

Material Grade: **4130mod**
 Material Condition(s): **Untreated / Annealed / Quench and tempered**
 Surface Finish: **As rolled / As forged / Bright turned**

Associated Standard: **ASTM A29**
ASTM A322
NACE MR0175 / ISO15156

Description:

A Chromium-molybdenum steel used widely for wellhead applications. It can be quenched and tempered to high strengths, however hardenability limitations prevent through hardening above approximately 5". This grade also offers good weldability and machinability, and has relatively low cost. It is often clad with Ni alloy 625 at seal joints to prevent crevice corrosion.

Typical applications: **Valve bodies, low stress Oil & Gas applications for sour service**

1. STEELMAKING

Method/ Refining: **Electric Arc Furnace / Basic Oxygen Furnace followed by VDG**
 Grain Size: **5-8**
 Min. reduction ratio: **4:1 min (typically 3:1 on sections > 300mm)**

	<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>V</u>	<u>Al</u>	<u>Cu</u>	<u>Sn</u>
Min	0.30	0.15	0.4			0.9		0.20		0.01		
Max	0.33	0.35	0.6	0.025	0.025	1.1	0.25	0.25	0.020	0.04	0.35	0.035

2. TYPICAL MECHANICAL PROPERTIES

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	-46°C	-60°C
Variation	Sample dia	Unit	KSI	KSI	KSI	%	%	HRc (HB)	J	J
4130 + QT	100mm	Min		80	100	20	40	18 (217)	42	27
		Max		110	130			22 (235)		
4130 + QT	150mm	Min		75	100	20	40	18 (217)	42	27
		Max		110	130			22 (235)		
4130 + QT	200mm	Min		60	95	20	40		42	27
		Max						22 (235)		

3. INSPECTION

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