

**SIN RUBTECH® POLYMER BOUND  
PREDISPERSED Si 69 – 50G****(Silane Coupling Agent)****Product Description**

Composition:	A proprietary predispersed 50% Bis – [3 – (Triethoxysilyl) propyl] – Tetrasulphide in a 50% elastomeric / processing aids binder specially formulated for use in EPDM, NR, SBR, BR formulations
Appearance:	Translucent Beige Granules
Odour:	Faint Alcoholic.
Density:	Approx. 1.21 g/cm <sup>3</sup> .
ML 1+4 @ 50°C	< 70
Storage Stability:	Over 6 months under normal storage conditions at 10°C to 35°C. However for longer storage stability, we strongly recommend that storage temperatures be between 10°C to 30°C.
Packing:	18 kg nett in sealed PE bag in a carton box.

**Recommendations and Applications**

SIN RUBTECH® Si 69 – 50G is recommended where high productivity, better dispersion and a more eco-friendly environment are required. This often translates to a lower bottom-line costing. A special advantage of our polymer bound predispersed silane is its better storage stability under exposed tropical ambient conditions.

The active ingredient Si 69 or bis – [3 – (Triethoxysilyl) propyl] – tetrasulphide is the earliest coupling agent discovered which can chemically crosslink an unsaturated rubber backbone and a filler containing surface hydroxyl groups such as silica, silicate, talc and clay.

The positive end results are :-

Higher tensile strength	Lower compression set
Higher abrasion resistance	Lower Mooney viscosity
Higher modulus / hardness	Lower tan $\delta$ / fuel consumption in tyres

The negative results are :

Lower tear strength, Low cut growth resistance and Higher compound cost.

The silanol groups in silica can also react with amines eg. Hexa, DPG, CBS, glycols eg. DEG & PEG 4000 and metallic oxide eg. ZnO & MgO. This is a good or bad thing. Bad, because these rubber chemicals will rob the silanol groups before the Si 69 has a chance to react and hence a waste of good monies. For this reason, Si 69 modified silica formulations are recommended to be mixed first without such chemicals. Good, we have chemicals like DEG, PEG 4000, Hexa & DPG and proprietary monofunctional organosilanes which can be used to reduce the “crepe hardening” or high Mooney viscosity of silica compounds which can sometimes make processing very difficult. Also compounders need to compromise cost and vulcanisate properties as Si 69 cost is very high and where below standard Si 69 dosages are used, PEG 4000 etc. can be used to improve processability. Si 69 is also a sulphur donor and its incorporation besides functioning as a coupling agent can lead to increased sulphur cross-link densities as well as more heat reversion resistant vulcanisates.

Applications of Si 69-50G include high-end shoe solings, rollers, ‘Green Tyre’ treads where above beneficial effects of silane are exploited.

Si 69 – 50G is not recommended for peroxide cured formulations.

**Dosage**

Dosage recommended is 2 – 20 parts based on 100 parts silica used.

Source of liquid silane is Degussa Si 69 from Degussa – Hüls AG Germany and the solid polymer bound form is manufactured under license by UA Rubber Speciality Chemical Sdn. Bhd.

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