

TEGOPAC[®] RD

New reactive diluents for adhesives & sealants

BL Interface & Performance

Our SMP portfolio: Polymer ST and TEGOPAC®

POLYMERS

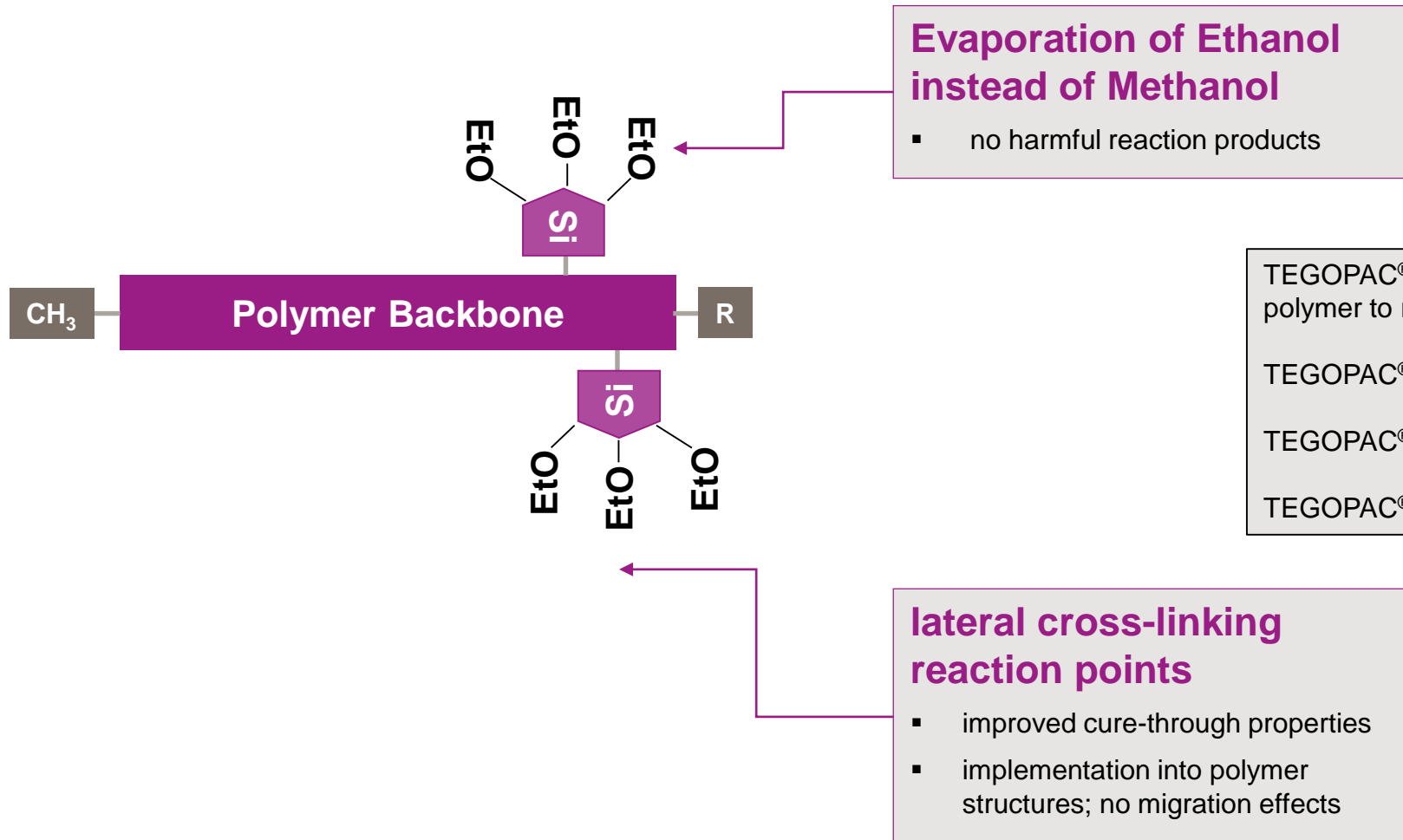
	Release of	Modulus of formulation	Polymer backbones	Plasticizer	Viscosity at 25°C [mPas]	Position of cross-linking groups
Polymer ST 48	Methanol	low-medium	PPG	DPHP	60,000	terminal
Polymer ST 77	Methanol	low-medium	PPG	Elatur® CH	40,000	terminal
Polymer ST 61	Methanol	high	PPG	none	35,000	terminal
Polymer ST 61 LV	Methanol	high	PPG	none	12,000	terminal
Polymer ST 80	Methanol	high	PPG	none	20,000	terminal
Polymer ST 81	Methanol	high	PPG	none	40,000	terminal
TEGOPAC® Seal 100	Ethanol	low-medium	PPG	none	55,000	lateral
TEGOPAC® Bond 150	Ethanol	medium	PPG	none	55,000	lateral
TEGOPAC® Bond 160	Ethanol	medium	PPG	none	10,000	lateral
TEGOPAC® Bond 170	Ethanol	medium	PPG	none	30,000	lateral
TEGOPAC® Bond 251	Ethanol	medium	modified	none	30,000	lateral

REACTIVE DILUENTS *To adjust viscosity of formulations and for development of "non-bleeding" formulations*

	Release of	Modulus of formulation	Polymer backbones	Plasticizer	Viscosity at 25°C [mPas]	Position of cross-linking groups
TEGOPAC® RD 1	Ethanol	reactive diluent	modified	none	1,000	lateral
TEGOPAC® RD 2	Ethanol	reactive diluent	modified	none	1,500	lateral
TEGOPAC® RDS 1	Ethanol	reactive diluent	PPG	none	300	lateral

TEGOPAC® RD products are silane-modified polymers with lateral cross-linking functions which release ethanol during the curing process. Curing takes place in the presence of moisture.

TEGOPAC[®] reactive diluents (RD)



TEGOPAC[®] reactive diluents need to be combined with a co-polymer to reach good mechanical properties

TEGOPAC[®] RD 1 (low crosslinking density): ~1 Pas

TEGOPAC[®] RD 2 (higher crosslinking density): ~ 1.5 Pas

TEGOPAC[®] RDS 1 (reduced water pick-up): ~ 0.3 Pas

Where to use TEGOPAC® reactive diluents?

Application fields

- As a raw material for parquet adhesives or roof sealing
- For the production of self-levelling moisture cure formulations
- For migration-free /-reduced adhesive application
- As a raw material in pressure sensitive adhesives
- For epoxy blended adhesive formulations

Target market

- Construction industry
- Flooring industry
- Industrial assembly adhesives

Grade	Viscosity	Formulation Target
TEGOPAC® RD 1	1000 mPas	Highest Elasticity
TEGOPAC® RD 2	1500 mPas	Highest Mech. Strength
TEGOPAC® RDS 1	300 mPas	Lowest Viscosity



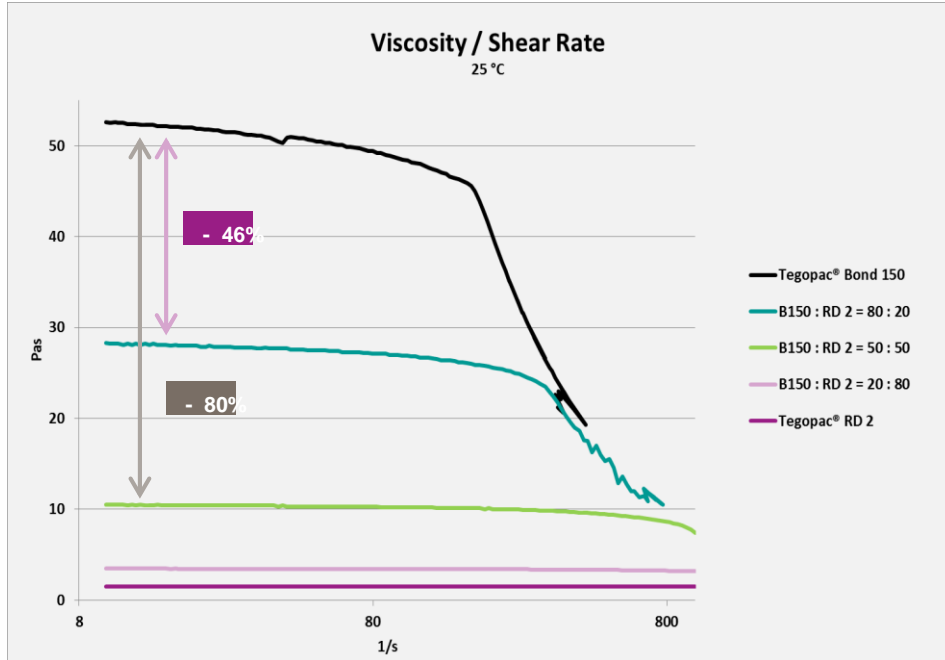
Reasons to use TEGOPAC[®] reactive diluents

- **Viscosity reduction** of a polymer or of an adhesive/sealant formulation
- **Avoid migration** effects through partial or total replacement of plasticizers
- **Improve through cure properties**, because of lateral crosslinking groups
- **Increase cured formulation toughness** (TEGOPAC[®] RD 2)
- TEGOPAC[®] RDS 1: has **lower water-pick-up** properties in comparison the other reactive diluents, because of a more hydrophobic character
- TEGOPAC[®] RD 1, TEGOPAC[®] RDS 1 or TEGOPAC[®] RD 2 can be combined with different silane-modified polymers (**high compatibility & good storage stability**)

Remarks:

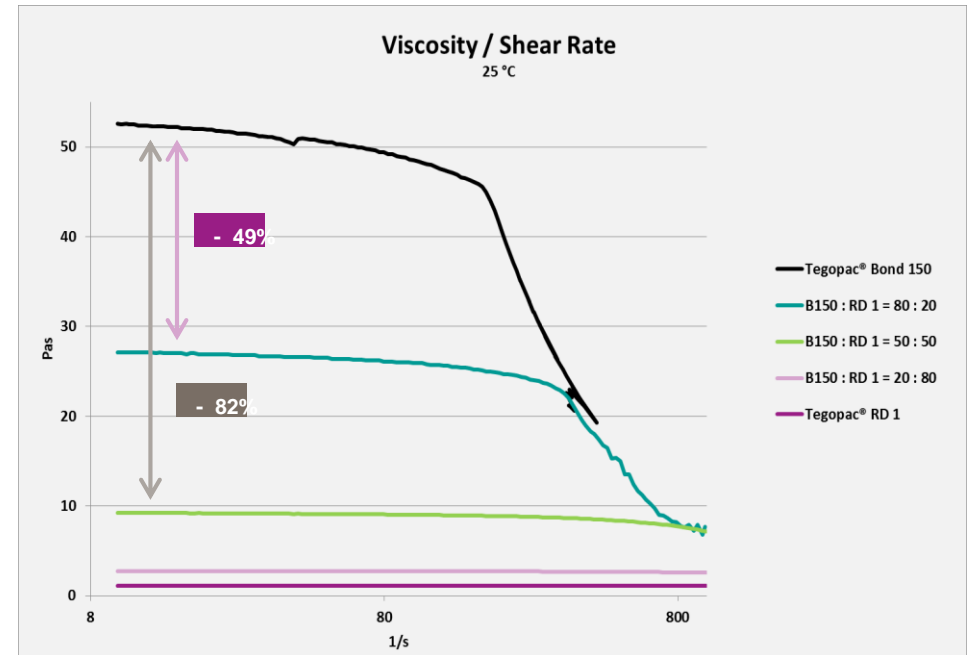
- TEGOPAC[®] reactive modifiers need to be combined with a co-polymer to reach good mechanical properties
- Viscosity of TEGOPAC[®] RD 1 (low crosslinking density): approx. 1 Pas
- Viscosity of TEGOPAC[®] RD 2 (higher crosslinking density): approx. 1.5 Pas
- Viscosity of TEGOPAC[®] RDS 1 (reduced water pick-up): approx. 0.3 Pas

Influence TEGOPAC® RD grades on viscosity



TEGOPAC® RD 1 & TEGOPAC® Bond 150

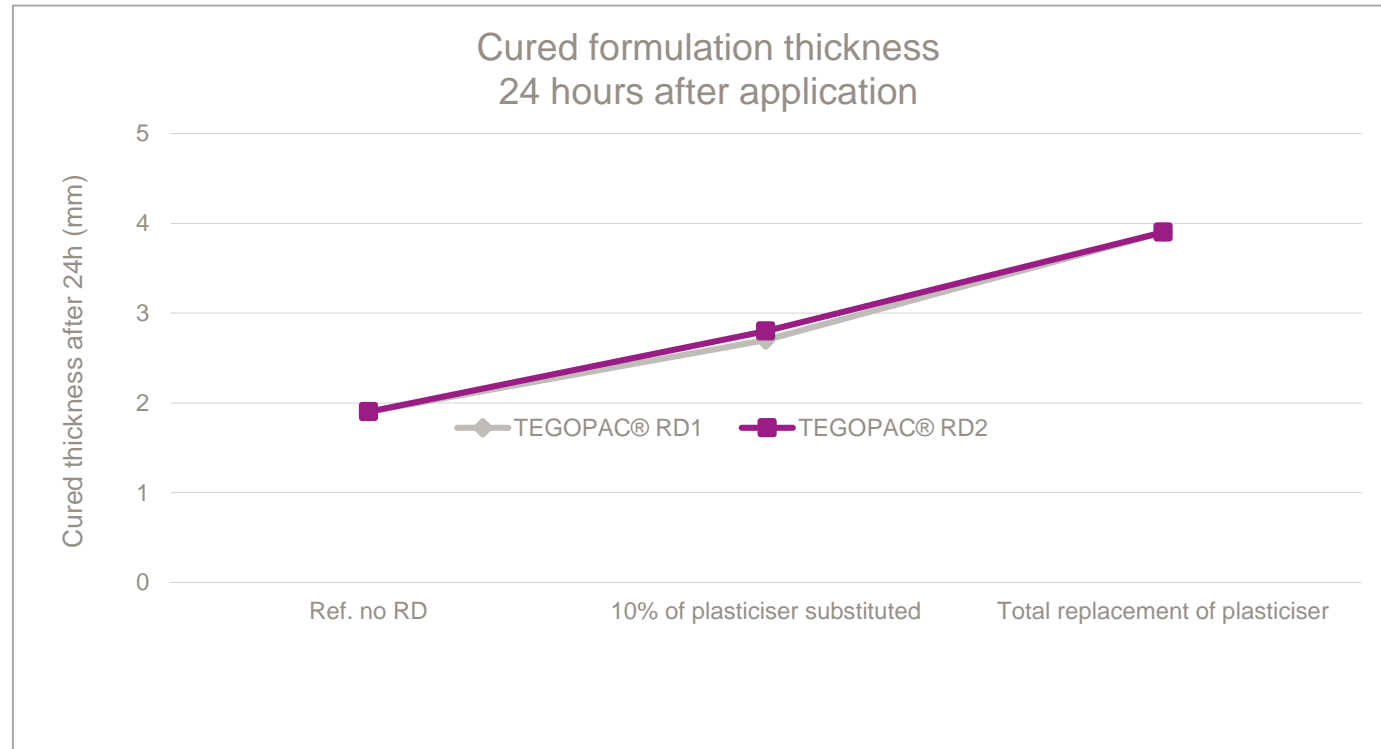
TEGOPAC® RD 1:
low cross-linking density



TEGOPAC® RD 2 & TEGOPAC® Bond 150

TEGOPAC® RD 2:
high cross-linking density

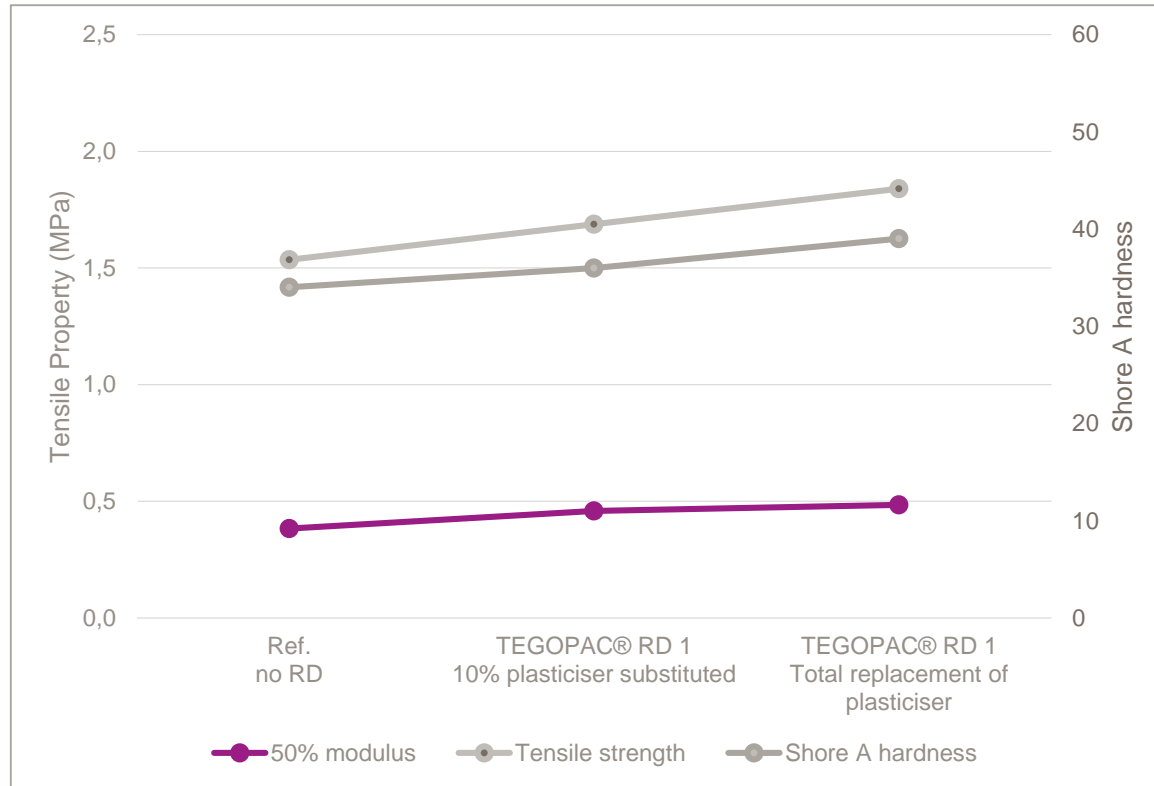
Impact of TEGOPAC® RD grades on formulation through cure



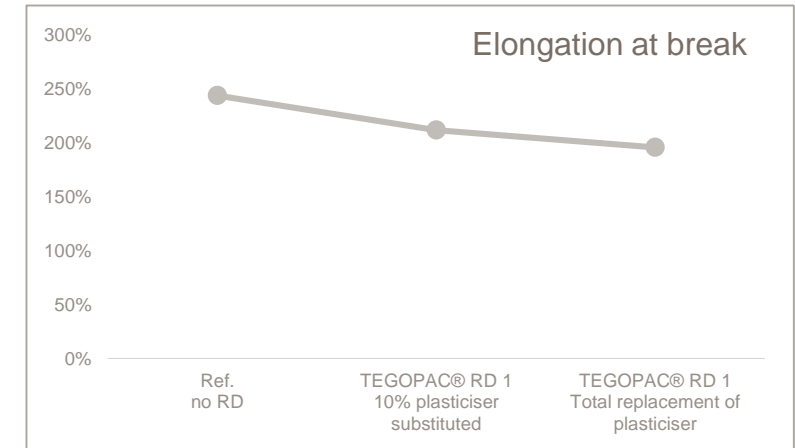
measured on bead (10mm x 20mm)

The addition of TEGOPAC® RD to a formulation allows to speed-up the in-depth cure

Impact of TEGOPAC® RD 1 on mechanical properties of a cured formulation



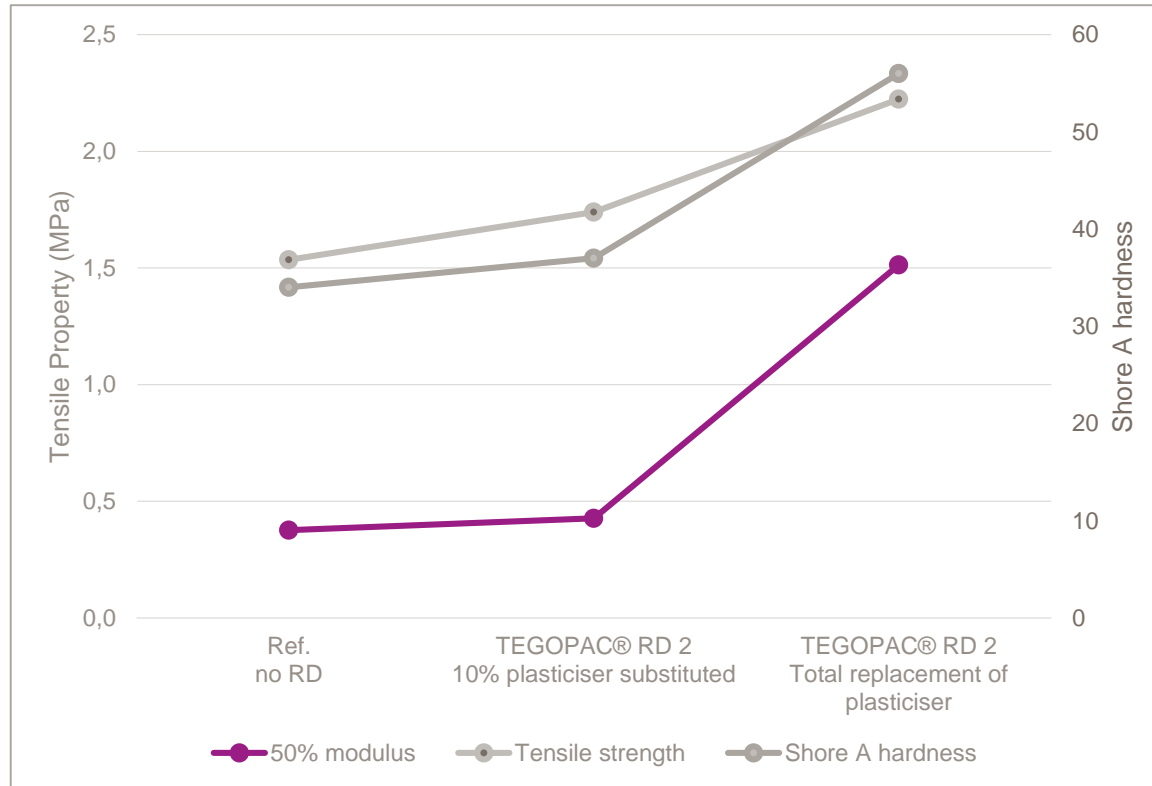
according to DIN 53540 (S2) & DIN EN ISO 868



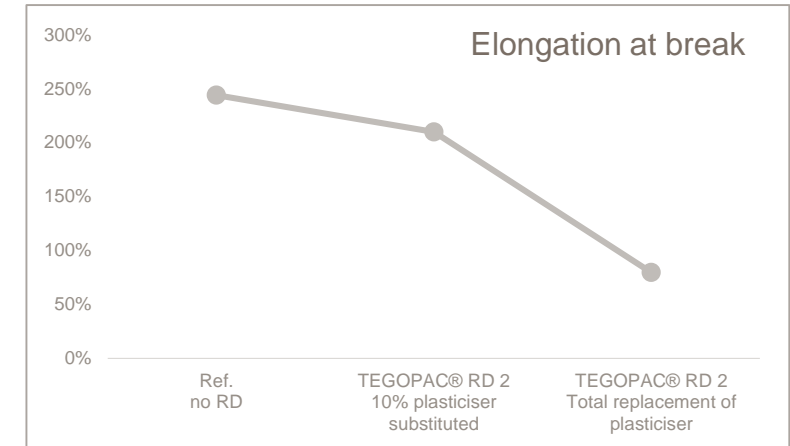
according to DIN 53540 (S2)

TEGOPAC® RD 1 has only limited impact on the mechanical properties of the cured formulation

Impact of TEGOPAC® RD 2 on mechanical properties of a cured formulation



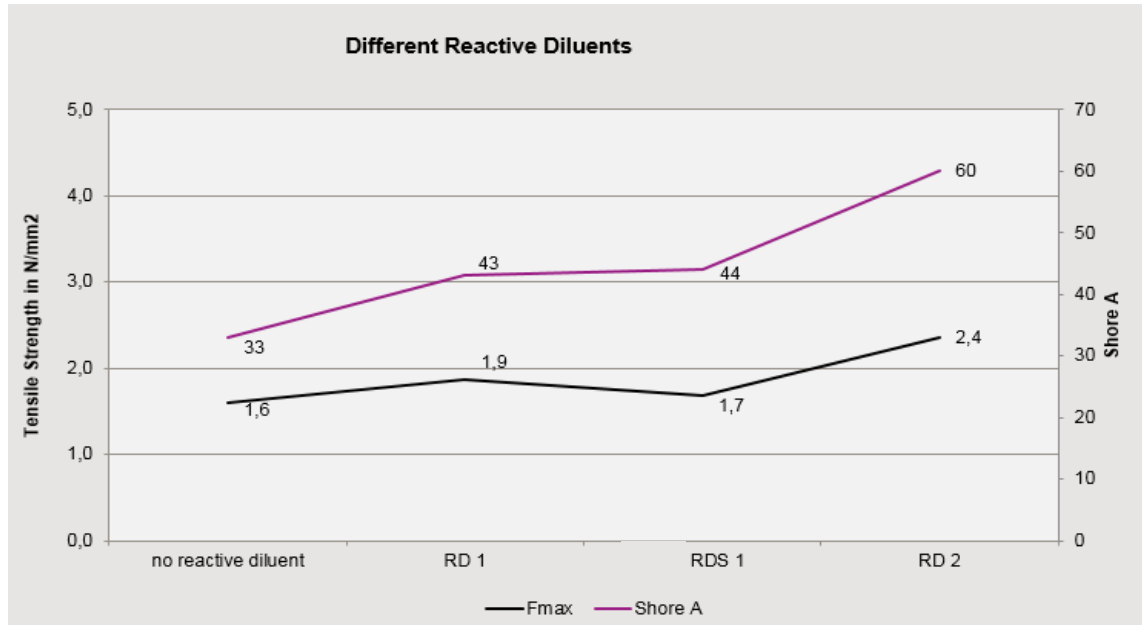
according to DIN 53540 (S2) & DIN EN ISO 868



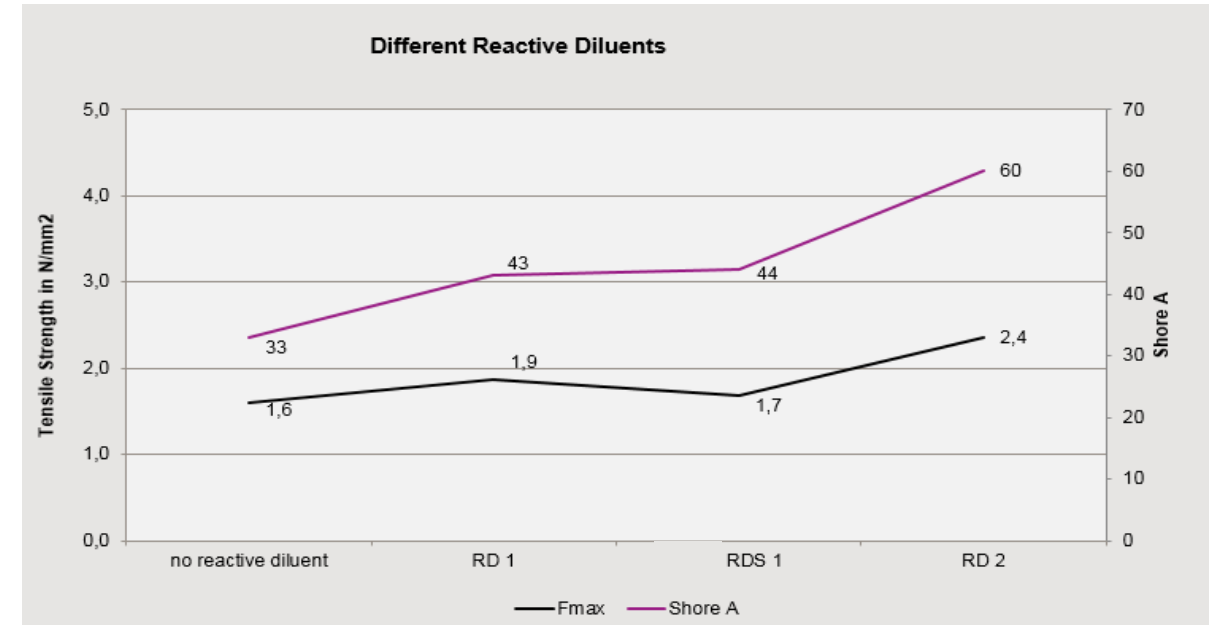
according to DIN 53540 (S2)

TEGOPAC® RD 2 increases the crosslinking density of a formulation. This translates into a significant stiffness increase of the cured product.

Impact of TEGOPAC® RDS 1 on mechanical properties of a cured formulation



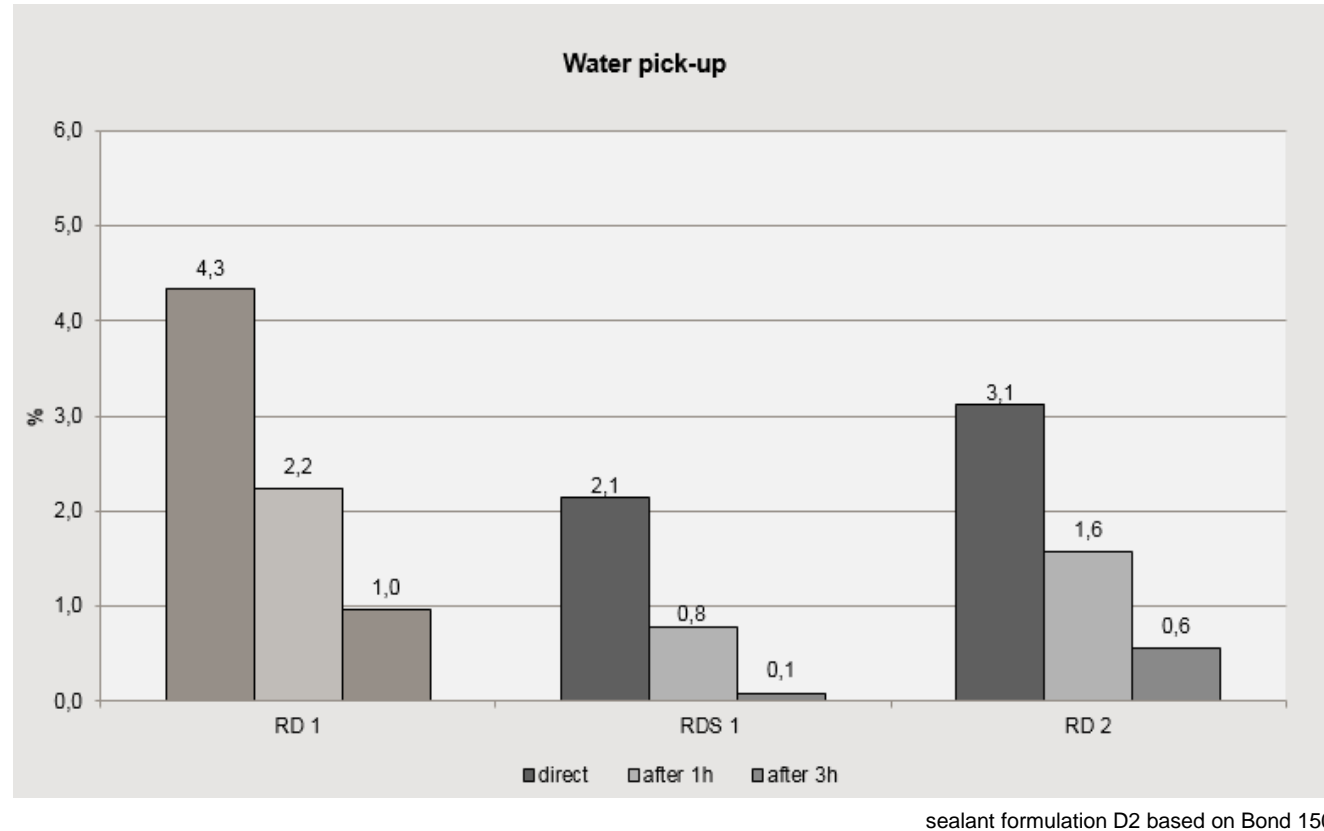
sealant formulation D2 based on Bond 150



sealant formulation D2 based on Bond 150

TEGOPAC® RDS 1 increases the crosslinking density of a formulation, but less in comparison to TEGOPAC® RD 2. Only minor effects on mechanical properties take place.

Impact of TEGOPAC® RDS 1 on “water-pick up” properties



Adhesive formulations containing TEGOPAC® RDS 1 show reduced water-pick-up properties.



EVONIK

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