UNISEAL® PS

CHEMICAL RESISTANCE POLYSULPHIDE JOINT SEALANT



Product Features

UNISEAL® PS is a non-slumping, two-component, chemically curing polysulphide joint sealant, designed as a watertight seal for moderate-movement and control joints. Based on a liquid polysulphide polymer, it cures after mixing with the hardener to form a tough, flexible, non-staining, rubber-like seal.

Its resistance to chemicals, oils and fuels makes it the preferred sealant for sewage treatment plants, chemical plants, oil & gas facilities and any joint exposed to oil or chemicals. It bonds well to concrete, stone, metals and other common building substrates and resists deterioration on prolonged exposure to UV.

Suitable for both vertical and horizontal joints, with a movement accommodation factor (MAF) of ±25%.

Advantages

- High Elasticity & Resilience
- Permanent Watertight Seal
- Non-Staining Formulation
- Superior UV & Fatigue Resistance
- Thermal Movement Accommodation
- Multi-Substrate Adhesion
- Long-Term Ageing Resistance
- Chemical & Hydrocarbon Resistance
- Ideal for Sewage, Chemical & Oil-Exposed Joints

Fields of Application

Swimming Pools	Airport Runways & Apron Pavements
Factories & Warehouses	Parapet Walls
Metal & Concrete Sea Walls	Sewage & Wastewater Plants
Bridge Decks & Highway Pavements	Garages & Workshops
Chemical Plants	Oil & Gas Plants

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Technical Properties

Property	Value
Specific Gravity (ASTM D792)	1.55 ± 0.05
Consistency	Thixotropic paste
Shrinkage	Negligible
Application Life (min)	> 120
Shore 'A' Hardness (ASTM D2240)	20 – 35
Tack Free Time (hrs)	5
Tensile Strength at Break (ASTM D412)	> 2.0 MPa
Elongation at Break (ASTM D412)	> 500%
UV Resistance @ 300 hrs	No deterioration
Chemical Resistance	pH 2.5 – 11.5, hydrocarbon fuels, vegetable oil, urea, seawater
Cracking & Chalking after Heat Ageing @ 70°C	No deterioration
Initial Cure @ Standard Condition (hrs)	24
Final Cure @ Standard Condition (days)	7
Application Temperature (°C)	+5 to +40
Service Temperature (°C)	-20 to +80

All values given are subject to 5 – 10% tolerance.

Physical Properties

Material	Polysulphide (PS)
Colour	Grey
Size & Packing	UNISEAL® PS – 2.5 litre set / 4 sets per carton UNISEAL® PRIMER – 1 litre tin
Primer Coverage	Approximately 30 – 50 litres sealant per litre

Paintability

UNISEAL® PS can be painted after it has fully cured. Paints and coatings containing solvents may cause the sealant to react and become tacky, and some coatings may crack or craze due to the cyclic movement of the joint. Always carry out a field test to confirm compatibility with the chosen coating.

Storage & Shelf Life

Store in a cool, dry place away from heat and direct sunlight (air-conditioned storage in hot climates). Shelf life: 12 months in unopened condition.

Cleaning

Remove excess sealant with a scraper. Clean tools and spillages with solvent or xylene before curing; cured material can only be removed mechanically.

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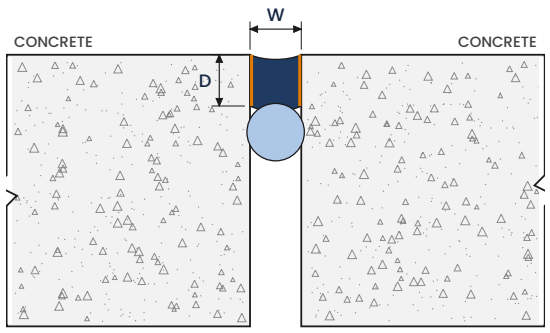
Joint Design Geometry

To ensure that the correct joint width to depth ratio is achieved and to prevent the sealant from adhering to the bottom of the joint, use a tight-fitting backing material such as **UNIFLEX® PE Backer Rod**. Do not puncture the skin of the backer rod during installation, as this can cause bubbling in the uncured sealant. Do not use oil or tar impregnated backing materials.

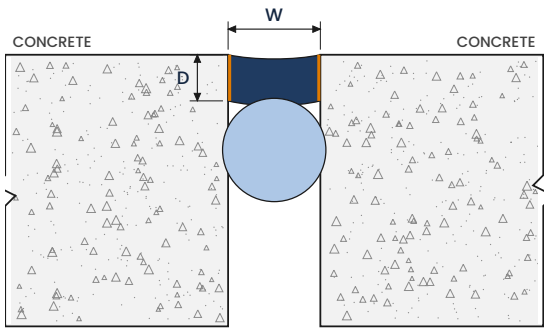
Joint width at least 4 x the anticipated movement : joint depth shall not exceed the width

1 JOINTS UP TO 12MM WIDE Not to scale



Width : Depth = 1 : 1

2 JOINTS OVER 12MM WIDE Not to scale



Width : Depth = 2 : 1

Coverage

Theoretical calculation formula as below :-

Width (mm) x Depth (mm) x Length (m) / 1000 = Volume (litres)

Length of joint in metres filled per 2.5 litre set of **UNISEAL® PS**

Depth (mm)	Width (mm)					
	6	10	15	20	25	30
6	69.4	41.7	27.8	–	–	–
10	–	25	16.7	12.5	–	–
15	–	–	11.1	8.3	6.7	5.6
20	–	–	–	6.2	5	4.2
25	–	–	–	–	4	3.3

*Calculation based on theoretical coverage. Actual material consumption at site will vary depending on the wastage.

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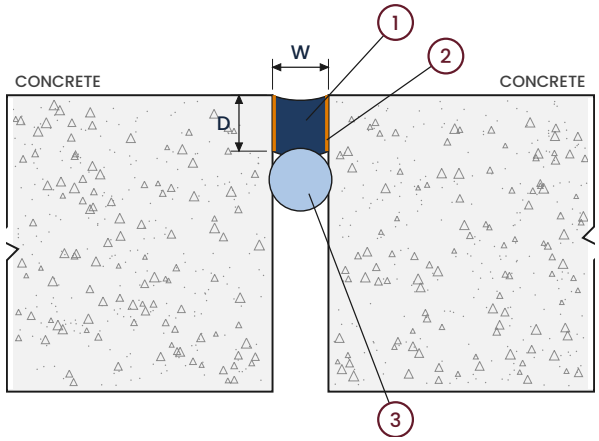
Typical Drawing & Application

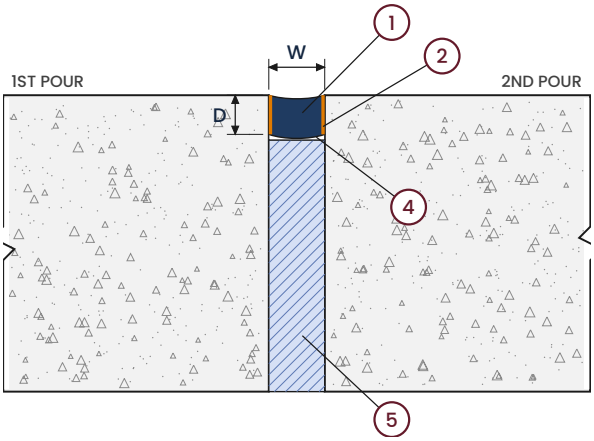
1 SEALANT ON BACKER ROD

Not to scale



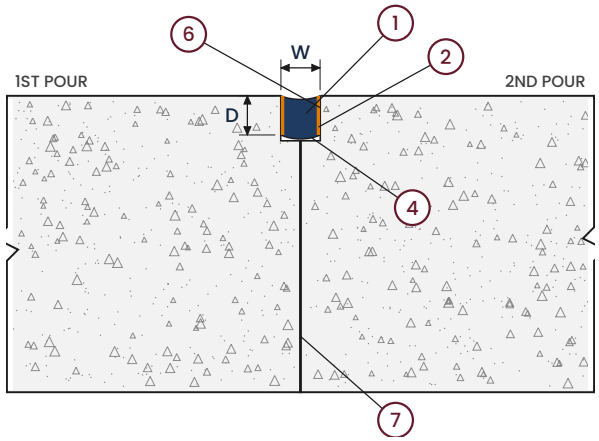
2 SEALANT OVER FILLERBOARD

Not to scale



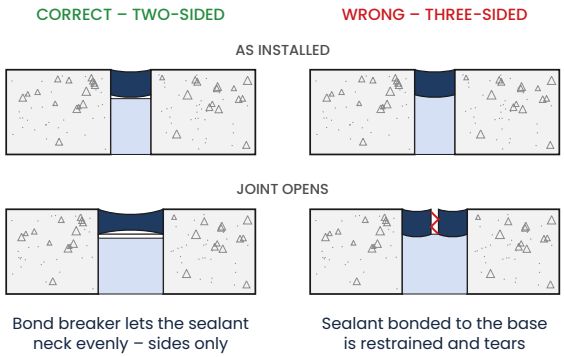
3 SEALED GROOVE

Not to scale



4 WHY A BOND BREAKER

Not to scale



LEGEND

1. UNISEAL® joint sealant
2. UNISEAL® PRIMER (porous surfaces)
3. UNIFLEX® PE backer rod
4. UNIFLEX® PE bond breaker tape
5. UNIFLEX® fillerboard
6. Formed or saw-cut groove
7. Construction joint

Illustrations only – not for construction. Refer to drawing UR-SL-01.

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Installation Procedures

1 Joint Preparation | 2 Priming | 3 Back-Up Material | 4 Mixing | 5 Apply & Tooling

Step 1
JOINT PREPARATION

The joint edges must be clean, dry and free from oil, loose particles, cement laitance and other contaminants which may affect adhesion. Thorough wire brushing, grinding, sand blasting or solvent cleaning may be required to expose a clean and sound substrate. Cut back any compressible joint filler to give a uniform joint depth.

Step 2
PRIMING

Apply masking tape along both edges of the joint for a clean, neat finish. Apply primer to the clean, dry joint faces before installing the backer rod or bond breaker tape – **UNISEAL® PRIMER** is required on porous substrates and immersed joints.

Brush the primer on in a thin coat and allow it to dry (1 – 2 hours) before applying the sealant. Re-prime the joint edges if the sealant is not installed within 3 hours of priming.

Step 3
BACK-UP MATERIAL

Insert **UNIFLEX® PE Backer Rod** into all movement joints to prevent three-sided adhesion. The backer rod sets the correct joint depth, forms the hourglass profile of the sealant and resists tooling pressure so the sealant fully wets the joint faces. Its diameter shall be 10 – 20% larger than the joint width, so it stays in compression and in place during sealant installation.

Caution : do not damage or puncture the backer rod during or after installation – this can cause air bubbles in the sealant.

Step 4
MIXING

UNISEAL® PS is supplied as a two-component kit, with the base and curing agent in a single tin. The mix ratio controls the final adhesion, durability and strength, so always mix one complete kit at a time – **do not part mix**. Mix with a slow-speed drill (300 – 400 rpm) and flat-bladed paddle for 2 – 3 minutes until the colour and consistency are uniform, scraping the sides and base of the tin so the curing agent is fully dispersed.

Step 5
APPLY & TOOLING

Load the mixed sealant immediately into the barrel gun with a heavy-duty follower plate: push the plunger fully forward, place the follower plate on the sealant in the tin, set the gun over the plate, depress the release plate and slowly pull back the plunger to fill the barrel.

Fix the nozzle and extrude the sealant firmly into the joint with even pressure. On vertical joints, start at the bottom and work upwards; fill deep vertical joints in 2 to 3 lifts to avoid air entrapment and sagging. Tool the sealant straight away with a rounded tool dipped in soapy water to give a smooth hourglass profile, then remove the masking tape.

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CHEMICAL RESISTANCE CHART



Chemical Group	Examples	Resistance Level	Comments
Water	Freshwater, Saltwater	Excellent	Ideal for marine and waterproofing applications.
Dilute Acids	Sulfuric acid (low conc.), Acetic acid	Excellent	Suitable for mild acid exposure.
Concentrated Acids	Sulfuric acid (>10%), Nitric acid	Moderate to Poor	Resistance depends on concentration and exposure duration.
Dilute Alkalis	Sodium hydroxide (low conc.)	Excellent	Common in industrial applications.
Concentrated Alkalis	Sodium hydroxide (>10%)	Moderate to Poor	May cause degradation over time.
Fuels	Jet A-1 fuel, kerosene, gasoline, diesel	Excellent	No swelling or blistering observed after 28 days.
Crude Oil	Crude Oil	Excellent	No swelling or blistering observed after 28 days.
Mineral & Lubricating Oils	Mineral oil, machine oil, engine oil, lubricant oil, form oil	Excellent	No swelling or blistering observed after 28 days.
Hydraulic & Brake Fluids	Hydraulic oil, hydraulic fluid, brake fluid	Excellent	No swelling or blistering observed after 28 days.
Grease	Grease	Excellent	No swelling or blistering observed after 28 days.
Alcohols	Ethanol, Methanol	Excellent	No swelling or blistering observed after 28 days.
Aromatic Solvents	Toluene, xylene, benzene	Good	Slight discoloration observed after 28 days.
Chlorinated Paraffin	Chlorinated paraffin	Moderate	Slight discoloration and slight weight loss after 28 days. Avoid prolonged contact.
Chlorinated Solvents	Trichloroethylene, Methylene chloride	Moderate	Limited resistance; avoid prolonged contact.
Oxidizers	Hydrogen peroxide, Chlorine	Poor	Strong oxidizers can break down the sealant.
Ketones and Esters	Acetone, MEK, Ethyl acetate	Poor	Not recommended; causes rapid swelling or degradation.

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