



Aseal 5K

Description and Uses

Aseal 5K is a single-component, chrome-free coating composition formulated for protecting ferrous alloys from both high temperature heat oxidation and at the same time offering sacrificial (cathodic) protection to the base metal. Because of its high temperature capabilities, it offers excellent protection when exposed to cyclic high temperature and corrosive salt environments, continuing to provide sacrificial properties at temperatures to 1150°F. Although an inorganic coating, it combines thermal stability, excellent adhesion and hardness, along with good flexibility... a property not found in most inorganic coatings. At about 1200°F., the aluminum oxidizes to a point where it no longer provides its excellent sacrificial properties, however, it will continue to offer excellent heat oxidation continuously to 1600°F. and in some cases, depending on metal substrate, has offered heat oxidation protection to 2200°F.

Tests have been conducted using low carbon steel alloys. There was no loss of weight after several weeks of continuous exposure at 1000°F. After exposure to 5% salt spray for 1000 hours, there was no evidence of corrosion.

Further, the coating formed from Aseal 5K composition offers superb thermal shock resistance. The coating will not crack, spall, or fail after shocking from 1100°F. to room temperature repeatedly.

Aseal 5K coating composition offers greater protective properties in combinations of heat, weathering, corrosion, and oxidation than organic paints and is lighter in weight and more flexible than most ceramic coatings.

Surface Preparation

Special care must be exercised in the preparation of the surface for all high quality, premium performance coatings.

1) Degreasing. All oil, grease and other organic deposits must be removed by suitable degreasing operation or by heating parts to temperature sufficiently high to facilitate contaminant removal. Following the degrease, parts must be handled with clean gloves.

2) Cleaning and Roughening. All old coats, mill scale, rust, or other tightly adherent deposits must be removed by a method such as dry grit or vapor blasting. Grit blasting, using clean aluminum oxide (AL₂O₃) grit, is the recommended cleaning procedure which is necessary for maximum adhesion to steel, although other abrasive methods may be satisfactory.

Technical Data

Volume Solids:	27%
Number of Coats:	One to two
Film Thickness:	1-2 mils DFT
Theoretical Coverage @ 2 mils DFT:	320 sq. ft./gallon
Dry Time @ 75°F., 50% R.H.:	To touch - 20 minutes
Prebake Oven Time @ 175°F.:	15 minutes minimum
Cure Temperature:	Minimum: 460F for 2hours Preferred: 650F for 30 minutes
Thinner:	Do not thin, use as received
Method of Application:	Spraying preferred
Clean Up:	Water
Shelf Life:	1 year, if unopened

Application of Coating

Before applying coating, it is important that all aluminum powder be completely dispersed through use of mechanical stirring or agitation. Aseal 5K coating composition should be applied by spray application to obtain optimum smoothness and uniform film thickness. Use standard paint spray equipment. Equipment can be readily cleaned using tap water.

Note: This product is not to be thinned, use as received.

Number of Coats

Aseal 5K will typically provide excellent performance after one coat, but multiple coats may be necessary for certain conditions. A maximum of 2 coats is recommended.

Curing Procedures

1) Dry to room temperature for a minimum of 15 minutes or until color is uniform matte light gray. If humidity is high and coating is drying slowly, it may be necessary to force dry at a low temperature, approximately 100 to 125°F. with air movement.

2) Prebake at 175°F. metal surface temperature for a minimum of 20 minutes (no maximum time). Large parts act as heat sinks and will require longer times.

3) Cure at a minimum of 650°F. for minimum of 30 minutes (no maximum time). Surface temperature of coated part must reach recommended cure temperature for 30 minutes.

4) Apply second coat immediately after parts have cooled to prevent possible contamination. Repeat cure cycle in steps 1, 2 and 3.

Note: This coating may be cured as low as 460°F. for two hours. Surface temperature must reach 460°F. and be held there for 2 hours. At 460°F. the coating will not be as hard or as abrasion resistant as when cured at higher temperatures, but will retain its excellent corrosion resistant properties.

Surface Treatment

Coating must be made electrically conductive to obtain sacrificial properties. There are two ways this can be done.

A) Coating may be post cured at 1025°F. for 60 minutes.

B) Coating may be burnished by any suitable method such as glass bead peening, or aluminum oxide. For the smoothest surface, 325 mesh aluminum oxide is recommended. It is important when using a blast cabinet for burnishing that 25 to 35 PSI be used in a suction blast cabinet and 5 to 10 PSI in a pressure blast cabinet.

Note: It is important that the coating is electrically conductive. Using light pressure with probes of an ohm meter held 1" apart, a reading of 10 ohms or less should be obtained.

Removal of Coating

If it should be necessary to remove the cured coating, it can be stripped by grit blasting or immersing in a hot (approximately 150°F.) caustic soda solution (approximately 10% caustic soda) then lightly grit blasting. Care should be taken when using a caustic solution since hydrogen will be generated. Area should be well ventilated.

Touch-up

If a small area is nicked or scratched and requires a cosmetic touch-up, the Aseal 5K may be used as the repair material. Lightly abrade the affected area by hand using an abrasive pad or sandpaper. Apply the Aseal 5K by brush or spray and allow to air dry for 1 hour. Again, lightly abrade the repaired area to make the coating conductive, either by an abrasive pad or by a lightly burnishing with a grit blast.

NOTE: This coating does not provide the full extent of its protective properties when only cured at ambient temperature. This procedure is to be used for cosmetic touch-up of very small nicks or scratches only.

Precautions

Contains aluminum metal powder. Normal precautions should be taken for handling of alkali materials. Avoid ingestion. Harmful or fatal if swallowed. Avoid inhalation of spray mist and contact with eyes. In case of eye contact flush immediately with plenty of water and consult a physician. Avoid prolonged or repeated contact with skin. For skin contact flush with plenty of water.

When spraying, a suitable exhaust system should be used. If spray mist is not completely removed from air, a suitable respirator should be used such as #9910 manufactured by 3M Co., or an equivalent type.

In case of spill, use absorbing material to soak up and dispose of in accordance with all applicable regulations. Do not use strong alkalis, then flush with water.

See material safety data sheet before using.

Waste Disposal Method: Filter to remove aluminum and discard as solid chemical waste. Dispose of liquid and solid waste in accordance with federal, state and local environmental control regulations.

Important: Avoid direct contact with alkalis and strong oxidizing or reducing agents since this may produce hydrogen gas.

Since this compound contains aluminum powder, a clean spray area and duct system are important. It is hazardous to allow an accumulation of dried material to occur since this dried material in the form of dust could be ignited by sparks or other means and possibly cause a dust explosion as with any finely divided powdered material.

Note: Some manufacturers requiring this coating composition develop their own procedure specifications and in all cases they should be followed in place of the foregoing procedures.