



NESSteel Inc.

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Cold Drawn Steel AISI 1018

1018 is a low carbon, high manganese bar steel, which is normally available with a cold drawn finish. Typical analysis is shown in the chart below:

Carbon	Manganese	Phosphorus	Sulphur
0.15% - 0.20%	0.60% - 0.90%	0.4% Max	0.05% Max

1018 is suitable for carburized parts requiring soft core and high surface hardness. Typical applications include:

- Gears
- Pinions
- Worms
- King Pins
- Ratchets
- Dogs
- Machine Parts
- Jigs and Fixtures
- Structures
- Equipment manufacturing and repair

Hardening

Any standard carburizing method and subsequent heat treatment will work well. For case hardening and tough core, carburize at 1700°F for about 8 hours. Cool in box and reheat to 1450°F. Quench in water and draw at 350°F.

Machinability

1018 is rated at 78% based on 1212 as 100%. Average surface cutting is 130 fpm.

Weldability

1018 is easily welded by all welding processes. The resultant welds and joints are of extremely high quality. The grade of welding rod to be used depends on the thickness of section, design, service requirements, etc.

Minimum Mechanical Properties (Cold Drawn)

Size, inches	Tensile Strength PSI	Yield Point, PSI	Elongation in 2"	Reduction of Area	Brinell Hardness
5/8 to 7/8	70,000	60,000	18%	40%	143
Over 7/8 to 1-1/4	65,000	55,000	16%	40%	131
Over 1-1/4 to 2	60,000	50,000	15%	35%	121
Over 2 to 3	55,000	45,000	15%	35%	111

(Cold Drawn followed by High Temperature Stress Relief)

Size, inches	Tensile Strength PSI	Yield Point, PSI	Elongation in 2"	Reduction of Area	Brinell Hardness
5/8 to 7/8	65,000	45,000	20%	45%	131
Over 7/8 to 1-1/4	60,000	45,000	20%	45%	121
Over 1-1/4 to 2	55,000	45,000	16%	40%	111
Over 2 to 3	50,000	40,000	15%	40%	101

Grinding

Grinding of 1018 cold finished steel in thin sections is not recommended without first stress relieving. High stresses due to cold finishing are released in the grinding process causing severe warpage in smaller sections.