

Working with SOLIDWORKS

This is a brief how-to for creating material data files with the MPDB software (<https://www.jahm.com/>) and accessing these material data files within SOLIDWORKS.

Step 1: On your hard drive create the directory where the materials.xml files created in the MPDB software will be saved for use in SOLIDWORKS.

- a) Do this in Windows explorer.

Step 2: In SOLIDWORKS add the directory created in Step 1 where your materials.xml files will be saved to SOLIDWORKS.

- a) Start SOLIDWORKS.
- b) Click the menu item “Tools->Options” (Figure 1.)
- c) Click the “File Locations” in the “System Options – General” dialog (Figure 2.)
- d) Select “Material Databases” from the drop-down menu (Figure 3.)
- e) Click the “Add” button (Figure 4) and navigate to the folder where your materials.xml files will be saved, the directory you created in Step 1.
- f) You should now see your directory with your material.xml files listed (Figure 5.)

Step 3: Create your database using the MPDB software.

a) **Creating a new database.**

- I. Start the MPDB software.
- II. Click the “SOLIDWORKS /ANSYS->Create/Edit a new SOLIDWORKS XML database” menu item (Figure 6.)
- III. A new window will appear (Figure 7.)
- IV. Change the “Data type” options if desired. If the “Use material name from database” is checked the materials you add will have the name they have in the MPDB software. If this is not checked you will be prompted to enter a name for each material.
- V. Click the “Start DB” button to begin to define a new database. Once this button is clicked its label will change to “Start Mat”. You can cancel the current database at any time by clicking the “Cancel DB” button.
- VI. Click the “Start Mat” to begin to define a material to be added to the database. You will be prompted to pick a color for the material.
- VII. Select the material you want to add to the database in the normal way. Click the “Add to database” button (Figure 8.)
- VIII. The window shown in Figure 9 will pop-up and you can select the properties you want to add. You can combine (mix-and-match) properties from more than one material in the MPDB database to a single material in your XML database. If the

desired material does not have all of the properties you need, you can select a similar material which has the missing properties and only select the properties you need. If you add the same property more than once for a material, the last property assigned will be used.

- IX. When you have defined all of the properties you need for a given material click the “Finish Mat” button to finalize the current material.
- X. Repeat steps VI through IX to add as many materials as desired (up to 1000) to the XML database.
- XI. Click the “Save DB” to save the current database to your hard drive. If you save the database in the directory you added in SOLIDWORKS (Step 2 above) the XML file will appear then next time you start SOLIDWORKS. The file will have the “.sldmat” extension.
- XII. You can check the “Remove” column of a material(s) then click the ‘Remove” button to remove a material(s) from the database.
- XIII. You can see the material definitions by clicking the “Display” button. If no materials are checked all of the materials will be displayed. Otherwise, only the checked materials will be displayed. Only the material definitions will be display, other information needed for the XML file will not be shown. You can also look at the XML database in a text editor, such as Notepad, if desired.
- XIV. You can also rename a material by selecting its name in the table then clicking the “rename” button.

b) Adding on to an existing database.

- I. Click the “Open Existing” button to open an existing database for editing. You can add, deleted and rename materials.
- II. The procedure is similar as described above except than the commands are now “Append Mat” and “Finish Append”.
- III. Individual properties cannot be added to an existing material, the entire material must be defined at once.
- IV. When you open an existing database a copy of the original will be automatically be made with a “_bak” added to the name.

Other Notes:

The only way to see the temperature dependent material property curves in the XML database from within SOLIDWORKS is to use the “SOLIDWORKS Simulation” add-in. You must have a license for this add-in.

- I. If you have a license for this add-in you can select the “Office Products” tab then click the “SOLIDWORKS Simulation” tab (Figure 10.)
- II. Then right-click “Material <not specified>” and then “Edit Material” (Figure 11.)

- III. You will see a list of the default SOLIDWORKS material files and any databases that you have added to the directory you defined in Step 2 above. Click on a database to see the materials in that database (Figure 12.)
- IV. Click the “Table & Curves” tab to see the curve representing a particular property.

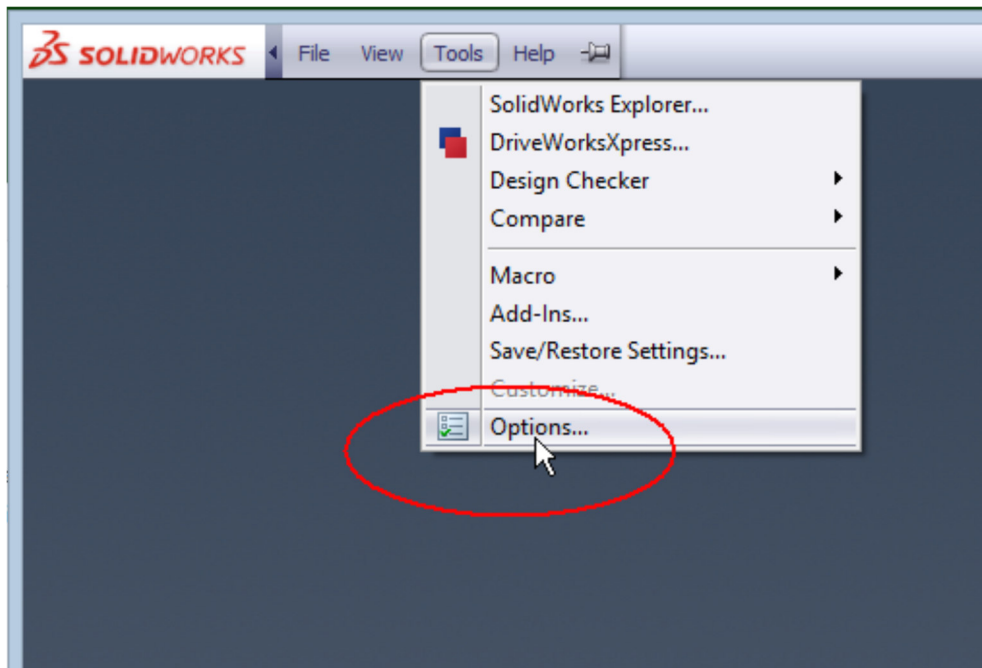


Figure 1.

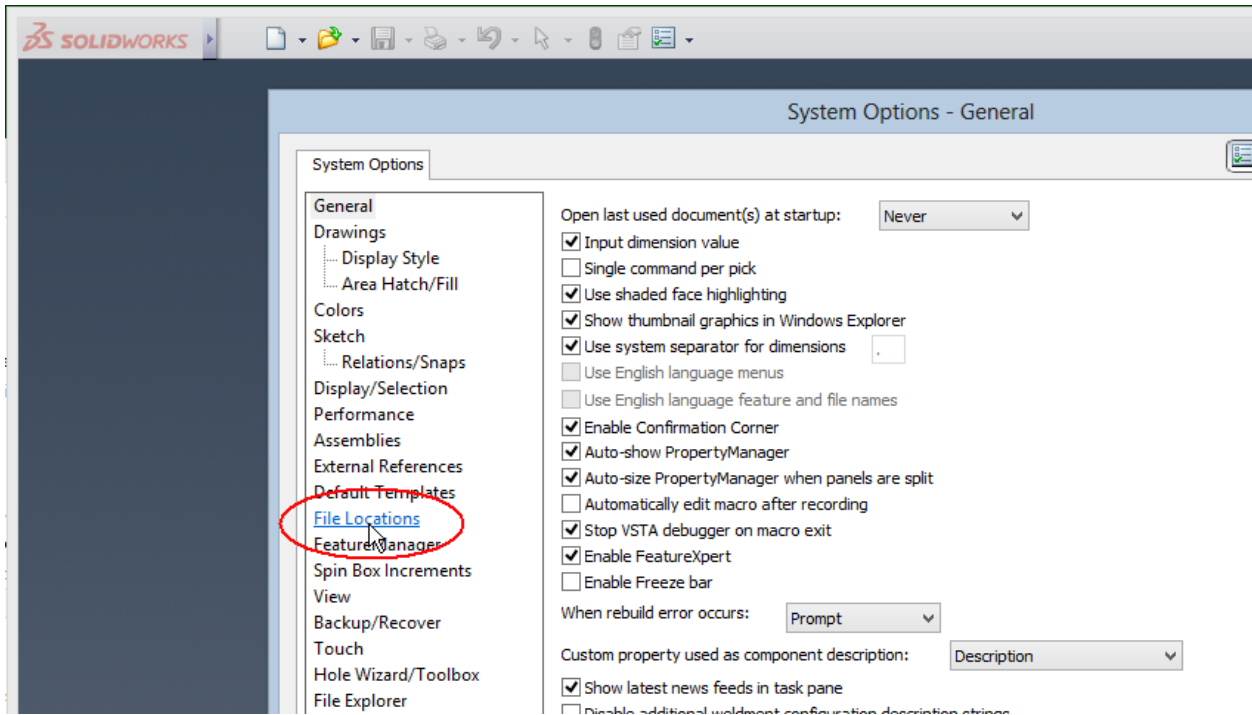


Figure 2.

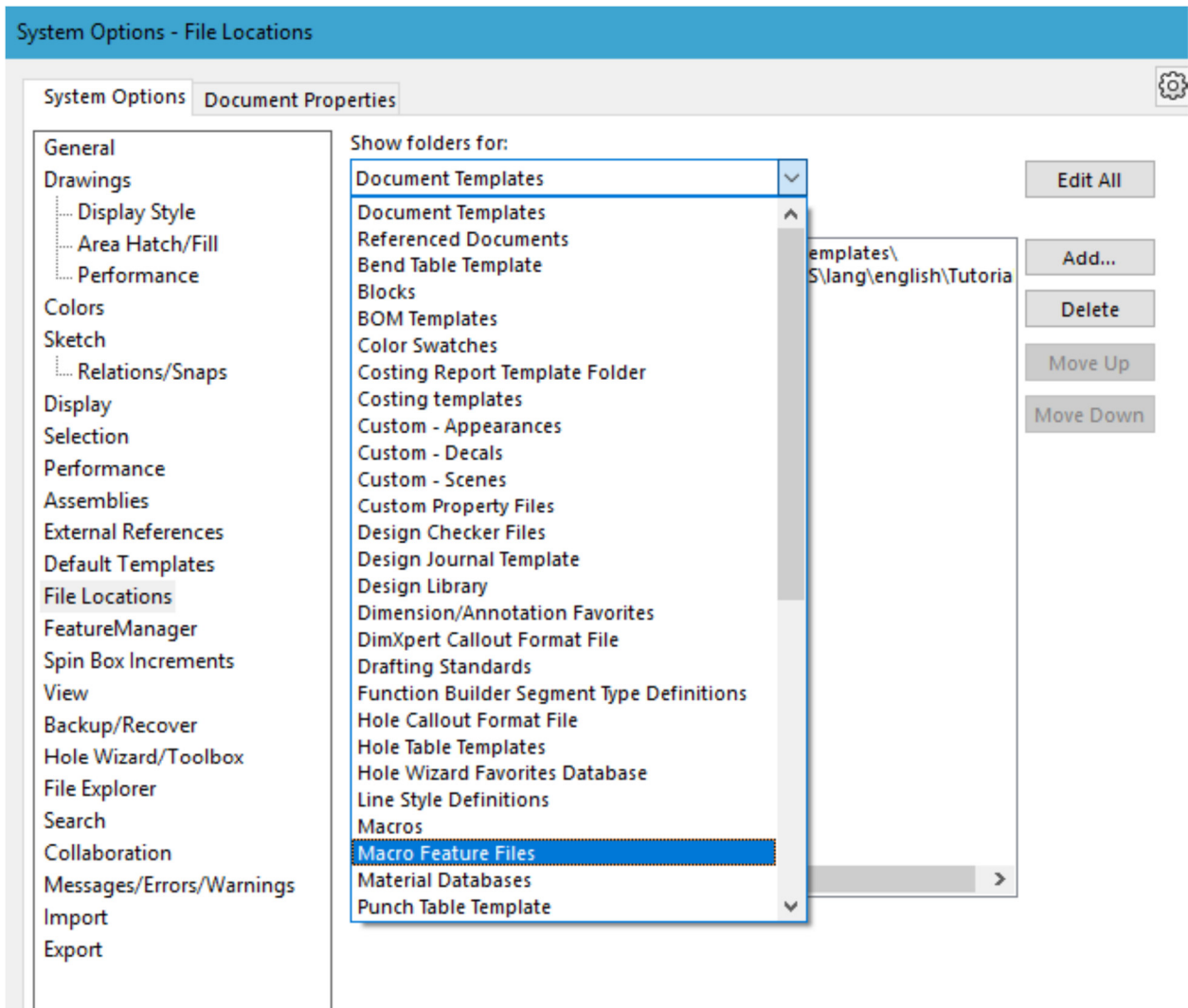


Figure 3.

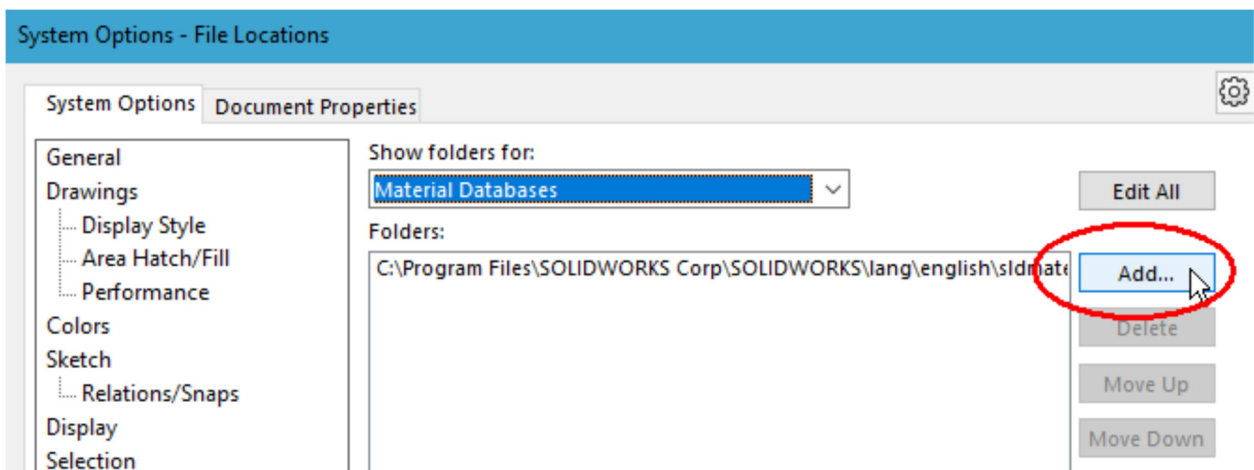


Figure 4.

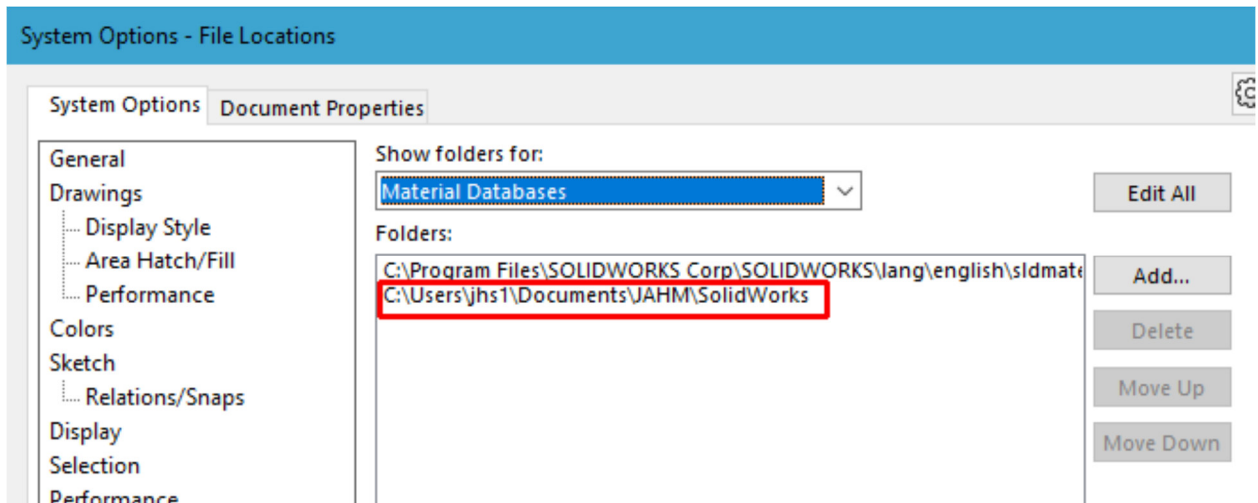


Figure 5.

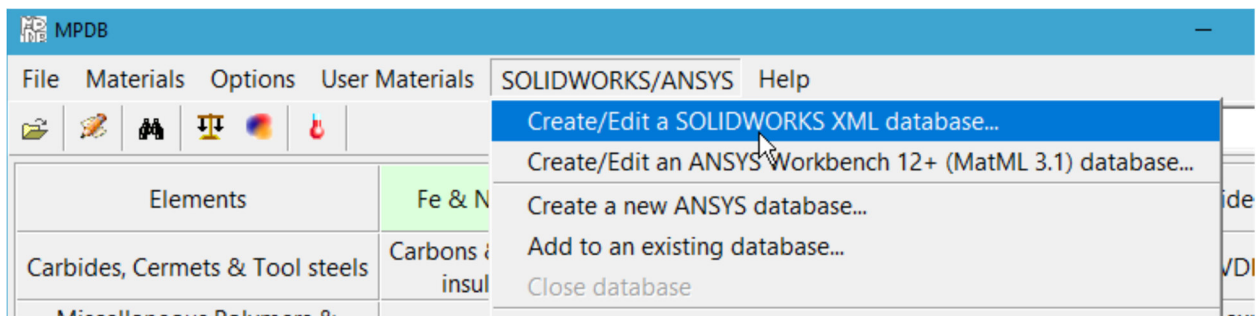


Figure 6.

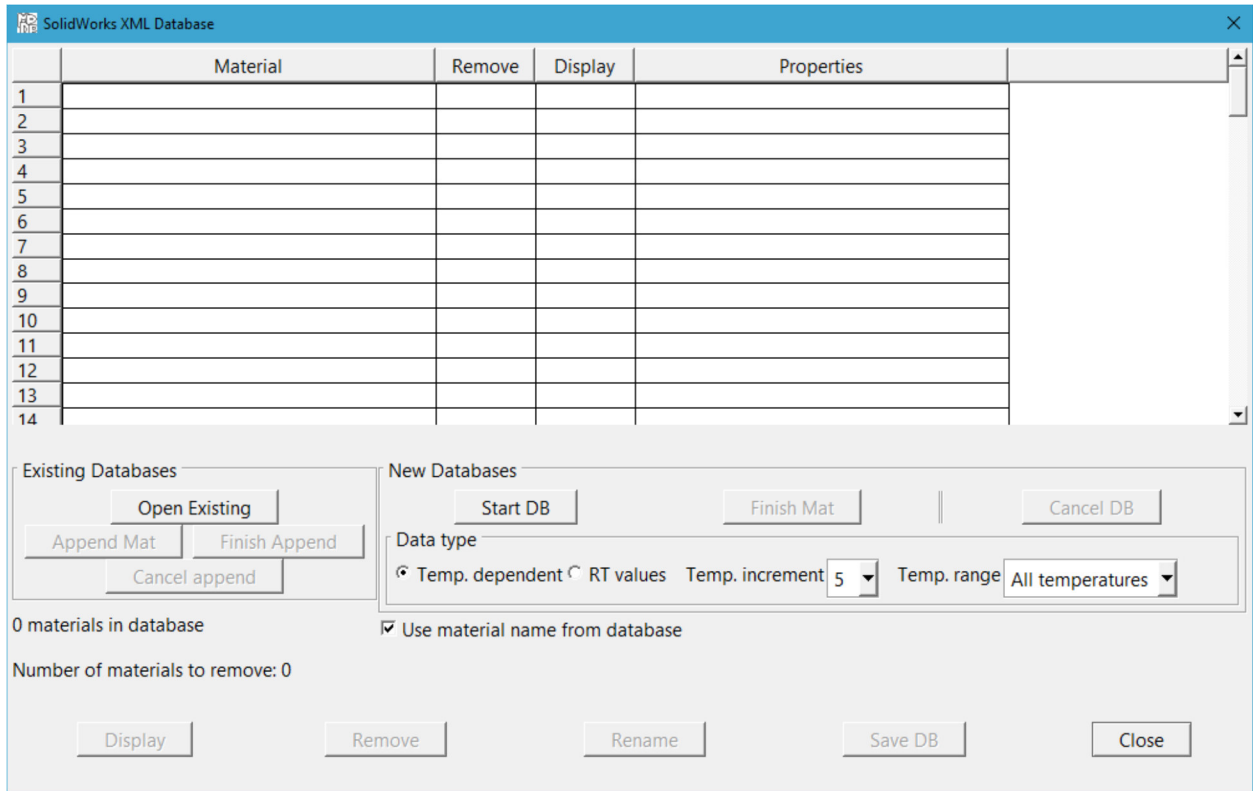


Figure 7.

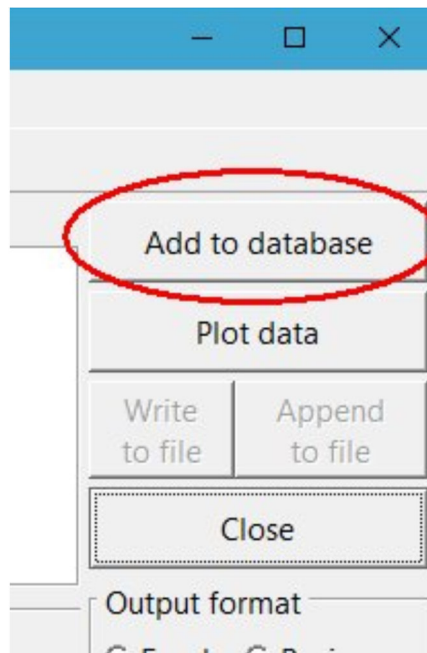


Figure 8.

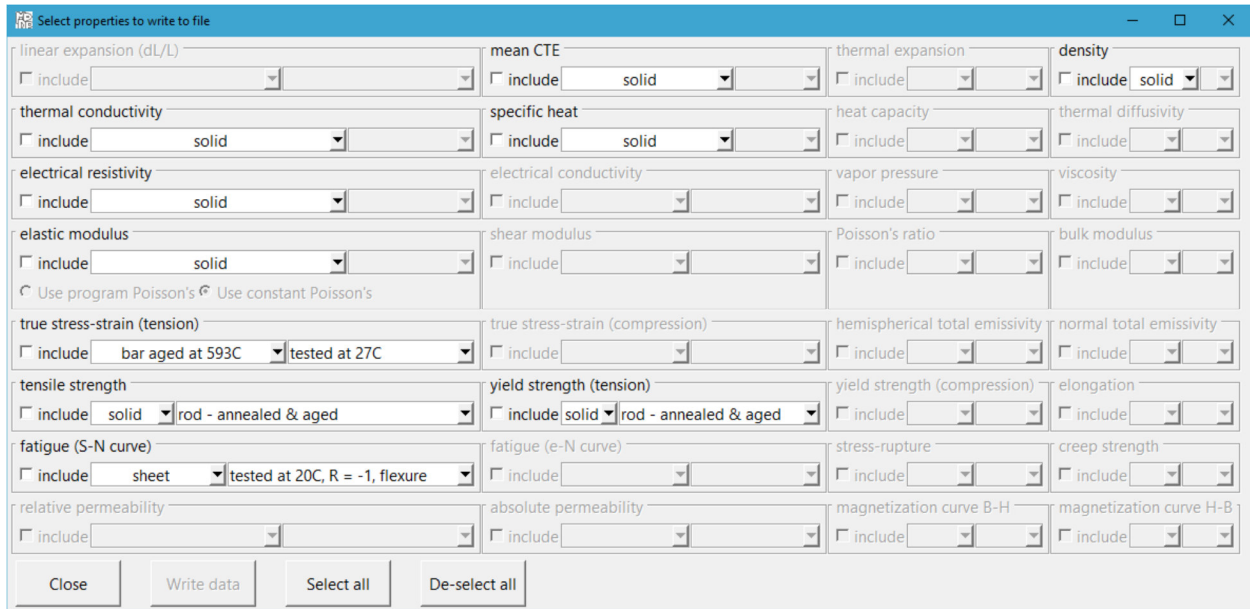


Figure 9.

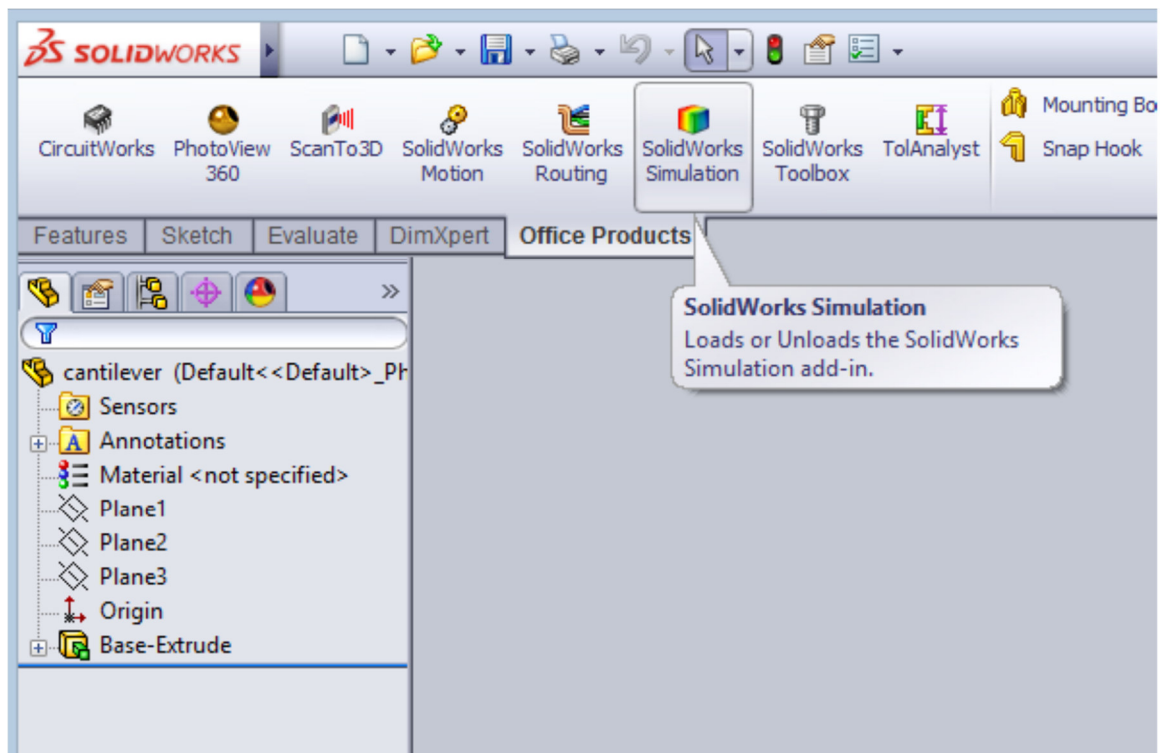


Figure 10.

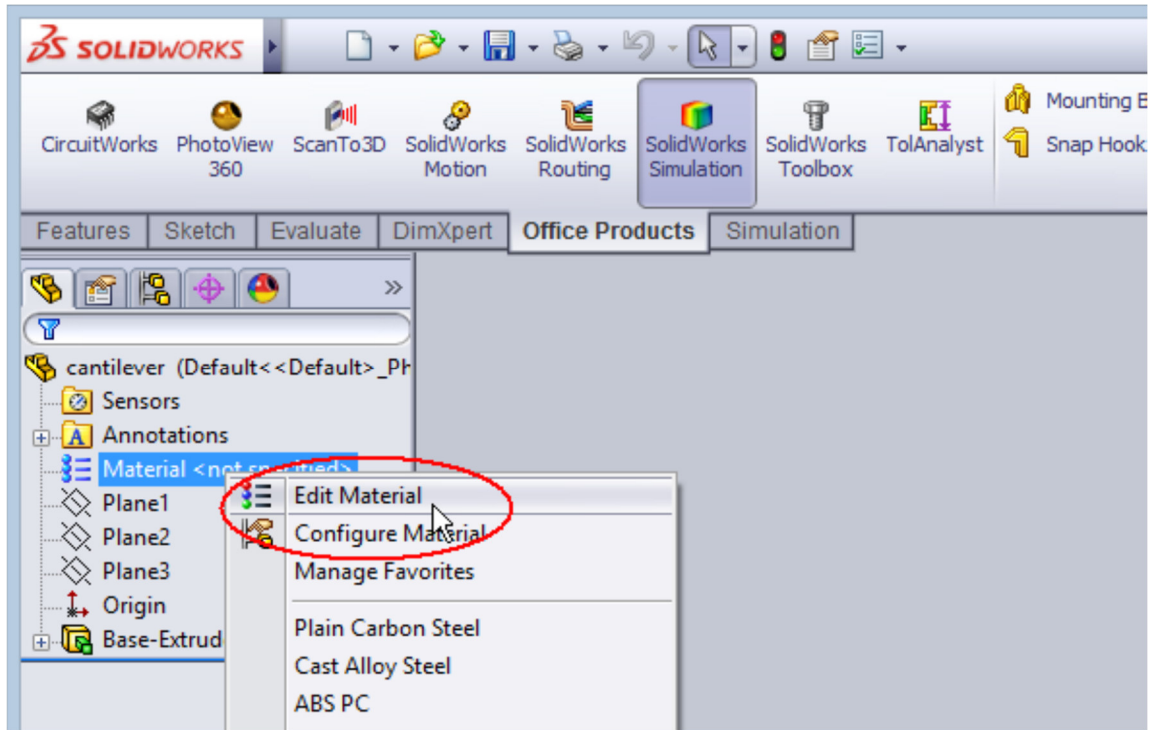


Figure 11.

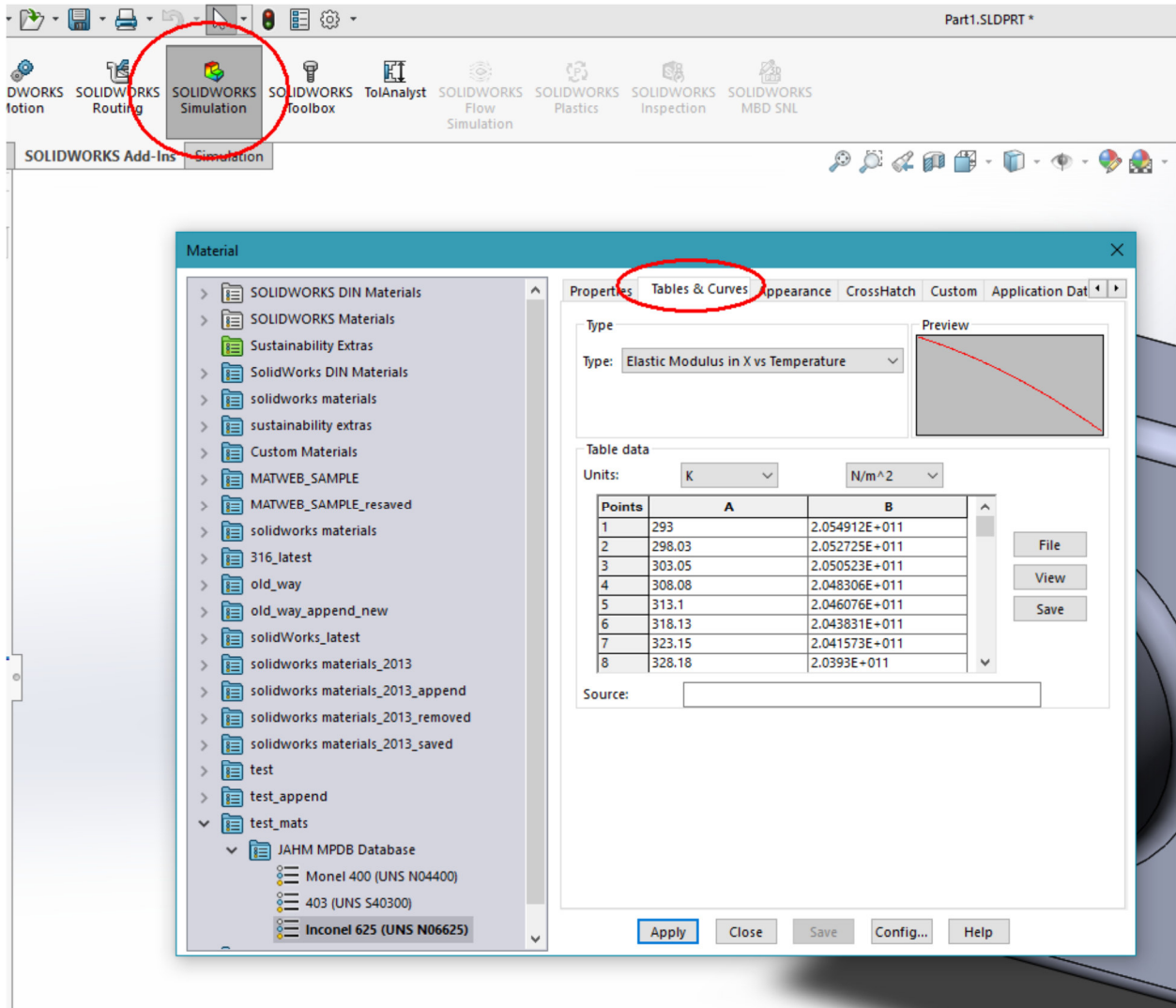


Figure 12.