

Precipitation Hardening Stainless Steel

Typical Applications

Mechanical components in Aerospace and Defence.
High-Tech mechanical applications

Product Description

This aerospace grade, precipitation hardening stainless steel combines high mechanical strength with moderate to good corrosion resistance in a variety of media. The steel is melted in air by an electric process. BS S143 is similar in a number of respects to 17/4 PH stainless steel (UNS S17400 / AISI 630) in its combination of properties. BS S143 stainless steel is supplied in the fully heat treated condition (solution heat treated followed by a two stage precipitation hardening treatment) as bright bar (BS S143D), black bar (BS S143B) and forgings (BS S143C).

Material to S144 and S145 shares a common chemical composition with S143. Therefore material to S143 can be precipitation hardened using a different sequence of temperatures to produce material meeting the mechanical property requirements of S144 or S145.

Machinability / Welding

The machining and welding of this grade of stainless steel presents no particular problems. Guidance can be sought from our Technical Dept.

Corrosion Resistance

S143 stainless steel provides useful corrosion resistance in mildly/moderate corrosion environments and is similar to that of basic 300 series stainless steels.

Inspection & Testing

In accordance with the latest issue of British Standard S100, billets and bars and, where practicable, forgings shall be subjected to ultrasonic examination.

Related Specifications

- BS S143
- FV520B
- Def Stan 95/14-2

Chemical Composition (weight %)

| | C | Mn | Si | S | P | Cr | Ni | Mo | Cu | Nb |
|-----|------|------|------|-------|-------|------|-----|------|------|------|
| Min | | | | | | 13.2 | 5.0 | 1.20 | 1.20 | 0.10 |
| Max | 0.07 | 1.00 | 0.60 | 0.025 | 0.035 | 14.7 | 5.8 | 2.00 | 2.00 | 0.40 |

Mechanical Properties (minima for bar & forgings in the finally heat treated condition)

| | |
|---------------------------|---------------|
| Ultimate Tensile Strength | 930/1,180 MPa |
| 0.2% Proof Strength | 780 MPa |
| Elongation | 15 % |
| Hardness | 277/341 HB |
| Izod Impact | 40 ft. lbf |

Typical Physical Properties

| | |
|--------------|------------------------|
| Density | 7.8 kg/dm ³ |
| Magnetisable | Yes |

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**
 Smiths Gateshead **0191 469 5428**
 Smiths Horsham **01403 261 981**

Smiths Leeds **0113 307 5167**
 Smiths Manchester **0161 794 8650**
 Smiths Norwich **01603 789 878**
 Smiths Nottingham **0115 925 4801**
 Smiths Redruth **01209 315 512**
 Smiths Verwood **01202 824 347**
 Main Office **0845 527 3331**

Quality & Testing:



www.smithmetal.com info@smithmetal.com