General product description

Xtreme Performance Technology enables the properties of the microalloyed steel 38MnVS6 to be modified to meet customer-specific processing or component requirements. Optimisation can be achieved in either of two ways. One approach is to design the process to produce a disproportionately high increase in the material's strength characteristics, which is accompanied by a significant rise in toughness. Alternatively, the production process can focus on creating a significant increase in the material's ductility.

Mechanical-technological properties

<table>
<thead>
<tr>
<th>Variant</th>
<th>( R_{\text{p0.2}} ) [MPa]</th>
<th>( R_m ) [MPa]</th>
<th>( A_5 ) [%]</th>
<th>( A_g ) [%]</th>
<th>( Z ) [%]</th>
<th>( A_{\text{av}} ) [J]</th>
<th>( T_{27} ), [°C]</th>
</tr>
</thead>
<tbody>
<tr>
<td>high strength, very high toughness</td>
<td>640</td>
<td>840</td>
<td>20</td>
<td>10</td>
<td>55</td>
<td>( \geq 100 )</td>
<td>-60</td>
</tr>
<tr>
<td>very high strength, high toughness</td>
<td>950</td>
<td>1100</td>
<td>18</td>
<td>10</td>
<td>55</td>
<td>( \geq 90 )</td>
<td>-40</td>
</tr>
</tbody>
</table>

Typical mechanical-technological values.
\( R_{\text{p0.2}} \) = yield strength (at 0.2% offset), \( R_m \) = tensile strength, \( A_5 \) = elongation after fracture, \( A_g \) = uniform elongation, \( Z \) = reduction of area at fracture, \( A_{\text{av}} \) = notch impact energy (ISO-V, specimens), \( RT \) = room temperature, \( T \) = temperature, \( T_{27} \) = transition temperature at 27 J

Chemical composition

(cast analysis by mass-%)

<table>
<thead>
<tr>
<th>Variant</th>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>P</th>
<th>S</th>
<th>Cr</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>min.</td>
<td>0.34</td>
<td>0.15</td>
<td>1.20</td>
<td>-</td>
<td>0.020</td>
<td>-</td>
<td>0.08</td>
</tr>
<tr>
<td>max.</td>
<td>0.41</td>
<td>0.80</td>
<td>1.60</td>
<td>0.025</td>
<td>0.060</td>
<td>0.30</td>
<td>0.20</td>
</tr>
</tbody>
</table>

The chemical analysis corresponds to 38MnVS6 (1.1303).
Maximum carbon equivalent

Max. CET (CEV) 0,60 (0,81)
Typ. CET (CEV) 0,55 (0,70)

Surface properties
Bars are 100% eddy current tested acc. to surface quality class 3 of EN 10277-1.
Bar ends untested on both sides with a length of 50 mm if not otherwise requested by customer.

Miscellaneous
Other agreements acc. to order.

Condition of delivery
Bar, black or peeled
Diameter range 18 – 40 mm, tolerance h11 (black) or h9 (peeled)
Bar straightness 0,5 mm/m

Fabrication and other recommendations
Moderately good machinability, excellent induction hardenability.

We reserve the right to make changes and technical improvements without notice. Errors and omissions excepted. The desired performance characteristics are only binding if they had been agreed upon exclusively at the time that the contract was made.