



Autodesk Inventor Tutorials

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Using Colors & Materials in iParts

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So you are now a master of threads. It's now time to move onto colors and materials. First let's discuss how these two properties are related in Inventor. A color is simply that, what color does the part appear on screen. You can have a color but no material (it's the default material actually with a density of 1 g/cm³ and no other properties). A material defines the mass and inertia of the model but it also associates a color with the material. So when you assign a material to a model to get that material's associated color to appear you need to set the color to "As Material". Confused? It'll make sense in a a bit.

Open the iPart we drew last time. What? You deleted it? This would be a good time to practice redrawing it. ☺ OK, you can download it [here](#).

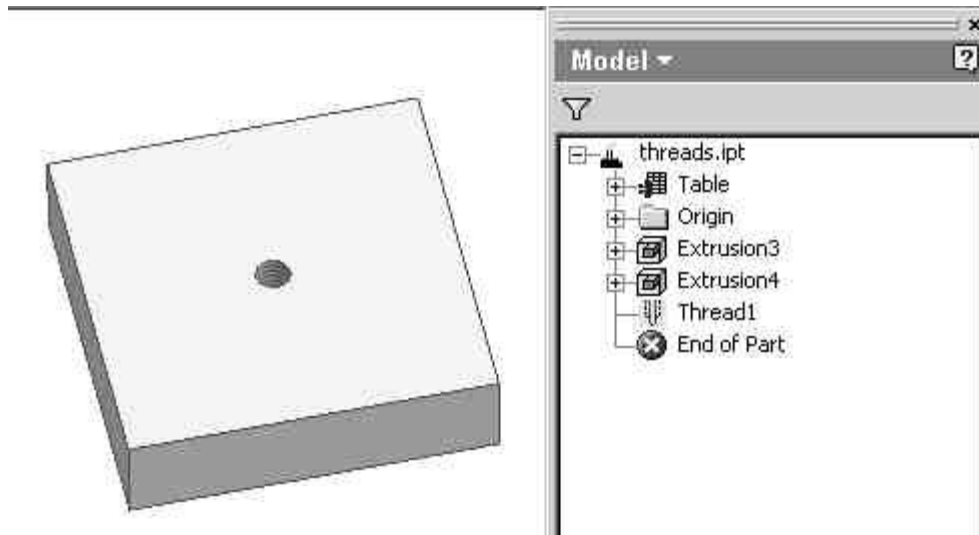


Figure 1 - Base iPart

Open the iPart Author and select the Other tab. We will now add a value for the color of the part. Add **Color** and RMB on it and select *Display Style Column*. This lets IV know that this will be a display style (color) column. Note that you could use **shade** or **colour** (for you Brits) the spelling or word is not important. (see Figure 2)

Exit out of the iPart Author and select the Table Icon and then *Edit Via Spreadsheet*. The table has added the **Color** column (with the style designator next to it to signify that it is a style column). Also notice that one of the fields is filled out as Beige. This is due to the fact that this row as the active configuration when I entered the spreadsheet and Beige was the active color. This may appear in a different row and/or have a different color in your model. (see Figure 3)

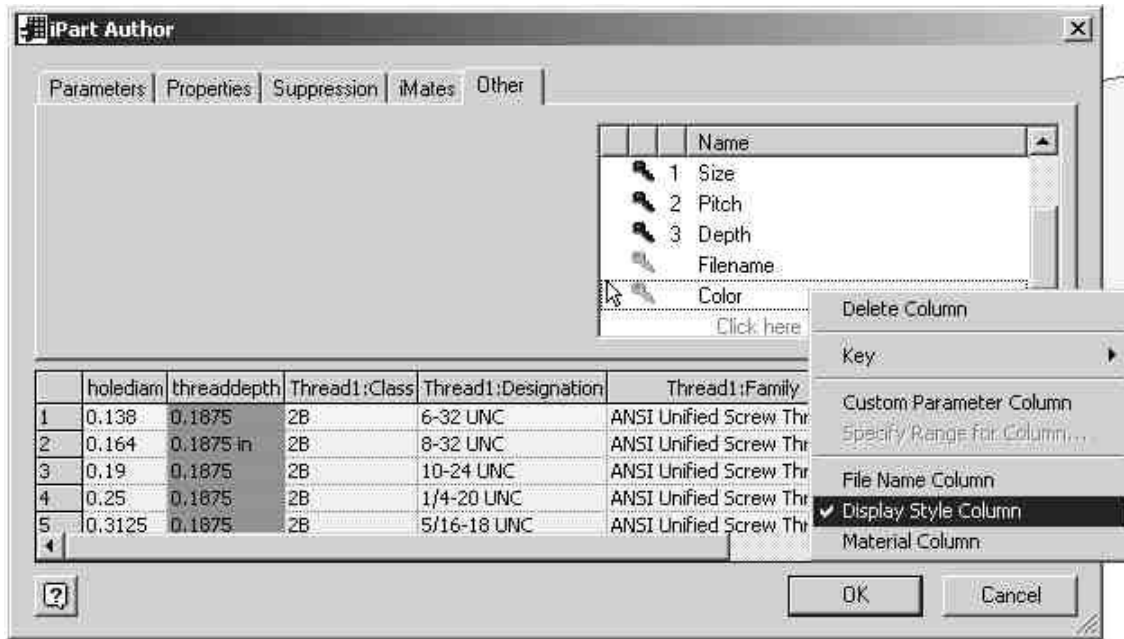


Figure 2 - Applying the Display Style Column

	A	B	C	D	E	F	G	H	I	J
1	holediam:defaultR	threaddepth	Thread1:Class	Thread1:Designation	Thread1:Family	Size:key:0:/key:	Pitch:key:1:/key:	Depth:key:2:/key:	Filename	Color:style:/style:
2	0.138	0.1875	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Half	6-32-HALF	Beige
3	0.164	0.1875	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Half	8-32-HALF	NewItem1
4	0.19	0.1875	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Half	10-24-HALF	NewItem1
5	0.25	0.1875	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Half	1/4-20-HALF	NewItem1
6	0.3125	0.1875	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Half	5/16-18-HALF	NewItem1
7	0.138	0.1875	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Half	6-32-HALF	NewItem1
8	0.164	0.1875	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Half	8-32-HALF	NewItem1
9	0.19	0.1875	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Half	10-24-HALF	NewItem1
10	0.25	0.1875	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Half	1/4-20-HALF	NewItem1
11	0.3125	0.1875	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Half	5/16-18-HALF	NewItem1
12	0.138	0.375	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Full	6-32-FULL	NewItem1
13	0.164	0.375	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Full	8-32-FULL	NewItem1
14	0.19	0.375	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Full	10-24-FULL	NewItem1
15	0.25	0.375	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Full	1/4-20-FULL	NewItem1
16	0.3125	0.375	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Full	5/16-18-FULL	NewItem1
17	0.138	0.375	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Full	6-32-FULL	NewItem1
18	0.164	0.375	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Full	8-32-FULL	NewItem1
19	0.19	0.375	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Full	10-24-FULL	NewItem1
20	0.25	0.375	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Full	1/4-20-FULL	NewItem1
21	0.3125	0.375	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Full	5/16-18-FULL	NewItem1

Figure 3 - Excel Table Filled Out

Now we want to assign some more colors to the model. One important point is that the color must be spelled in the Excel spreadsheet **EXACTLY** as it is spelled in the modeling environment. This includes any spaces, commas, parentheses etc.. If your model doesn't change colors it is probably due to a missing space or misspelling. (See the free lesson on Tips & Tricks for a suggestion on how to speed up this process)

I want to make the UNF half and full threads different colors and well as the UNC half and full threads yet another set of colors. Figure 4 shows the completed table.

	A	B	C	D	E	F	G	H	I	J
1	hole diam: default	thread depth	Thread Class	Thread Designation	Thread Family	Size: key: 0: / key:	Pitch: key: 1: / key:	Depth: key: 2: / key:	Filename	Color: style: <fstyle>
2	0.138	0.1875	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Half	6-32-HALF	Beige
3	0.164	0.1875	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Half	8-32-HALF	Beige
4	0.19	0.1875	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Half	10-24-HALF	Beige
5	0.25	0.1875	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Half	1/4-20-HALF	Beige
6	0.3125	0.1875	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Half	5/16-18-HALF	Beige
7	0.138	0.1875	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Half	6-32-HALF	Green (Flat)
8	0.164	0.1875	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Half	8-32-HALF	Green (Flat)
9	0.19	0.1875	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Half	10-24-HALF	Green (Flat)
10	0.25	0.1875	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Half	1/4-20-HALF	Green (Flat)
11	0.3125	0.1875	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Half	5/16-18-HALF	Green (Flat)
12	0.138	0.375	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Full	6-32-FULL	Black Chrome
13	0.164	0.375	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Full	8-32-FULL	Black Chrome
14	0.19	0.375	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Full	10-24-FULL	Black Chrome
15	0.25	0.375	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Full	1/4-20-FULL	Black Chrome
16	0.3125	0.375	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Full	5/16-18-FULL	Black Chrome
17	0.138	0.375	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Full	6-32-FULL	Red (Flat)
18	0.164	0.375	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Full	8-32-FULL	Red (Flat)
19	0.19	0.1875	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Full	10-24-FULL	Red (Flat)
20	0.25	0.375	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Full	1/4-20-FULL	Red (Flat)
21	0.3125	0.375	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Full	5/16-18-FULL	Red (Flat)

Figure 4 - Completed iPart Excel Table

We can now exit out of the Excel spreadsheet and return to our model. You may encounter the "model does not match table error". Hit OK and your part should now have color. Below are two examples of our model. (Yes I know it would be better with color graphics but we have to keep it small for the people with dial-up accounts). Even in grayscale you can see the texture differences of the block.

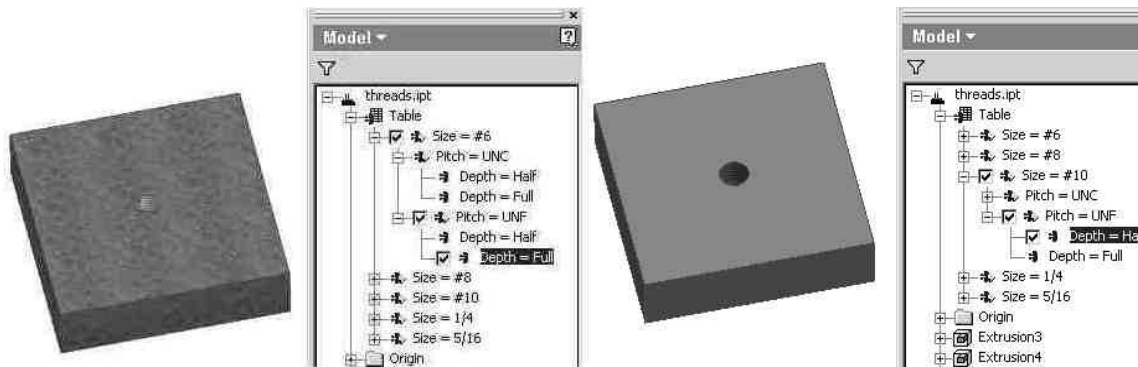


Figure 5 - Different Colors on iParts

So we now know how to change the color. How about the material? Say the bearing is offered in steel and aluminum. Since the material sets the color we can get rid of the **Color** column in our iPart. Open the iPart author and RMB on the **Color** entry and select *Delete Column*.

Now enter a new value named **Material** (or Matl or Stuff, again it doesn't have to be specific unlike threads). RMB on this entry and select *Material Column*. This lets IV know this column will control the material.

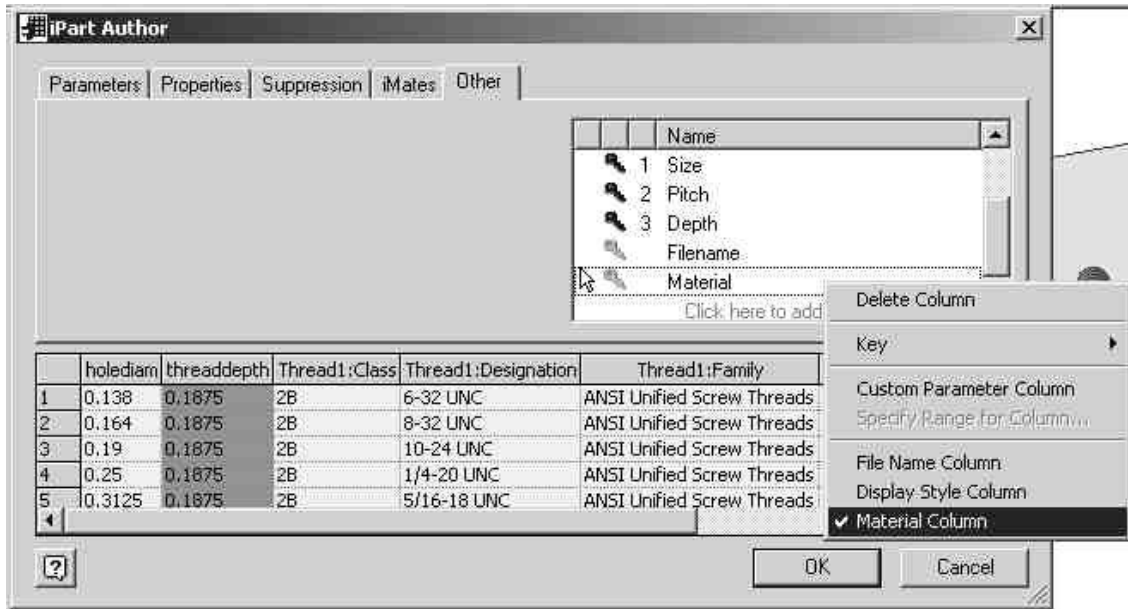


Figure 6 - Specifying the Material Column

Open the Excel spreadsheet and notice that again one of the values is already filled in. It may be Default (if you haven't set a material) or it may be a material name.

HINT: If you set the part to the configuration you want and then set the material you want it will fill in the result for you. This helps to prevent misspellings and missing characters. (also see the lesson on Tips & Tricks)

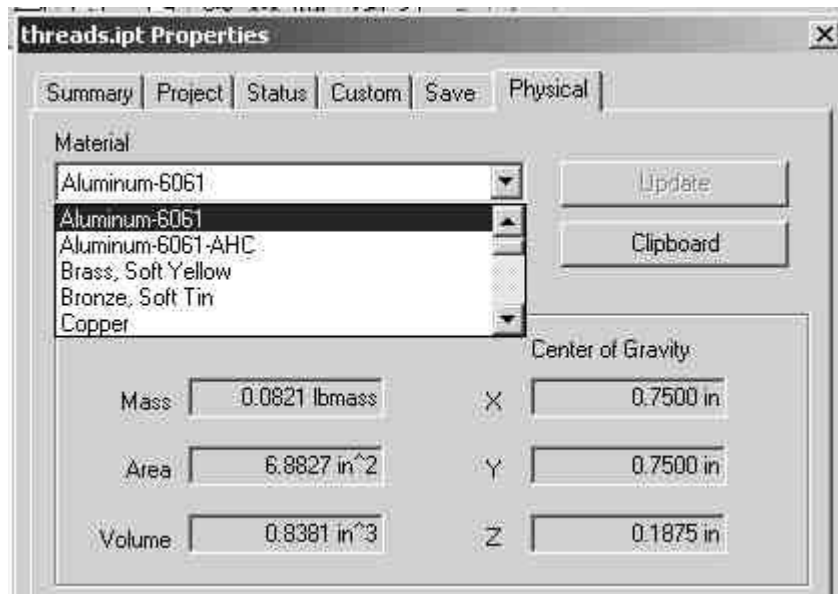


Figure 7 - Specifying the Material

Now fill in the table with the proper materials. We follow the same scheme as in the color example and end up with this table.

	A	B	C	D	E	F	G	H	I	J
	hole diam: default	thread depth	Thread Class	Thread Designation	Thread Family	Size: key: 0: / key:	Pitch: key: 1: / key:	Depth: key: 2: / key:	Filename	Mat: material: c: / material:
1										
2	0.138	0.1875	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Half	6-32-HALF	Nylon-6/6
3	0.164	0.1875	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Half	8-32-HALF	Nylon-6/6
4	0.19	0.1875	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Half	10-24-HALF	Nylon-6/6
5	0.25	0.1875	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Half	1-4-20-HALF	Nylon-6/6
6	0.3125	0.1875	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Half	5-16-18-HALF	Nylon-6/6
7	0.138	0.1875	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Half	6-32-HALF	UHMV, Black
8	0.164	0.1875	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Half	8-32-HALF	UHMV, Black
9	0.19	0.1875	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Half	10-24-HALF	UHMV, Black
10	0.25	0.1875	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Half	1-4-20-HALF	UHMV, Black
11	0.3125	0.1875	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Half	5-16-18-HALF	UHMV, Black
12	0.138	0.375	2B	6-32 UNC	ANSI Unified Screw Threads	#6	UNC	Full	6-32-FULL	PEEK
13	0.164	0.375	2B	8-32 UNC	ANSI Unified Screw Threads	#8	UNC	Full	8-32-FULL	PEEK
14	0.19	0.375	2B	10-24 UNC	ANSI Unified Screw Threads	#10	UNC	Full	10-24-FULL	PEEK
15	0.25	0.375	2B	1/4-20 UNC	ANSI Unified Screw Threads	1/4	UNC	Full	1-4-20-FULL	PEEK
16	0.3125	0.375	2B	5/16-18 UNC	ANSI Unified Screw Threads	5/16	UNC	Full	5-16-18-FULL	PEEK
17	0.138	0.375	2B	6-40 UNF	ANSI Unified Screw Threads	#6	UNF	Full	6-32-FULL	Aluminum-6061
18	0.164	0.375	2B	8-36 UNF	ANSI Unified Screw Threads	#8	UNF	Full	8-32-FULL	Aluminum-6061
19	0.19	0.1875	2B	10-32 UNF	ANSI Unified Screw Threads	#10	UNF	Full	10-24-FULL	Aluminum-6061
20	0.25	0.375	2B	1/4-28 UNF	ANSI Unified Screw Threads	1/4	UNF	Full	1-4-20-FULL	Aluminum-6061
21	0.3125	0.375	2B	5/16-24 UNF	ANSI Unified Screw Threads	5/16	UNF	Full	5-16-18-FULL	Aluminum-6061

Figure 8 - Filling out the Excel Table

Exit out of the table and if you made no mistakes you should now be able to change the material by picking different configurations. A quick peek at the properties window verifies that it worked.

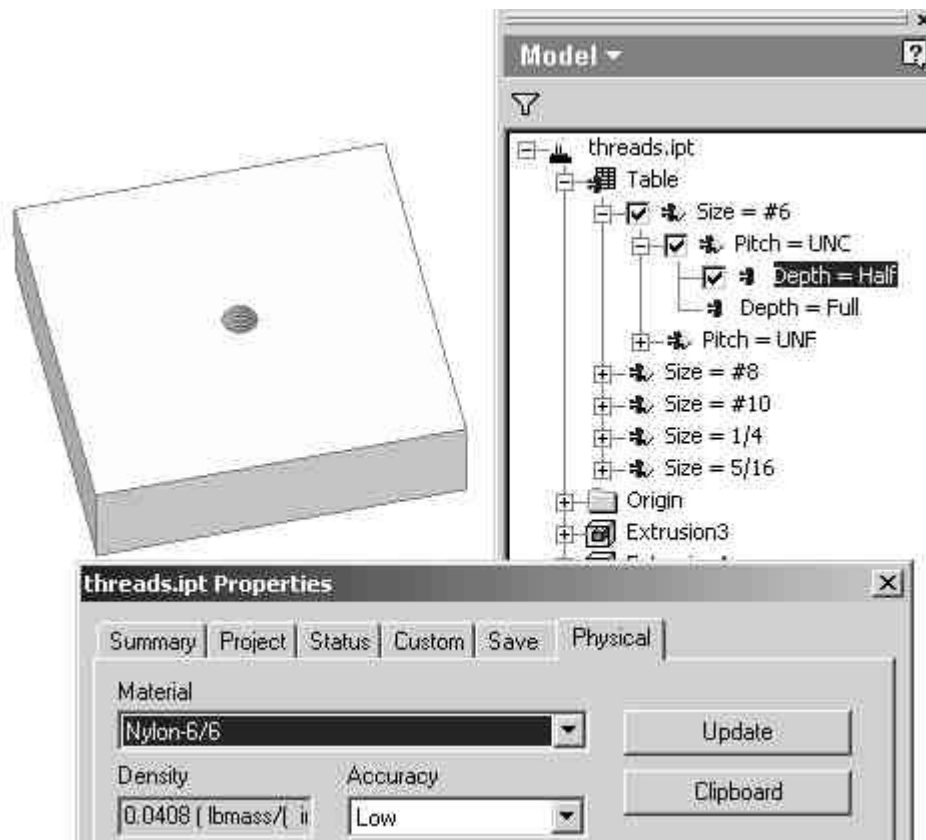


Figure 9 - Completed iPart (Nylon-6/6)

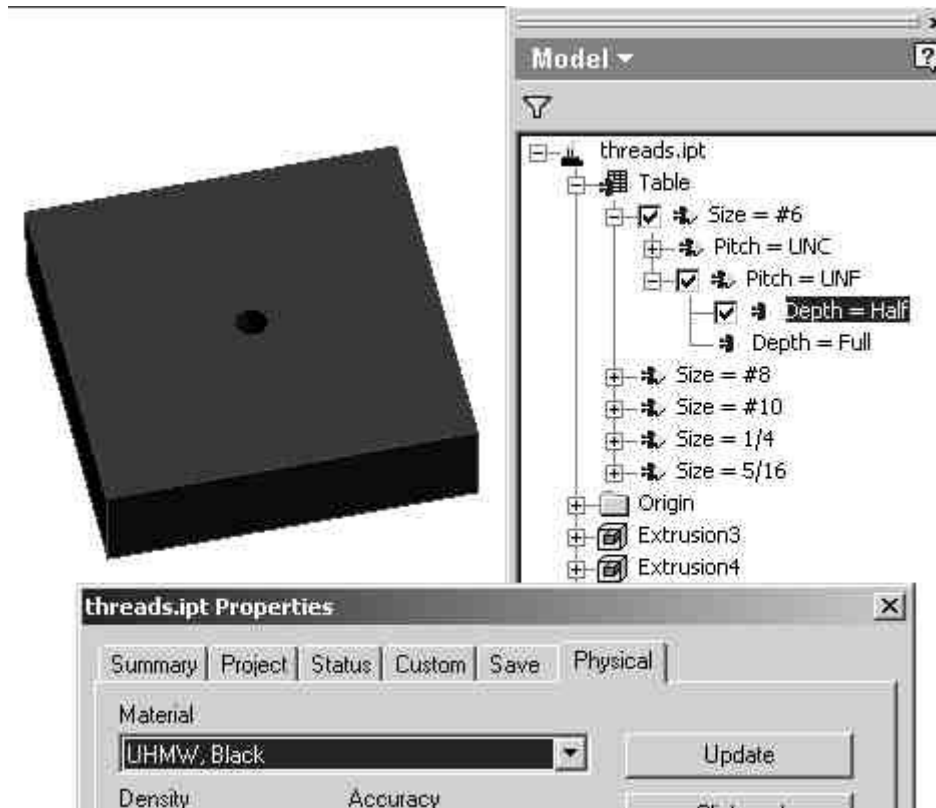


Figure 10 - Completed iPart (UHMW, Black)

In our example we changed the color and material dependent of other keys. We could have just as easily set the **Material** or **Color** column to be a key so that it would have been a selection as well. Be cautious of setting too many keys however as speed of the part will be sacrificed. A good example of how materials can be used as a selection are the clamp collars that I contributed to Charles Bliss' site located at:

(<http://www.cbliss.com/inventor>)