BS 2S143

DATA SHEET

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. S143 is similar in a number of respects to 17/4 PH stainless steel (UNS S17400 / AISI 630) in its combination of properties. S143 stainless steel is supplied in the finally heat treated condition (solution heat treated followed by a two stage precipitation hardening treatment) as bright bar (S143D), black bar (S143B) and forgings (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.

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.

STOCK RANGE
Round Bar : 3/8" to 2" Diameter (9.525 to 50.8mm)

We hold starting stock of large square bar in the softened condition (S143A) to enable us to offer a competitive delivery on forgings.

MATERIAL SPECIFICATIONS
- BS 2S143:1976
- FV520B (related specification)
- Def Stan 95/14-2 (related specification)

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

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.

CHEMICAL COMPOSITION (WEIGHT %)

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>Mn</th>
<th>Si</th>
<th>S</th>
<th>P</th>
<th>Cr</th>
<th>Ni</th>
<th>Mo</th>
<th>Cu</th>
<th>Nb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min.</td>
<td>0.07</td>
<td>1.00</td>
<td>0.60</td>
<td>0.025</td>
<td>0.035</td>
<td>13.2</td>
<td>5.0</td>
<td>1.20</td>
<td>1.20</td>
<td>0.10</td>
</tr>
<tr>
<td>Max</td>
<td>1.00</td>
<td>1.00</td>
<td>0.60</td>
<td>0.025</td>
<td>0.035</td>
<td>14.7</td>
<td>5.8</td>
<td>2.00</td>
<td>2.00</td>
<td>0.40</td>
</tr>
</tbody>
</table>

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. lb

*T The Charpy U-notch value obtained from a standard test piece may be expected to be not less than 40J.

TYPICAL PHYSICAL PROPERTIES

- Density: 7.8 kg/dm³
- Magnetisable: Yes

TECHNICAL SALES ASSISTANCE
Our resident team of qualified metallurgists and engineers will be pleased to assist further on any technical topic.

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