

CE 265: MATERIAL SCIENCE

Assignment #2 Steel

1. Generate a table of metal material properties using the textbook, library, and Internet as resources. The table should include: name (and alloy type is relevant), density, yield strength, ultimate strength, and stiffness. In a separate list, provide three common applications including at least one in Civil Engineering for each metal.

Name	Density [units]	Yield [units]	Ultimate [units]	Stiffness [units]

Since the properties of metals of even the same type can have a range of values, you should present the range of values you found and include a list of references (including web addresses) at the end of the assignment.

The metals should include representatives from the following

- Cast iron
- Cold formed steel
- Structural steel for buildings and reinforcing steel for concrete (by American or Canadian standards)
- Stainless steel (two types)
- Aluminum (2 types)
- Brass
- Bronze
- Copper (2 types)
- Two metals of your own choosing

2. Using data from the above table and other sources, sketch the tensile stress strain curve of North American structural steel, concrete reinforcing steel, and aluminum on one plot to allow comparison. The important characteristics (i.e, yield stress and strain, ultimate stress and strain) should be clear from the plot. Compare the material's properties and the uses you have listed – why are they used for these purposes?