SIQUAL 6587 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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<tbody>
<tr>
<td>SIQUAL 6587</td>
<td>CT781</td>
<td>1.6587</td>
<td>17CrNiMo6 †</td>
<td>18CrNiMo7-6</td>
<td>4820</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>0.18</td>
<td>max.0.40</td>
<td>0.70</td>
<td>1.65</td>
<td>0.30</td>
<td>1.55</td>
<td>-</td>
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Description
Nickel-molybdenum alloy steel. Alloyed case hardening steel for heavy and high strained gear parts with high demands on toughness at core tensile strength of 1050-1350 N/mm².

Applications
Severely stressed components for mechanical engineering and automobile industry.

Physical properties (average values) at ambient temperature
Modulus of elasticity \([10^3 \times \text{N/mm}^2]\): 210
Density \([\text{g/cm}^3]\): 7.87
Thermal conductivity \([\text{W/m.K}]\): 38.0
Electric resistivity \([\text{Ohm mm}^2/\text{m}]\): 0.18
Specific heat capacity\([\text{J/g.K}]\): 0.46

Coefficient of Linear Thermal Expansion \(10^{-6} \text{°C}^{-1}\)

<table>
<thead>
<tr>
<th>20-100°C</th>
<th>20-200°C</th>
<th>20-300°C</th>
<th>20-400°C</th>
<th>20-500°C</th>
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<tbody>
<tr>
<td>11.2</td>
<td>12.1</td>
<td>12.9</td>
<td>13.4</td>
<td>13.9</td>
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</table>
Continuous Cooling Transformation (CCT) Diagram

Time-Temperature Transformation (TTT) Diagram
Soft Annealing
Heat to 650-700°C, cool slowly in furnace. This will produce a maximum Brinell hardness of 229.

Intermediate Annealing: 630-650°C.

Hardening
Carburising: 880-980°C.
Core Hardening: 830-870°C, water.
Case Hardening: 780-820°C, water.

Normalizing
Normalizing: 850-880°C, air.

Tempering
Tempering temperature: 150-200°C.

Soft annealed treated: max. 229 HB.
Treated for cold shearability: max. 255 HB.
Treated for strength: max. 229 HB.
Treated for ferite and pearlite structure and hardness range: 159-207 HB.

Tensile Strength $R_m$ in N/mm$^2$ vs. Diameter in mm
After Hardening and Tempering at 200°C

<table>
<thead>
<tr>
<th>Diameter in mm</th>
<th>d&lt;=16</th>
<th>17&lt;d&lt;=40</th>
<th>41&lt;d&lt;=100</th>
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</thead>
<tbody>
<tr>
<td>Tensile Strength $R_m$ in N/mm$^2$</td>
<td>min. 1200</td>
<td>min. 1100</td>
<td>min. 900</td>
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</tbody>
</table>

Hardenability Diagram

Forging
Hot forming temperature: 1050-850°C.

Machinability
No data.

Forms manufactured: Please see the Dimensional Sales Program.

Disclaimer
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