

STEEL



LIBERTY

AISI 410 Modified UNS S41000

A corrosion resistant martensitic
stainless steel

AISI 410 has a high strength and hardness and is normally supplied in a hardened and tempered condition.

It is typically used in the oil and gas Market for applications such as valve bodies, valve seats and outlet connections which require a combination of corrosion resistance alongside high strength and harness.

MEMBER OF



Scope

The specification defines the requirements for AISI 410, UNS S41000 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 cast into bottom-poured wide end up ingots.

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
0.08	-	0.25	-	-	12.5	-	-	0.015	-
0.15	0.5	0.8	0.025	0.025	13.5	0.3	0.4	0.050	0.04

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

Mechanical properties

	80ksi Variant 3-10" (mid radial)	
	Minimum	Maximum
0.2 % Proof stress (ksi)	80	95
UTS (ksi)	100	
% Elongation	18	
% reduction of area	45	
Hardness HRC	18	22
Hardness HBW	217	237
	Average	Min. Single
CVN @ -10°C (J)	27	20
CVN @ -29°C (J)	30	20

Properties achieved using QTC procedure set out in APIN 6-A

Reduction ratio

Reduction ratio will meet 4:1 as a minimum.

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.

Heat treatment

Furnaces surveyed and calibrated per AMS 2750.

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.

LIBERTY SPECIALITY STEELS

7 Fox Valley Way, Stocksbridge,
Sheffield, S36 2JA, United Kingdom

T: + 44 (0) 114 288 2361
E: contactus@specialityuk.com

While care has been taken to ensure that the information contained in this publication is accurate, Liberty House Group does not accept responsibility or liability for information which is found to be misleading. ©Copyright 2019 Liberty House Group.