

What is used in Class:

1020 Hot Rolled comes in 20 foot sections

1020 Hot Rolled = $\frac{1}{4}$ by $\frac{3}{4}$ by $9 \frac{1}{2}$ = **Karen Chou (CIVE Class)**

Note: The last batch ordered was A36 Hot Rolled steel

1020 Hot Rolled = $\frac{1}{8}$ by $\frac{3}{4}$ by $9 \frac{1}{2}$

1018 Cold Rolled comes in 12 foot sections

1018 Cold Rolled = $\frac{1}{4}$ by $\frac{3}{4}$ by $9 \frac{1}{2}$

1018 Cold Rolled = $\frac{1}{8}$ by $\frac{3}{4}$ by $9 \frac{1}{2}$ = **Vance Browne (ME 336 Class)**

6061 Aluminum comes in 12 foot sections

6061 Aluminum = $\frac{1}{4}$ by $\frac{3}{4}$ by $9 \frac{1}{2}$ = **Karen Chou (CIVE Class)**

Minnesota Iron & Metal Company (507) 387-5541

Suppliers:

US Steel

New Core Steel

A) 1018 Cold Rolled Steel:

Material	General-Purpose Low-Carbon Steel
Low-Carbon Steel Type	1018 Carbon Steel
Finish/Coating	Unpolished (Mill)
Shape	Sheets, Bars, and Strips
Sheets, Bars, and Strips Type	Plain
Thickness	4"
Thickness Tolerance	-.008"
Length	12"
Length Tolerance	± 1 "
Width	6"
Width Tolerance	-.008"
Tolerance	Standard
Hardness	Rockwell B72-B86
Maximum Attainable Hardness	Rockwell C60-C62
Yield Strength	45,000 to 55,000 psi
Melting Point	2700°F
Specifications Met	American Society for Testing and

1018 is among the most commonly available grades available in the world. It is widely available in cold finished rounds, squares, flat bar and hexagons. Despite its unimpressive mechanical properties, the alloy is easily formed, machined, welded and fabricated. Due to its higher Mn content, it can, in thin sections, be hardened to Rc 42.

Applications The alloy is a free machining grade that is often employed in high volume screw machine parts applications. It is commonly employed in shafts, spindles, pins, rods, sprocket assemblies and an incredibly wide variety of component parts.

- **Machinability:** 1018 is rated at 62% of 1112 carbon steel. The alloy can be easily brought to a fine finish, its chips are continuous and hard and it can be machined in all conditions.
- **Forming:** 1018 can be easily formed in the annealed condition.
- **Welding:** 1018 has been successfully welded using most all the common practices including gas, resistance, oxyacetylene, and submerged melt welding.
- **Heat Treatment:** 1018 can, in thin sections, be case hardened to Rc 42. In thicker sections, over 4", Rc 28-30 can be obtained.

B) A513 (alloy 1020-1026) Hot Rolled Steel:

This alloy is generally used for DOM tubing. Its higher carbon content means higher strength, but lower weldability and machinability.

ASTM A513 alloys 1020 - 1026 Mild (low-carbon) steel		
Minimum Properties	Ultimate Tensile Strength, psi	87,000
	Yield Strength, psi	72,000
	Elongation	10.0%
	Rockwell Hardness	B89
Chemistry	Iron (Fe)	99.08 - 99.53%
	Carbon (C)	0.18 - 0.23%
	Manganese (Mn)	0.3 - 0.6%
	Phosphorus (P)	0.04% max
	Sulfur (S)	0.05% max

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