

## Soft Magnetic Alloys

**Application:** There are several MIM soft-magnetic alloys. Each has specific properties that covers a wide range of applications.

**MIM-2200:** Provides outstanding toughness and ductility; surface provides excellent wear with a tough core. Use in applications requiring high magnetic output. Some applications include, safety and security devices, automotive interior components and hardware

**MIM-Fe3Si:** Has low core losses and high electrical resistivity in AC & DC applications such as armatures, relays, solenoids, pole pieces and cores.

**MIM-Fe-50Ni:** Has a high permeability and low coercive field. It has magnetic shielding applications and is used in motors, switches and relays.

**MIM-Fe-50Co:** Produces the highest magnetic saturation, surpassing pure iron. It is suitable for small components, which are required to carry high magnetic flux densities.

**MIM-430L:** A ferritic stainless steel which combines excellent magnetic properties and good corrosive resistance. Excellent applications for parts requiring good corrosive requirements.

**MIM-2700:** Has a wide range of Industrial uses such as Weapons, Textile Machines, Gears and Satellites.

## Low-Alloy & Alloy Steels

Low alloy steels such as **MIM-2200** (formally designated as **MIM-4600**), **MIM-2700** and **MIM-4605** (formally designated as **MIM-4650** with the addition of 0.2% Mo), and Alloy Steels such as **4140** & **4340**

Applications for these Steels are typically used where high strength and surface hardness are required as well as excellent fatigue resistance.

## Stainless Steels

**MIM-316L** is an Austenitic Grade of Stainless Steel and is used when parts require good corrosive resistance and need high strength and ductility. Some applications include Medical and Dental devices, marine components, Watches and applications that are non-magnet

**MIM-420:** is a Martensitic Grade of Stainless Steel. It has magnetic properties with resistance to wear and moderate corrosion. Ideal for parts requiring high strength and hardness.

**MIM-17-4 PH:** is a Precipitation Hardening Grade of Stainless Steel. It provides an excellent combination of strength, hardness and corrosion resistance. A range of properties and hardness can be achieved through various heat treatment. Some applications include Medical, Aviation, Boating & Motors exposed to water and Sporting Goods

**MIM-430L:** is a Ferritic Stainless Steel Grade and has good corrosive and heat resistance along with good machinability and magnetic properties.

## Tool Steels

Tool Steels such as **M-2, M-4, M-42 & T-15** are used when high hardness and wear resistance are required.

Applications include hand tools and hardware devices.

## Hard Metals, Tungsten Copper & Copper

Hard metals such as Tungsten Carbide with a variety of choices of percentages of either Cobalt or Nickel are available and are used when high hardness, impact strength or the ability to hold a sharp edge

Applications include uses in the Fastener Industry such as Header Dies & Punches & Mining Industry and Road Construction, where strength and durability are required.

Tungsten Copper with a wide variety of Copper percentages are available such as **WCu15 & WCu20**.

Applications include Heat Sinks are used in the electronic industry to remove heat from chips from cell phones and other electrical devices.

Copper is used for applications that require high electrical and thermal conductivity.

Applications include Heat Sinks for the electronic industry and also used for electrical components.

## Low or Controlled Expansion Alloys

These materials are used in the electronic industry to provide hermetic seals with materials such as glass and ceramics.

Most popular grades are **F-15** (trade name **Kovar**) and **Fe-36Ni** (trade name **Invar**). **F-15** provides low and consistent coefficient of linear expansion up to 750 °F (400 °C) whereas **Fe-36Ni** provides a coefficient of linear expansion up to 300 °F (150 °C)

## Special Custom Blends

TCK understands that our customers' needs are ever expanding. Our R & D Department and Engineering Staff are here to assist in the development of new materials for their specific applications.