# Technical Data Sheet

Product name: Vinyltrimethoxysilane/A-171 CAS 2768-02-7

Cas No.: 2768-02-7

Molecular Formula: C5H12O3Si

Molecular Weight: 148.23

Appearance: Colorless liquid

Flash point: 31℃

Boiling point: 123℃

Refractive index: 1.3930

Density: 0.97g/mL

Purity: 96% Min

**Features:**

1. A-171 is a bifunctional silane possessing a reactive vinyl group and a hydrolysable inorganic methoxysilyl group. The dual nature of its reactivity allows it to bind chemically to both inorganic materials (e.g., glass, metals, fillers) and organic polymers (e.g., thermo- plastics, thermosets or elastomers), thus functioning as adhesion promoter, crosslinker, and/or surface modifier.

2. A-171 may also be useful as a moisture scavenger in moisture cure systems where enhanced shelf-life is sought.

Pipes and cables produced from silane- crosslinked polyethylene (PE) using A-171 are more resistant to heat and weathering than products made from non-crosslinked PE. They also have improved electrical properties. The storage stability is greatly enhanced in formulations of silane-crosslinking adhesives and sealants.

3. Use of A-171 as a co-monomer in polymer dispersions results in binders which exhibit much improved wet scrub resistance and higher abrasion resistance thanks to crosslinking and improved adhesion to the substrate.

4. It’s a clear, colorless, low viscosity liquid with a typical aromatic odor. The silane hydrolyzes in the presence of moisture (methanol is released) to form silanols, which can then react with themselves to produce siloxanes.

**Specifications:**

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| Appearance | Colorless liquid |
| Purity | ≥96.0% |
| Density at 25℃ | 0.97g/ml |
| Boiling point at 760mmHg | 123℃ |
| Flash point, Tag closed cup | 31℃ |
| Refractive index (25℃) | 1.3930 |

## Reactivity:

In the presence of moisture, the methoxy (Si- $OCH_3$) groups of A-171 hydrolyze to produce methanol and reactive silanol (Si-OH) groups which can bond to a variety of inorganic substrates or react with each other to form siloxane bonds (Si-O-Si). The organophilic vinyl end of A-171 can also react with a suitable polymer initiated by peroxide.

## Application and performance:

***Moisture curing of polymers***

A-171 is suitable for the preparation of moisture-curing polymers, e.g., polyethylene. The characteristic feature of this process is peroxide-initiated grafting of the vinylsilane to the polymer during extrusion. After grafting. the polymer can still be processed as a thermo- plastics. Only upon treatment with moisture (in an 80-100 ℃ waterbath, steambath, or even at ambient conditions), the polymer chains are linked together; Thereby forming a crosslinked polymer. This reaction can be accelerated by using a catalyst. Silane cross- linked polyethylene is widely used as cable isolation, and sheathing mainly in low voltage applications as well as for hot water/sanitary pipes and underfloor heating. Heat resistance is the main reason for the crosslinking of polymers for cable applications, but crosslinking can also improve the following properties: tear- and crack resistance, chemical resistance, abrasion resistance, memory effect. A-171 may also be used as a co-monomer for the preparation of different polymers such as polyethylene or acrylics. Those polymers show an improved adhesion to inorganic surfaces and they can also be crosslinked with moisture as described above.

***Adhesion promotion and surface modification***

Because of its ability to react with inorganic fillers as well as with organic polymers (activated by e.g., peroxides or radiation), A-171 acts as an efficient adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture. Once bonded to inorganic filler,

A-171 hydrophobates the filler surface, improving the compatibility of fillers with polymer, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics. The pretreatment of glass, metals, or ceramic surfaces with A-171 improves the adhesion of coatings on these surfaces and can thus improve the corrosion resistance.

***As co-monomer for polymer dispersions***

Polymer dispersions (e.g., styrene acrylics),

modified with A-171 show improved adhesion strength in wet conditions and wet scrub resistance.

***As moisture scavenger***

The electron withdrawing effect imparted by the silanes vinyl functionality enhances the rate of hydrolysis. This increased reactivity makes A-171 silane one of the fastest hydrolyzing alkoxy silanes available. The elevated rate of hydrolysis is sufficient to enable A-171 silane to be utilized as a moisture scavenging agent in moisture sensitive systems.

A-171 silane can be incorporated into urethane, silylated polyurethane (SPUR prepolymer) or othe r silane modified polymer-based sealants and adhesives to extend the systems shelf-life.

***Other applications of A-171***

A-171 can easily bond to OH-groups. Hydroxyl containing polymers e.g., functionalized silicones, may be modified with A-171, thereby introducing reactive vinyl groups into the polymer chains. The vinyl group of A-171 is activated by its proximity to silicon, which makes it an attractive mol ecule for different organic syntheses.

**Storage:** Store in a cool, dry, ventilated place.

**Package:** 200kg/drum or as per your particular request.