PRODUCT RANGE

Coupling Systems for Mechanical Rubber Goods and Shoe Soles – Rubber Silanes and COUPSIL® Products

COUPSIL® products – pre-silanized ULTRASIL® precipitated silica

COUPSIL® grades

DESIGNATION	SILICA (SPEC. SURFACE AREA / BET)	SILANE	SILANE CONTENT (PARTS PER HUNDRED PARTS SILICA)
COUPSIL® 8113	ULTRASIL® VN 3 (180 m^2/g)	Si 69®	13
COUPSIL® 8113 GR	ULTRASIL® VN 3 (180 m^2/g)	Si 69®	13
COUPSIL® 6109	ULTRASIL® VN 2 (130 m^2/g)	Si 69®	9
COUPSIL® VP 6411	ULTRASIL® VN 2 (130 m^2/g)	Si 264™	11
COUPSIL® VP 6508	ULTRASIL® VN 2 (130 m^2/g)	Dynasylan® VTEO	8

COUPSIL® grades form a group of silane-modified silica products used as reinforcing fillers in rubber compounds with a wide range of polymers such as NR, IR, SBR, BR, (Hal)-IIR, NBR, EPDM, EPM and blends thereof.

The use of COUPSIL® products is particularly advantageous in short mixing series. COUPSIL® grades therefore meet effectively the requirements of the rubber-processing industry, particularly for mechanical rubber goods, which demand products that can be easily processed.

Great advantages of the COUPSIL® family:

- Pre-reacted products which eliminate the equipment-related complex in-situ modification of silica in the mixer.
- Reaction in presence of accelerators by forming rubber-to-filler bonds during vulcanization.
- Enabling tear and abrasion resistance on a high level = as well as excellent dynamic properties.

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COUPSIL® grades based on Si 69® and ULTRASIL® precipitated silica

COUPSIL® 6109 and COUPSIL® 8113

Offering a flexibility regarding specific surface area of the silica and silane concentration.

COUPSIL® 8113 and COUPSIL® 8113 GR should be used wherever high reinforcement is necessary.

Ideal for compounds requiring

- Good transparency (e. g. in shoe soles)
- Hard compounds (e. g. in rollers)
- High abrasion resistance
- Tear resistance on high level

COUPSIL® 8113 GR offers the advantage of a granulated material with easy handling.

COUPSIL® 6109 uses a silica with lower surface area which imparts low viscosities and favorable processing properties to rubber compounds. In addition, COUPSIL® 6109 yields reduced compression set, very good tensile strength and excellent dynamic properties.

COUPSIL® VP 6411 based on Si 264™ and ULTRASIL® VN 2

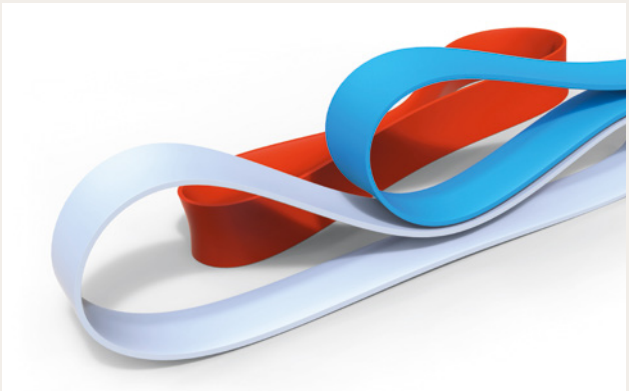
COUPSIL® VP 6411 with special rubber coupling function offers advantages in several fields

- Particularly rapid vulcanization accompanied by great scorch safety.
- Creates a high share of short sulfur crosslinks which leads to low compression sets and high heat stability.
- High cure rate of Si 264™ which furthermore permits nitrosamine-forming thiuram accelerators to be eliminated, partially or even completely, and replaced by other accelerators which are not affected by the nitrosamine formation.
- Leads to better vulcanization properties than the Si 69® containing COUPSIL® grades in polar polymers such as NBR.

COUPSIL® VP 6508 based on Dynasylan® VTEO and ULTRASIL® VN 2

COUPSIL® VP 6508 is a vinyl silane modified silica.
It is conceived for use in peroxide-cured rubber goods.
It delivers a significantly better reinforcement and in general better physical properties in comparison to vinyl silane modified natural fillers such as whitings and clays which are widely used in the market.

Tailor-made COUPSIL® products are available on request.



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XP Si 466 EXT – solid low VOC silane with intrinsic activator function

XP Si 466 EXT is a solid silatrane silane with a disulfane function derived from the liquid rubber silane Si 266®. Equivalent to Si 266®, the silatrane is also scorch stable at temperatures above 160 °C and hence, XP Si 466 EXT can be used at higher mixing and processing temperatures.

A further advantage of the silatrane is to be a VOC-free coupling agent, which can simplify curing (e.g. pressure-less salt-bath or hot air curing) and leads to smooth vulcanizates.

As an additional feature, the triethanol moiety provides an intrinsic activator function. Thus, accelerators like DPG may be omitted when using the solid silatrane.

This easy to handle silane is commercially available as polymer bound, dust-free co-extrudate XP Si 466 EXT in pellet form in an SBR matrix (17 wt% SBR).

Si 264™

Si 264™ (3-Thiocyanatopropyltriethoxysilane) is a bifunctional liquid silane with a special rubber active chemical function.

Advantages:

- Forms stable crosslinks with a wide range of polymers based on NR, IR, SBR, BR, NBR and EPDM during vulcanization.
- Crosslinks have a high share of short sulfur-bridges which leads to low compression sets and high heat stability of the vulcanized rubber articles.

Si 264™ enables mechanical rubber goods with

- High dynamic stability (e. g. lower tan δ at elevated temperatures)
- Reduced heat build-up
- Low compression set
- High abrasion resistance
- Low compound viscosity

Despite its high reactivity towards the polymer, Si 264™ does not cause thermal crosslinks during compounding. Even after prolonged mixing at 170 °C the compound does not show any sign of scorching.

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