

STEEL



LIBERTY

SUPER 13 Cr UNS S41427

Delivering superior strength and
toughness than standard 13% Cr steel

SF 13/2/5 (UNS S41427) is a martensitic stainless steel that provides enhanced corrosion resistance suitable for NACE MR0175 / ISO 15156 applications with strength and toughness superior to that of a standard 13% Cr steel.

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Scope

The specification defines the requirements for SF 13/2/5 modified 13 % Cr Martensitic stainless steel hardened and double tempered to meet either 95ksi, in line with NACE MR0175, or 110ksi minimum yield strength.

Steel manufacture

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

Heat treatment

- Furnaces surveyed and calibrated per AMS 2750.
- 95ksi variant quenched and double tempered in line with NACE MR0175, table A.21.
- 110ksi variant quenched and double tempered to meet exacting specifications

General delivery conditions

- Applicable bar diameters: 3 -10".
- 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.
- NORSOK M650 3" - 10", 110Ksi

Structure

Grain size will be ASTM 5 or finer. Delta Ferrite <0.5 %.

Reduction ratio

Reduction ratio will meet 4:1 as a minimum.

Chemical analysis

C	Si	Mn	P	S	Cr	Mo	Ni
-	-	0.3	-	-	11.5	1.5	4.5
0.03	0.05	1.0	0.02	0.005	13.5	2.5	6.0

API 6A

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

Mechanical properties

	95ksi Variant 1-10" (mid radial)		110ksi variant 1-10" (mid radial)	
	Minimum	Maximum	Minimum	Maximum
0.2% Proof stress (ksi)	95	112	110	130
UTS (ksi)	105	112	125	140
% Elongation	20		13	
% reduction of area	45		45	
Hardness HRC		29		32
Hardness HBW	217	255	277	326
	Average	Min. Single	Average	Min. Single
CVN @ -10°C (J) Long	81	66	81	66
CVN @ +15°F (ft.lbs) Long	60	49	60	49

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

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

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