UDDEHOLM UNIMAX®
THE HARDER, THE BETTER
Classified according to EU Directive 1999/45/EC. For further information see our “Material Safety Data Sheets”.

EXCELLENT FOR REINFORCED PLASTIC DETAILS

Uddeholm Unimax is suitable for moulding reinforced plastics, compression moulding and long run production moulds. The combination of high ductility and high hardness means improved durability and wear resistance. This makes Uddeholm Unimax especially suited to cope with moulding processes that cause hard wear on the mould.

REDUCED CYCLE TIME – VERY GOOD HEAT DIFFUSION

Due to superior heat diffusion properties Uddeholm Unimax can reduce the cycle time considerably. Application tests have shown that Uddeholm Unimax has better dynamic heat conductivity than H13 type steel, resulting in significantly reduced cycle times. This means increased production and you will be able to produce more parts per time unit.

LONGER TOOL LIFE

Uddeholm Unimax’s property profile will increase the tool life substantially. High ductility helps prevent brittle fracture and will make the production run a lot smoother, with fewer disturbances.

GOOD SURFACE TREATMENT PROPERTIES

The wear resistance can be further improved by surface treatment or surface-coating, such as duplex nitriding/PVD, hard chromium plating, etc. High hardness and toughness together with good dimensional stability make Uddeholm Unimax a suitable substrate steel for various surface coatings.

VERY GOOD HARDENABILITY – SUPERIOR PROPERTIES IN LARGE DIMENSIONS

Large moulds need high toughness and high resistance to indentation all the way through. Uddeholm Unimax has very good hardenability which results in the same good properties throughout the entire cross-section. Therefore we supply Uddeholm Unimax in sizes larger than Ø 800 mm.

UNIVERSAL TOOL STEEL REALLY MEANS UNIVERSAL

Uddeholm Unimax is universal not only within the plastic moulding segment but also within the entire tooling field. This means that Uddeholm Unimax is suitable to cope with applications found in severe cold work and hot work tooling. The excellent combination of toughness and hardness also makes it a universal engineering grade.
The harder, the better

A lot of parameters must be considered when choosing the right tool steel. The tool users want to maximise the life and performance of the tool and minimise the costs of production and down time. In the end it all boils down to the cost per part produced. With Uddeholm as your partner the goal is easier to achieve.

Uddeholm Unimax is the new universal tool steel from Uddeholm. The excellent properties offered enable it to be used for many tooling applications. Reduced cycle time and longer tool life contribute to improved overall economy.

With an exceptional combination of high ductility and high hardness, Uddeholm Unimax is perfect when moulding plastic details that cause hard wear on the mould. It is also a strong alternative when moulding difficult parts and bigger details. The superior properties of Uddeholm Unimax actually become more evident the bigger the mould is and the more difficult the part produced. As we put it – the harder, the better.
We used to have cracking problems when producing this office machine gear segment. The steel we tried earlier demanded a multipart tool with high complexity. With Uddeholm Unimax we get great results without cracking. In addition our tool design can now be much simpler, and that saves us nearly 30% of the tool cost.

Andreas Krona, Callo Sintermetall, Nässjö, Sweden

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### INJECTION MOULD INSERT

<table>
<thead>
<tr>
<th>Tool steel</th>
<th>H13</th>
<th>UDDEHOLM UNIMAX&lt;sup&gt;®&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>52–54 HRC</td>
<td>56–58 HRC</td>
</tr>
<tr>
<td>Heat treatment</td>
<td>–</td>
<td>1,000–1,010ºC/30 min + 525ºC/2x2h</td>
</tr>
<tr>
<td>Produced parts/refurbishment</td>
<td>&lt; 6,000</td>
<td>&gt; 7,700</td>
</tr>
<tr>
<td>Failure mechanism</td>
<td>Fast wear and plastic deformation</td>
<td>Still running and in good condition</td>
</tr>
<tr>
<td>Comments/status</td>
<td>–</td>
<td>The mould is running well. No problem in machinability.</td>
</tr>
</tbody>
</table>

Company: Sefa, Sicam, Tecnogymn, Italy  
Product: Rotor for an electric motor, produced for Ducati energia S.p.a.  
Work material: Nylon (PA) + 30%GF, Transformer sheet inserts

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### INJECTION MOULD

<table>
<thead>
<tr>
<th>Tool steel</th>
<th>W.-Nr. 1.2344</th>
<th>W.-Nr. 1.2379</th>
<th>UDDEHOLM UNIMAX&lt;sup&gt;®&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>52–54 HRC</td>
<td>52–54 HRC</td>
<td>54–56 HRC</td>
</tr>
<tr>
<td>Heat treatment</td>
<td>–</td>
<td>–</td>
<td>1,000–1,010ºC/30 min + 525ºC/2x2h</td>
</tr>
<tr>
<td>Produced parts/refurbishment</td>
<td>100,000</td>
<td>100,000</td>
<td>625,000 shots</td>
</tr>
<tr>
<td>Failure mechanism</td>
<td>Wear</td>
<td>Cracking</td>
<td>Still running</td>
</tr>
<tr>
<td>Comments/status</td>
<td>–</td>
<td>–</td>
<td>The mould is running well. No problem in machinability in milling and drilling. No problem in the wire-EDM cutting. Many parts obtained by grinding; no particular problems.</td>
</tr>
</tbody>
</table>

Product: Electric relay body for General Electric  
Work material: PA66 + 30%GF – V0 (Latamid 30)
UDDEHOLM is the world’s leading supplier of tooling materials. This is a position we have reached by improving our customers’ everyday business. Long tradition combined with research and product development equips Uddeholm to solve any tooling problem that may arise. It is a challenging process, but the goal is clear – to be your number one partner and tool steel provider.

Our presence on every continent guarantees you the same high quality wherever you are. ASSAB is our wholly-owned subsidiary and exclusive sales channel, representing Uddeholm in various parts of the world. Together we secure our position as the world’s leading supplier of tooling materials. We act worldwide, so there is always an Uddeholm or ASSAB representative close at hand to give local advice and support. For us it is all a matter of trust – in long-term partnerships as well as in developing new products. Trust is something you earn, every day.

For more information, please visit www.uddeholm.com, www.assab.com or your local website.