SIQUAL 6582 Steel

Designation by Standards

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Ravne</th>
<th>Mat. No.</th>
<th>DIN</th>
<th>EN</th>
<th>AISI/SAE</th>
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<tr>
<td>SIQUAL 6582</td>
<td>VCNMO150</td>
<td>1.6582</td>
<td>-</td>
<td>34CrNiMo6</td>
<td>4337/4340</td>
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</tbody>
</table>

Chemical Composition (in weight %)

<table>
<thead>
<tr>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>Cr</th>
<th>Mo</th>
<th>Ni</th>
<th>V</th>
<th>W</th>
<th>Others</th>
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<tbody>
<tr>
<td>0.34</td>
<td>max.0.40</td>
<td>0.65</td>
<td>1.50</td>
<td>0.23</td>
<td>1.50</td>
<td>-</td>
<td>-</td>
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Description
SIQUAL 6582 is a heat treatable, low alloy steel containing nickel, chromium and molybdenum. It is known for its toughness and capability of developing high strength in the heat treated condition while retaining good fatigue strength. A very popular, versatile steel. It can be heat-treated to produce a wide range of tensile strength in moderate sections.

Applications
Typical applications are for structural use, such as aircraft landing gear, power transmission gears and shafts and other structural parts, general engineering parts, through-hardened gears, connecting rods and bolts, gun barrels.

Physical properties (average values) at ambient temperature
Modulus of elasticity \( [10^3 \times \text{N/mm}^2] \): 210
Density \([\text{g/cm}^3]\): 7.84
Thermal conductivity \([\text{W/m.K}]\): 37.7
Specific heat capacity \([\text{J/g.K}]\): 0.46

Environmental resistance
Flammability: very good
Fresh water: good
Organic solvent: very good
Oxidation at 500°C: good
Sea water: average
Strong acid: poor
Strong alkalis: poor
Wear: very good
Weak acid: average
Weak alkalis: good
Minimum service temperature: -73.2 to -42.2°C
Maximum service temperature: 613-653°C
Continuous Cooling Transformation (CCT) Diagram

Time-Temperature Transformation (TTT) Diagram
**Normalizing**
Normalizing temperature: 850-880°C.

**Stress Relieving**
Stress relieving to remove machining stresses should be carried out by heating to approx. 650°C, holding for 1-2 hours at heat, followed by air cooling. This operation is performed to reduce distortion during heat treatment.

**Hardening**
Harden from a temperature of 830-860°C followed by oil quenching. Quenching temperature in the end-quench test is 850°C.

**Tempering**
Tempering temperature: 540-660°C.

**Mechanical Properties in Quenched and Tempered Condition**

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>0.2 % proof stress (N/mm²)</th>
<th>Tensile strength (N/mm²)</th>
<th>Elongation (%)</th>
<th>Reduction of area (%)</th>
<th>Notch impact energy (ISO-V) (J)</th>
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</thead>
<tbody>
<tr>
<td>up to 16</td>
<td>980</td>
<td>1180-1380</td>
<td>9</td>
<td>40</td>
<td>41</td>
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<tr>
<td>17-40</td>
<td>885</td>
<td>1080-1280</td>
<td>10</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>41-100</td>
<td>785</td>
<td>980-1180</td>
<td>11</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>101-160</td>
<td>685</td>
<td>880-1080</td>
<td>12</td>
<td>55</td>
<td>48</td>
</tr>
<tr>
<td>161-250</td>
<td>590</td>
<td>780-930</td>
<td>13</td>
<td>55</td>
<td>48</td>
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</table>

**Distance From Quenched End in mm**

<table>
<thead>
<tr>
<th>-</th>
<th>1.5</th>
<th>3</th>
<th>5</th>
<th>7</th>
<th>9</th>
<th>11</th>
<th>13</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
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<tbody>
<tr>
<td>H max.</td>
<td>58</td>
<td>58</td>
<td>58</td>
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<td>57</td>
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<tr>
<td>H min.</td>
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<tr>
<td>HH max.</td>
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<tr>
<td>HH min.</td>
<td>53</td>
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<tr>
<td>HL max.</td>
<td>55</td>
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Tempering Diagram

Hardenability Diagram

Forging
Hot forming temperature: 1100-900°C.

Machinability
Machining is best done with this alloy in the annealed or normalized and tempered condition. It can be machined by all conventional methods.

Corrosion Resistance
This is a low alloy steel and not a corrosion resistant alloy. Protective coating should be used.

Welding
The alloy can be fusion or resistance welded. Preheat and post heat weld procedures should be followed when welding this alloy by established methods.

Cold working
The VCNMO150 alloy may be cold worked, in the annealed condition, by conventional methods and tooling. It has good ductility.

Forms manufactured: Please see the Dimensional Sales Program.

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