

Section 1: Description

Alumina Trihydrate ($Al_2O_3 \cdot 3H_2O$) is the most widely used flame retardant in the world due to its versatility and low cost. It can be used in a wide range of polymers at processing temperatures below 220°C. ATH is non-toxic, halogen-free, chemically inert, and has low abrasiveness. Additional benefits are arc and track resistance in plastics exposed to electrical arcing, acid resistance, and smoke suppression. At about 220°C, ATH begins to decompose endothermically releasing approximately 35% of its weight as water vapor. Alumina Trihydrate acts as heat sink thereby retarding pyrolysis and reducing the burning rate. The water vapor released has an added effect of diluting combustion gases and toxic fumes. Mixed into resin applications which require smoke and flame suppression as part of their use parameters.

Section 2: Advantages

Section 3: Applications

- Engine compartment coatings
- Marine composites
- Engine compartment repair
- Airliner compartments
- Aerospace applications

Section 4: Handling Precautions

Refer to the Safety Data Sheet

Section 5: Storage Life

At least 12 months from the date of manufacture in the original sealed container at ambient temperature. Store away from heat and excessive humidity in tightly closed containers.

Section 6: Typical Properties

In Combination with RR 2040 epoxy resin
Appearance: White Liquid
Color (Gardner) 1 - 2 white
Viscosity @ 77 °F (cP) 6000 mixed
EEW - 180
Specific Gravity @ 77 °F 1.14
Density @ 77 °F (lb/gal) 9.5
Flash Point (closed cup) (°F) NA
Recommended Mix Ratio: 1 to1 mix by volume with epoxy/hardener mixture

Section 7: Typical Handling Properties

Gel Time (130g mix @ 77 °F) (min)
18 Minutes - Fast Hardener
40 Minutes - Slow Hardener
160 Minutes - Extra Slow Hardener
Thin Film Set Time
@ 77 °F (hr) 1.5 Fast; 4 Slow; 12 X Slow
@ 57 °F (hr) 4.5 Fast; 12 Slow; 36 X Slow
Peak Exotherm (100g mix @ 77 °F)
Fast 198F; Slow 180F; X Slow - 150F
Peak Exotherm Time (min)
22 Fast; 48 Slow; 170 X Slow
Use Level: 1 to 1 with epoxy/hardener mix

Section 8: Typical Performance

(7 day cure @ 77 °F)
Heat Deflection Temperature (°F) 125
Tensile Strength (psi) 9500
Tensile Modulus 398,000
Tensile Elongation (%) 4.3
Flexural Strength (psi) 14,400
Flexural Modulus 470,000
Hardness (Shore D) 83
Compression Yield 15,200
Mar Resistance (kg) — 1.05