



Silquest* A-172NT

Silquest* A-172NT Silane

Description

Silquest A-172NT silane, vinyl tris (2 methoxy - ethoxy) silane, is a vinyl-functional coupling agent that promotes adhesion among unsaturated, polyester-type resins or crosslinked polyethylene resins or elastomers and inorganic substrates, including fiber glass, silica, silicates and many metal oxides.

Key Features and Benefits

- Improves electrical properties and strength of mineral-filled ethylene/propylene rubber and crosslinked polyethylene and other polymer or resin systems, particularly after wet-conditioning. Silquest A-172NT silane can be added to the clay and siliceous filler or blended directly into the system.
- Enhances the strength performance of cured, filled or reinforced polyester and other resin composites, both initially and after wet-conditioning. Silquest A-172NT silane reduces water absorption in cured polyester molding compounds, particularly diallyl phthalate compounds, thus improving the wet electrical and mechanical properties.
- Improves the bond of glass filament to polyester and other resins in fiber glass reinforced applications, rendering the cured composites more resistant to wet environmental conditions. Silquest A-172NT silane can be incorporated into the glass fiber size binders.
- Increases the adhesion of printing inks or pastes and coatings to glass, ceramics or metal, providing economic advantages over costlier ceramic-fusing techniques.
- Improves the adhesion of silicone rubber applied to polyester or glass surfaces, especially important in high-temperature applications.
- Moisture-curable, water- and solvent-borne latexes can be produced by copolymerizing Silquest A-172NT silane with other vinyl monomers in latex polymer production. Silquest A-172NT silane can also be grafted onto existing reactive or unsaturated polymers.

Typical Physical Properties

Physical Form	Liquid
Color	Light straw
Specific Gravity at 25/25°C	1.035
Boiling Point at 760 mm Hg, °C (°F)	285 (545)
Refractive Index, nD 25°C	1.427
Flash Point, Tag Closed Cup (ASTM D 56), °C (°F)	92 (198)

Solubility

Silquest A-172NT silane is soluble in methanol, ethanol, toluene, benzene, xylene and acetone. With adequate stirring, it also is soluble in water, at concentrations up to five percent.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

WARNING – Sporadic minor explosions and fires have been reported during A-172NT/EPDM compounding in internal mixers. The following precautionary

steps are recommended by Momentive Performance Materials in order to insure that a flammable atmosphere is not created.

1. Review all MSDS and product safety literature with the appropriate operations personnel.
2. Conduct a complete and thorough safety review of each operation, paying particular attention to the potential of flammable mixtures inside all mixing and compounding units and vessels.
3. Ground all mixing, compounding and blending units or vessels and periodically test this equipment for electrical continuity.
4. Eliminate all known sources of ignition within and in the immediate vicinity of the compounding/mixing/blending units.
5. Blanket all mixing, compounding and blending units/vessels with an inert gas such as nitrogen to reduce the oxygen concentration to a safe level prior to the addition of silane. Maintain the inert blanketing throughout the entire compounding and discharge cycles.
6. Eliminate or control other sources of potentially explosive gases.
7. Keep the temperature of the second stage pass as low as possible consistent with proper catalyst dispersion.
8. Provide the necessary personal protective equipment as specified in the MSDS. Include local exhaust ventilation as necessary.

EGME (ethylene glycol monomethyl ether) is generated during hydrolysis, which occurs when Silquest A-172NT silane reacts with surface moisture on clay, or other minerals, or with moisture from other sources. Typical use levels of Silquest A-172NT silane in EPDM compositions can generate this hydrolysis by-product in concentrations which are within defined explosive limits when mixed with air in industrial internal mixers (e.g., Banbury, Littleford, etc.). Other formula ingredients can also be sources of combustible reagents, e.g. polymers, plasticizing and processing oils (hydrocarbons), solvents, products of chemical reactions, peroxides, etc.

Static can be generated in a number of mixing/compounding operations. Although all mechanical equipment should be properly grounded, static discharges might not be completely eliminated – especially in certain intensive mixing operations. Since the fuel source (alcohol) and an ignition source (static) might be unavoidable in some cases, the remaining control to avoid ignition is the elimination of oxygen. The blanketing of mixing and compounding units with an inert gas such as nitrogen is one of the most effective options to removing the remaining (third) side of the fire triangle.

EPM and EPDM, are non-polar compounds, which are particularly prone to generate static sparks, especially when a Banbury mixer is undercharged, which is often standard procedure in second stage mix cycles. Wire and cable grade EPM/EPDM compounds are particularly prone to generating static sparks during compounding because they typically contain low levels of plasticizing oils and use calcined (i.e., anhydrous) clays.

References

1. E. I. DuPont, "Safe Handling of Vinyl Silane A-172NT in Nordel Insulating Compounds," 1970.
2. H. F. Coward and G. W. Jones, "Limits of Flammability of Gases and Vapors," Bulletin 503, U.S. Bureau of Mines, 1952.

Customers should review the latest Material Safety Data Sheet (MSDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, and any special storage conditions required for safety. MSDS are available at www.momentive.com or, upon request, from any Momentive Performance Materials (MPM) representative. **For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center.** Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Contact Information

For product prices, availability, or order placement, contact our customer service by visiting momentive.com/ContactSilicones.

For literature and technical assistance, visit our website at: www.momentive.com

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