

# Material data

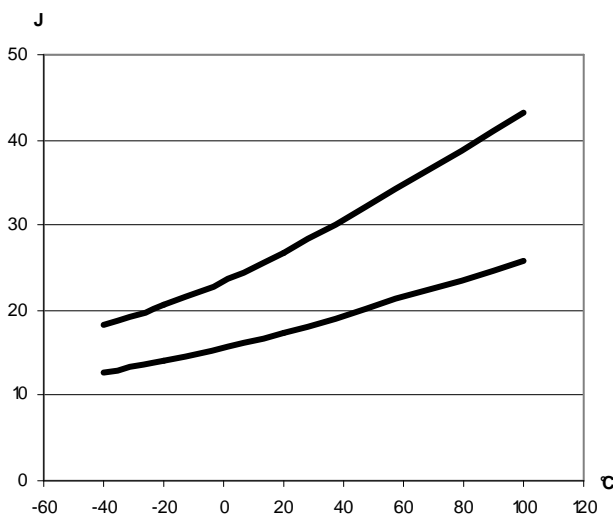
UDDEHOLM COMPONENT BUSINESS

## UDDEHOLM ORVAR SUPREME

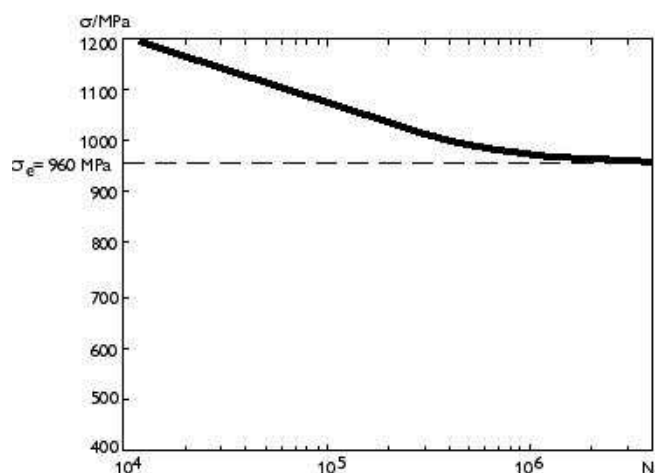
Hardened and tempered to 44-46 HRC, at 20°C (68°F)

Physical properties	Metric	English
Density	7 800 kg/m <sup>3</sup>	0.282 lbs/in <sup>3</sup>
<b>Mechanical properties</b>		
Hardness	44-46 HRC	44-46 HRC
Hardness, MAX recommended	54 HRC	54 HRC
Ultimate tensile strength, R <sub>m</sub>	1400 N/mm <sup>2</sup>	203 000 psi
Yield strength, R <sub>p0,2</sub>	1250 N/mm <sup>2</sup>	181 250 psi
Elongation at break, A <sub>5</sub>	13 %	13 %
Reduction of area, Z	55 %	55 %
Modulus of elasticity	210 000 N/mm <sup>2</sup>	30.5x10 <sup>6</sup> psi
Poisson's ratio	0,29	0.29
Impact toughness, Charpy-V	22 J	16.2 ft lb
Shear modulus of elasticity	80 000 N/mm <sup>2</sup>	1.16 x10 <sup>6</sup> psi
<b>Thermal properties</b>		
Coefficient of thermal expansion, linear	12,6 µm/m °C (20-200°C)	7.0 µin/in °F (68-390°F)
Specific heat capacity	460 J/kg °C	0.11 BTU/lb-°F
Thermal conductivity	25 W/m °C	176 BTU in/h ft <sup>2</sup> °F

Transition curve 46-48 HRC



Wöhler curve 45 HRC  
Stress amplitude at R=-1



Expected values valid for Round Bars up to Ø63.5 mm, longitudinal.