

MIM-9310 Low Alloy Steel

Low Alloy Steel Injection Molding

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Technical Data: MIM-9310 Low Alloy Steel

Product Description

MIM-9310 is a low alloy steel renowned for its exceptional mechanical properties. MIM-9310 exhibits excellent strength, toughness, and wear resistance by combining iron, nickel, chromium, and molybdenum. Its low carbon content ensures good weldability while maintaining the alloy's high tensile and impact strength.

MIM-9310 is extensively employed in the automotive, aerospace, and machinery sectors, where precision and reliability are critical.

Its remarkable properties make it suitable for gears, shafts, and high-stress parts, delivering outstanding performance under demanding conditions. The Metal Injection Molding (MIM) process allows for the intricate and cost-effective production of complex shapes with MIM-9310. It is a versatile choice for applications where precision and durability are essential.



Chemical Composition

Alloying Element	Iron (Fe)	Nickel (Ni)	Chromium (Cr)	Molybdenum (Mo)	Carbon (C)	Silicon (Si)	Manganese (Mn)	Phosphorus (P)	Sulfur (S)
Percentage	97.50%	3.00%	1.60%	0.60%	0.15%	0.25%	0.75%	0.03%	0.03%

Physical and Mechanical

Alloys	Status	Tensile Strength	Yield Strength	Impact Strength	Hardness	Young's Modulus	Poisson's Ratio	Elongation	Density
		Mpa	Mpa	J	HRC	Gpa	Ratio	% in 25.4 mm	g/cm ³
MIM-9310	As Sintered	800 - 1000	650 - 800	40 - 60	28 - 35	205	0.3	12	7.85

Typical Properties

Wear Resistance



MIM-9310 parts are known for their impressive wear resistance. With a combination of alloying elements like nickel, chromium, and molybdenum, MIM-9310 exhibits exceptional resistance to wear, minimizing surface degradation even under demanding conditions. It is ideal for components subjected to high-stress, high-friction environments, ensuring prolonged service life and reduced maintenance costs.

Applications requiring wear resistance for MIM-9310 parts encompass gears and gear components in automotive and aerospace industries, bearings and bushings, cutting tools, and industrial machinery components. These components demand longevity and durability in the face of continuous wear, and MIM-9310's wear-resistant properties excel in meeting these requirements.

Note

The above data are reference material science data. This data reference is not binding and is not considered as authoritative test data. If your material requirements are extremely precise, please contact our material engineers. Tel | +86 18926788217 | Web | www.newayprecision.com | Contact Neway



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Typical Properties

Corrosion Resistance

MIM-9310 parts exhibit moderate corrosion resistance depending on the specific alloy composition and heat treatment. While they may not be inherently corrosion-resistant like stainless steels, MIM-9310 can offer protection against mild corrosive environments, mainly when treated with appropriate coatings or surface finishes. It is suitable for applications where moderate corrosion resistance is sufficient and additional protection measures can be applied.

Applications requiring moderate corrosion resistance for MIM-9310 parts include specific automotive components, such as transmission parts and shafts, where exposure to atmospheric moisture and mild environmental corrosion may occur. Additionally, MIM-9310 can find use in machinery and equipment components where protection against corrosion is necessary but not the primary focus of the material.



Toughness



MIM-9310 parts are distinguished by their impressive toughness, which measures their ability to absorb energy and resist fracture under impact or dynamic loading conditions. This toughness makes MIM-9310 well-suited for applications where components are subjected to sudden shocks, vibrations, or high-stress conditions. Its capacity to withstand impact without fracturing or deforming ensures reliable performance and component longevity.

Applications that demand high toughness for MIM-9310 parts include gears and shafts in automotive transmissions, where they must endure rapid gear changes and withstand shock loads. Aerospace components like landing gear also benefit from MIM-9310's toughness, ensuring safe and reliable operation under dynamic forces during takeoff and landing.

Dimensional Accuracy

MIM-9310 parts are renowned for their exceptional dimensional accuracy, a key attribute in precision engineering applications. The Metal Injection Molding (MIM) process allows for intricate and complex shapes with tight tolerances, ensuring that MIM-9310 components are manufactured to precise specifications.

Applications necessitating stringent dimensional accuracy for MIM-9310 parts include aerospace components such as intricate connectors and fasteners, automotive transmission and engine parts, and medical instruments like orthopedic implants and surgical tools. These applications demand components that adhere to precise measurements, ensuring the final products' seamless assembly and optimal functionality.



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