

MAGNESIUM PLATE FOR VIBRATION TEST FIXTURES

TOOLING PLATE BENEFITS

Lightweight

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

Easy machining

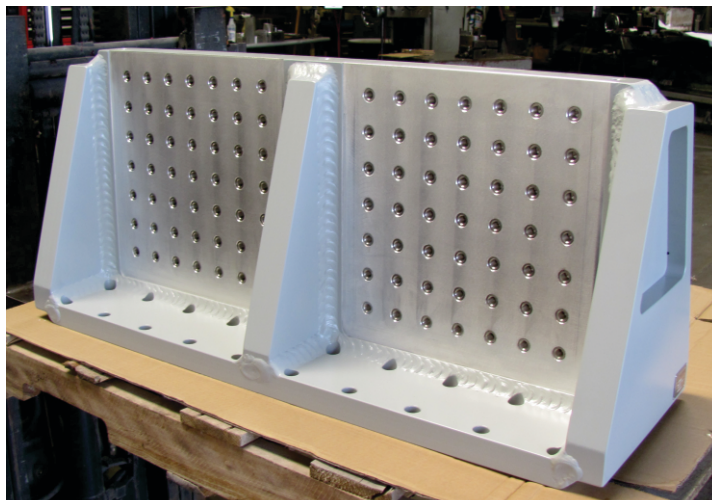
- 40% faster than Al 6061
- 96% faster than Al 7075

Longer tool life

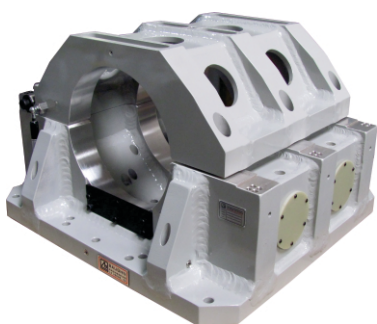
- 5 to 10 times longer tool life when compared to aluminum

Flat, stable and stress free.

Good damping Properties



DAMPING CAPACITY OF MAGNESIUM



Damping capacity is a measure of a material's ability to dissipate mechanical vibration or wave propagation. When ranked according to damping capacity, materials may be roughly categorized as either high or low damping. Low damping materials would be utilized in musical instruments where sustained vibration and acoustic wave propagation is desired.

Conversely, high damping materials are excellent for suppressing vibration which is critical for control of noise, stability of sensitive systems and instruments, and for reducing machine fatigue and wear. Fatigue wear is often caused by the momentum of swinging or moving components and is worsened by heavy components.

PROPERTIES OF MAGNESIUM ALLOYS AZ31B- TOOLING PLATE

AZ31B-TP has a density of 0.064 lbs/inch³ (1.78g/cm³) which is 30% lower than aluminum alloys.

The low density and high damping capacity make AZ31B-TP the material of choice for vibration test fixtures. Fixtures fabricated from AZ31B-TP exhibit higher resonant frequencies relative to equivalent aluminum structures. This allows testing to be carried out at higher frequencies and shorter test times, reducing testing costs. The low density of the tooling plate leads to fixtures with lower weight. The reduced mass of a magnesium fixture increases the overall envelope of operation of any given vibration test bed. This allows multiple parts to be run in the same test, greatly reducing the overall cost.

AZ31B-TP is weldable and dimensionally stable, allowing for the fabrication of complex fixtures.



VIBRATION TESTING



Two key components of vibration testing are the machine table and the fixture that supports the part. Both need to be stiff, strong, lightweight, and have good damping characteristics to reduce resonance. Its combined physical and mechanical properties make Magnesium AZ31B-Tool Plate an ideal choice for vibration testing components.

SPECIFIC DAMPING CAPACITY

A6061 - T6, Zn, Ti	1.50%
Cast Irons, Ni alloys	2.50%
Pure Al, Cu	3.50%
Steel	4%
Mg Alloy-AZ31B-O	10%

Vulcan Metals Specialty Products

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