Xometry

Datasheet

Mold Steel 718

Description

Mold steel 718 (Chinese designation: 3Cr2NiMo) is an improved pre-hardened plastic mold steel based on P20 (3Cr2Mo). It is engineered for high hardenability, superior polishability, and excellent dimensional stability. Supplied in a pre-hardened condition, it is ready for immediate machining without requiring further heat treatment (quenching).

Steel GradeThis steel grade corresponds to the following international standards: China (GB): 3Cr2NiMo; Germany (DIN): 1.2738; Sweden (ASSAB): 718; USA (AISI/SAE): P20+Ni; Japan (JIS): Optimized SNCM; International (ISO): 35CrMo2.

Features

It is supplied in the pre-hardened condition and can be used directly without quenching, eliminating the risk of heat treatment deformation. It offers excellent mirror polishability, making it ideal for high-gloss products. The material provides a balanced combination of strength, toughness, and wear resistance, retaining over 80% of its strength even at 300°C. With outstanding dimensional stability and good machinability, it also contains chromium and nickel, offering good corrosion resistance against common plastics and weak acids.

PSPEPPABS PlasticsIt is commonly used for large mirror-finish plastic molds, such as those for automotive parts, home appliances, and audio-visual products. It is also suitable for plastic molds requiring a high-gloss finish, as well as injection molds and blow molds for materials like PA, POM, and others.

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Parameters (Standard Values in Pre-Hardened Condition)

Chemical Composition of Grade 718 Steel (%)

Composition	C	Si	Mn	P	S	Cr	Ni	Mo
Min.	0.28	0.2	1	-	-	1.4	0.8	0.3
Max.	0.4	0.8	1.5	0.03	0.03	2	1.2	0.55

Physical Properties

Density: 7.85 g/cm³

Elastic Modulus: 205–210 GPa

Coefficient of Thermal Expansion (20–200°C): 12.7×10^{-6} /°C

Thermal Conductivity: 29–35 W/(m·K)

Specific Heat Capacity: 460 J/(kg·K)

Mechanical Properties (Pre-Hardened Condition)

Hardness: HRC 30–36 (718H: 33–38 HRC)

Tensile Strength: 1000–1200 MPa

Yield Strength: 800–1000 MPa

Elongation at Break: ≥12%

Impact Toughness (Room Temperature): 60–80 J/cm²

Reduction of Area: 40–50%