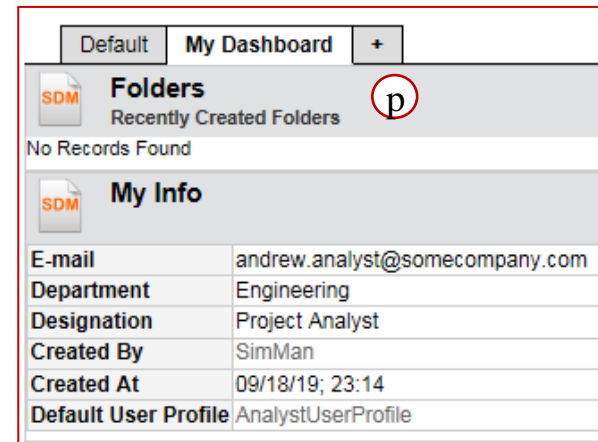
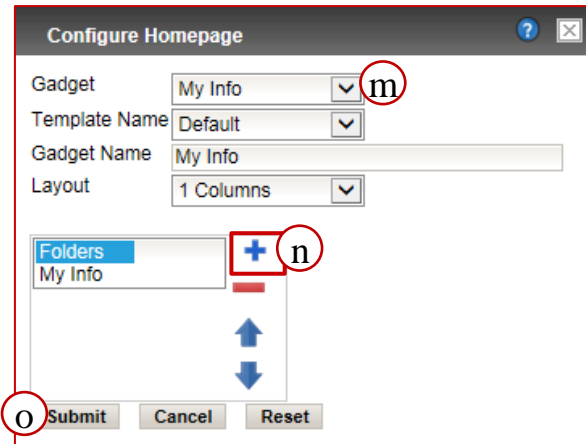
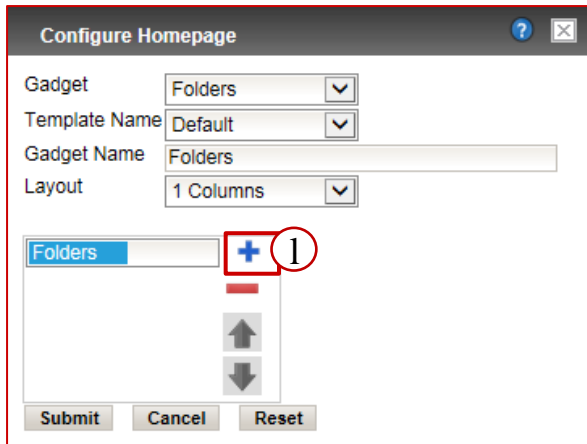
Step 1. Log in and Personalize Your Homepage (Cont.)

You can create a custom homepage dashboard to view specific types of information whenever you log in.

- h. In the Main Menu, click the + icon next to the Default dashboard.
- i. Select **New Dashboard**.
- j. Name the dashboard **My Dashboard** and select **Ok**.
- k. Right-click the **My Dashboard** tab and select **Edit**.
- l. Click + to add the Folders gadget to the first column.
- m. Change the Gadget dropdown menu to **My Info**.
- n. Click + to add the My Info gadget to the first column.
- o. Click **Submit** to save your new gadget.
- p. Note the new arrangement of your custom homepage dashboard.



For a description of available gadgets, please visit: <https://docs.mscsoftware.com/MaterialCenter/2017/home-page>



Step 1. Log in and Personalize Your Homepage (Cont.)

The Current Units System for material properties can be quickly viewed and modified directly through the page footer.

- q. At the bottom-right corner of any page, select **Current Units System**.
- r. In the prompted Units System list, make a selection set the displayed units system across the system.

The screenshot displays the MaterialCenter application interface. At the top, there is a red navigation bar with the 'MaterialCenter' logo on the left and user information ('user1'), 'Log Off', and 'Help' on the right. Below this is a secondary navigation bar with icons for home, navigation, search, and configuration. The main content area shows a 'My Dashboard' tab and a 'My Info' section with a table of user details. In the bottom right corner, a dropdown menu is open, listing various units systems. The 'US_CONSISTENT' option is selected and highlighted with a green checkmark and a red circle labeled 'r'. A red circle labeled 'q' is positioned near the bottom right of the interface, indicating the location of the dropdown menu.

My Info	
E-mail	andrew.analyst@somecompany.com
Department	Engineering
Designation	Project Analyst
Created By	SimMan
Created At	09/18/19; 23:14
Default User Profile	AnalystUserProfile

- SI-CUSTOMARY
- SI-MPa-mm
- SI_CONSISTENT
- US-CUSTOMARY
- ✓ US_CONSISTENT (r)
- VA-MPa-CUSTOMARY
- VA-SI_CONSISTENT
- VA-US_CONSISTENT

Step 2. Use the Navigate Workspace

Now let us use the Navigate Workspace to view specific types of materials with the Tree and List View.

- Click the **Navigate** workspace tab.
- On the navigation tree, click the **+** next to **Metals**.
- Continue expanding the tree by clicking **+** at **Nonferrous Metals** then **Aluminum**.
- Select the word **Wrought** to show the list of a materials in this family.
- Hovering the mouse over a node also provides a count of the records within that node. There are 378 materials at this node in the tree.
- Click the **Heat Treatment** column header in the List View and select **Sort ascending**.

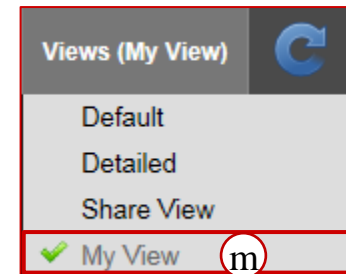
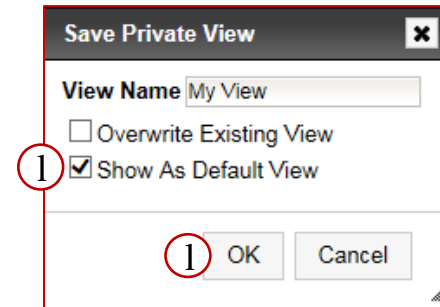
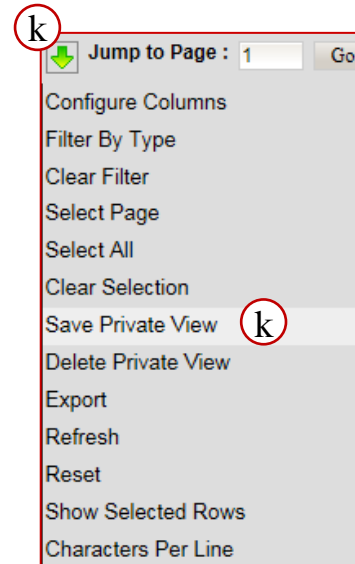
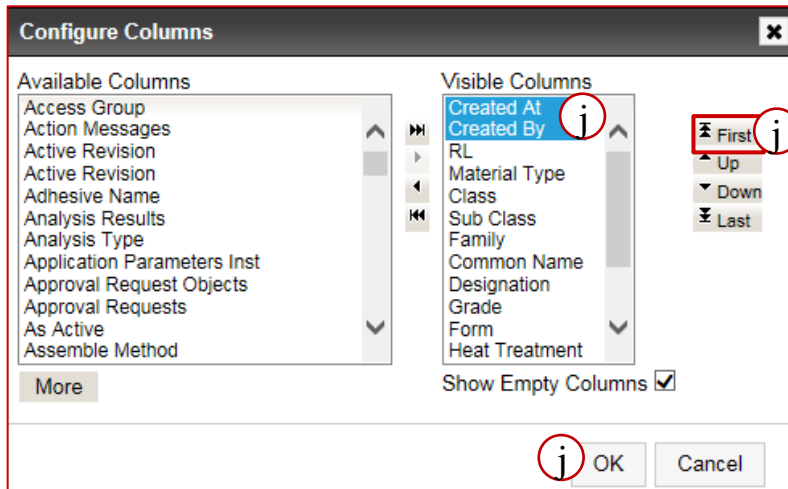
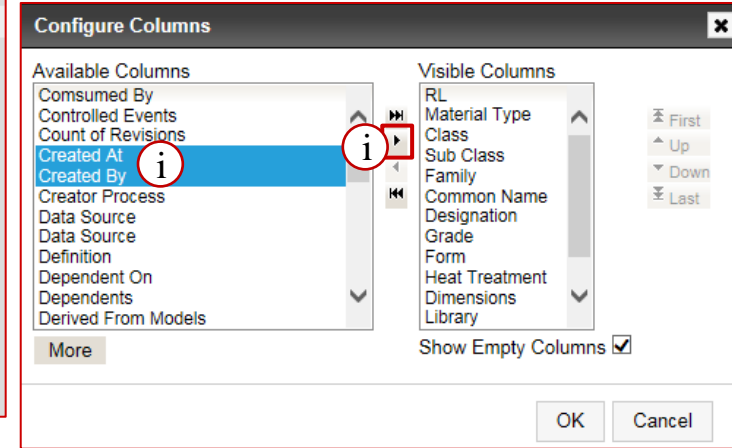
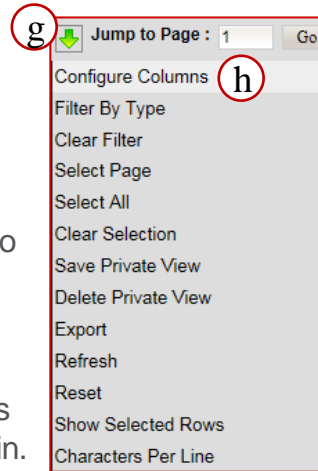
The screenshot shows the MaterialCenter interface. The navigation tree on the left is expanded to show **Metals** (b), **Nonferrous Metals** (c), and **Wrought** (d). A tooltip for **Wrought** shows **Wrought:378** (e). The main list view displays a table of materials with 378 rows (e). The **Heat Treatment** column header is selected, and the **Sort ascending** option is chosen (f).

Release Level	Material Type	Class	Sub Class	Family	Common Name	Designation	Form	Heat Treatment
2-Production	Metals	Nonferrous Metals	Aluminum	Wrought	6061 Aluminum Alloy	QQ-A-250/11	Plate	Sort ascending
2-Production	Metals	Nonferrous Metals	Aluminum	Wrought	6061 Aluminum Alloy	AMS 4127, AMS-A-22771, AMS-QQ-A-367	Die Forging	Sort descending
2-Production	Metals	Nonferrous Metals	Aluminum	Wrought	7075 Aluminum Alloy	AMS-QQ-A-200/11	Extruded Bar, Rod, Shapes	Filter
2-Production	Metals	Nonferrous Metals	Aluminum	Wrought	7075 Aluminum Alloy	AMS-A-22771, AMS-QQ-A-367	Hand Forging	T73, T73510, T73511
2-Production	Metals	Nonferrous Metals	Aluminum	Wrought	7075 Aluminum Alloy	AMS-A-22771, AMS-QQ-A-367	Hand Forging	T7352

Step 2. Use the Navigate Workspace (Cont.)

Configure your List View and Save it as a Private View.

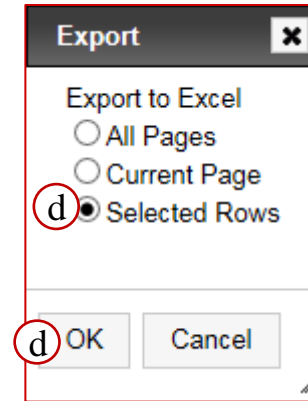
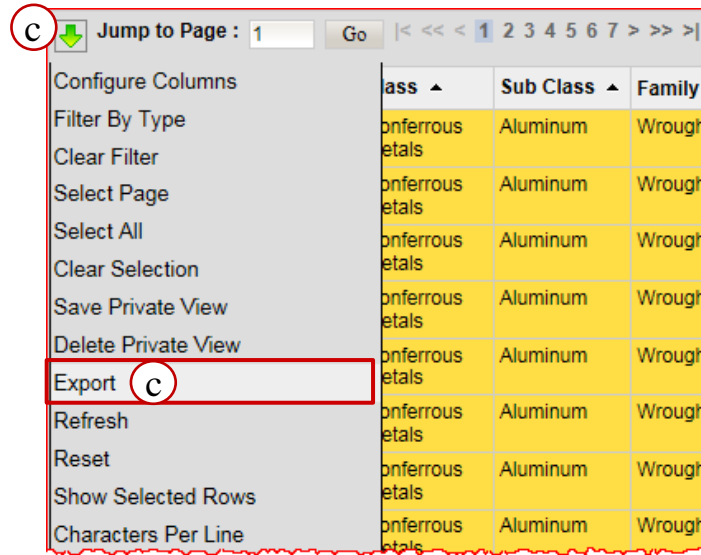
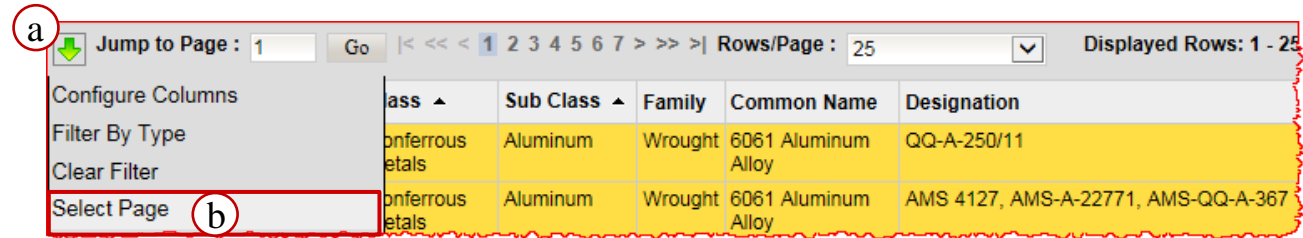
- g. Click the **green arrow** for List View options.
- h. Click **Configure Columns**.
- i. Use Ctrl to select **Create At** and **Created By** and move them to the Visible Columns.
- j. Select the two relocated column names and click **First** to place them at the top of the list. Click **OK** to view the new List View configuration.
- k. Click on the **green arrow** again and select **Save Private View**.
- l. Check **Show As Default View** and select **OK**. This will become your new List View whenever you log in.
- m. Under the Views menu, you can find or change your saved Private Views.



Step 3. Select Materials and Export

After configuring the columns you want to see in the List View, you can export the table to Excel.

- Click the **green arrow** for List View options.
- Click **Select Page**.
- Select the **green arrow** again and select **Export**.
- Click **Selected Rows** and **OK** to download an excel file.
- Open the excel file to view the exported data. Note that this action only exported the tabulated List View data, not the detailed property or record data.



e

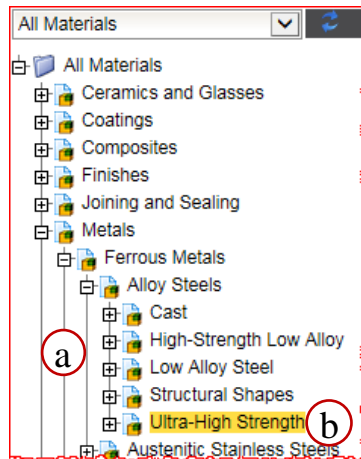
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Created At	Created By	Release Level	Material Type	Class	Sub Class	Family	Common Name	Designation	Grade	Form	Heat Treatment	Dimensions	Library	Security Labels	Rev.
1	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 2014			Annealed		[Materials Selector]		1
2	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 2017			Annealed		[Materials Selector]		1
3	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5052			Annealed		[Materials Selector]		1
4	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 2024			Annealed		[Materials Selector]		1
5	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 2219			Annealed		[Materials Selector]		1
6	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5005			Annealed		[Materials Selector]		1
7	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5050			Annealed		[Materials Selector]		1
8	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5154			Annealed		[Materials Selector]		1
9	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5056			Annealed		[Materials Selector]		1
10	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought		AA 5083			Annealed		[Materials Selector]		1
11	09/18/19; 23:30	Root	2-Production	Metals	Nonferrous Metals	Aluminum	Wrought					Annealed		[Materials Selector]		1

Ensure that your browser's pop-up blocker is disabled for this step.

Step 4. Open a Material Detailed View

Now let us examine the Detailed View (Datasheet) of one material.

- In the navigation tree, expand **Metals, Ferrous Metals, then Alloy Steels**.
- Select **Ultra-High Strength**.
- Double-click the row with Common Name: **D-6A Alloy Steel**.
- The Detailed View is displayed in My Workspace.
- The Details tab is opened by default.
- The Classification data is listed at the top of the datasheet.
- The Property Sets (Assembly, Composition, Mechanical, etc.) are listed below the Classification.



Release Level	Material Type	Class	Sub Class	Family	Common Name	Designation	Grade	Form	Heat Treatment
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	4340 Alloy Steel				Austenitized at 1550 deg_F, oil quenched, tempered at 400 deg_F
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	D-6A Alloy Steel				Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	300-M Alloy Steel				Normalized at 1700 deg_F, austenitized at 1600 deg_F, oil quenched, tempered 600 deg_F
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	4330 V-Modified Alloy Steel			Plate	Vacuum melted plate aus 1600 deg_F 1hr, oil quench, dbl temper (2hr ea) 600 deg_F, air cool
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	4130 Alloy Steel			Bar	Austenitized at 1575F, water quenched, tempered at 800 deg_F 1hr.
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	9Ni-4Co Alloy Steel				Austenitized at 1500-1550 deg_F, water/oil quenched, double tempered 1000, deg_F
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	18-Ni Maraging Steel				Annealed at 1500 deg_F 1hr., air cooled, aged at 900 deg_F for 3hr.
2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	H-11 Modified Alloy Steel				Modified; air and vacuum melted heat treated material

d Metals; Ferrous Metals; Alloy Steels; Ultra-High Strength; D-6A Alloy Steel; Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F [Material]

Actions Create Edit Export Security Tools

Pedigree Viewer Add To Clipboard Export To Excel Find Similar Plot

e Details Revisions Process Viewer Comments

Display Select Actions Select Property Set Parameters

f Classification

Material Type	Metals
Class	Ferrous Metals
Sub Class	Alloy Steels
Family	Ultra-High Strength
Common Name	D-6A Alloy Steel
Heat Treatment	Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F
UNS Number	K24728

g Assembly

Test Temperature (°F)	70
Weldability	Weldable by standard methods; preheat 450-550 deg_F, postheat 600 deg_F

g Composition

Test Temperature (°F)	70
Carbon Composition (%)	0.460
Chromium Composition (%)	1.00
Iron Composition (%)	96.020
Manganese Composition (%)	0.75
Molybdenum Composition (%)	1.00
Nickel Composition (%)	0.550
Silicon Composition (%)	0.22

Step 4. Open a Material Detailed View (Cont.)

- h. Hover the mouse over a property value, for example, the **185.00E+3 - 284.00E+3** range for *Tensile Ultimate Strength*.
- i. The Property Value, Parameters, and Source attributes are displayed in a tool-tip.
- j. To open a separate window containing all the properties for one row, click the **magnifying glass icon** at the right end of the row.
- k. The Material Classification is at the top, followed by each value of that property with corresponding parameters and source attributes.
- l. Close the Property details window.

The screenshot shows a software interface with a table of material properties and a detailed view window. Red annotations highlight key elements:

- h:** A magnifying glass icon next to the value range [185000 : 284000] for Tensile Ultimate Strength.
- i:** A tool-tip window showing details for the selected property, including Property Value (284000 psi), Parameters (Test Temperature: 70 °F), and Source information.
- j:** A magnifying glass icon at the end of the Tensile Ultimate Strength row.
- k:** A detailed view window titled "Tensile Ultimate Strength" showing material classification (Metals; Ferrous Metals; Alloy Steels; Ultra-High Strength; D-6A Alloy Steel) and a table of values for different test temperatures (70 °F and 800 °F).
- l:** A "Close" button at the bottom of the detailed view window.

Property	Value
Tensile Ultimate Strength (psi)	[185000 : 284000] [12]
Tensile Yield Strength (psi)	[159000 : 250000]
Ultimate Strength (psi)	[185000 : 284000]
Yield Strength (psi)	[159000 : 250000]
Physical	
Test Temperature (°F)	[+] [70 : 800]
Test Type	[+] FEA
Density (slinches/in ³)	7.3299E-4 [16]
Processing	
Test Temperature (°F)	70
Hot Working Temperature (°F)	[1800.0 : 2250.0]
Machinability	All grades are readily machinable in the annealed condition.

Property	Value
Test Temperature (°F)	70
Tensile Ultimate Strength (psi)	284000
Source Databank	Materials Selector Q2 2013 1.1
Source Document Name	Materials Selector, Updated by MSC Software Corporation 1999
Source Document Publisher	Machine Design/MSD Software Corporation
Test Temperature (°F)	800
Tensile Ultimate Strength (psi)	185000 [12]
Source Databank	Materials Selector Q2 2013 1.1
Source Document Name	Materials Selector, Updated by MSC Software Corporation 1999
Source Document Publisher	Machine Design/MSD Software Corporation

Step 5. Collapse Parameters and Filter Parameters

The property table columns can be expanded or collapsed, and displayed parameter values can be filtered.

- Click the **[+]** symbol next to the **Test Temperature** parameter.
- The parameter ranges and the corresponding property values are now expressed as individual columns.
- You can also use the **Expand Parameters** button to expand all the parameters at once at the top of the Datasheet.
- Click **Parameter** at the top of the Datasheet.
- For Test Temperature, **Ctrl** select **800 deg_F** and **900 deg_F**.
- Click the **left arrow** to move these parameters to the Available column.

Mechanical	
Test Temperature (°F)	a [+] [70 : 900]
Test Type	[+] FEA , FEA Failure
Time (s)	[+] [360000 : 3600000]
Tensile Elastic Modulus (psi)	[2.3700E7 : 3.0000E7] [2]
Poisson's Ratio	0.269 [13]
Rupture Strength (psi)	[97000 : 144000]
Strength (psi)	[159000 : 250000] [3]
Tensile Ultimate Elongation (in/in)	[7.50E-6 : 1.520E-5] [14]
Tensile Ultimate Strength (psi)	[185000 : 284000] [12]
Tensile Yield Strength (psi)	[159000 : 250000] [15]
Ultimate Strength (psi)	[185000 : 284000] [2]
Yield Strength (psi)	[159000 : 250000] [2]

Mechanical	
Test Temperature (°F)	b [-] 70 800 900
Test Type	[+] FEA , FEA Failure ,
Time (s)	[+] [360000 : 3600000]
Tensile Elastic Modulus (psi)	3.0000E7 [2] 2.3700E7 [2]
Poisson's Ratio	0.269 [17] 0.269 [11]
Rupture Strength (psi)	[97000 : 144000]
Strength (psi)	250000 [3] 159000 [3]
Tensile Ultimate Elongation (in/in)	7.50E-6 [7] 1.520E-5 [4]
Tensile Ultimate Strength (psi)	284000 185000 [12]
Tensile Yield Strength (psi)	250000 [1] 159000 [9]
Ultimate Strength (psi)	284000 [2] 185000 [2]
Yield Strength (psi)	250000 [2] 159000 [2]

Pedigree Viewer Add To Clipboard Export To Excel Find Similar Plot

Details Revisions Process Viewer Comments

Display **Select** Actions **Select** Property Set **d** Parameters

Classification Material Type Class Sub Class Metals Alloy Steels

Display dropdown menu: Select, Select, Display Source, Clear Source and Parameter Filter, **Expand Parameters** **c**

Filter Parameter

Test Temperature

Available Selected

Selected list: -200 °F, 70 °F, **800 °F** **e**, 900 °F, [80.0 : 400] °F

Left arrow **f**

Step 5. Collapse Parameters and Filter Parameters (Cont.)

- g. Click **Ok**.
- h. After applying the filter, notice that the Mechanical property set table only has one Test Temperature value shown.
- i. Select **Add To Clipboard** in the toolbar. This will allow you to quickly return to this material in the future.

Mechanical	
Test Temperature (°F)	70
Test Type	[+] FEA , FEA Failure
Time (s)	[+]
Tensile Elastic Modulus (psi)	3.0000E7 [2]
Poisson's Ratio	0.269 [17]
Rupture Strength (psi)	
Strength (psi)	250000 [3]
Tensile Ultimate Elongation (in/in)	7.50E-6 [7]
Tensile Ultimate Strength (psi)	284000
Tensile Yield Strength (psi)	250000 [1]
Ultimate Strength (psi)	284000 [2]
Yield Strength (psi)	250000 [2]

Metals; Ferrous Metals; Alloy Steels; Ultra-High Strength; D-6A Alloy Steel; Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F [Material]

ⓘ
📋
📄
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Pedigree Viewer
Add To Clipboard
Export To Excel
Find Similar
Plot

Details
Revisions
Process Viewer
Comments

Filter Parameter

Test Temperature

Available: 800 °F, 900 °F

Selected: -200 °F, 70 °F, [80.0 : 400] °F

Test Type

Available:

Selected: FEA, FEA Failure, -0-

Time

Available:

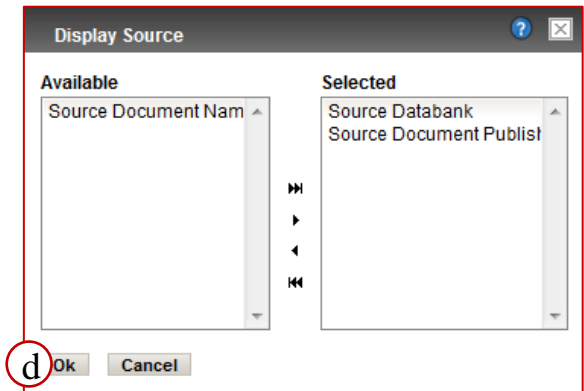
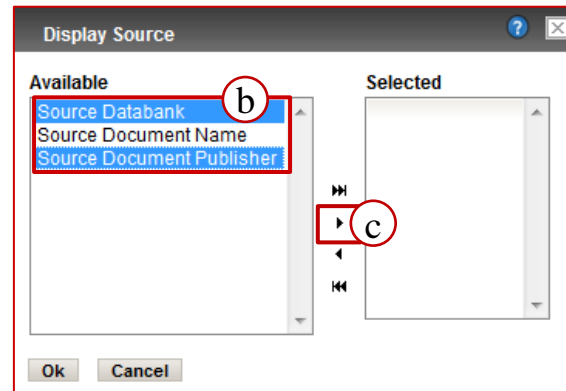
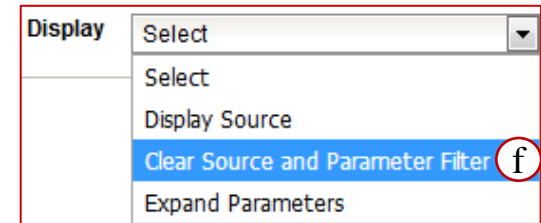
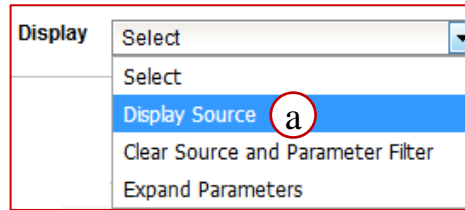
Selected: -0-, 360000 s, 3600000 s

g. Ok Cancel Reset

Step 6. Add Source Attributes

By default, Source attributes are not displayed. The Display Source button is used to add them to each property in the Detailed View.

- Click **Display Source** at the top of the Datasheet.
- Ctrl** select **Source Databank** and **Source Document Publisher**.
- Click the **right arrow** to move these to the Selected column.
- Click **Ok**.
- The selected Source attributes are now added to the detailed view, in italic font, and indented below the relevant property name.



For example, Charpy Impact Strength, now has its Source Databank and Source Document Publisher shown.

- Click **Clear Source and Parameter Filter** to reset the current view to the default view (all Parameters shown and all Source attributes hidden).

Impact	
Test Temperature (°F)	[+] [-200 : 70]
Specimen Details	Unnotched
Charpy Impact Strength (Btu)	[10.0 : 14.0]
<i>Source Databank</i>	Materials Selector Q2 2013 1.1
<i>Source Document Publisher</i>	Machine Design/MSC.Software Corporation

Step 7. Change the Footnote Display in Options Panel

Footnotes can be displayed as a tool-tip, or in-line with Properties. Let's look at both options.

- Scroll to the Mechanical properties table.
- Hover the mouse over the footnote: **[13]**, next to Poisson's Ratio.
- Note the tool-tip displayed on mouse-over. [SAE Handbook...]
- In the Main Menu, click the **down-arrow** next to your user name, user1, and select **Options**.
- Scroll to the bottom of the Options panel, and select the **Footnotes Inline** check box.
- Click **Submit**.
- After saving Options, you will be taken to the Home page.
- In the Clipboard gadget, select the **D-6A Alloy Steel** material which you placed in the previous step.
- Review the Property Set tables and note that the footnotes are now displayed in-line next to the property value.

Poisson's Ratio	0.269 [13]	
Rupture Strength (psi)	[97000 : 1	[See related property tables, SAE Handbook 1993, Vol. 1, Page 10.132, Value taken from like materials]
Strength (psi)	[159000 : 250000][3]	

Clipboard | user1 | Log Off | Help

- Options **d**
- Change Password
- Edit Own User Info
- Global Filter
- Units System >

Material

Footnotes On Off

Footnotes Inline **e**

Show Initial Parameter Filter In Compare Workspace

Use Material Display for Parameters

Show Single Column Span in Material Detailed View

Image Height

Image Width

f Submit Cancel Reset

Clipboard

Name **h**

Metals; Ferrous Metals; Alloy Steels; Ultra-High Strength; D-6A Alloy Steel; Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F

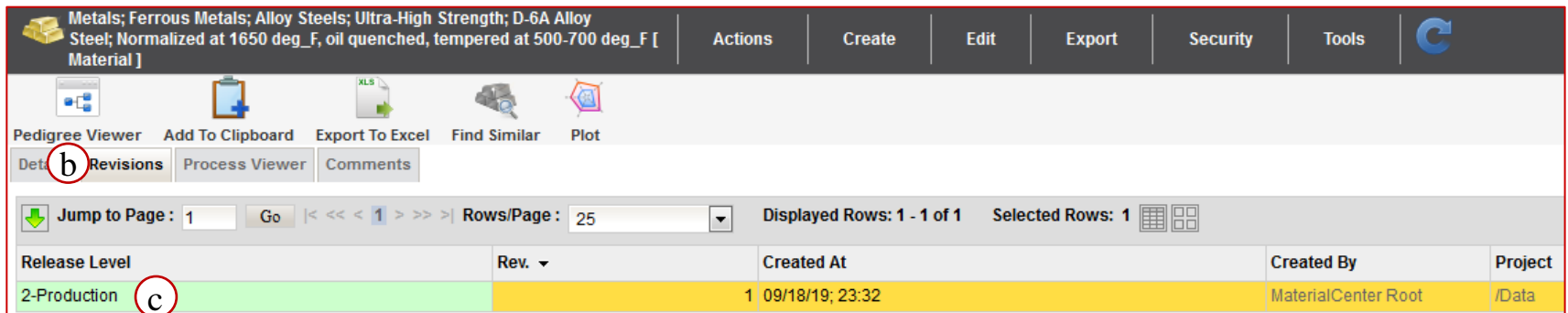
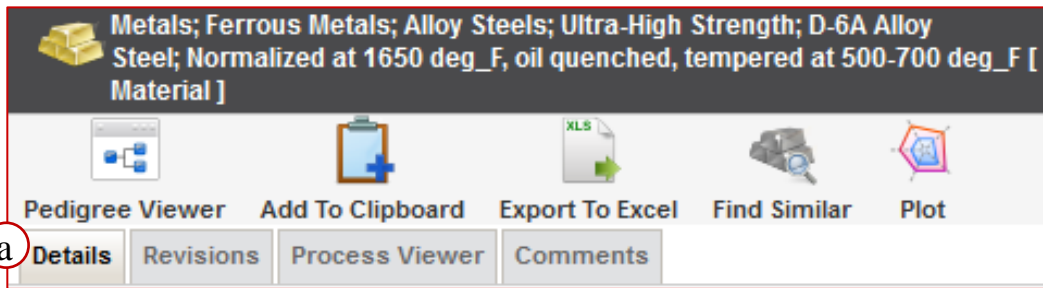
View All

Poisson's Ratio	0.269 [See related property tables, SAE Handbook 1993, Vol. 1, Page 10.132, Value taken from like materials] i
Rupture Strength (psi)	[97000 : 144000]
Strength (psi)	[159000 : 250000][Yield strength used as failure strength]

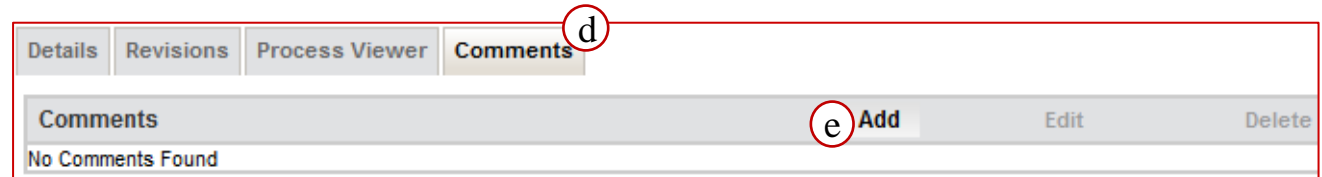
Step 8. Explore the Datasheet Tabs and Pedigree Viewer

A material detailed view (Datasheet) is a multi-tabbed interface. Let us look at the available features under each tab.

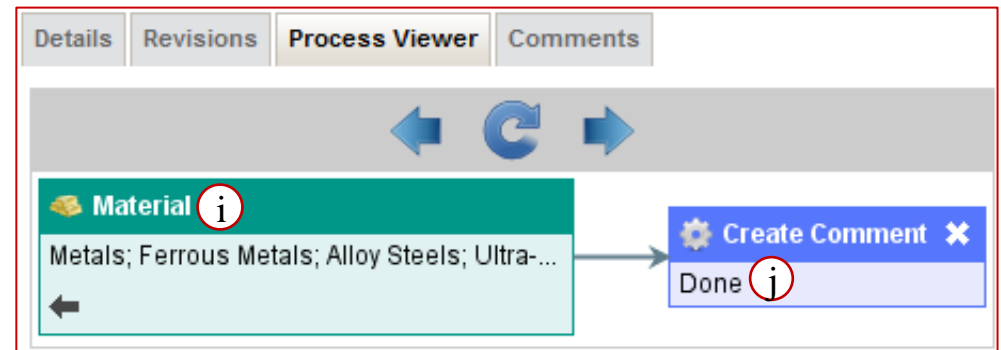
- When opening a material detailed view, you will be directed to the Details tab (as previously mentioned).
- Click the **Revisions** tab.
- Under this tab, the user has access to useful information regarding the Revision of a material, date that the material was Created At, who the material was Created By, and which Project the material belongs to.



Step 8. Explore the Datasheet Tabs and Pedigree Viewer (Cont.)



- d. Click the **Comments** tab.
- e. Click **Add** to create a comment.
- f. Enter a **Subject** and **Detailed Comments**.
- g. Click **Submit** to add a comment.
- h. Click the **Process Viewer** tab. This shows an interactive diagram of object and process relations.
- i. Objects are in green (Material) and Processes are blue (Create Comment). The order of the Pedigree flows from left to right (i.e. the Material was created first, followed by the Comment).
- j. Each box contains a link to the relevant object or process.



Step 8. Explore the Datasheet Tabs and Pedigree Viewer (Cont.)

- k. Click the **Pedigree Viewer** icon on the toolbar.
- l. The Pedigree Viewer opens in a Pedigree workspace tab.
- m. The selected material is in the green box at the center of the diagram.
- n. Parent objects are to the left of the material.
- o. Child objects are to the right.
- p. Click the Measure Property Set link: List (42). The list at the bottom will show all the measure property sets in the material record.



MaterialCenter | Clipboard | user1 | Log Off | Help | Materials | Search

MaterialCenter navigation bar: Home, My Workspace, Navigate, Search, Configuration, Pedigree (1)

The diagram shows a central **Material** node (m) in a green box. To its left is a **Data Source** node (n) labeled "materials_selector". To its right is a **Properties** node (p) which is expanded to show a list of property sets: "All (46)", "Measure Property (42)" (highlighted in a red box), and "String Property (4)".

MaterialCenter toolbar: Material, Actions, Create, Edit, Export, Security, Tools, Views (My View)

MaterialCenter secondary toolbar: Pedigree Viewer, Add To Clipboard, Export To Excel, Find Similar, Plot

MaterialCenter table controls: Jump to Page: 1, Go, Rows/Page: 25, Displayed Rows: 1 - 1 of 1, Selected Rows: 1

Created At	Created By	Release Level	Material Type	Class	Sub Class	Family	Common Name	Designation	Grade	Form	Heat Treatment	Dimensions	Library	Security Labels	Rev.
09/18/19; 23:32	MaterialCenter Root	2-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength	D-6A Alloy Steel				Normalized at 1650 deg_F, oil quenched, tempered at 500-700 deg_F		[Materials Selector]		1

Step 9. Use Easy Search, then Filter the Results

You can always use the *Easy Search*, from any workspace, to quickly perform string-based and conditional searches through the “top-down” search method.

- Use the default query for **Materials**.
- Type **steel** in the Easy Search box.
- Click the **Search** icon (or hit **Enter** on your keyboard).
- The Search workspace is opened and lists all the matching materials, with the search string highlighted in green.
- On the left side is a filter panel with pre-configured search conditions (attributes) for refining your search results (Material Type, Class, etc.).



Material 564

- Apply Global Filter
- Only my objects
- Only from clipboard

Material Type 5

Class 6

Sub Class 22

Common Name 62

Form 24

Heat Treatment 76

Dimensions 13

Property 159

Curves 18

Library 2

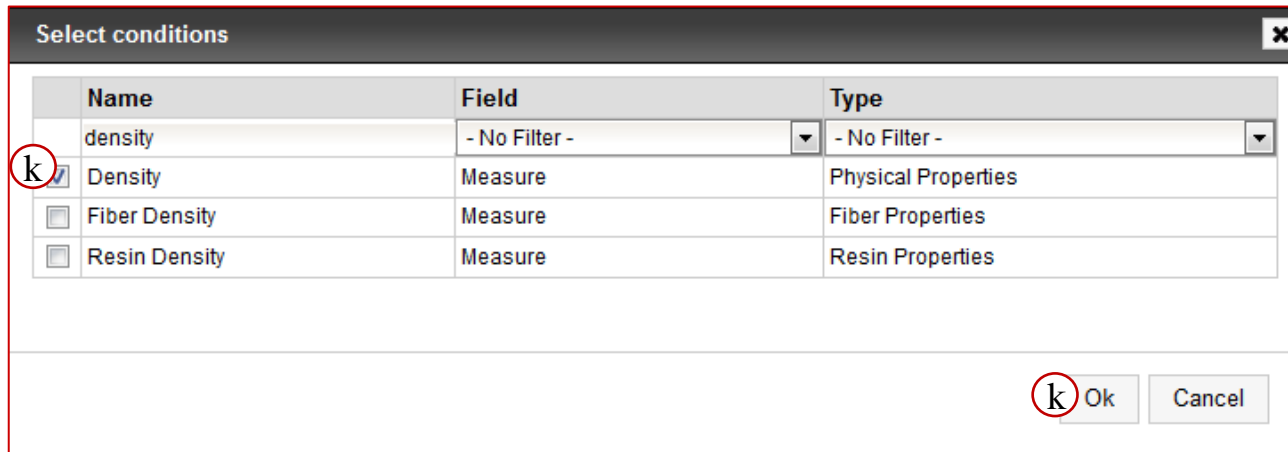
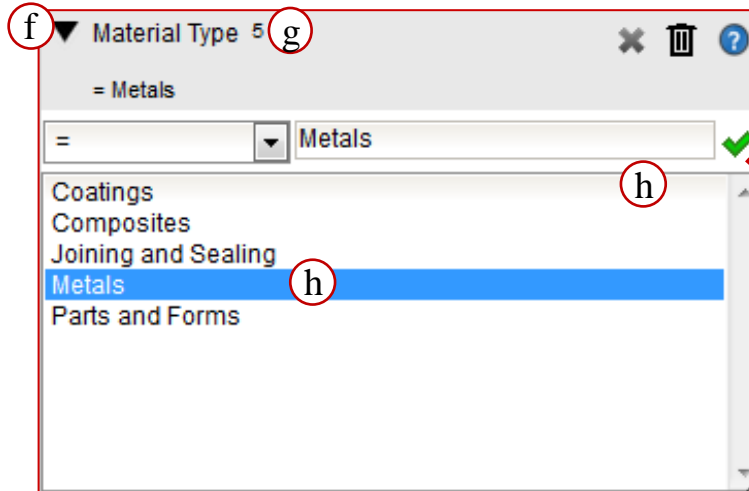
+ Add Condition

Created At	Created By	Release Level	Material Type	Class	Sub Class	Family	Common Name	Designation	Grade	Form
09/18/19; 23:37	MaterialCenter Root	2-Production	Coatings	Flame Spray	Metals	Steel, Low Shrink				
09/18/19; 23:37	MaterialCenter Root	2-Production	Coatings	Flame Spray	Porcelain Enamel	Steel Enamels				
09/18/19; 23:37	MaterialCenter Root	2-Production	Composites	Clad Metals	Aluminum	Low Carbon Steel Substrate				Strip
09/18/19; 23:37	MaterialCenter Root	2-Production	Composites	Clad Metals	Aluminum	Low Carbon Steel Substrate				Strip
09/18/19; 23:37	MaterialCenter Root	2-Production	Composites	Clad Metals	Brass	Low Carbon Steel				Strip

MaterialCenter (2020.0) user1 (AnalystUserProfile) Global Filter (View: Authoring) Current Units System (US_CONSISTENT)

Step 9. Use Easy Search, then Filter the Results (Cont.)

- f. Click the **arrow** next to Material Type to expand this attribute.
- g. The number 5 indicates the number of unique values that apply to this attribute.
- h. Select **Metals** and click the **check** symbol to apply the filter.
- i. The number of matching materials is reduced from 564 to 506.
- j. Select **Add Condition** at the bottom of the filter panel to apply additional filters.
- k. Type and select **Density**, then click **Ok**.



Step 9. Use Easy Search, then Filter the Results (Cont.)

- l. Click the **arrow** next to Density to expand this category.
- m. Within this search condition, you can change the **Units**, click on the **histogram** bars to drill into a specific range, or use the **sliding bar** to apply a range of values. Click the **check** mark to apply your search condition.
- n. Click the **Save** icon to save the search template for later use.
- o. Enter a Name for the search template, for example: Search for Steels by Density.
- p. Return to the Home Page.
- q. Your new saved search template is now in the Search Templates gadget and can be executed or edited by double-clicking the template name.

The image consists of three screenshots from a software interface, illustrating the steps for saving and using search templates.

- Top-left screenshot:** Shows a search condition for "Density 1024". A histogram displays values 18, 64, 44, 86, and 812. A sliding bar below the histogram is set between 0.209000 and 0.294000. Annotations 'l' and 'm' point to the search condition and the histogram/sliding bar respectively.
- Top-right screenshot:** Shows a "Material 506" list with various filters. A "Save" icon (a floppy disk) is circled with 'n', indicating the step to save the search template.
- Bottom screenshot:** Shows a "Search Templates" list. The template "Search for Steels by Density" is highlighted in yellow and circled with 'q'. The list also includes "Search for Materials by Ultimate Strength", "Search for Materials by Basis", "Search for Materials by Heat Treatment", and "Search for Materials by Form". A "View All" link is at the bottom right. Annotation 'p' points to the top navigation bar.

Step 10. Configure the “Find Similar” Search.

Another method of searching for records is with the Find Similar feature. Let us configure the behavior of the Find Similar search.

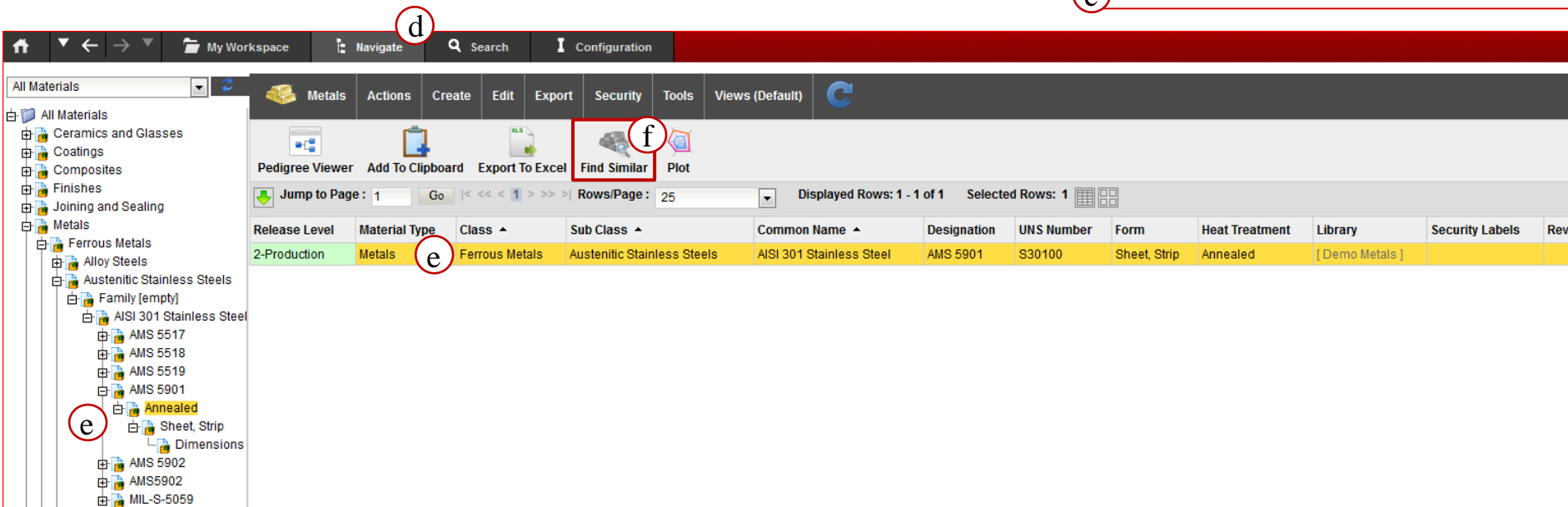
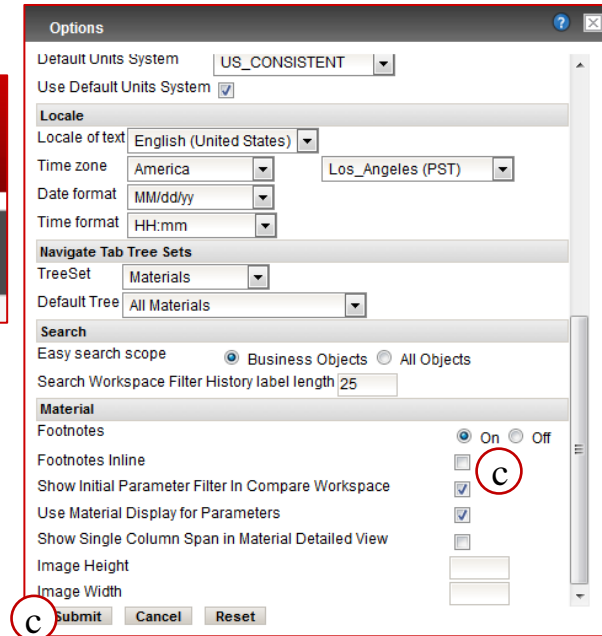
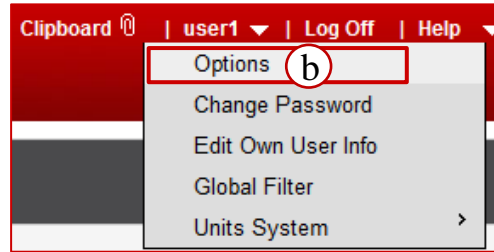
- Click the **Configuration** tab.
- Click the **Configure Find Similar** link.
- In the Classification table, select the following, while holding the **Ctrl** select: **Class, Family, Form, and Subclass**.
- Click the right arrow to move these to the Selected column.
- Click **Submit**.

The screenshot shows the 'Configure Find Similar' dialog box. The 'Available' column lists the following items: Adhesive Name, Base Material, Chemistry, Common Name, Designation, Dimensions, Feature, Fiber Direction, Fiber Name, and Generic Symbol. The 'Selected' column contains: Class, Family, Form, and Sub Class. The 'Submit' button is highlighted with a red circle 'e'. The 'Configuration' tab is highlighted with a red circle 'a'. The 'Configure Find Similar' link in the sidebar is highlighted with a red circle 'b'. The 'Selected' list is highlighted with a red box and a red circle 'd'.

Step 11. Perform a “Find Similar” Search

After defining the Find Similar criteria, let us use the Find Similar function.

- Return to Homepage.
- Open the **Options** panel.
- Turn **Off** the **Footnote Inline** option and **Submit**. This will produce a more compact display.
- Click the **Navigate** tab.
- Select the following material: **Metals; Ferrous Metals; Austenitic Stainless Steels; AISI 301 Stainless Steel; AMS 5901; Annealed**.
- Click the **Find Similar** icon.



Step 12. Compare Two Materials

Comparing records is as simple as selecting multiple records, then launching the Compare tool.

- The Find Similar search produces a list of several materials with the same Class, Family, Form, and Subclass. (As configured in Step 10.)
- Select the **MIL-S-5059** and (**Ctrl** select) **AMS 5517 material** in the list.
- Select the **Actions** menu → **Compare**.

Release Level	Material	Common Name	Designation	UNS Number	Form	Heat Treatment	Library	Security Labels	Rev.	
2-Production	Metals (b)	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS 5517	S30100	Sheet, Strip	1/4 Hard	[Demo Metals]	1
2-Production	Metals	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS5902	S30100	Sheet, Strip	3/4 Hard	[Demo Metals]	1
2-Production	Metals (b)	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	MIL-S-5059	S30100	Sheet, Strip	1/2 Hard	[Demo Metals]	1
2-Production	Metals	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS 5518	S30100	Sheet, Strip	1/2 Hard	[Demo Metals]	1
2-Production	Metals	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS 5519	S30100	Sheet, Strip	Full Hard	[Demo Metals]	1
2-Production	Metals	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS 5901	S30100	Sheet, Strip	Annealed	[Demo Metals]	1
2-Production	Metals	Ferrous Metals	Austenitic Stainless Steels	AISI 301 Stainless Steel	AMS 5902	S30100	Sheet, Strip	3/4 Hard	[Demo Metals]	1

You can also access the **Compare** option by right-clicking the table.

Step 12. Compare Two Materials (Cont.)

- d. The two materials are displayed in the Compare workspace.
- e. Filtering options are available in the Compare workspace to condense your view.
- f. Attributes and property values that are different are highlighted in yellow.
- g. Close the Compare tab by clicking X.

Display

Select

Select

Reset Display

Remove Selections

Show Differences Only

Show All Data

Collapse Common Classifications

Collapse Selection Table

Collapse Common Parameters

Collapse All Property Sets

Expand All Property Sets

My Workspace Navigate Search Configuration Compare X g

Compare:Metals d

Compare Results

e Display Select Property Set

Common Classification	
Material Type	Metals
Class	Ferrous Metals
Sub Class	Austenitic Stainless Steels
Common Name	AISI 301 Stainless Steel
Form	Sheet, Strip
UNS Number	S30100

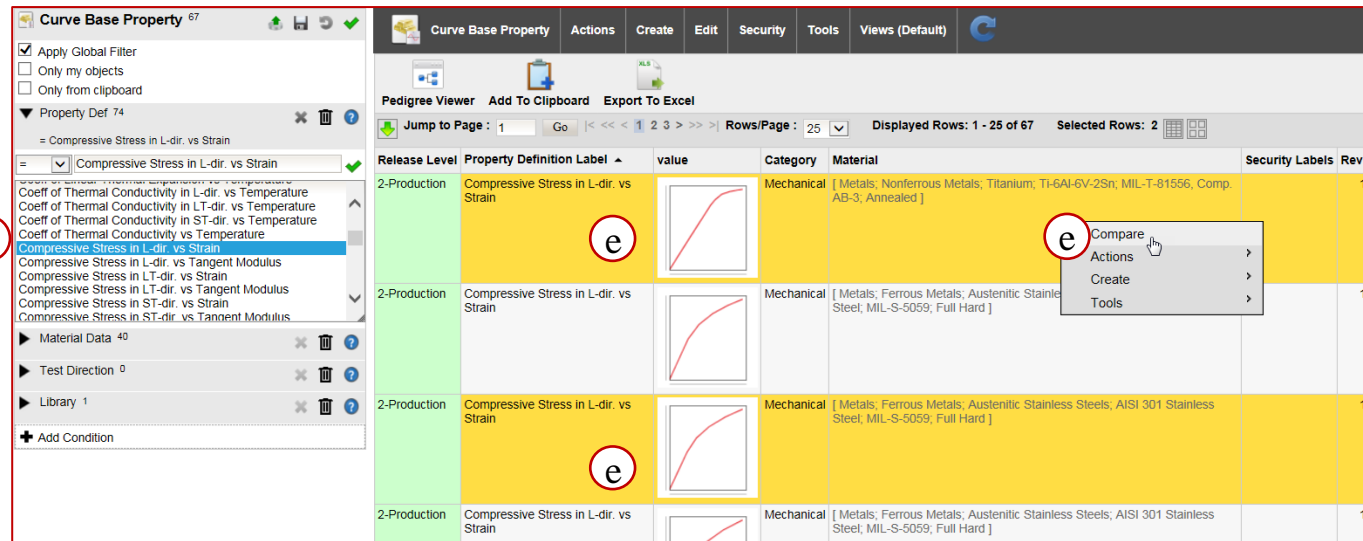
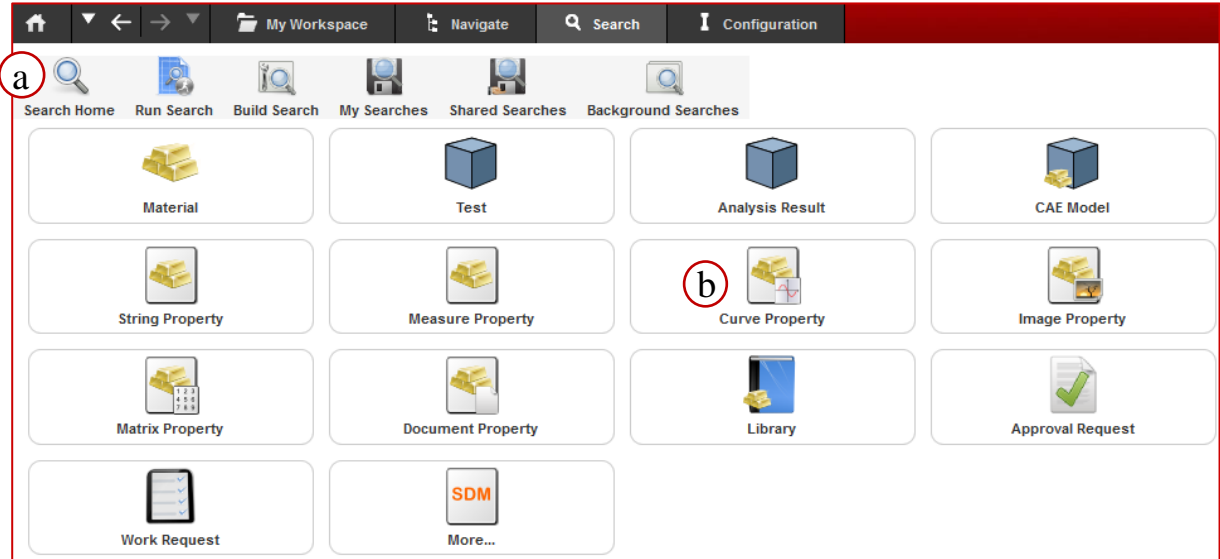
Selection	<input type="checkbox"/>	<input type="checkbox"/>
Name	Material 1.Revision.1	Material 2.Revision.1
Designation	f AMS 5517	MIL-S-5059
Heat Treatment	1/4 Hard	1/2 Hard

Mechanical	[+]			Basis ▼	Specimen Details ▼
Bearing Ultimate Strength (e/D=2.0) in L-dir. (psi)	[+] 🔍	[262000 : 273000]		A , B	
Bearing Yield Strength (e/D=2.0) in L-dir. (psi)	[+] 🔍	[123000 : 149000]		A , B	
Compressive Elastic Modulus in L-dir. (psi)	[+] 🔍	[2.60E7 : 2.60E7]		A , B	
Compressive Elastic Modulus in LT-dir. (psi)	[+] 🔍	[2.70E7 : 2.70E7]		A , B	
Compressive Yield Strength in L-dir. (psi)	[+] 🔍	[44000 : 54000]		A , B	
Compressive Yield Strength in LT-dir. (psi)	[+] 🔍	[71000 : 88000]		A , B	
Poisson's Ratio (inplane: L-LT)	[+] 🔍	[0.270 : 0.270]		A , B	
Shear Modulus (inplane: L-LT) (psi)	[+] 🔍	[1.060E7 : 1.060E7]		A , B	
Shear Ultimate Strength (inplane: L-LT) (psi)	[+] 🔍	[66000 : 69000]		A , B	

Step 13. Search for Curve Properties in Search Workspace

Curves can be displayed as icons, thumbnails, or full size images. Multiple curves can be overlaid onto one plot, and interactive options are available in the Curve Viewer.

- Click the **Home** icon under the Search tab.
- Click the **Curve Property** icon.
- The Search results page displays all curve properties.
- Under the Property filter, select **Compressive Stress in L-dir Vs Strain**, then click the **check** symbol to apply.
- Ctrl** select the **first and third** properties, **right-click** the selection, and click **Compare**.



Step 14. Compare Two Curves

- The comparison table for the two selected properties is displayed, with difference data highlighted in yellow.
- Click the **curve icon** for **Compressive Stress in L-dir Vs Strain**.
- The icon is changed to a large thumbnail image with the curves superimposed and color-coordinated.
- Click on the expanded **thumbnail** to launch the Curve Viewer.

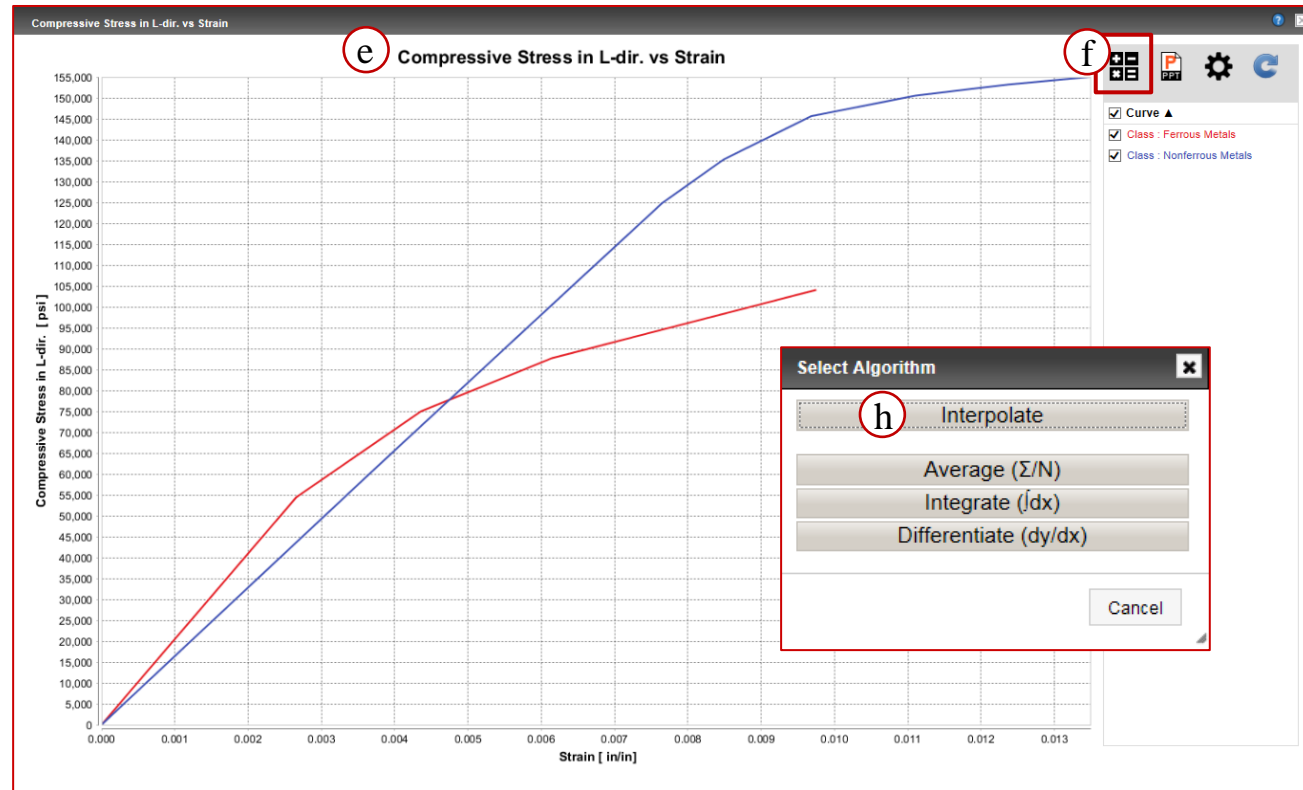
Compare:Curve Property Available Comparators: Property

Compare Results

Material	Metals; Nonferrous Metals; Titanium; Ti-6Al-6V-2Sn; MIL-T-81556, Comp. AB-3; Annealed-Revision.1	Metals; Ferrous Metals; Austenitic Stainless Steels; AISI 301 Stainless Steel; MIL-S-5059; Full Hard-Revision.1
<input type="button" value="Remove Selected"/>	<input type="checkbox"/>	<input type="checkbox"/>
Classification		
Material Type	Metals	Metals
Class	Nonferrous Metals	Ferrous Metals
Sub Class	Titanium	Austenitic Stainless Steels
Family	Alpha Beta Titanium Alloys	
Common Name	Ti-6Al-6V-2Sn	AISI 301 Stainless Steel
Designation	MIL-T-81556, Comp. AB-3	MIL-S-5059
Heat Treatment	Annealed	Full Hard
Form	Extrusion	Sheet
UNS Number	R56620	S30100
Compressive Stress in L-dir. vs Strain(psi vs in/in)		
Parameters		
Exposure Time (h)		0.5
Test Temperature (°F)	70	800
Source		
Effective Date	98-12-01	98-12-01
Revision Date	99-08-23	99-08-23
Source Databank	MIL-Handbook 5 Databank Q3 2003 1.0	MIL-Handbook 5 Databank Q3 2003 1.0
Source Document Name	MIL-HDBK-5J	MIL-HDBK-5J
Source Figure Number	5.4.2.1.6(e)	2.7.1.5.6(c)
Legend		
Common Data	<input type="checkbox"/>	
Different Data	<input type="checkbox"/>	

Step 14. Compare Two Curves (Cont.)

- e. The two curves are opened in a large viewer window.
- f. Click the **Calculator** to open a context menu.
- g. Try out the various options for viewing the curves.
- h. For example, select **Interpolate**.
- i. Select the first curve.
- j. Enter **0.005** in the X in/in text box.
- k. Click the **Compute Y** button.
- l. The Y-value corresponding to the entered X-value is displayed.
- m. Click **OK**.
- n. Click **X** to close the curve viewer.



Step 15. Enhanced Plotting

In addition to the Curve Viewer for viewing predefined collections of data points, MaterialCenter's plotting feature allows users to select multiple records and graphically represent their property values in a variety of formats.

- a. Click the **Navigate** tab.
- b. Select the **Metals** node.
- c. Click on the green arrow then **Select All**.
- d. Click on the **Plot** icon.
- e. Under the new workspace, click on the Plot Type dropdown and select Bar Chart.

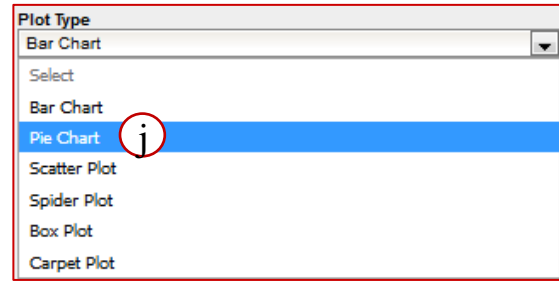
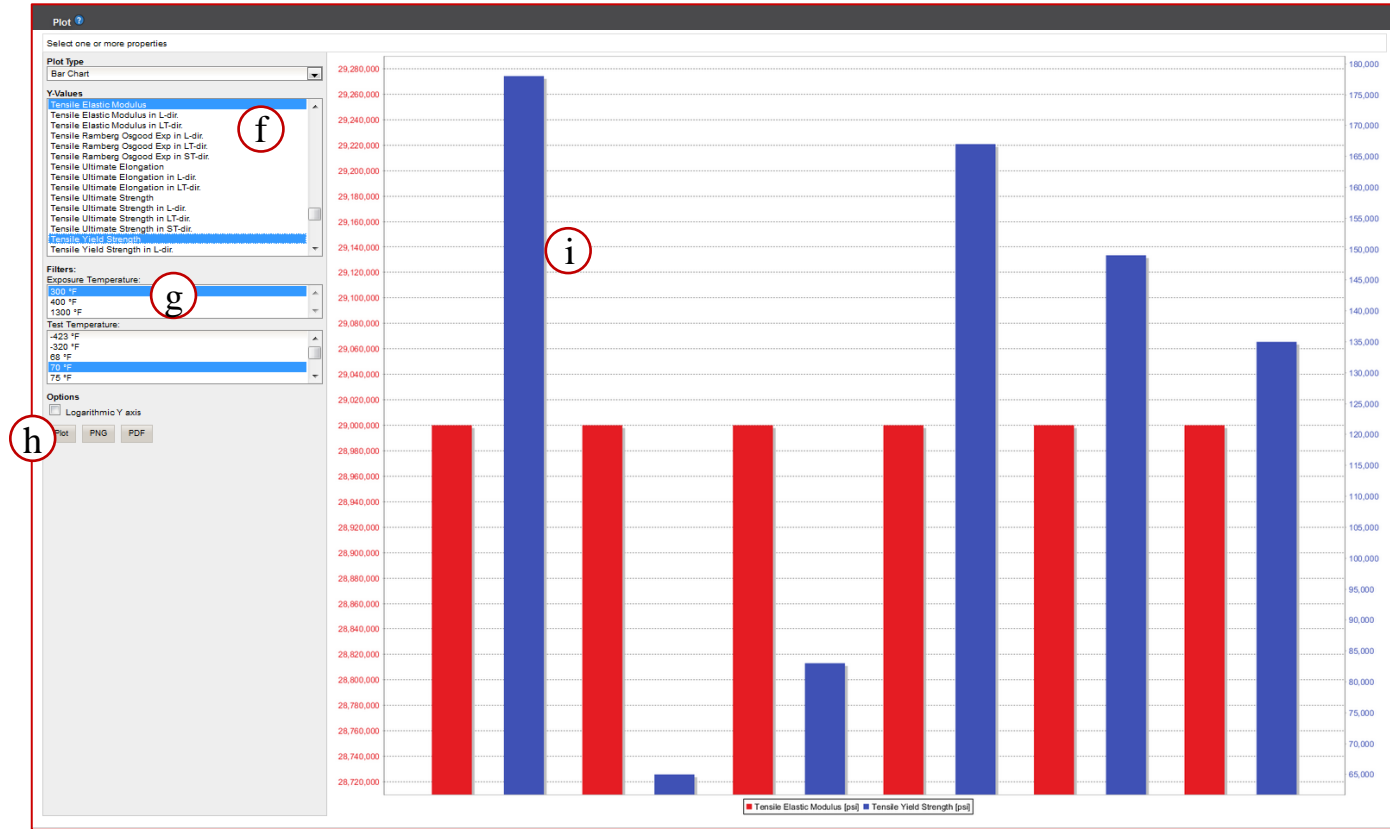
The screenshot shows the MaterialCenter software interface. The top navigation bar includes 'Material', 'Actions', 'Create', 'Edit', 'Export', 'Security', 'Tools', and 'Views (My View)'. The 'Navigate' tab is selected, and the 'Metals' node is highlighted in the left-hand tree view. A context menu is open over the 'Metals' node, with 'Select All' highlighted. The 'Plot' icon is also visible in the top right corner. Below the tree view, a table displays material data with columns for Release Level, Material Type, Class, Sub Class, and Family.

Release Level	Material Type	Class	Sub Class	Family
-Production	Metals	Ferrous Metals	Alloy Steels	Low Alloy Steel
-Production	Metals	Ferrous Metals	Alloy Steels	Ultra-High Strength
-Production	Metals	Ferrous Metals	Alloy Steels	High-Strength Low Alloy
-Production	Metals	Ferrous Metals	Alloy Steels	High-Strength Low Alloy
-Production	Metals	Ferrous Metals	Alloy Steels	Low Alloy Steel
-Production	Metals	Ferrous Metals	Alloy Steels	Low Alloy Steel
-Production	Metals	Ferrous Metals	Alloy Steels	Cast
-Production	Metals	Ferrous Metals	Alloy Steels	Structural Shapes

The screenshot shows the 'Plot' dialog box with the title 'Please Select Plot Type'. The 'Plot Type' dropdown menu is open, and 'Bar Chart' is selected. Other options include Select, Pie Chart, Scatter Plot, Spider Plot, Box Plot, and Carpet Plot.

Step 15. Enhanced Plotting – Bar Chart (Cont.)

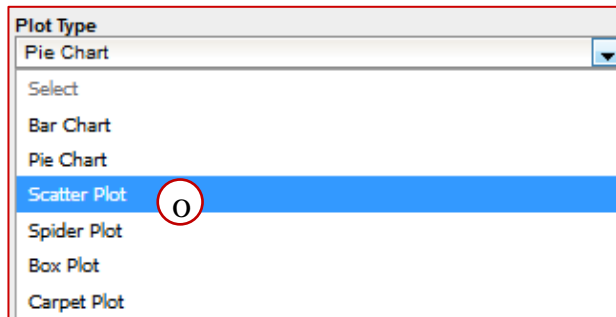
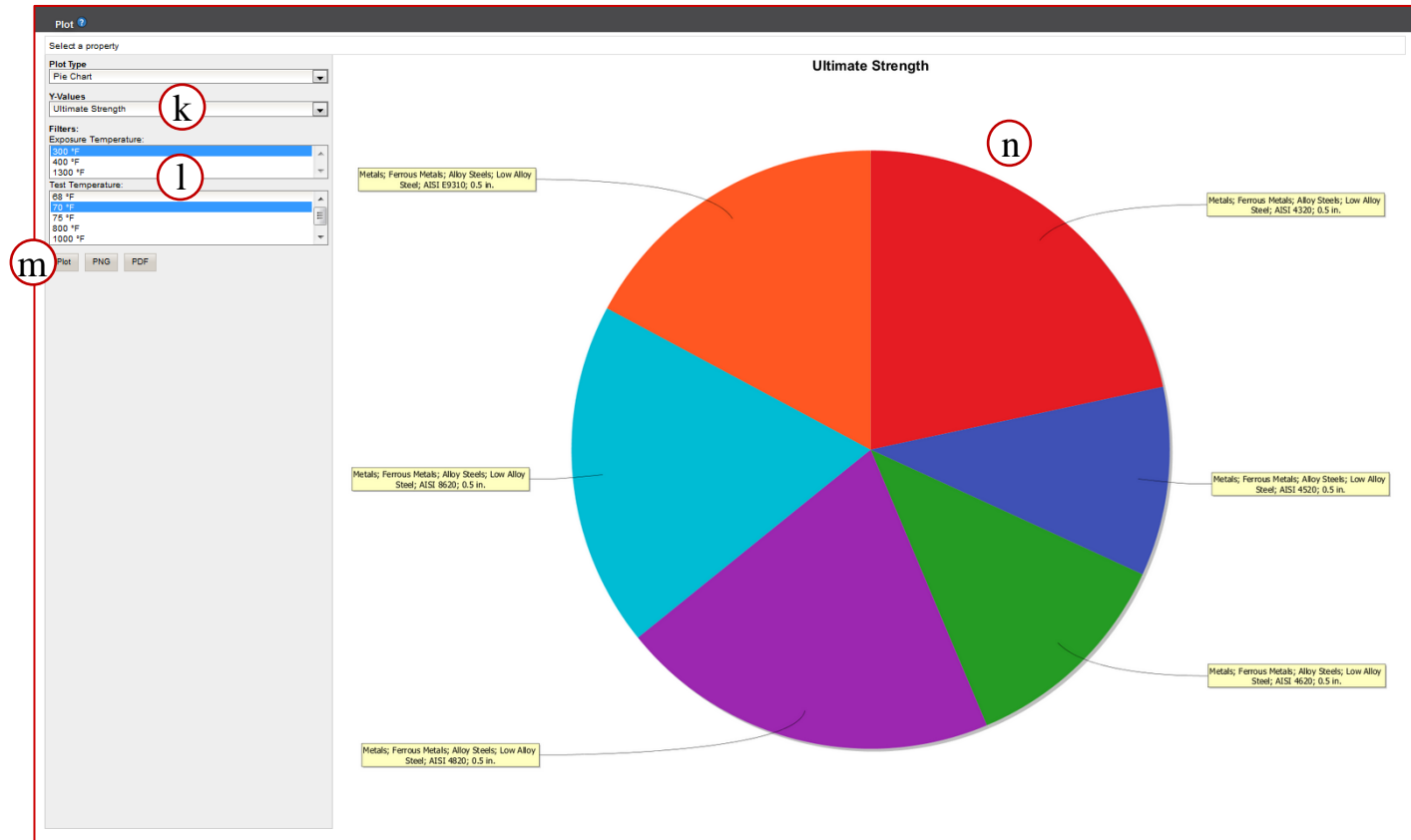
- f. Under Y-Values, Ctrl select Tensile Elastic Modulus and Tensile Yield Strength.
- g. Select Exposure Temperature: 300 °F, and Test Temperature: 70 °F.
- h. Click **Plot**.
- i. A Bar Chart will appear with the property values on the Y-axis, material record names on the X-axis, and a legend below that provides property units and distinguishes each of the selected properties by color.
- j. Under **Plot Type**, select **Pie Chart**.



Click on a bar to navigate to the material record's **Detailed View**.

Step 15. Enhanced Plotting – Pie Chart (Cont.)

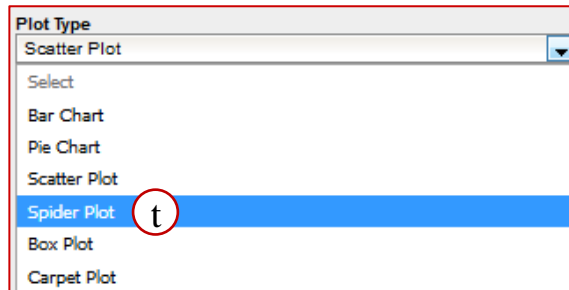
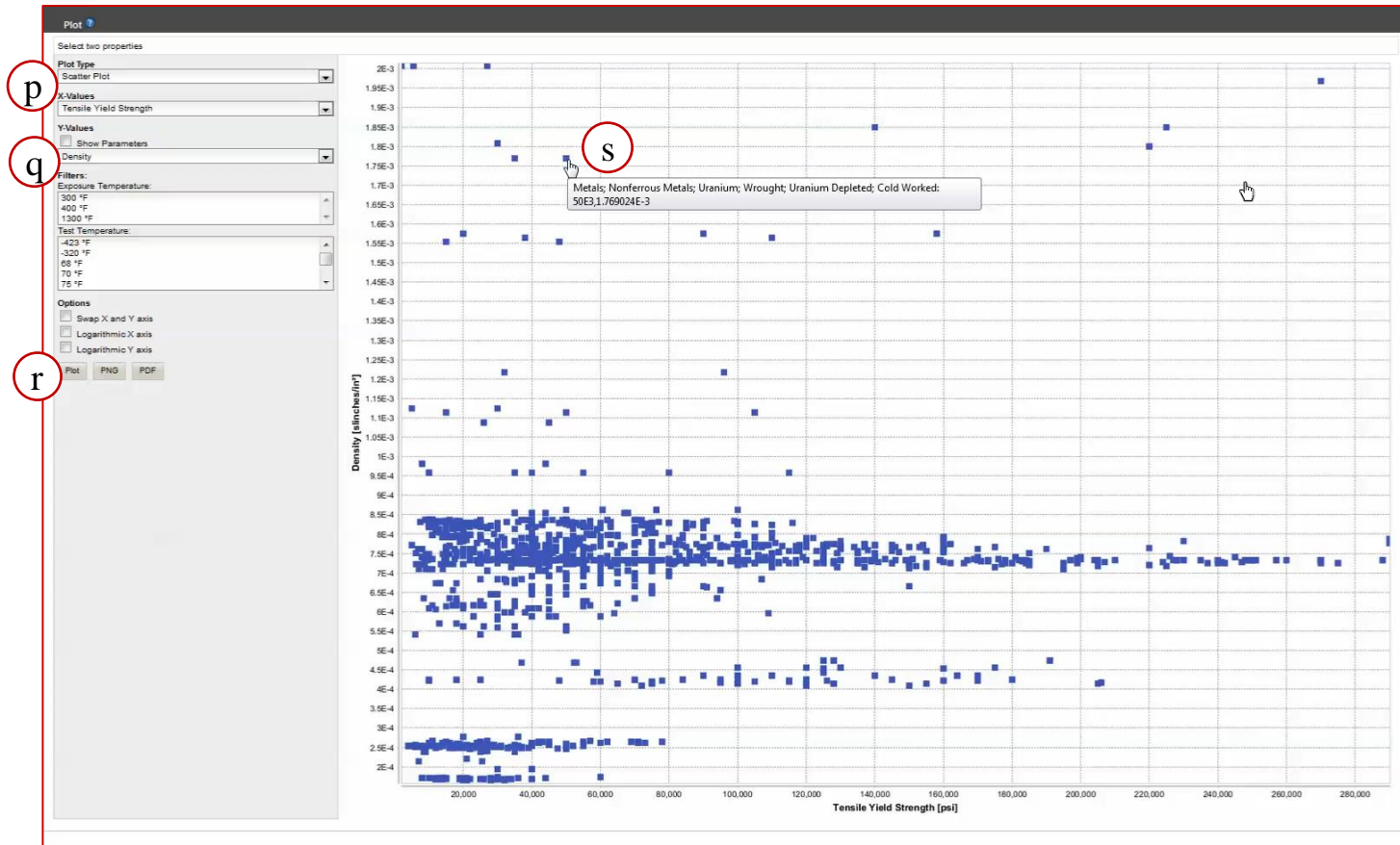
- k. Under **Y-Values**, select **Ultimate Strength**.
- l. Under **Filters**, select **Exposure Temperature: 300 °F** and **Test Temperature: 70 °F**.
- m. Click **Plot**.
- n. A Pie Chart will appear that displays a single property value for all applicable records. The material record names are individually labeled, and the distribution of the chart reflects the deviation of the property values that were selected.
- o. Under **Plot Type**, select **Scatter Plot**.



Click on a section of the pie chart to navigate to the material record's **Detailed View**.

Step 15. Enhanced Plotting (Cont.)

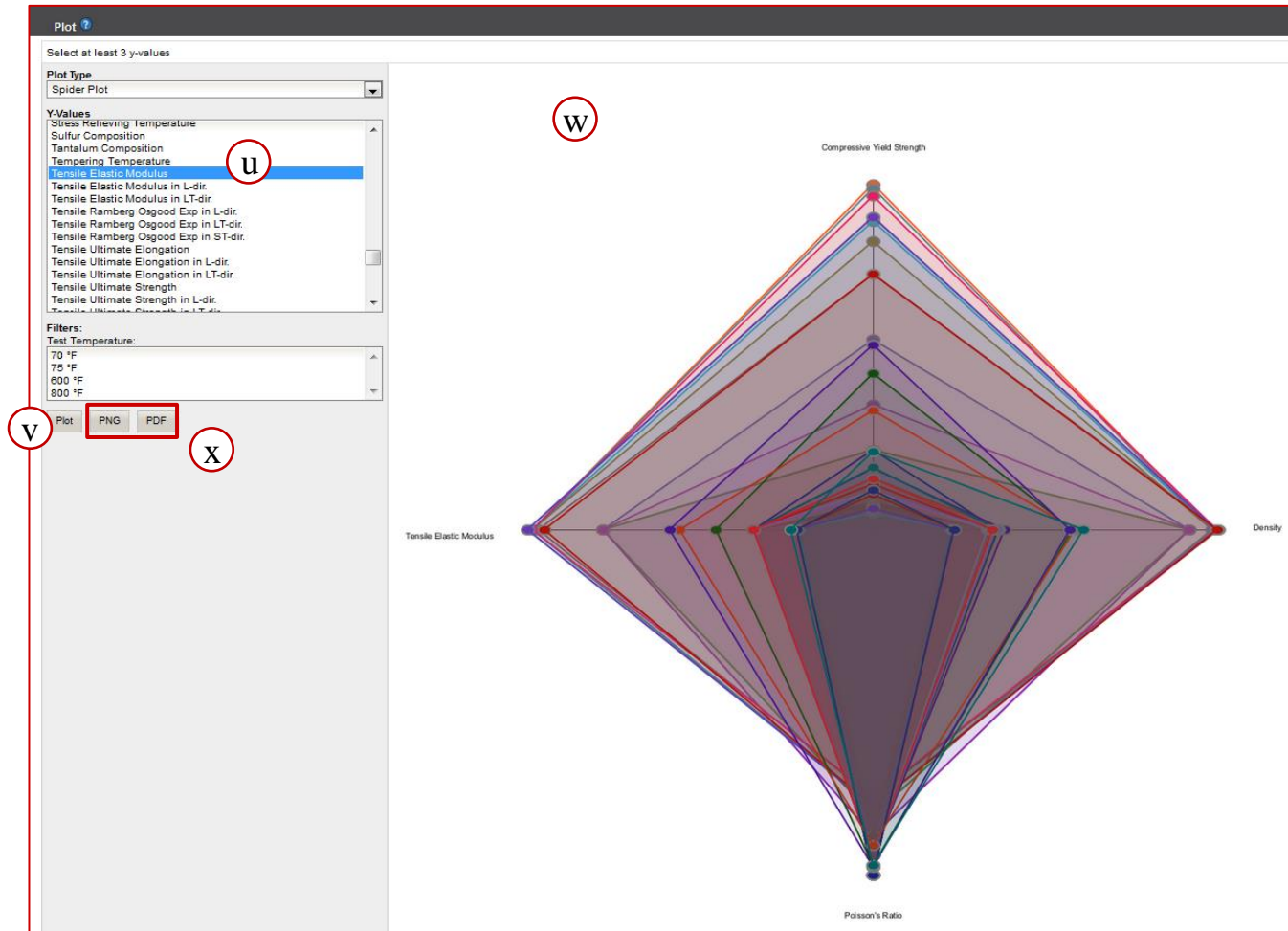
- p. Under X-Values, select **Tensile Yield Strength**.
- q. Under Y-Values, select **Density**.
- r. Click **Plot**.
- s. A Scatter Plot will appear that displays the selected properties and units on the X-axis and the Y-axis. Hovering the mouse over a point provides a tooltip with a description of the record name and its plot coordinate.
- t. Under **Plot Type**, select **Spider Plot**.



Click on a point on the scatter plot to navigate to the material record's **Detailed View**.

Step 15. Enhanced Plotting (Cont.)

- U. Under Y-Values, select Compressive Yield Strength, Density, Poisson's Ratio and Tensile Elastic Modulus.
- V. Click Plot.
- W. A Spider Plot will appear that provides a radial view of the selected properties. Three or more properties can be selected for the Spider Plot. As with the Scatter Plot, hovering the mouse over a point provides a tooltip with a description of the record name and its plot coordinate.
- X. On each type of plot, the PNG and PDF buttons are available on the lower right to convert the displayed plot into a printer-friendly format.



Click on a point on the spider plot to navigate to the material record's **Detailed View**.

End of Workshop 1