Xometry

Datasheet

SKD11

Description

Cold-work mold steelHardenabilitySKD11 is a high-wear-resistant, tough, general-purpose high-carbon, high-chromium alloy tool steel, produced via vacuum degassing and refining for exceptional purity. It features excellent machinability, high hardenability, and minimal distortion during quenching. After undergoing spheroidizing annealing for softening, the steel exhibits excellent machinability. It features fine and uniformly distributed carbide particles. Furthermore, the special addition of strengthening elements Molybdenum (Mo) and Vanadium (V) enhances toughness, thereby eliminating concerns about quenching cracking.

Features

1. Wear resistance. Excellent high-temperature strength and toughness; superior overall performance with good machinability.

2. Balanced PropertiesSKD11 is a cold-work mold steel characterized by exceptionally high strength, toughness, and thermal stability. In recent years, with the development of isotropic products, it has evolved towards even higher toughness. These advancements enable longer mold life, more stable performance, excellent machinability, and minimal distortion during heat treatment.

3. Commonly used for manufacturing plastic cold-heading dies, deep-drawing dies, and cold-extrusion dies, etc.

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Parameters

Physical Properties	Metric	English
Density	7.70 g/cc	0.278 lb/in^3

Mechanical Properties	Metric	English
Hardness, Brinell	<= 255	<= 255

Thermal Properties	Metric	English
CTE, linear	10.5 µm/m-°C @Temperature 20.0 - 100 °C	5.83 µin/in-°F @Temperature 68.0 - 212 °F
	11.8 µm/m-°C @Temperature 0.000 - 300 °C	6.56 µin/in-°F @Temperature 32.0 - 572 °F
	12.5 µm/m-°C @Temperature 0.000 - 500 °C	6.94 µin/in-°F @Temperature 32.0 - 932 °F

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Component Elements Properties	Metric	English
Carbon, C	1.4-1.6%	1.4-1.6%
Chromium, Cr	11 -13%	11 -13%
Copper, Cu	<= 0.25 %	<= 0.25 %
Iron, Fe	81.9-86.6%	81.9-86.6%
Manganese, Mn	<= 0.60 %	<= 0.60 %
Molybdenum, Mo	0.80-1.2%	0.80-1.2%
Nickel, Ni	<= 0.50 %	<= 0.50 %
Phosphorus, P	<= 0.030 %	<= 0.030 %
Silicon, Si	<= 0.40 %	<= 0.40 %
Sulfur, S	<= 0.030 %	<= 0.030 %
Vanadium, V	0.20 - 0.50 %	0.20 - 0.50 %