SUPREME STEEL INDUSTRIES

Type D2 Tool Steel, Air Quenched at 1010°C, Tempered at 200°C

Material Notes: High-carbon, High-chromium Tool Steel, alloyed with Molybdenum and Vanadium. Virtually non-deforming during heat treatment. High wear resistance, which increases with increasing C and V content.

Key Words: UNS T30402, ASTM A681, FED QQ-T-570, SAE J437, SAE J438, DIN 1.2379 AISI D2

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Physical Properties	Metric	English	Comments
Density	7.67 g/cc	0.277 lb/in³	hardened to 62 HRC
	7.61 g/cc @Temperature 399 °C	0.275 lb/in³ @Temperature 750 °F	hardened to 62 HRC
	7.64 g/cc @Temperature 199 °C	0.276 lb/in³ @Temperature 390 °F	hardened to 62 HRC

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	210	210	Soft annealed
Modulus of Elasticity	209.9 GPa	30450 ksi	(hardened to 62 HRC)
	180 GPa @Temperature 399 °C	26100 ksi @Temperature 750 °F	hardened to 62 HRC
	200 GPa @Temperature 199 °C	29000 ksi @Temperature 390 °F	hardened to 62 HRC
Compressive Yield Strength	1650 MPa	239000 psi	0.2%, hardened to 50 HRC
	1900 MPa	276000 psi	0.2%, hardened to 55 HRC
	2150 MPa	312000 psi	0.2%, hardened to 60 HRC
	2200 MPa	319000 psi	0.2%, hardened to 62 HRC

Thermal Properties	Metric	English	Comments
CTE, linear	11.2 µm/m-°C @Temperature 20.0 - 200 °C	6.20 µin/in-°F @Temperature 68.0 - 392 °F	high temp. tempering, hardened to 62 HRC
	12.1 µm/m-°C @Temperature 20.0 - 400 °C	6.70 µin/in-°F @Temperature 68.0 - 752 °F	high temp. tempering, hardened to 62 HRC
	12.2 µm/m-°C @Temperature 20.0 - 200 °C	6.80 µin/in-°F @Temperature 68.0 - 392 °F	low temp. tempering, hardened to 62 HRC
Specific Heat Capacity	0.460 J/g-°C @Temperature 20.0 °C	0.110 BTU/lb-°F @Temperature 68.0 °F	hardened to 62 HRC
Thermal Conductivity	20.0 W/m-K @Temperature 20.0 °C	139 BTU-in/hr-ft²-°F @Temperature 68.0 °F	hardened to 62 HRC
	21.0 W/m-K @Temperature 199 °C	146 BTU-in/hr-ft²-°F @Temperature 390 °F	hardened to 62 HRC
	23.0 W/m-K @Temperature 399 °C	160 BTU-in/hr-ft²-°F @Temperature 750 °F	hardened to 62 HRC

Component Elements Properties	Metric	English	Comments
Carbon, C	1.55 %	1.55 %	
Chromium, Cr	11.8 %	11.8 %	
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	0.80 %	0.80 %	
Silicon, Si	0.30 %	0.30 %	
Vanadium, V	0.80 %	0.80 %	

Processing Properties	Metric	English	Comments
Processing Temperature	205 - 540 °C	401 - 1000 °F	Tempering Temperature
	980 - 1025 °C	1800 - 1877 °F	Hardening Temperature
Annealing Temperature	870 - 900 °C	1600 - 1650 °F	

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