

Material Grade: **420mod**
 Material Condition: **Hardened, Quenched, Tempered & Stress Relieved (2nd tempered)**
 Surface Finish: **Turned/ Peeled**

Associated Standard: **ASTM A276 Grade 420**
NACE MR0175/ISO 15156

Description

This grade is used extensively on completion equipment in both bar and tubular form, for structural and pressure containing members, in standard and CO₂ environments. It is capable of deep hardening (to approximately 500HB) but usually limited to 22HRc in order to comply with NACE MR0175/ISO15156.

420 steel is very sensitive to oxygen and chlorine contamination. It has relatively low corrosion resistance when compared with other stainless steels and it is not recommended for temperatures above 100°C and chloride environments above 50 000ppm.

This grade has better hot working characteristics and is less susceptible to quench cracking when compared to 410.

Typical applications **Packers, safety valves, liner hangers, flow control valves and other sub-surface equipment.**

1. STEELMAKING

Method/ Refining: **Electric Arc Furnace followed by VDG**
 Grain Size: **5-8**
 Min. reduction ratio: **5:1**

	<u>C</u>	<u>Si</u>	<u>Mn</u>	<u>S</u>	<u>P</u>	<u>Cr</u>	<u>Ni</u>	<u>Mo</u>	<u>Al</u>	<u>Cu</u>	<u>N</u>
Min	0.18	0.25	0.40			12.50			0.01		
Max	0.22	0.80	1.00	0.005	0.015	13.50	0.20	0.50	0.06	0.20	0.04

2. TYPICAL MECHANICAL PROPERTIES

3.

Test type			Tensile and hardness test (at room temperature)					Impact test (KV)		
			Yield (Re)	0.2 % proof	UTS (Rm)	Elong (A)	R of A (Z)	Hardness	0°C	-10°C
Variation	Sample dia	Unit	KSI	KSI	KSI	%	%	HRc (HB)	J	J
Quench and double tempered (stress relieved)		Min		80	100	20	40	18 (217)	30	27
		Max		95	120			22 (234)		

4. INSPECTION

NDT procedure: **ASTM A388/A388M**
 Acceptance Standard **API 6A PSL Level 3**