

SGZ-187 Sol-gel pretreatment for Metal, Alloy and Glass Surfaces

Metal, Alloy and Glass Surface Preparation for Bonding (sol-gel) Pretreatment SGZ-187

Description

SGZ-187 is a high-performance surface preparation for adhesive bonding. Testing on various metal, alloy and glass substrates shows improved performance in humidity resistance, wedge test, tensile lap shear and floating roller peel tests at a variety of temperatures for a number of adhesives and coatings.

A sol-gel preparation, SGZ-187 promotes enhanced adhesion as a result of the chemical interaction at the interfaces between the metal/glass and the SGZ-187 (sol-gel) and the SGZ-187 and the subsequent adhesive/coating. SGZ-187 is an environmentally friendly alternative to such surface preparation techniques as phosphoric acid anodize (PAA) or sulfuric acid-sodium dichromate etchings and achieves the high performance required.

The product may be applied by brush, spray, or dip. Long-term durability of adhesion to metal and glass has been demonstrated.

Surface Preparation

For metals SGZ-187 may be applied to surfaces after manually deoxidizing the surface by either 1) grit blasting; 2) sanding with #180 or finer sandpaper, or 3) Scotch-Brite nylon pad abrasion. For glass SGZ-187 may be applied to surfaces after thorough degrease and solvent cleaning of the substrate. The success of the bonding operation relies on the thorough cleaning and preparation of the surface.

Physical and Application Properties

The SGZ-187 surface pretreatment needs to be prepared in-situ by the user based on the supplied individual part of the kit. All components in the kit come pre-weighed in their individual containers.

Mix A1 (2 parts) into A2 (100 parts) with stirring to avoid significant clouding and set aside. Mix B1 (0.5 parts) into B2 (1 part) and set aside. Add B mixture into the A mixture with stirring to avoid significant clouding. No precipitation should be appearing at this point.

The induction time before the solution is ready to be used as pretreatment is 30 minutes. Pot life for a pretreatment solution is 10 hours after full mixing.

Coverage

1 mL of fully mixed solution generally treats 0.05 sq feet (0.0045 sq meters) of surface.

Health and Safety Precautions

SGZ-187 is safe to use and apply when recommended precautions are followed. Before using this product, read and understand the Material Safety Data Sheet (MSDS), which provides information on health, physical and environmental hazards, handling precautions and first aid recommendations.

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Storage

The shelf life of SGZ-187 individual kit components is 12 months from date of manufacture, when stored in the original unopened containers between 40°F and 100°F.

Typical Application Technique

Prepare SGZ-187 in accordance with instructions. Scale up for size of part and the method of application as necessary.

Spray Application

Apply SGZ-187 coating solution by spray-drenching the part surface. Spray solution generously, allowing excess to run off of the part surface. Keep part surface continuously wet with the solution for a minimum of 2 minutes. Part surfaces must not be allowed to dry and should be drenched with fresh solution at least 5 times during the application period. Insure treated surface does not dry between spray coats. Larger surface areas may require being coated by sections. Allow coated part to drain for 3 to 10 minutes. If there is any surplus of SGZ-187 solution that has pooled or collected in crevices, pockets, or other collection areas, including drip edges or fastener holes, use filtered compressed air to blow off excess solution while maintaining a wet surface. Do not splatter this excess solution onto adjoining part surfaces. A cloth pre-wetted with SGZ-187 may be used to gently blot, not rub, the surface of pooled solution. Do not blow dry areas of the part that are able to freely drain.

Brush Application

Apply fresh SGZ-187 liberally by brushing with a clean natural bristle brush or swabbing with a clean wiper, cheesecloth or gauze. Do not scrub with a brush or applicator. Apply solution generously, keeping the part surface continuously wet with the solution for a minimum period of 2 minutes. Part surface should be drenched with solution. Brushes or wipers should not leave streaks on the surface. Part surfaces must not be allowed to dry and be covered with fresh solution at least 5 times during the solution application process. Allow coated part to drain for 3 to 10 minutes. If there is any surplus SGZ-187 solution that has pooled or collected in crevices, pockets, or other collection areas, including drip edges or fastener holes, use filtered compressed air to blow off excess solution while maintaining a wet surface. Do not splatter this excess solution onto adjoining part surfaces. A cloth pre-wetted with SGZ-187 may be used to gently blot, not rub, the surface of pooled solution. Do not blow dry areas of the part that are able to freely drain.

Dry/Cure of SGZ-187

Dry the solution-coated parts under ambient conditions for a minimum of 60 minutes. Minimize contact with the part, as the coating may be easily damaged or contaminated until fully cured. Exact drying time will vary depending upon part configuration of the part and ambient conditions. Alternately, after drying at ambient temperature for a minimum of 30 minutes parts may be heated to 140°F maximum for an additional 30 minutes minimum to facilitate drying. After drying, coated surfaces should be protected from contamination prior to applying the adhesive/coating.