ALPASE M-1™

Aluminum Mold Plate - A Proven Product Developed For The Plastic And Molding Industries

New Technologies In Aluminum

ALPASE

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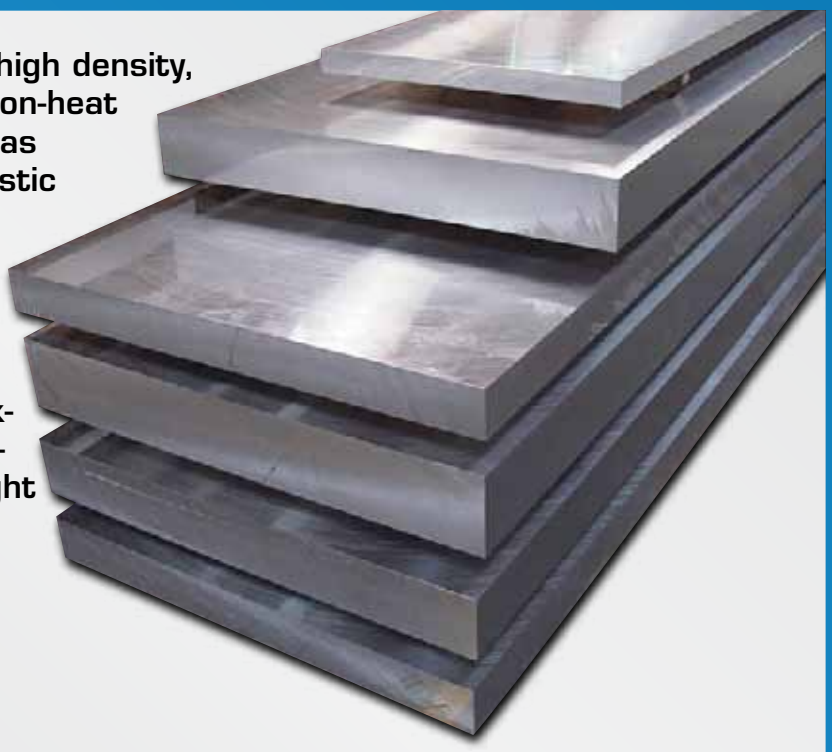
Alpase introduced M-1 in 1988 as a high density, dimensionally stable, high strength (non-heat treated) aluminum plate. Its design was inspired by the growing high-temp plastic and mold industries.

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

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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 alumunum alloys.

Wrought alloys must be rough-machined because of the material softness, heat treated to the required hardness and reset 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	**Coefficient of Expansion**	12.9×10^{-6} (68 to 392°F)
Typical Yield	30 ksi	**Electrical Conductivity**	39% (I.A.C.S.) Uniform equiaxed grains
Typical Elongation	7% to 9%	**Microstructure**	Vacuum Tight
Brinell Hardness	85 HB	**Thermal Conductivity**	95 Btu/ft x h x °F
Density	0.101 lb./in^3	**Modulus of Elasticity**	10.8 KSI x 10^3

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

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