A Subsidiary of PETRONAS Chemicals Group

PRODUCT DATA SHEET

BRB Silanil® 276

Silanes

BRB International BV
PO Box 3552 NL-6017 ZH Thorn. Office: Europastraat 5 NL-6014 CD Ittervoort The Netherlands.
T: +(31) 475 560 300
www.brb-international.com

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Silanes

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BRB Silanil® 276
Vinyl(trimethoxy)silane

Description

BRB Silanil® 276 is a reactive chemical containing vinyl functionality and a silane hydrolysable group. It is a fast hydrolyzing alkoxy silanes type and can be used for many potential applications.
CAS# is specified as 2768-02-7.

Features

BRB Silanil® 276 is reactive in free radical chemistry as in hydrolysis chemistry and forms siloxane bonds through moisture curing.

When used as a special crosslinker in PE, especially in wire and cables jacket, pipe and foam, *BRB Silanil® 276* can give better heat and weather resistance compared to other crosslinkers.

BRB Silanil® 276 is commonly used for modification of various types of emulsion polymerization. It can be added to latex as monomer to form vinyl modified latexes. It can also be added to various synthetic rubbers to form vinyl co-polymers.

Moisture Scavenger is one of the potential applications. It is applied in synthetic resin for surface coating and adhesives such as polyurethane with fast hydrolysis rate of *BRB Silanil® 276* to catch H2O in moisture cure system in order to prolong the shelf life of the resin.

BRB Silanil® 276 can as well be used for hydrophobic modification purposes in which a hydrolysable group is able to bond or interact with inorganic surfaces such as Glass , Quartz and Steel. It then leaves a hydrophobic vinyl group on top.

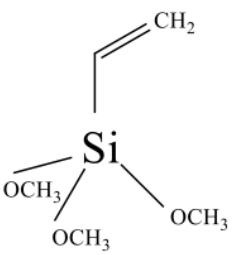
Benefits

- High reactivity
- Good covalent bonding by free radical mechanism

Typical Data

Parameter	Unit	Value
Specific gravity at 25°C		0.97
Refractive index at 25°C		1.391
Viscosity at 25°C	cSt	0.56
Flash point	°C	24
Purity	%	> 98

Chemical Structure



How to Use

BRB Silanil® 276 will hydrolyze when combined with water to form a silanol reactive group and is released by product as methanol. Vinyl functional groups will have an organic chemical bond or interact with a polymer or an organic surface.

Potential Applications

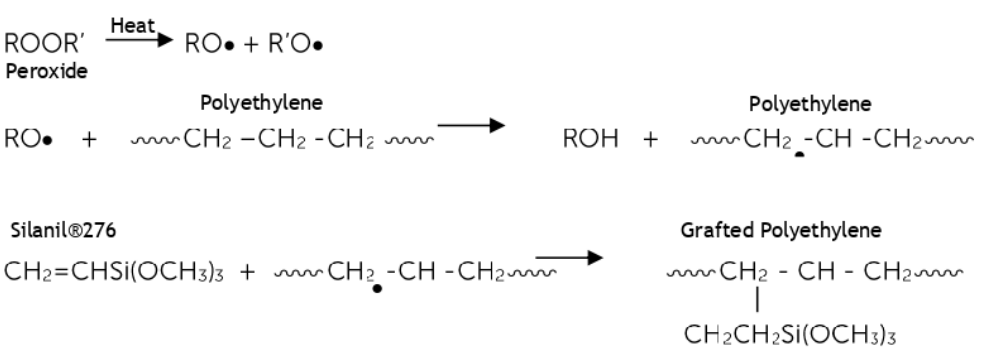
I.Crosslinker for Polyethylene

Silane crosslinking is a type of chemical crosslinking process to create a network structure of thermoplastic polyethylene to be three dimensional macromolecule structure which materials will be changed from thermoplastic to near thermoset.

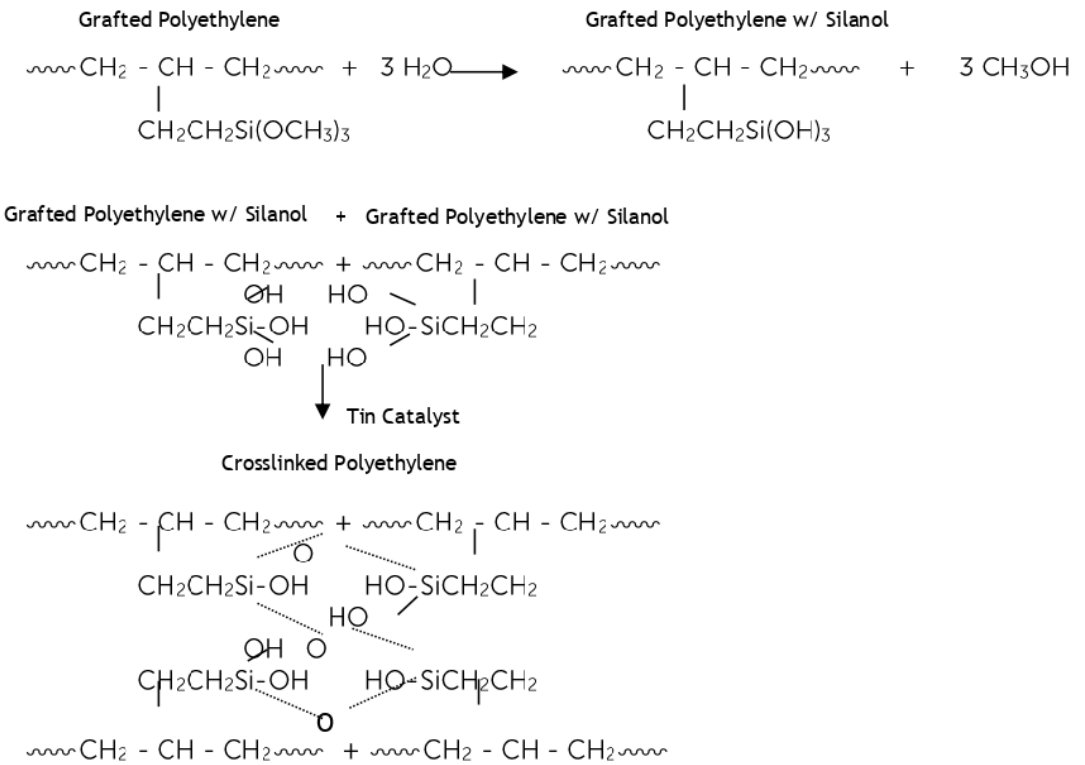
Crosslinked Polyethylene is also commonly called XLPE or PEX to be used in wire&cable insulation layer, PEX pipe and PEX foam.

Example of crosslinking method is illustrated below:

Part A. Silane Grafting Polyethylene



Part B. Crosslinking



Application Recommendation

- *BRB Silanil® 276* dosage recommendation: 2-3% based on polyethylene wt.
- Initiator: Di-Cumyl Peroxide
- Catalyst: Dibutyltindilaurate (DBTDL)
- Twin screw length/diameter for silane grafting is recommended 24-35 L/D ratio.

Curing Method of End Product

- Water Bath: immerse 80-95°C, cure time estimate rate 4 hours per 1mm HDPE thickness
- Steam Sauna: pressure steam 90-100°C, cure time estimate rate 4 hours per 1mm HDPE thickness

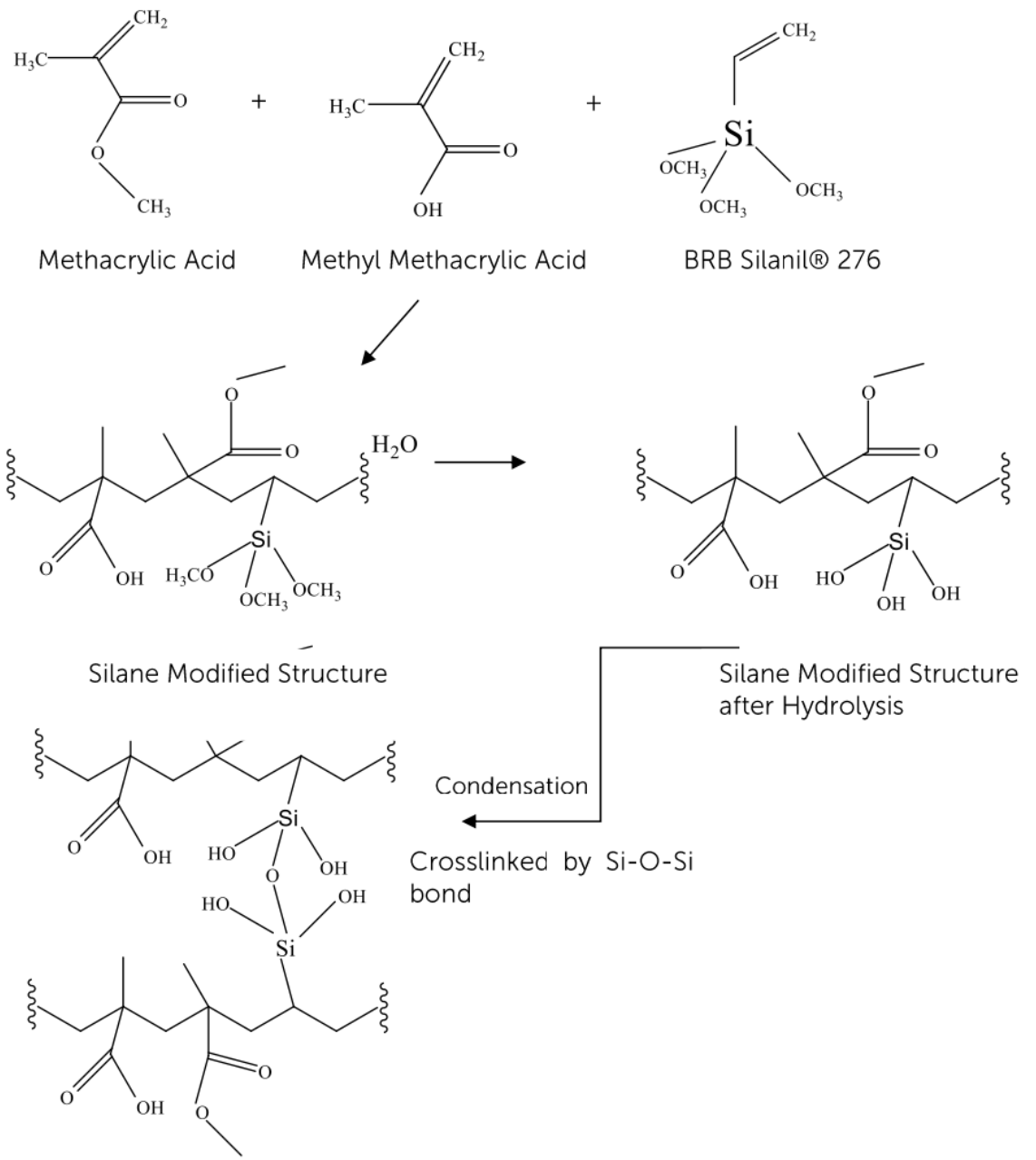
Benefits after Crosslinking

- Increase creep resistance and hot set test properties
- Increase solvent resistance
- Increase long term service temperature
- Overall better mechanical properties

II. Crosslinker for Polymer Modification

BRB Silanil® 276 is widely used to modify polymer structures, especially in surface coating resin for both of water borne and solvent borne such as Acrylic Latex, which is commonly added in polymerization steps either in pre-emulsion tanks or monomer mixture tanks.

An example of a crosslinking method is illustrated below



Application Recommendation

- In solvent borne: recommended silane dosage at 0.4-10.0% on total monomer wt.
- In water borne: recommended silane dosage at 0.1-2.0% on total monomer wt.
- For emulsion polymerization, it is recommended to add silane in the pre-emulsion stage. In case of none pre-emulsion stage, it is recommended to add silane into the monomixture at the remaining of 10-15% monomers feeding time.
- For water borne: pH is recommended close to neutral or < = 8.5 pH for stability purposes.

Benefits after Crosslinking

- Increase film hardness
- Improve scrub and abrasion resistance
- Improve solvent, acid and base resistance
- Increase water resistance
- Overall better mechanical properties of modified polymer

Storage Recommendation

Store in dry and cool (approx. 20-25 ° C) condition. After opening, avoid exposure to atmospheric moisture. Inert gas e.g. N^2 gas is required to purge into the container after opening to prevent hydrolysis by moisture

A Product Safety Data Sheet should be obtained from your BRB office prior to use.
ATTENTION: Before handling, read product information, Product Safety Data Sheets and container labels for safe use, and any physical and/or health hazard information.

FOR MORE INFORMATION

Please contact
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