Cryodur 2990
The innovative cold work tool steel for sheet metal processing
Punching, cutting and shearing tools made of Cryodur 2990

Improve production reliability, cut production costs

**Targeted problem solution**

Although extremely wear-resistant tools for sheet metal processing can be produced from conventional ledeburitic cold work tool steels, one weakness is generally the lack of toughness and thus the risk of tool failure under high stresses. Tool changes and machine stoppages cost time and money.

Therefore, our materials specialists set out to develop a special steel that combines high resistance to abrasive and adhesive wear with great hardness and, above all, greater toughness.

With Cryodur 2990, we can offer you a steel grade with an ideal property profile for sheet metal processing.

For all punching, cutting and shearing tools, such as rotary shear blades, punches and dies, progressive dies. Other cold work applications are also possible (thread rolling, deep drawing ...).

**Perfect alloy mix**

The tough Cryodur grade stands out due to its special chemical composition and the resultant fine, homogeneous microstructure.

Cryodur 2990 is characterized by extraordinary hardness, strength and wear resistance. And with its newly acquired, enormous toughness, it also stands for high resistance to failure and thus for longer service lives and higher production quantities of the tools. Production reliability, productivity and, above all, cost-efficiency can be substantially improved with Cryodur 2990.

The higher dimensional stability of the tools permits compliance with demanding tolerances of the parts to be produced, thereby enhancing their quality.
Ideal property profile
- High toughness
- High compressive strength
- High resistance to abrasive and adhesive wear
- Good EDM properties
- Good surface treatability by all known methods
- Good inductive hardenability

Chemical composition (typical analysis in weight-%)

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>Si</th>
<th>Cr</th>
<th>Mo</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0</td>
<td>0.9</td>
<td>8.0</td>
<td>1.0</td>
<td>1.6</td>
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</tbody>
</table>
With Cryodur 2990 into the future

Withstands more, earns more

**Specialist for cold work**

Cryodur 2990 is the perfect steel for punching, cutting and shearing tools
- Rotary shear blades
- Punches
- Dies
- Circular shear blades
- Progressiv dies

**Advantages compared to conventional cold work tool steels**
- Higher production reliability
- Longer service lives
- Higher productivity
- Greater cost-efficiency
- Higher product quality
- Fewer tool failures
- Less machine downtime
- Less lost production
- Lower tool costs
- Fewer production rejects

**Delivery programme**

<table>
<thead>
<tr>
<th>Width / thickness in mm</th>
<th>Durchmesser in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1010.0 x 15.0</td>
<td>20.5  25.5  50.8  81.0  91.5</td>
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<tr>
<td>1010.0 x 25.0</td>
<td>111.5 122.0 131.5 141.5 151.5</td>
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<tr>
<td>1010.0 x 30.0</td>
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<td>272.5 302.5 307.0 323.0 143.0</td>
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<td>373.0 403.0 413.0 428.0 453.0</td>
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<tr>
<td>1010.0 x 150.0</td>
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Please enquire about special formats you may need.
Comparison of properties

<table>
<thead>
<tr>
<th>Material</th>
<th>Cr-content in weight-%</th>
<th>Hardness</th>
<th>Wear resistance adhesive</th>
<th>Wear resistance abrasive</th>
<th>Compressive strength</th>
<th>Toughness</th>
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</thead>
<tbody>
<tr>
<td>Cryodur 2363</td>
<td>5</td>
<td>++</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Cryodur 2990</td>
<td>8</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
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<td>Cryodur 2379</td>
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<td>++</td>
<td>+++</td>
<td>++</td>
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</tbody>
</table>

Tempering behaviour

As-hardened (hot bath 550°C)
Cryodur 2990

The perfect steel for cold work

**Toughness of Cryodur 2990**
Higher toughness and simultaneously high hardness.

![Impact Energy Graph](image)

- **1.2363**
  - Longitudinal: 61 HRC, 58 HRC
  - Transverse: 61 HRC, 58 HRC

- **1.2379**
  - Longitudinal: 60 HRC, 62 HRC
  - Transverse: 58 HRC, 55 HRC

- **Cryodur 2990**
  - Longitudinal: 60 HRC
  - Transverse: 58 HRC

**Wear resistance of Cryodur 2990**
Very good resistance to both, abrasive and adhesive wear.
Example: “Pin-on-disk test for comparing the abrasive wear rate”.

![Wear Rate Graph](image)

- **1.2363**
  - Longitudinal: 61 HRC, 58 HRC, 61 HRC

- **1.2379**
  - Longitudinal: 59 HRC, 61 HRC, 58 HRC

- **Cryodur 2990**
  - Longitudinal: 60 HRC, 63 HRC, 61 HRC
Microstructure of Cryodur 2990
- Small carbide size
- Little carbide banding
- Homogeneous structure

1.2363  1.2379  Cryodur 2990

General note (liability)
Printing errors, omissions and changes accepted. Product-specific data sheets have priority over the information provided in this brochure. The desired performance characteristics are binding only if they are exclusively agreed upon at the conclusion in a contract.