

Grade: 420Mod / UN S42000 / AISI 420

Type: General purpose, high hardenability martensitic, 13 Cr type stainless steel with fairly good corrosion resistance. Normally supplied in the quenched and double tempered condition to 22HRC max hardness

(NACE)

Nominal Composition	
Element	Weight %
Carbon	0.15 – 0.22
Silicon	1.0 max
Manganese	0.25 - 1.0
Phosphorus	0.04 max
Sulphur	0.03 max
Chromium	12.0 – 14.0
Nickel	Addition is optional
Molybdenum	Addition is optional

## Mechanical Properties (Quenched and tempered condition)

Typically supplied in hardened and double tempered condition.

Property	Values
Ultimate Tensile Strength	100 min KSI min (689 N/mm <sup>2</sup> )
0.2 % Yield Strength	80 min KSI min (551 N/mm <sup>2</sup> )
Elongation	20 % min
Reduction of Area	40 % min
Charpy Impact Toughness	18 min J at -10° C**
Hardness	22HRC max**

Note, the addition of nickel and molybdenum helps improve strength and corrosion resistance and is recommended at Ni 0.2% min and Mo 0.3% min respectively.

Hardness condition is to NACE M0175

The grade has better hot working capability, and less susceptibility to quench cracking in heat treatment when compared to 410. The grade has increased strength and hardness over 410.

The material has very limited weldability due to its carbon content and high hardenability.