Technical Data Sheet

CoatOSil* 1770 Silane

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Description

An improved combination of performance, appearance and handling characteristics may be possible in waterborne coatings formulated with CoatOSil 1770 silane. Shelf stable, one-pack and two-pack systems are possible. When properly formulated, crosslinking can occur under both room temperature and elevated temperature conditions.

Key Features and Benefits

Performance Benefits

Incorporation of CoatOSil 1770 silane into waterborne coating formulations gives excellent coating properties in terms of appearance, weathering and durability:

- Improved solvent, impact and mar resistance
- Superior wet and dry adhesion
- Improved stain resistance in wood and automotive plastic coatings
- No negative affect on clarity or color of the cured film
- Excellent gloss retention upon aging

Handling Benefits

CoatOSil 1770 silane provides a range of handling characteristics that are necessary for shelf stability:

- Stability over 18 months in a fully formulated coating (one pack system)
- Stability of over 12 months for a 40% emulsion (for a two pack system)
- Stability superior to crosslinkers such as polyaziridines, melamines, isocyanates

Shelf stability of a one pack system will be reduced by increased (>5% on resin solids) addition levels of CoatOSil 1770 silane, or by pH outside the range of 6-8.5. Please contact your Momentive Performance Materialsrepresentative for answers to any questions you have regarding shelf stability.

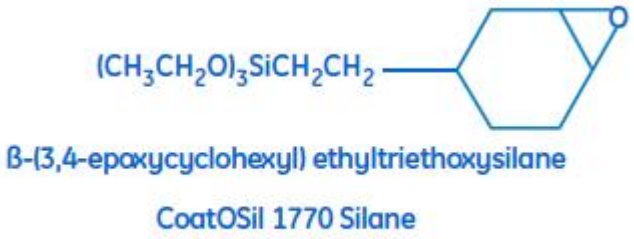
Typical Physical Properties

(Not to be used for specification purposes)

Physical Form	Clear liquid
Color	Clear, pale
Percent Active Material	100
Specific Gravity, 25/25°C	1.00
Boiling Point (°C at 760mm Hg)	> 300
Molecular Weight, g/mole	288.46
Flash Point, Pensky-Martens Closed Cup(1), °C (°F)	74 (165)

(1) ASTM Method D93

Chemical Structure



ß-(3,4-epoxycyclohexyl) ethyltriethoxysilane

CoatOSil 1770 Silane

Processing Recommendations

Formulation and Addition - CoatOSil 1770 silane is easily dispersed or emulsified in a coating formulation, providing stability in the formulated coating of over 12 months. This silane compound can be added by two methods:

Direct Addition of the Silane - In many coating formulations, adequate quantities of surfactant or co-solvent are present to stabilize the dispersion of neat CoatOSil 1770 silane. Moderate shear is recommended for dispersion.

Addition of a Silane Emulsion - It is possible to introduce a 40% emulsion of the CoatOSil 1770 silane into the coating formulation at the time of use (two pack system) or during formulation (one pack system). Light to moderate shear will uniformly mix the silane emulsion.

Recommended Use Levels and Applications - Silane addition level, and the acid number of the polymer emulsion, will determine the level of performance. Typical range of addition of CoatOSil 1770 silane will be 0.5-5% of total resin solids.

CoatOSil 1770 silane provides value and performance in a wide range of coating end uses, particularly those with high performance and durability demands such as product finishes, wood coatings, and coatings for exterior use. Additional levels as a percent of resin solids in the formulation are as follow.

Wood Coatings (kitchen cabinets, institutional furniture), %	2
Wood Coatings (floors), %	3
Masonry Coatings, %	2
Metal Coatings for Exterior Uses, %	1
Glass Coatings, %	1.5
Exterior Architectural Coatings, %	1.2
Interior Architectural Coatings, %	0.5
Coatings for leather, vinyl and plastics	2.0

Best results are obtained when CoatOSil 1770 silane is formulated with a waterborne resin with an acid number in the range of 15 to 70. Higher acid number values and silane addition levels are suggested where the highest levels of performance and durability are required.

Momentive Performance Materials recommends that you optimize use level to get the balance of performance and cost which best matches the needs of your customer's end use.

Chemistry of Crosslinking - The mechanism of crosslinking involves the epoxysilane's dual chemical functionality. The epoxy portion of the molecule is reactive with the matrix resin and the alkoxysilane portion crosslinks after hydrolysis by condensation

forming siloxane bonds. The alkoxysilane also can react with surfaces to improve wet adhesion of the coating, or with fillers to improve pigment binding.

Patent Status
The use of and compositions containing CoatOSil 1770 silane and related compounds are described and claimed in U.S. Patent No. 5,714,532 and pending patent applications.

Standard copy to come

Product Safety, Handling and Storage
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Limitations
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Contact Information
For product prices, availability, or order placement, contact our customer service at Momentive.com/CustomerService/

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

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