

# HOWAT GROUP

## 420Mod / UN S42000 / AISI 420

**Grade:** 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

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.

### 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:** 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.

### Applications

Used typically for completion equipment and pressure containing members.

Supplied in the quenched and double tempered condition the material has good strength, reasonable impact properties and good corrosive resistance in standard and CO<sub>2</sub> environments.

The grade does have limited use in certain environments. It is sensitive to both oxygen and chlorine contamination. It is not recommended for use in high temperature or high chloride environments. Or those containing H<sub>2</sub>S.