SUPREME STEEL INDUSTRIES

CLC 1.2311 Prehardened Mold Steel (300HB/30HRC)

Material Notes: **Description:** CLC 1.2311 is a 300HB (30HRC) pre-hardened grade specially designed for Plastic Mould Industry. Chromium, Molybdenum, Carbon and manganese additions are optimized to have a fully martensite-bainite microstructure after quenching. The steel is melted in electrical furnace and refined with VOD or DH device The cleanliness of the steel is guaranteed as well as the soundness. This makes the steel particularly well adapted for mold steel even when polishing or chemical etching are required for surface finish quality.

Size Range: Thickness 25 ~ 350mm
Width 205 ~ 1500 mm

Key Words: AFNOR 40CMD8, DIN 40CrMnMo7, WERKSTOFF.Nbr 1.2311, AISI P20

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Mechanical Properties	Metric	English	Comments
Hardness, Brinell	300	300	Typical, in Longitudinal and Transverse Direction
Tensile Strength, Ultimate	992 MPa	144000 psi	Typical, Transverse Direction
	1014 MPa	147100 psi	Typical, Longitudinal Direction
Tensile Strength, Yield	821 MPa @Strain 0.200 %	119000 psi @Strain 0.200 %	Typical, Transverse Direction
	854 MPa @Strain 0.200 %	124000 psi @Strain 0.200 %	Typical, Longitudinal Direction
Elongation at Break	9.6 %	9.6 %	Typical, EL 5.65 Transverse Direction
	10.8 %	10.8 %	Typical, EL 5.65 Longitudinal Direction
Modulus of Elasticity	205 GPa	29700 ksi	Typical, in Longitudinal and Transverse Direction
Charpy Impact	25.0 J	18.4 ft-lb	Typical (Transverse)
	28.0 J	20.7 ft-lb	Typical (Longitudinal)
	23.0 J @Temperature -20.0 °C	17.0 ft-lb @Temperature -4.00 °F	Typical (Longitudinal)
Charpy Impact, Unnotched	28.0 J	20.7 ft-lb	Typical at -20°C (Longitudinal)
	30.0 J	22.1 ft-lb	Typical at 20°C (Transverse)
	32.0 J	23.6 ft-lb	Typical at 20°C (Longitudinal)

Thermal Properties	Metric	English	Comments
CTE, linear	11.5 µm/m-°C @Temperature 20.0 - 100 °C	6.39 µin/in-°F @Temperature 68.0 - 212 °F	
	11.57 µm/m-°C @Temperature 20.0 - 200 °C	6.428 µin/in-°F @Temperature 68.0 - 392 °F	
	12.47 µm/m-°C @Temperature 20.0 - 300 °C	6.928 µin/in-°F @Temperature 68.0 - 572 °F	
Thermal Conductivity	34.0 W/m-K @Temperature 20.0 °C	236 BTU-in/hr-ft²-°F @Temperature 68.0 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	1.9 %	1.9 %	
Iron, Fe	95.683 - 95.7 %	95.683 - 95.7 %	As remainder
Manganese, Mn	1.5 %	1.5 %	
Molybdenum, Mo	0.20 %	0.20 %	
Phosphorous, P	<= 0.012 %	<= 0.012 %	
Silicon, Si	0.30 %	0.30 %	
Sulfur, S	<= 0.0050 %	<= 0.0050 %	

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