

STEEL



HyPer30

Low alloy steel grade
with improved corrosion resistance

HyPer30 is a high performance low alloy steel grade with improved corrosion resistance. The chemistry and heat treatment schedules of HyPer30 have been specifically designed to give improves strength and toughness characteristics compared to existing steel grades.

In addition the chemistry of HyPer30 has been optimised so that it meets or exceeds the requirements of national association of corrosion engineers (NACE) in relation to its resistance to sulphide stress corrosion cracking (SCC)

HyPer30 has been designed for use in oil and gas applications such as drilling jars, perforating guns, mud motors and subs.

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Scope

HyPer30 is available in two variants; 95ksi and 125ksi yield strength which both meets or exceed NACE standard properties in line with NACE MR0175.

Steel manufacture

Steel is manufactured via Electric Arc Furnace, followed by ladle refining and vacuum degassing and is then ingot cast.

General delivery conditions

- Applicable bar diameters: 3 -6".
- Surface conditions:
Black/ Peeled/Smooth Turned to ASTM A29 tolerances.
- Straightness: 1mm in 500mm, 1/8" in 5'.
- Enhanced straightness may be available on request.

Heat treatment

- Furnaces surveyed and calibrated per AMS 2750.
- Austenitised and liquid quenched
- Tempered to meet select strength variant
- Supplied either stress free or stress relieved

Machining tolerances

For 'Machining Quality Bar' to ASTM A29 Tolerances the minimum machining allowance should be as follows:

Ordered Surface condition	Minimum stock removal
Peeled/Smooth Turned	1 % per side
Black	1.6 % per side

Chemical analysis

C	Si	Mn	P	S	Cr	Mo	Ni	V	Cu
0.25	0.15	0.6			1.2	0.65			
0.33	0.35	0.9	0.015	0.005	1.5	0.75	0.25	0.05	0.3

Mechanical properties

	165ksi Variant 3-8" (mid radial)		125ksi Variant 3-6" (mid radial)	
	Minimum	Maximum	Minimum	Maximum
0.2% Proof stress (ksi)	95	110	125	140
UTS (ksi)	105		135	
% Elongation	18		14	
% reduction of area	40		40	
Hardness HRC	19	25	29	34
Hardness HBW	217	255	277	326
	Average	Min. Single	Average	Min. Single
CVN @ -40°C (J)	56	46	56	46
CVN @ -40°F (ft.lbs)	42	34	42	34

Structure

Grain size will be ASTM 5 or finer.

Reduction ratio

Reduction ratio will meet 4:1 as a minimum.

Chemical analysis

	95ksi	125ksi
SCC Temp Test	24°C / 75°F +3°C / +5°F	79°C / 175°F -3°C / +5°F

Defined by TM0177- Method A (standard tensile Test) solution A at 80 % specified minimum yield strength with the above test temperatures.

API 6A

Each bar length will be 100 % ultrasonically tested per ASTM A388, with acceptance criteria in accordance with API 6A PSL 3&4.

Technical Support

We have a comprehensive technical support team available to advise on grade selection and product range to achieve the maximum benefit. Customer Technical Support provide specialist advice and help with day-to-day problem solving.

Works based metallurgists and the full resources of our Steel Research and Development Laboratories are available to assist with longer-term developments.

For further information, enquiries or any technical guidance on our range of Oil & Gas products please contact the Commercial Department at the address below.

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