

SERMABOND 481

SUBJECT:

The use of Sermabond 481 high temperature cement

GENERAL DESCRIPTION:

SermaBond 481 is an inorganic ceramic metallic compound that matures to an insoluble, machinable, tenaciously bonded cement. The coating is unaffected by hot and cold water, mineral spirits, jet fuel, hydraulic oils, hot degreasing vapors and temperature up to 1000°F.

SURFAE PREPARATION:

Before application of SermaBond 481, surfaces to be bonded must be clean and free from oil, grease and paint films since these contaminants will compromise bonding properties. For maximum performance of the cement, the substrate material should be vapor degreased in 1,1,1-trichloroethane or equivalent. After degreasing, handle only with clean lint-free cotton gloves. Grit blast with 90-120 mesh aluminum oxide to produce a surface profile suitable for bonding.

PREPARATION OF CEMENT:

SermaBond 481 is shipped as a two part mix and has a six month shelf life when stored at a temperature of 35-45°F (2-7°C). After combining Parts I and II, shelf life is limited to two weeks. To prepare the cement, shake the container of Part I on a paint shaker to ensure complete mixing. Transfer to a suitable gallon plastic container and mechanically stir while adding the Part II powder. Avoid stirring too rapidly to avoid air entrapment. Break up any agglomerates of Part II during the addition. The mixed material should be allowed to stand 18 to 20 hours before using; this allows time for the reaction of the activator, Part II, to take place. If less than the total contents are to be mixed, the following quantities should be used:

To 100 ml. of Part I by volume
add 4.35 gm of Part II

To 100 gm of Part I by weight
add 2.35 gm of Part II

CURING BAKING SCHEDULE:

1. Allow cement to air dry a minimum of twelve hours prior to baking in an electric oven.
2. Place cemented parts in a preheated oven and increase in increments as follows:

2 hours @ 140°F ± 5	1 hour @ 200°F ± 5
1 hour @ 175°F ± 5	2 hours @ 360°F ± 5
3. Curing schedule can be altered to suit substrate restrictions. Any increase in curing temperature up to 615°F ± 15° will help to increase the water insolubility.

CEMENT REMOVAL:

Soak in a caustic solution to soften cement. A solution of five pounds of sodium hydroxide per gallon of water and heated to 180°F + 5 will remove the cement. Rinse in hot water, then cold water and air dry. CAUTION: Sodium hydroxide solutions are toxic and will irritate skin and mucous membranes. Wear rubber gloves, goggles and protective clothing when working with the caustic solution. The bath must be vented with an exhaust system.

APPLICATIONS EQUIPMENT AND MAINTENANCE:

Cement can be applied in open areas with a spatula or straight flexible metal blade. In narrow or confined areas, a hypodermic syringe with an approximate 1/32 inch ID needle can be used. Sealant guns as Semco Model No 250-2 1/2 or equivalent with an appropriate fabricated tube needle and approximately 4 psi regulated shop air are excellent tools for production applications. Semco guns are manufactured by Semco Sales and Service, Inc., 1313 West Florance Avenue, Inglewood, CA.

All dispersing equipment can be thoroughly cleaned by flushing in warm water immediately after use. Dip end of applicator needles in water when not in use to prevent cement from hardening in the gun or syringe.

PRODUCT DATA:

481 Part I

Weight per gallon	14.8 pounds minimum
Viscosity, #5 Zahn cup at 77°F (25°C)	24-26 seconds
Principal Pigment	Aluminum
% Solids	70% minimum
Color	Grey

481 Part II

Color	White
Apparent Density (ASTM B417)	0.36 ± 0.10
Structure	Crystalline Powder

CURED CEMENT PROPERTIES:

SermaBond 481 cement cured in the aforementioned baking schedule on steel parts should develop the following properties.

Heat Resistance

Unaffected by prolonged heating to 1000°F

Organic Solvents and Oil Resistance Tests

Room temperature for 100 hours	.....
MIL-J-5655F JP4 Jet Fuel	.....	Unaffected
AMS 3160B Mineral Spirits	.....	Unaffected
MIL-G6529 Type III oil	.....	Unaffected
ASTM 101 (Andersol-L-774 oil)	.....	Unaffected
Water/alcohol solution	.....	Unaffected
Tap water	.....	Unaffected
Tap water 4 hours @ 170°F ±	.....	Unaffected
At 250°F for 100 hours	.....
ASTM 101 (Andersol-L-774 oil)	.....	Discoloration only
Hot degreasing (vapors)	.....	Unaffected

TOXICITY:

Although SermaBond 481 is of low toxicity, care should be taken to avoid ingestion. Skin contact may produce irritation. In case of skin contact, immediately rinse with running water for 15 minutes then obtain medical attention.