Alpase introduced M-1 in 1988 as a high density, dimensionally stable, high strength (non-heat treated) aluminum plate. Its design was inspired by the growing high-temp plastic and mold industries.

M-1 has among the best elevated temperature properties available in aluminum. It is a cast product with uniform equiaxed grain structure making the properties uniform in all directions. More cost-effective than wrought aluminum and tool steel, M-1 lowers real-time production costs through machining advantages.

**M-1 Product Features and Benefits**

- **Density** - M-1 offers a very tight equiaxed grain structure that is metallurgically sound throughout. This is achieved using modern technologies in casting, cooling and homogenization processes.

- **Brinell Hardness** - Highly consistent throughout the entire plate regardless of thickness.

- **Machinability** - Aluminum machining rates are over 3 times that of steel and M-1 is rated very high among aluminum alloys. M-1 has the capability of achieving an excellent surface finish.

- **Weldability** - Maintains its high mechanical properties in and adjacent to weld area without additional heat treatment unlike wrought alloys.

- **Dimensional Stability** - Unlike wrought alloys, M-1 maintains dimensional stability during machining without stress relieving. The result is a very low residual stress and uniform grain structure in all directions.

- **Hardcoat Anodize** - M-1 conforms well to hardcoat anodizing as well as Nickel Coating.

- **Cost Efficiency** - Decreases production costs and increases productivity better than tool steel or wrought aluminum molds. High thermal conductivity allows for shorter cycle times.

Produced in the USA
Aluminum Mold Plate - A Proven Product
Developed For The Plastic And Molding Industries

M-1 APPLICATIONS

Injection Molding - M-1 aluminum is used for mold applications where 1 to 12 cavities are required. The faster cool-down rate of M-1 will increase productivity, tool steel molds have a much slower cool-down rate.

M-1 aluminum molds are approximately one-third of the cost of tool steel molds. It is more cost-effective to make engineering changes with M-1 aluminum molds than re-working tool steel or wrought aluminum alloys.

Wrought alloys must be rough-machined because of the material softness, heat treated to the required hardness and re-taped for the final machine process. With M-1 this costly process is eliminated.

Structural Foam Molding - Dimensional stability and uniform hardness of M-1 is ideal for structural foam molding.

R.I.M. Molding - Proven high thermal fatigue properties of M-1 aluminum mold plate make it the number one choice for R.I.M. molding.

R.T.M. Molding - Unique combination of hardness, thermal fatigue resistance, polishability and weldability has made M-1 the specified choice for R.T.M. molds.

Rubber Molds - From simple mat molds to sophisticated aero-space parts, the dense grain structure in combination with dimensional stability, make M-1 your number one choice.

Blow Molding - M-1 is best used for blow molding due to it’s high Brinell hardness and high thermal conductivity.

M-1 TYPICAL PROPERTIES

Typical Tensile Strength: 43 ksi
Typical Yield: 30 ksi
Typical Elongation: 7% to 9%
Brinell Hardness: 85 HB
Density: 0.101 lb./in³

Coefficient of Expansion: 12.9 x 10⁻⁶ (68 to 392°F)
Electrical Conductivity: 39% (I.A.C.S.) Uniform equiaxed grains
Microstructure: Vacuum Tight
Thermal Conductivity: 95 Btu/ft x h x °F
Modulus of Elasticity: 10.8 KSI x 10³

Tolerances
Thickness: +1/8” - 0”
Width/Length: +1/4” - 0”

Standard Sizes
Thickness: From 1” to 30”
Widths: Up to 88”
Lengths: Up to 195”

Non-Standard Thicknesses
Special Inquiry

Close Tolerances
Special Inquiry