

BS S80D (Bright)

Technical Datasheet



Service. Quality. Value.

Stainless Steel Bar

Typical Applications

Used where higher mechanical properties than 410 are required and where corrosive conditions are not too severe. Typically: valve parts, centrifuge bowls, chemical equipment, bolts and screws, in aerospace, defence and high technology markets.

Product Description

S80 is a 16% chromium stainless steel modified by the addition of nickel, in the British Standard Aerospace series of alloys. It is designed to develop high mechanical properties by conventional heat treatment methods and provide good corrosion resistance. This grade is manufactured by electric melting process. It is magnetic in all conditions and can therefore be used for parts which may be subject to magnetic inspection. The designation S80D denotes material in the hardened and tempered condition.

Related Specifications

- AISI 431
- UNS S43100 in ASTM A276
- AMS 5628
- 431529

Machinability / Formability

BS S80 has better machining characteristics than the chromium-nickel grades. It has a machinability rating of 45%, with 1212 rated 100%. Surface cutting speed on automatic screw machines is approximately 75 ft/min. This material can be cold formed. If a cold forming operation is undertaken then a stress relieving treatment should be applied.

Corrosion Resistance

The corrosion resistance of BS S80 is superior to that of the standard chromium grades such as Types 410 and 416. This grade has excellent resistance to corrosion in all conditions of heat treatment from mild acids and alkalis, neutral and basic salts, food acids, and atmosphere. Maximum resistance is obtained by hardening and polishing.

Weldability

May be welded by all the commercial processes except forge or hammer welding. Large sections should be preheated prior to welding. Because of air-hardening properties, this grade should be annealed after welding.

Production Tolerances

Manufacturing limits are as stated in the Table BS S100 For further assistance please contact our Sales Dept / Laboratory.

Chemical Composition (weight %)

Weight (%)	C	Si	Mn	P	S	Cr	Ni
Min	0.12					15.0	2.0
Max	0.20	1.0	1.0	0.030	0.025	18.0	3.0

Mechanical Properties (minima unless stated for 'D' condition)

Tensile Strength (MPa)	0.2% Proof Stress (MPa)	Elongation on 5.65√S ⁰ (%)	Brinell Hardness (HB)	Izod Impact (ft.lbf)	
				≤ 63mm	> 63mm
880 / 1080	690	12	255 / 321	25	15

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

UK Service Centres:

Smiths Belfast 02895 908 897
Smiths Biggleswade 01767 604 704
Smiths Birmingham 0121 728 4940
Smiths Bristol 0117 971 2800
Smiths Chelmsford 01245 466 664
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Smiths Nottingham 0115 925 4801
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Quality & Testing:



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