



416 R – Technical Data

General Descriptions:

416 R is a hardenable chromium stainless steel particularly suited for use in high quality precision rifle barrels. This grade has good machinability and, because of closely controlled chemistry and processing techniques, may be machined and lapped to a high finish, which is important for bore accuracy.

Examples of applications:

Rifle and pistol barrels. Flats are available for various knife components.

Chemical Composition

Carbon	Chromium	Manganese	Phosphorous	Sulfur	Silicon	Molybdenum
0.12%	12.4%	0.4%	0.03%	0.13%	0.40%	0.40%

Surface Treatment

Various surface treatments can be applied.

Physical Properties

Modulus of Elasticity	29,000,000 psi	Density	0.28 lb/cubic inch
Annealed Hardness	155 BHN	Machinability	90% of O1

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Heat Treatment

Forging

416 R should be forged at 2050 to 2150 F (1121 - 1177 C)

Annealing

416R should be annealed for maximum softness at 1550 F (843 C), followed by a furnace cool. For better machinability, a semi-anneal at 1300 F (704 C) is recommended.

Stress Relieving

1200 F for two hours, cool to room temperature in still air.

Hardening

416R can be hardened by air cooling or oil quenching from 1750 - 1850 F (954 - 1010 C).

High Heat (Austenitizing)

1750 - 1850 F.

Quench

Air or oil quenching.

Tempering

See chart for tempering information.

All martensitic stainless steels have reduced ductility at very low temperatures. For this reason, caution should be exercised in the design of barrels for use at extremely low temperatures.

Typical Values: Size 1" rd. Tensile 0.505 in. diam.

