LUXFER®
MAGNESIUM
ROLLED PRODUCTS

MAGNESIUM ELEKTRON TOOLING PLATE

Tooling Plate Benefits

Lightweight

33% lighter than aluminum
75% lighter than steel
High damping properties

Easy machining

40% faster than Al 6061
96% faster than Al 7075

Longer tool life

5 to 10 times longer tool life
when compared to aluminum

Flat, stable and stress free

Good damping properties

Tooling Plate Applications

- Jigs, fixtures
- Optical housings and gimbals
- Vibration test equipment
- Rugged computers and servers
- Sights, scopes and night vision optics
- Handheld electronics
- Pattern plates
- Electrical housings
- Textile machinery
- Robotics

Elektron Tooling Plate

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CHEMICAL COMPOSITION

Aluminum	3% nominal
Zinc	1% nominal
Magnesium	Balance

PHYSICAL PROPERTIES

Specific gravity	0.064 lb/in^3 (1.78g/cm^3)
Coefficient of thermal expansion	14.9 x 10^{-6}°F^{-1} (26.8 x 10^{-6}/K^{-1})
Specific heat capacity	0.25 Btu/lb/°F (1040 J/kg/K)
Thermal conductivity	44.5 Btu/hr /ft/°F (76.9 W/m/K)
Modulus of elasticity	6500 ksi (44 GPa)
Poissons ratio	0.35
Melting range	1050°F - 1170°F (566° - 632°C)

SPECIFIC DAMPING

Material	**Ψ at 0.1 σ_{ys} (%)**
AA6061-T6, Zn, Ti,	1.5
Cast irons, Ni alloys	2.5
Pure Al, Cu	3.5
Steel	4.0
Mg Alloy- AZ31B-F	**10.0**

WELDABILITY

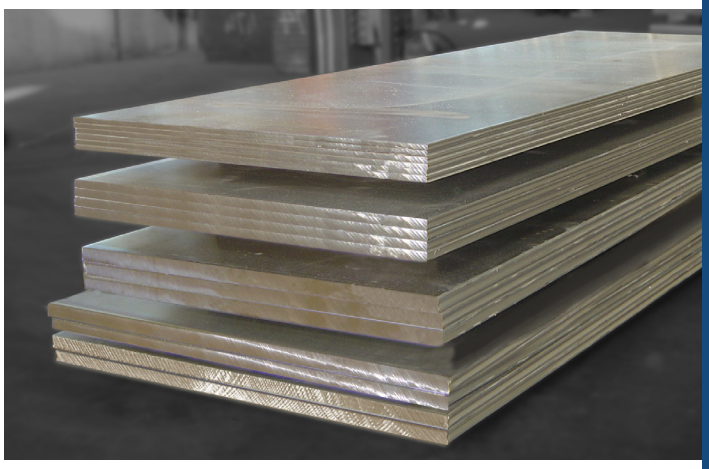
Excellent weldability with gas shielded arc using AZ61A (preferred) or AZ92A filler rod; post weld stress relief is required to prevent stress corrosion cracking. AZ31B sheet and plate can also be FSW.

MACHINING

Magnesium machines faster than any other known metal. Machining magnesium is only limited to the speed of the tool which is doing the cutting. Studies have shown that magnesium machines 40% faster than 6000 series aluminum and up to 96% faster than 7000 series aluminum employing the use of large feed rates and greater depths of cut. Machining magnesium uses 55% less power than what is required to machine aluminum. Magnesium machines like wood with well broken chips and does not accumulate on the tooling as compared to aluminum alloys. Extremely fine and smooth surfaces can be achieved and 5 to 10 times longer tool life can be expected.

SURFACE TREATMENT

The surface protection of Tooling Plate is dependent on the service conditions where the material will be operating. In dry conditions, with limited exposure to moisture, Tooling Plate can be left bare or lightly oiled. A protective coating solution should be given to application in more demanding environments. Tooling Plate can be protected by a variety of coatings that include chromating, anodizing, plating, e-coat, paint, and plasma electrolytic oxidation (PEO). It is recommended to prepare the magnesium surface by cleaning and pre-treatment (conversion coating) using traditional non-ferrous methods prior to e-coat or paint. There are commercially available pre-treatments that are a non-chromate based chemistry which result in good adhesion of the paint system. For further guidance on surface protection, contact Luxfer MRP.



LUXFER®
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Domestically Made
DFARS Compliant / RDHS Compliant
Frank Dodd Act Compliant

Visit **www.luxfermrp.com** for more information.

Luxfer Magnesium Rolled Products
1001 College Street, PO Box 258
Madison IL 62060, USA
Tel: +1 618 452 5190

Email: lga.usa.sales@luxfer.com

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