



LIBERTY

STEEL

AISI 420 Modified UNS S42000

A martensitic stainless steel that
provides corrosion resistance

AISI 420 modified is a martensitic stainless steel that provides corrosion resistance similar to AISI 410 but with increased strength and hardness.

It is typically used for completion equipment and pressure containing members.

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Scope

The specification defines the requirements for AISI 420 modified, UNS S42000 hot rolled bars hardened and double tempered to meet 80ksi minimum yield, 22HRC maximum, in line with NACE MR0175/ISO 15156.

Steel manufacture

Steel is manufactured via Electric Arc Furnace, followed by Ladle Refining and Vacuum Degassing and is then Ingot Cast.

Structure

Grain size will be ASTM 5 or finer.

General delivery conditions

- Applicable bar diameters: 3 - 10".
- Surface conditions: Peeled/Smooth Turned.
- Straightness: 1mm in 500mm, 1/8" in 5'.
- Enhanced straightness may be available on request.

Chemical analysis

C	Si	Mn	P	S	Cr	Mo	Ni	Al	N
0.18	-	0.6	-	-	12.5	-	-	0.015	-
0.22	1.0	1.0	0.02	0.005	14.0	0.5	0.2	0.050	0.04

Mechanical properties

	80ksi Variant 3-7.5" (mid radial)	
	Minimum	Maximum
0.2 % Proof stress (ksi)	80	95
UTS (ksi)	100	120
% Elongation	20	
% reduction of area	45	
Hardness HRC	18	22
Hardness HBW	217	237
	Average	Min. Single
CVN @ -10°C (J)	25	20
CVN @ 0°C (J)	25	20

Tensile Strength as per ASTM A370, Charpy as per ASTM E23, HRC as per ASTM E18, HBW as per ASTM E10

API 6A

Each bar length will be 100 % ultrasonically tested per ASTM A388, with acceptance criteria in accordance with API 6A PSL 3&4. Central soundness is guaranteed over the size range.

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

Heat treatment

Furnaces surveyed and calibrated per AMS 2750.

Reduction ratio

Reduction ratio will meet 4:1 as a minimum.

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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V3 10/2021.

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