### Rapidur

**Steel properties**

- High-performance high-speed steel featuring an extremely good cutting edge retention and wear resistance due to its high vanadium content. A high cobalt content contributes to a high red hardness and tempering resistance.

**Applications**

- Machining of hard materials which wear cutting edges such as highly quenched and tempered chromium-nickel grades and non-ferrous metals, mother-of-pearl, paper, hard rubber, synthetic resins, marble, slate and the like. Ideally suited for turning and finishing tools, forming tools of all kinds, heavy-duty milling cutters and automatic lathes.

### Cryodur

**Steel properties**

- Newly developed ledeburitic cold-work steel with high hardness, good toughness and high tempering resistance combined with high wear resistance.

**Applications**

- Cutting and punching tools including precision cutting tools, threading dies and rolls, rotary shear blades, cold pilger mandrels, pressure pads and plastic moulds, cold-forming and deep-drawing dies, woodworking tools and cold rolls.

**Heat treatment**

- Soft annealing: 830 – 860°C
- Stress-relief annealing: approx. 650°C
- Hardening: 1080°C
- Tempering: 510°C

### Steel properties

<table>
<thead>
<tr>
<th>Steel property</th>
<th>C</th>
<th>Si</th>
<th>Cr</th>
<th>Mo</th>
<th>V</th>
<th>W</th>
<th>Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapidur</td>
<td>1.35</td>
<td>0.80</td>
<td>4.10</td>
<td>3.80</td>
<td>12.00</td>
<td>4.80</td>
<td></td>
</tr>
<tr>
<td>Cryodur</td>
<td>1.00</td>
<td>0.90</td>
<td>8.00</td>
<td>1.10</td>
<td>1.60</td>
<td>12.00</td>
<td></td>
</tr>
</tbody>
</table>

### Physical properties

- Coefficient of thermal expansion at °C: 11.4 – 11.8
- Thermal conductivity at °C: 24.0 – 25.8

### Applications

- Cutting and punching tools including precision cutting tools, threading dies and rolls, rotary shear blades, cold pilger mandrels, pressure pads and plastic moulds, cold-forming and deep-drawing dies, woodworking tools and cold rolls.

### Heat treatment

- Soft annealing: 820 – 860°C
- Stress-relief annealing: approx. 650°C
- Hardening: 1080°C
- Tempering: 510°C

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**Reference numbers in brackets are not standardized in EN ISO 4957.**