

# Ultratemp-AL

REFRACTORY BOARD FOR HIGH TEMPERATURE  
MOLTEN METAL APPLICATIONS

Ultratemp-AL is a carbon fiber reinforced insulating refractory board specifically designed for molten metal applications. It is asbestos free and composed primarily of calcium silicate and reinforcing fibers. Components machined from Ultratemp-AL are generally used for the movement, distribution, flow control, and casting of non-ferrous metals and their alloys. Ultratemp-AL board exhibits excellent machinability exceptional uniformity, and dimensional stability prolonging its service life and minimizing costly replacement procedures. Its high strength, low shrinkage, and non-wetting properties ensure that components are highly resistant to breakage during casting and subsequent cleaning operations.



## APPLICATIONS

Ultratemp-AL is an economical low density calcium silicate board that has received an additional heat treatment. The resultant product has minimal shrinkage after heating. Since most failures from these types of refractory boards are due to cracks (checks) developing as the result of thermal shrinkage, the low shrinkage of Ultratemp-AL makes it an ideal candidate for many molten metal contact applications such as: Transition Plates, Caster Tips, Skim Dams, Trough Dams & Components, Launder Sections, Floats, Spouts

## THERMAL PERFORMANCE

Ultratemp-AL is non-combustible and can withstand continuous operating temperatures up to 1560 F (849 C ). It provides prolonged resistance to cracking and disintegration from thermal cycling or the action of liquid metal flow which reduces the risk of inclusions and casting contamination. The low thermal capacity and high insulating value of Ultratemp-AL ensures that low metal melting and holding temperatures are maintained, resulting in better fuel economy, reduced surface metal oxidation, and improved metal quality.

## SHRINKAGE

Ultratemp-AL is factory heat treated to provide extremely low thermal shrinkage. The resultant board exhibits minimal thermal movement and retains dimensional stability when in direct contact with molten metal and other high temperature environments.

## NON-WETTING PERFORMANCE

Ultratemp-AL board has a smooth non-porous surface, and added raw materials that prevent metal adhesion, allowing for easy removal of any frozen metal residues after cooling without damage to the components.

## MACHINING

Ultratemp-AL can be easily machined using standard shop equipment. Normal engineering techniques and tooling will produce high definition, tight tolerance components with excellent surface finishes. Contact Foundry Service & Supplies for recommendations on speeds & feeds, and for tooling suggestions. Or send us your prints and we will use our 50+ years of experience to produce the highest quality components to your specifications using our state-of-the-art CNC machines and CAD/CAM systems.

## PROPERTIES

### MECHANICAL PROPERTIES

	Ultratemp-AL
Bulk Density	53 pcf (847 kg/m <sup>3</sup> )
Flexural Strength	1150 psi (7929 kPa)
Compressive Strength @ 10% Deformation	2500 psi (17237 kPa)
Hardness (Shore D)	65

### THERMAL PROPERTIES

Maximum Service Temperature	1560°F (849°C)
Thermal Conductivity at:	
400°F (204°C)	1.2 BTU•In./hr•ft <sup>2</sup> •°F (.17 W/m•°K)
600°F (316°C)	1.2 BTU•In./hr•ft <sup>2</sup> •°F (.17 W/m•°K)
800°F (427°C)	1.2 BTU•In./hr•ft <sup>2</sup> •°F (.17 W/m•°K)
1100°F (593°C)	1.2 BTU•In./hr•ft <sup>2</sup> •°F (.17 W/m•°K)

### Thermal Shrinkage

Thickness: 24 hrs. at 1382°F (750°C)	.90%
Length / Width: 24 hrs. at 1382°F (750°C)	.35%
Loss On Ignition	4.5%

## CHEMICAL RESISTANCE

Ultratemp-AL is an inert material which resists chemical attack by alloying elements, lubricants, boron nitride, and graphite coatings. It will not contaminate molten metal through gaseous emission caused by heat or chemical reaction.

## STANDARD DIMENSIONS

Lengths: 96" (2438 mm)  
 Width: 48" (1219 mm)  
 Thickness: 3/4", 1", 1.5", and 2" (19, 25, 38, and 51 mm) with sanded finish on both sides  
 Dimensional Tolerances: Length/Width = ±1/8" (3.2mm), Thickness = ±1/16" (1.6mm)

Note: Non standard sizes and thickness' can be quoted upon request.

## ISO 9001 REGISTRATION

Ultratemp-AL is manufactured under an ISO 9001:2000 registered quality system. This registration, along with regular independent third-party auditing for compliance assures that all products are delivered with consistently high quality.