Data Sheet VC 800
Tooling Alloys

Zapp is certified to ISO 9001

CHEMICAL COMPOSITION
C – Cr – V – Mo – Mn – Si

VC 800 – PROPERTIES
VC 800 is a high alloyed tool steel characterized by the right combination of toughness and wear resistance required for blanking and forming.

TYPICAL APPLICATION
- Blanking of thick materials up to 8 mm
- Fine blanking
- Shear blades for cutting
- Industrial knives
- Dies for cold extrusion
- Bending tools
- Forming rolls
- Deep drawings
- Cold forging

PHYSICAL PROPERTIES
Specific Weight [$10^3$/mK]
20 – 200 °C 11.6

Thermal Conductivity [W/m*K]
20 °C 26.1
350 °C 27.1
700 °C 28.6

Density [kg/dm³] 7.7

Modulus of Elasticity E [MPa] 190

HEAT TREATMENT

ANNEALING
880° C
Slow controlled cooling in furnace at a rate of 10 °C/hr down to approx. 650 °C, further cooling in air.
Hardness after annealing max. 240 HB.

STRESS RELIEVING
650° C
After through heating, hold in neutral atmosphere for 2 hours.
Slow cooling in furnace to 500 °C, then freely in air.

HARDENING
980 to 1050 °C
Holding Time after temperature equalization:
30 minutes
Cooling in air / air blast, oil, or gas
Obtainable hardness: 60 HRc
TEMPERING

Slow heating to tempering temperature 1010 °C immediately after hardening / time in furnace at least 2 hours / cooling in air or gas. Normally VC 800 is tempered with a temperature range of 500 – 520 °C, 3x each 2 hours

<table>
<thead>
<tr>
<th>Tempering temperature [°C]</th>
<th>Hardness [HRc]</th>
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<tbody>
<tr>
<td>200</td>
<td>59 ± 1 HRc</td>
</tr>
<tr>
<td>250</td>
<td>58 ± 1 HRc</td>
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<tr>
<td>300</td>
<td>57 ± 1 HRc</td>
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<tr>
<td>450</td>
<td>59 ± 1 HRc</td>
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<tr>
<td>500</td>
<td>60 ± 1 HRc</td>
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<tr>
<td>550</td>
<td>54 ± 1 HRc</td>
</tr>
<tr>
<td>600</td>
<td>48 ± 1 HRc</td>
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</tbody>
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TEMPERING CHART

NITRIDING

Nitriding in ammonia gas gives a hard surface layer that is resistant to wear and erosion. The surface hardness after nitriding will be approx. 1000 HV. Nitrocarburizing will give a thin hard surface layer with a hardness of 900 HV.

Further information regarding our products and locations are available in our image brochure and under www.zapp.com

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