



EWCTC
Materials Worksheet

Preliminaries Competition-
March 23rd and 24th 2012
Finals- April 13th and 14th

South Western Pa. Bots I.Q. web site- <http://www.botsiqpa.org/>
Rio Botz tutorial web site- <http://www.scribd.com/doc/44721477/Riobotz-Combot-Tutorial-2-0>

The Goal of this worksheet is to use the right materials in the right place!

Define the following key terms so that the charts pages 78, 79 and 82 make sense:

1. Young Modulus- _____
Symbol- _____
2. Yield strength- _____
Symbol- _____
3. Ultimate strength- _____
Symbol- _____
4. Ductility- _____
5. Fracture Toughness- _____
Symbol- _____

Materials

1018 Carbon Steel-
Uses- _____
Pro- _____ Con- _____

4340 Steel-
Uses- _____
Pro- _____ Con- _____

1018 Carbon Steel-
Uses- _____
Pro- _____ Con- _____

Tool Steel-
Uses- _____
Pro- _____ Con- _____

Cast Iron-
Uses- _____
Pro- _____ Con- _____

6061 T6 Aluminum-
Uses- _____
Pro- _____ Con- _____

Titanium-
Uses- _____
Pro- _____ Con- _____

Copper Alloys-
Uses- _____
Pro- _____ Con- _____

Beryllium-
Uses- _____
Pro- _____ Con- _____



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Lexan-
Uses- _____
Pro- _____ Con- _____

UHMW-
Uses- _____
Pro- _____ Con- _____

Nylon/ Delrin-
Uses- _____
Pro- _____ Con- _____

List the top three high machinability materials from the proceeding list:

- 1. _____
- 2. _____
- 3. _____

List the three lowest machinability materials from the proceeding list:

- 1. _____
- 2. _____
- 3. _____

What material from the proceeding list has the best strength to toughness ratio? (Page 78)

What material from the proceeding list has the best ultimate strength? (Page 79 top)

After looking at the chart on page 82 answer the following questions:

What Material would be the best to make a weapon out of?

What Material would be the best to make a weapon support arms out of?

What Material would be the best to make bushings out of?

What Material would be the best to make a top and bottom plates out of?

What Material would be the best to make Mounting brackets out of?

What Material would be the best to make spinning shafts out of?

What Material would be the best to make electronic brackets out of?
