Fosroc®
Thioflex 600

constructive solutions

Multi-component, gun and pouring grade, polysulfide sealant

Uses

Sealing movement joints in building and civil engineering structures, including superstructures, floors, basements and subways.

Advantages

- Meets key international standards
- Forms a tough, elastic, rubber-like seal
- Accommodates continuous and pronounced cyclic movement
- Excellent adhesion to most common substrates, including primed concrete, glass, aluminium and stainless steel
- High resistance to ageing reduces physical damage due to climatic extremes

Description

Thioflex 600 is available in gun and pouring grades. The gun grade is ideal for general application. It is packed in a ready to mix, 2.5 litre tin containing the base and curing agent in the correct proportions. The pouring grade for joints in horizontal surfaces is supplied in 5 litre packs with the base and curing agent in separate tins.

Thioflex 600 is particularly recommended for use in high-rise buildings and other applications where access for subsequent maintenance will be difficult and the risk of early movement failure must be minimised. It is also suitable for sealing joints in brickwork, retaining walls, basements and subways.

Thioflex 600 pouring grade is recommended for initial sealing of expansion joints and stress relief joints in floors and sealing other horizontal surfaces.

CE 14	UKCA 22	Thioflex 600 Gun Grade	Thioflex 600 Pouring Grade
		DOP: UK9-85	DOP: UK9-86
Fosroc International Limited Drayton Manor Business Park, Coleshill Road, Tamworth, B78 3XN, UK		EN14188-2:2004 Joint fillers and sealants - Part 2: cold applied sealants	
Cold applied joint sealant system: Type: Class: Polymer base:		Multi-component (M) Non sag (ns-type) Class A,B, C Polysulfide	Two component (M) Self-levelling (sl-type) Class A, B, C Polysulfide
Test methods	**Requirements**	**Results**	**Results**
Extrudability (EN 29048)	> 70ml/min	200ml/min	Not applicable
Rate of cure (EN 14187-1)	MDV	≥ 80% at 48 hours	≥85% at 48 hours
Tack free time (EN 14187-2)	MDV	≥ 24 hours	≥ 24 hours
Resistance to flow (EN 7390)	Vertical ≤ 2mm Horizontal ≤ 2mm	0mm 0mm	Not applicable
Self-levelling (EN 14187-3)	Horizontal 5°C 2½% slope 23°C	Not applicable	1.8mm 1.5mm
Loss of volume (EN 10563)	<5%	0.19%	Not applicable
Change in mass and volume after immersion in liquid chemicals (EN 14187-4)	Change in mass ≤ -25% by mass ≤ + 30% by volume	Test fuel I (mass) -24% Test fuel II (mass) -17% Test fuel I (volume) -9% Test fuel II(volume) -3%	Test fuel I (mass) -18% Test fuel II (mass) -11% Test fuel I (volume) 22% Test fuel II(volume) 3%
Resistance to hydrolysis (EN 14187-5)	Change of Shore A hardness ≤ 50%	-15%	- 25%
Resistance to flame (EN 14187-7)	No flow, cracking, flaking, hardening or ignition	Pass	Pass
Cohesion -20°C (EN 9047)	No failure	No failure	No failure
Bonding strength (EN 8340:2005)	At 23°C ≥ 0.15MPa At -20°C ≤ 0.60MPa	0.23MPa - No failure 0.45MPa - No failure	0.16 MPa - No failure 0.51 MPa - No failure
Elastic recovery (EN 7389)	≥70%	89%	86%
Artificial weathering by UV radiation (EN 14187-8)	≤ ±20% change in modulus at 100% extension	1.9%	6%
Adhesion/cohesion after immersion in liquid chemicals (EN 14187-6)	Test fuel I Test fuel II	No failure No failure	No failure No failure

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Design criteria

Thioflex 600 may be applied to joints between 5 and 50 mm wide. Joints which are expected to experience cyclic movements should be designed to an optimum width : depth ratio of 2: 1, subject to the overriding recommended minimum sealant depths set out below:

5 mm for metals, glass and other non-porous surfaces;

10 mm for all porous surfaces;

20 mm for trafficked joints and those subject to hydrostatic pressures.

In exterior trafficked pavement joints the sealant should be recessed 5 – 8mm below the joint surface. Additional protection to the joint arris may be provided by chamfering the top edge.

To ensure that the sealant remains within its stated movement capacity (25% MAF), sealing slot widths should be designed in accordance with the recommendations of BS 6093.

The use of a surface primer is always required on porous surfaces. On non-porous surfaces a primer is not normally required except where glass or glazed surfaces are to be permanently immersed in water.

Standards compliance

British Standard EN14188-2:2004.*

U.S. Federal Specification TT-S-00227E November 1969 (amended 1970).

DTp specification for Highway Works December 1991 series 1000 clause 1017.

ASTM C920-87: Type M, Grade NS, Class 25.

Thioflex 600 complies with LU Standard 1-085 'Fire Safety Performance of Materials'.

*Use of Fosroc Primer 7E required.

Properties

Form:	Multi-part, paste compound
Colours:	Gun grade: grey Pouring grade: grey
Movement accommodation factor (BS 6093):	25% butt joints 50% lap joints
Physical or chemical change:	Chemical cure
Pot life:	2 hours @ 25°C
Setting time:	72 hours at 5°C 36 hours at 15°C 18 hours at 25°C
Cure time:	4 weeks at 5°C 2 weeks at 15°C 1 week at 25°C
Application temperature:	5°C to 50°C
Operating temperature:	– 20°C to +60°C
Hardness shore 'A' 25°C:	Gun grade grey: 20 to 25 Pouring grade: 15 to 23
Water immersion:	Thioflex 600 must be fully cured before permanent immersion in water

Chemical resistance to occasional spillage:	
Dilute acids	resistant
Dilute alkalis	resistant
Petrol	resistant
Aviation fuels	resistant
Diesel fuel	resistant
Kerosene	resistant
Lubricating oils	resistant
Skydrol	resistant
White spirit	resistant
Chlorinated solvents	not resistant
Aromatic solvents	not resistant
Dilute oxidising acids	not resistant

Biological resistance:	Thioflex 600 has been evaluated in microbiologically active situations and has been shown to have resistance to aerobic conditions
Solids content:	100%
Density:	1.62 kg/litre
Flash point:	Over 65°C
Flammability:	Burns but does not readily support combustion

Application instructions

Joint preparation

The joint surfaces must be thoroughly dry, clean and frost free. Remove all dust and laitance by rigorous wire brushing, grinding or grit blasting. Remove all rust, scale and protective lacquers from metal surfaces. Remove any oil or grease with Fosroc Equipment Cleaner.

Any expansion joint filler must be checked to ensure it is tightly packed and no gaps or voids exist at the base of the sealing slot before positioning a bond breaker.

Note: The use of a bond breaker is not required in expansion joints containing Hydrocell XL or Expandafoam cellular polyethylene expansion joint fillers. For construction or contraction joints a bond breaker tape or back-up strip should be used. Where hydrostatic pressure exists, only bond breaking tapes must be used, not foamed back-up strips.

Where a particularly neat finish is required, mask the face edges of the joint before priming and remove immediately after tooling is completed.

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Priming

When Fosroc Primers P7 or 7E are required, these should be used as follows:

Fosroc Primer P7: It is a one part chemically active clear liquid for brush application to concrete, stone, brickwork, timber and unglazed edges of ceramic tiles. One thin coat should be applied using a clean, dry brush, ensuring complete coverage. Avoid over priming resulting in an excess of primer in the base of the joint or application beyond faces. The mixed Thioflex 600 must be applied when the primer is tack free, that is after the evaporation of the solvent but before the primer film has completely reacted. After 3 hours the surfaces must be re-primed before applying the sealant.

Fosroc Primer 7E: It is a two part primer for brush application to concrete, stone, brickwork, timber and unglazed edges of ceramic tiles, where joints are to be intermittently or permanently immersed, or where the substrate is likely to be saturated and/or where compliance to EN14188 is required.

When using Fosroc Primer 7E, empty the entire contents of the hardener tin into the base, replace the base tin lid and shake thoroughly. Prime the joint face using a clean dry brush. Avoid over application of the primer causing puddles at the bottom of the joint. Thioflex 600 should be applied between 30 minutes and 4 hours after priming.

If the joint is left unsealed for more than 4 hours, the primer should be removed by grit blasting or grinding and the joint re-primed. Do not split packs of Primer 7E.

Iron and steel must be protected with an anti-corrosion primer prior to sealing.

Priming – Asphalt

To the clean, sound asphalt joint face apply Nitoflor FC130 and allow to dry. Then prime both joint faces with Fosroc Primer P7 or 7E as described above and seal the joint as detailed in the mixing and application instructions. If the asphalt is new, has a high or soft bitumen content, undertake local adhesion tests before main sealing works to confirm bond. If the results are satisfactory (cohesive failure within asphalt or sealant) then proceed with joint sealing.

Mixing

Gun grade: The base component and curing agent are supplied ready for mixing in a single tin. Mix thoroughly using a slow speed drill (300 to 500 rpm) fitted with a Fosroc Sealant Mixing Paddle. Mix for 3 minutes then scrape down the sides and bottom of the tin using a spatula, mix for a further 2 minutes. Only thorough mixing, including material right at the bottom of the tin, will result in proper curing. In cold weather Thioflex 600 mixes more easily if stored overnight at room temperature. Immediately after mixing, load the sealant into a Fosroc 'G' Gun using the Follower Plate, and apply to the joint.

Pouring grade: Thioflex 600 pouring grade is supplied ina tin which contains both the base component and also the hardener within a removable tray. The hardener contents should be transferred to the tin and mixed as per the gun grade instructions. The pouring grade may be poured directly into horizontal joints or for application to horizontal joints less than 15 mm wide loaded into a Fosroc 'G' Gun.

Finishing

Thioflex 600 should be tooled to a smooth finish. A minimumof surface lubricant such as dilute detergent solution maybe used to assist the process. Any masking tape should be removed immediately after tooling.

Cleaning

Clean equipment immediately after use with Fosroc Equipment Cleaner.

Contract application

The designer or contractor may wish to use the services of a specialist sub-contractor for joint sealing work. Names of specialist sub-contractors are available from Fosroc.

Maintenance

No special requirements, any damage identified during normal building inspections should be repaired or replaced as appropriate.

Estimating

Packaging

Thioflex 600 gun grade is supplied in 2.5 litre tins in cartons of four.

Thioflex 600 pouring grade is supplied in a 5 litre tin, curing agent included in a sachet inside the tin.

Primer P7 is supplied in 0.5 and 5 litre tins.

Primer 7E is supplied in 1 litre packs.

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Guide to quantities

Joint size in mm	Litres per metre run	Metre run per 2.5 litre pack	Metre run per 5 litre pack
5 x 5	0.025	100.00	200.00
5 x 10	0.050	50.00	100.00
10 x 10	0.100	25.00	50.00
20 x 10	0.200	12.50	25.00
20 x 15	0.300	8.33	16.67
20 x 20	0.400	6.25	12.50
40 x 20	0.800	3.12	6.25
40 x 25	1.000	2.50	5.00
40 x 30	1.200	2.00	4.00
40 x 40	1.600	1.56	3.12
50 x 25	1.250	2.00	4.00
50 x 30	1.500	1.67	3.33
50 x 40	2.000	1.25	2.25
50 x 50	2.500	1.00	2.00

1 litre of Fosroc Primer P7 to 30 litres of Thioflex 600.

These are theoretical yields. No allowance has been made for variation in joint width or wastage.

Guide to Thioflex 600 Primer coverage:

Linear metres per pack of primer

Joint depth	Primer P7				Primer 7 E
mm	0.5 ltr pack		5 ltr pack		1ltr pack
10	300	375	3000	3750	400
15	200	250	2000	2500	266
20	150	188	1500	1875	200
25	120	150	1200	1500	160
30	100	125	1000	1250	134
40	75	94	750	938	100
50	60	75	600	750	80

These are theoretical values. No account has been taken of variances in substrate, absorptivity or wastage.

Limitations

Overpainting of sealants is not recommended because of inability of paint films to accept movement. However, if definitely required, trials should be carried out to determine compatibility.

Thioflex 600 should not be used in direct contact with materials containing pitch or bitumen. See Priming – Asphalt for more detailed advice.

Thioflex 600 is not suitable for use in contact with potable water, Nitoseal MS600 should be used.

Storage

Storage life of 12 months in original containers when kept in dry conditions between 5°C and 27°C.

Precautions

Health and Safety

For further information refer to appropriate Product Safety Data Sheet.

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