Durehete 1055

1% CrMoV Steel for bolting applications up to 570°

Durehete 1055’s high temperature performance has been proven by over 50 years of in-service data and Durehete was the original equipment specification for Alstom (GEC) and Siemens (Parsons) powerplants in the UK.

The proven performance of Durehete 1055 in long term service is backed by an extensive database of long term, high temperature test results.

These results confirm that it has excellent room and elevated temperature strength, good creep and relaxation resistance to 570°C coupled with high notch tolerance.

In addition, it has thermal expansion coefficients compatible with low alloy steel turbine casing materials.

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Manufactured in the UK at our own production facilities in Stocksbridge, we can offer a tailored supply solution based on stock held at our own service centre in Rotherham.

**Scope**

Durehete 1055 is the natural choice for all bolting applications at temperatures of up to 570°C. Unless stated otherwise all data are in accordance with either customer specifications or National Standards including ATD 1221004, NEI 221, BSEN 10269: 2013, 20CrMoV-TiB4-10, Steel No. 1.7729, BSEN 1515-1: 1999, BS1506 681-820, CEGB GDCD STD2 ISS2, BS4882.

**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.

**Delivery conditions**

Applicable bar diameters: 25 - 276mm (1 - 11”)

Surface Condition: Turned / As Rolled.

**Heat treatment**

This defines the requirements for Durehete 1055 bars supplied as quenched and tempered.

<table>
<thead>
<tr>
<th></th>
<th>Pre-Treatment Temp. (°C)*</th>
<th>Quench Temp. (°C)</th>
<th>Coolant**</th>
<th>Temper Temp. (°C)***</th>
</tr>
</thead>
<tbody>
<tr>
<td>All diameters</td>
<td>Min 660</td>
<td>970</td>
<td>water/oil</td>
<td>680</td>
</tr>
<tr>
<td></td>
<td>Max 700</td>
<td>990</td>
<td></td>
<td>720</td>
</tr>
</tbody>
</table>

*A further subcritical treatment may subsequently be carried out at a higher temperature without cooling.

**If d≤35 then coolant = oil. If 35<d<50 then coolant = oil or water. If d>50 then coolant = water.

***A second temper/stress relieve can be applied depending on specification.

**Chemical analysis**

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>P</th>
<th>S</th>
<th>Al</th>
<th>B</th>
<th>Cr</th>
<th>Mo</th>
<th>Ni</th>
<th>V</th>
<th>Ti</th>
<th>As</th>
<th>Sn</th>
<th>Cu</th>
<th>Sb</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.17</td>
<td>-</td>
<td>0.35</td>
<td>-</td>
<td>0.001</td>
<td>0.9</td>
<td>0.9</td>
<td>0.15</td>
<td>0.07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>0.23</td>
<td>0.4</td>
<td>0.75</td>
<td>0.02</td>
<td>0.02</td>
<td>0.08</td>
<td>0.01</td>
<td>1.2</td>
<td>1.1</td>
<td>0.2</td>
<td>0.8</td>
<td>0.15</td>
<td>0.02</td>
<td>0.2</td>
<td>0.8</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

*R = P + 2.43As + 3.57Sn + 8.16Sb + 0.13Cu

**Stock Size (mm)**

25 35 48 62 67 73 79.3 92.5 104.7 117.3 127 139.7 158.7 180.9 196.8 228.6 241.3 276.3

**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 Industrial Engineering products please contact our experts using the details below.