Product Datasheet

Silane Coupling Agents

ADHESION PROMOTERS FOR POLYMERIC SYSTEMS

SP&S supplied high purity Silane Coupling Agents as additives that allow users to improve the adhesion of adhesives, coatings, and potting materials to hard-to-bond surfaces. Silanes Coupling Agents when used at the suggested levels improved adhesion and wetting of the surfaces by the liquid or paste system without significantly changing the other properties of the polymeric system. In many cases, Silane adhesion promoters improve adhesive strength by 10% or more and make the adhesive bond more resistant to moisture and environmental exposure. Selecting the right Primax formulation for your resin system and substrates is very important. The following information is designed to assist you in selecting and using our range of Silane Coupling Agents

Grade	Chemistry	Substrates
Silane 187	Epoxy Functional Silane	Multipurpose - most metals, glass, ceramics, masonry, wood, fabrics and rigid plastics such as ABS and PBT.
Silane 189	Mercapto Functional Silane	A wide range of plastics, rubbers, and other elastomeric materials including flame-treated polyolefins.
Silane 1120	Amino Functional Silane	Multipurpose - most metals, glass, ceramics, masonry, wood, fabrics and rigid plastics such as ABS and PBT.

Grade	Color	Flash point	Standard Shelf-life
Silane 187	Clear liquid	>94°C (>201.2°F)	12 months from date of shipment
Silane 189	Clear liquid	>74°C (>165.2°F)	12 months from date of shipment
Silane 1120	Clear liquid	>84°C (>183.2°F)	12 months from date of shipment

ENHANCING ADHESION

Many epoxies, polyurethanes, and silicones are designed to adhere well to most substrates, but surfaces may be incompatible with particular polymeric systems or may not yield the maximum bond strength possible without enhancement. Properly selected Silanes can form chemical bridges that connect the surface with the polymeric system to achieve enhanced, long lasting adhesion. Because of their chemical nature, most silane coupling agents when fully reacted will form bonds that are very resistant to attack by moisture, heat, or chemicals. In some cases, this effect will improve the moisture, heat, and chemical resistance of the overall bond.

SURFACE PREPARATION

For best results, the surface to be bonded should be clean and dry. For most applications, general, light surface abrasion is all that is required to provide a good clean surface and to increase the surface area for bonding. Steel wool, a wire brush, sand paper, or abrasive pads are all suitable for light abrasion of most surfaces. After the abrasion, the surface should be dusted to remove any loose material and then cleaned and degreased with an aqueous cleaner

such as one of the Alconox or Liqui-nox products, naphtha, mineral spirits, methyl ethyl ketone (MEK) or other suitable means of removing oils and other contaminants. A final surface wipe with acetone or IPA may also be helpful for some plastics. Allow solvents to completely evaporate before applying the polymer system. Please note that different cleaning techniques may give better results than others on particular surfaces and end use application. The user should determine the best technique for each specific application.

For especially difficult-to-bond-to surfaces, it may be necessary to increase the surface reactivity by chemical etchants or oxidizers, or by exposing the surface to UV, corona, plasma or flame sources.

In some cases, primers may also be a better option or helpful in addition to Silane Coupling Agents. Primers tend to be helpful when the primer can seal the surface to prevent against corrosion, oxidation, or cross-contamination (ex. to prevent plasticizer migration or cure inhibition). Primers are also helpful when applying a rigid polymeric system to a flexible surface, as a properly selected primer can help add some flexibility to the bond-line to prevent failure due to peel forces.

USAGE

The Silane Coupling Agents are typically added to the polymer system at the time of final mixing in a level of 0.1% - 1% by weight. For most applications a good starting point is between 0.25% and 0.5% with higher levels used only if they show increased bond strength. Because these materials are fully reactive in most polymer systems they will not affect the cured properties of the polymer system including the NASA Outgassing properties. However, this should be tested under the processing and curing condition used by the end user to ensure the desired results are being obtained. In some polymer systems, the coupling agent can be premixed into one of the components of the system and may be expected to be stable for an extended period. For example, Silane 187 which is epoxy functional may be added to most epoxy resin and will be stable for long periods. However, addition of the a silane to an incompatible part of the polymer system could result in a reaction that renders the material unusable. For example, adding Silane A1120 to an epoxy resin may result in an increase in viscosity, gelation, or even curing of the material depending on the concentration of the silane and the chemistry of the epoxy resin. Please contact SP&S for assistance in determining whether such pre-blends may be possible.

CURE CONDITIONS

In most polymer systems, the Silane Coupling Agents will not affect the curing conditions and the normal suggested cure schedule for the polymer system should be used.

STORAGE AND SHELF LIFE

Shelf life is indicated on the product label. For best results, Silane Coupling Agents primers should be stored between 15°C (59°F) and 35°C (95°F). Precautions must be taken to prevent moisture from contaminating these materials after opening as a negative reaction may occur. Containers should be kept tightly closed and head or air space minimized. Partially filled containers should be purged with dry air or other inert gases such as nitrogen to maximize shelf life.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

PERSONAL HYGIENE:

WARNING: May Cause Skin or Eye Irritation and possible allergic reaction. Avoid breezing vapors. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Use only with adequate ventilation. Do not take internally.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER:

IMPORTANT: The following supersedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

Specialty Polymers & Services, Inc. (SP&S)
27822 Fremont Court **Tel: 661-294-1790**
Valencia, CA 91355 **Fax : 661-294-0640**
www.spolymers.com **info@spolymers.com**