



# One-Component, Moisture Curing Silane Terminated Polyurethane Sealant Formulation

## DESCRIPTION

The following formulation is for construction sealant applications. This formulation would typically be applied as a one-component sealant in a caulking tube. The formulation is ortho-phthalate free and uses Dioctyl Terephthalate (DOTP) as the plasticizer. The moisture curing silane terminated polyurethane formulation uses Desmoseal® S XP 2774, a product supplied by Covestro.

## KEY FEATURES

- High elongation

## FORMULATION AND RAW MATERIAL DETAIL

Material	Parts	Function	Supplier
<b>Components</b>			
Desmoseal® S XP 2774	18.79	Resin	Covestro
Dioctyl Terephthalate (DOTP)	23.22	Plasticizer	Sigma-Aldrich
Irganox® 1135	0.28	Antioxidant	BASF Corporation
TINUVIN® 292	0.47	UV stabilizer	BASF Corporation
TINUVIN® 1130	0.53	UB absorber	BASF Corporation
TiONA® 8300	3.13	Pigment	Tronox Pigments
Socal® U1S2-G	51.23	Filler	Imerys Performance Materials
Dynasylan® VTMO	1.41	Moisture scavenger	Evonik Industries
Dynasylan® 1189	0.85	Adhesion promoter	Evonik Industries
DBU	0.09	Catalyst	Sigma-Aldrich
<b>Total Formulation</b>	100.00		

Typical Results			
Weight Solids (%)	100.00	Density (lb./gal)	12.72
Volume Solids (%)	100.00	P/B	1.29
VOC (lb./gal)	0	PVC (%)	31.94

## MANUFACTURING INSTRUCTIONS AND COMMENTS

- A planetary mixer equipped with a dispersing blade, side scraper, cooling water jacket, and vacuum adapter should be used in preparation of the sealant.
- Pre-dry all fillers and pigments in an oven to eliminate moisture.
- Charge the vessel with the dried fillers, pigment, plasticizer, and UV stabilizers. Under vacuum, mix using the planetary blade to eliminate air. Add Desmoseal® S XP 2774, and then reapply vacuum with mixing with the planetary blade and the dispersing blade.
- Maintain batch temperature below 40°C using the mixer's cooling system.
- Release vacuum and verify water content via Karl Fisher titration. Once at an acceptable level, add VTMO under continuous planetary blade mixing.
- Add the catalyst, mix thoroughly, and pack. Purge headspace with dry nitrogen prior to sealing.

## APPLICATION GUIDELINES

- Remove any existing sealant using a scrapper, putty knife, or wire brush. Clean the joint with solvent if necessary. If the substrate is concrete, apply a concrete primer prior to sealing.
- The sealant must be dispensed into plastic cartridges or internally coated aluminum cartridges only.
- Apply the sealant into the joint using a one-component caulking gun. Smooth the sealant surface with a jointing tool immediately after application.
- Allow the sealant to cure undisturbed under ambient moisture conditions.

## TROUBLE SHOOTING

- The cure rate can be adjusted by increasing or decreasing the catalyst level.
- Alternatively, DBN can be used as a catalyst for amine, base catalyst options.
- CAB-O-SIL® can be added to improve thixotropic behavior.

## APPLICATION AND CURED SEALANT PROPERTIES

Typical Application Properties	
Skin Time (23°C RT, 50% RH) Observation, internal test method	237 minutes
Vertical Sag Observation from application line	Non-sagging

Typical Cured Sealant Properties	
Shore A Hardness, 1 sec (5 sec) ASTM D 2240 Durometer Hardness	A 20 (A 19)
Tensile Strength at Break ASTM D 412	0.63 MPa (91.37 psi)
Modulus at 100% ASTM D 412	0.171 MPa (24.8 psi)
Elongation at Break ASTM D 412	≥ 900%
Tear Resistance, Die C ASTM D 624	63.3 lbf/in
Paintability <i>Paintability optimization in progress</i>	No – Water based latex No – Oil based enamel
Joint Movement Capability ASTM C719	Internal testing in progress

Covestro LLC  
Coatings and Adhesives  
1 Covestro Circle  
Pittsburgh, PA 15205 USA

Reference: NB# 76156-A

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