



PROXAN®-KV 3 G

(POURING GRADE)

POLYSULPHIDE ELASTOMER FOR CONCRETE HARD STANDINGS



BACKGROUND

THE ORGANISATION

Dortmunder Gußasphalt GmbH & Co. KG is a leading manufacturer of bituminous construction materials for more than 50 years. The Dga-Group, produces a wide range of products catering to road construction, concrete pavements and parking aprons and building protection. Products are manufactured at five locations in Germany namely Dortmund, Düsseldorf, Greiz, Großröhrsdorf and Vierlinden.

Dga's hot-processed and cold-processed bitumen products cover all stages and aspects of road construction: new roads, surface treatment, restoration and everything in between.

In structural engineering, DGA's building protection products protect new and old structures alike.

DGA's established brands like – BIGUMA®, DOBAU®, PROXAN®, NILA® and COLZUMIX® – have been used and guarantee quick and fast and simple installation and sustained long term durability.

PRODUCT BRIEF

PROXAN®- KV 3 is a specially formulated blend of high performance two part elastomeric sealant with added polymeric ingredients designed for the sealing of construction, contraction and expansion joints in heavily trafficked and loaded hard standings concrete structures.

PROXAN®- KV 3 was originally designed for use in German Airport and has progressed continuously to this day to seal joints in Aircraft Concrete Parking Aprons, Aircraft asphalt and Concrete runways and Aircraft concrete hanger facilities and Airport warehousing facilities around Europe.

Much research have been put into **PROXAN®- KV 3** to maintain its quality to cater for longer lasting sealing possibilities to reduce the otherwise frequent resealing of concrete joints which ultimately increases downtime in such heavily used transport facilities.

PROXAN®- KV 3 have been tested and proven to function well in Airport facilities with designed manufacturing considerations to endure movements, chemical and fuel attacks and resilience to prevent FOC Foreign Object Damage from occurring.

SEALING OF JOINTS IN COMPARTMENTALISED CONCRETE PANELS

Concrete hard standing in Airport facilities have to take heavy constant loads. A modern 747-8 has a takeoff weight of 435 I- tons.

Joints are subjected to elongation and contraction as a result of aircraft wheel loads.



❖ JOINTS IN TRAFFIC SURFACES

PROXAN®- KV 3 is recommended for sealing joints on Auto Bahn or super expressways, concrete road traffic junctions, car parks and pedestrian walkways.

❖ JOINTS IN ROOF AND ROOF FINISHES

PROXAN®- KV 3 is recommended for sealing of panel and perimeter joints on roof finishes and the sealing of sheet metal roof finishes.

❖ JOINTS IN BUILDING STRUCTURES

PROXAN®- KV 3 is recommended for sealing expansion joints in factory floors, warehouse floors, subways, basement and retaining walls

THERMAL CONSIDERATION

Concrete Hard standings are subjected to constant exposed cyclic climatic exposure. On a hot sunny day temperatures on concrete platforms can grow to as high as 57 °C and cools to a low norm during the night or unexpected rainfall. These extremes causes movements in extension and contraction of the mass.

SPILLAGES

Spillages of Aviation fuel Jet A-1 which have a flash point of 38°C can affect sealants in joints chemically. Jet A-1 could soften and decompose low quality sealants leaving open joint reservoirs flooded with Jet A-1 fuel which may ignite expectantly raising danger to parked planes and ground handling equipment.

Skydrol is a hydraulic fluid used in aircraft hydraulic systems such as the braking system and hydraulic actuators. Spillages of these do occur and when it comes into contact with sealants in joints, it will cause rapid swelling and sealant degeneration.

FOREIGN OBJECT DAMAGE

When jet engines are started, it sucks in a great amount of air into its turbines.

It will not be conceivable to allow sealants which will harden and after exposure to the weather, turn brittle and eventually flake out from joints to be sucked up by jet engines from aircrafts utilising the parking aprons..

Sealant which are tacky or too soft will lodge great quantities of debris which will later be dislodged causing uncalled for damages to jet engines.



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ADDITIONAL APPLICATIONS

❖ JOINTS IN WATER RETAINING STRUCTURES

PROXAN®- KV 3 is recommended for sealing joints in reservoirs, culverts, dams and water treatment works. It is particularly suited for applications which require resistance to water pressure and flow of up to 5 m/s. Expansion joint subject to a pressure head should incorporate central barriers such as Primeshield WS 2030

PRODUCT DESCRIPTION

PROXAN®- KV 3 is a two part polysulphide based joint sealing compound consisting of a base paste polysulphide polymer and a second part, being a curing agent.

After mixing, the compound cures to form a tough, rubber like flexible solid with excellent adhesion to most surfaces such as concrete, glass, aluminum and stainless steel.

PRINCIPLES OF USAGE

Construction, Contraction and Expansion Joints are generally formed with joint former which exhibits characteristic of compressibility and recovery like Corkfil and Flexcell.

Joints are formed in fixed sized panels to allow for movement during the expansion and contraction of concrete exposed to cyclic weather conditions and for the uneven loading of concrete slabs caused by laden vehicles which causes deflective vertical movements.

- Formed open joint have to be seal with sustainable joint sealants to prevent the intrusion of debris which will consolidate and harden in the joint and prevent movements from occurring and generating unwanted cracks.
- Open joints will allow the infiltration of water which will eventually filter or flow down into the subgrade and cause cavitation or loosening of soil particles below the concrete slabs. This would invariably cause concrete slabs to float as it loses base support.
- This is detrimental to concrete slabs as the constant repeated pumping action from loaded vehicles will procreate early crack formation and eventual dislodgement of the concrete slab.

FORMATION OF CONTACTION JOINTS

Saw cutting to form contraction joints is a simple methodology of creating such joints. However, it is often compromised by concreters with the under cutting of depth to just 25 mm when they are expected to saw cut to a depth of 1/3 the thickness of the slab with a minimum joint width of 9mm to infill joint

It will thus be more appropriate to cast concrete slabs in Alternate bays to insure that 12 mm thick x 60 mm high Corkfil saddled with FIBERCAP 40 to form contraction joints of 9.52 mm for the installation of PROXAN KV3

Whilst these are proper guidelines or fundamentals for design and good practice for project inspectors and building contractors.

Most times these basics are not followed and looked into by Building Contractors who overpower designers, resident engineers and site supervisors with their claimed expertise and experience in concreting placement.



They will often insist on executing 3 mm wide saw cuts to a depth of 25 mm going against all know codes of practice without much interference from professional consultants.

Some professional will even insist on having floors free of joints, to attain virtual seamlessness.

These individuals lack the basic understanding on the characteristics of Concrete and will event refuse to abide by written Codes of Practices in concreting.

These authoritative personals within the building industry have been responsible for massive cracks found in many concrete floor structures which they consider or assumed to be normal.

Cracks in concrete are indications of flaws or defects which sees the beginning of the weakening of structures.

JOINT in concrete, be they Construction, Contraction or Expansion will prevail, they need to be formed and sealed as long as Concrete is used as a medium for construction of structures.



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SPECIFICATION COMPLIANCE

PROXAN®- KV 3 is a product manufacture in Germany and is tested and approved by authorities within Germany

POXAN KV 3 has approved compliance with Bam which meets or exceeds standards stipulated in

- BS 4254 1983
- BS EN ISO 11600: 2003 +A1:2011
- ASTM C 920 (Type M, Grade NS, Class 25 USE T
- Federal Specifications A-a-1556A, Type Grade Ns, Class 25, Use T
- CRD-C-506 Type II, Classes A&B
- SS S-SS 200E

CHEMICAL RESISTANCE

Dilute acids	Good
Dilute alkalis	Good
Petrol	Good
Aviation fuels	Good
Skydrol	Good

PACKAGING

PROXAN KV 3 comes in two grades:

- Pouring Grade for horizontal joints
- Gun Grade for vertical or inclined joints

Both grades are supplied in packs containing a tin of base compound and a tin of curing agent in the correct proportions for mixing.

PACKING

POURING GRADE	GUN GRADE
2.5 Liter pack	2.5 Liter pack
4 Liter pack	4 Liter pack
10 liter pack	
25 Liter pack	

JOINT DIMENSIONS

PROXAN®- KV 3 may be applied to joint widths from 6 mm to 50 mm.

The minimum depth of seal for PROXAN®- KV 3 are:

- 6 mm for metal
- 10 mm for concrete and brickwork joints

Where resistance to external pressure is required, e.g. joints in floor and hydraulic pressures, the use of greater depth is recommended.

In general, joints subject to regular movements should be designed with a width of 2:1 ratio.

CHARACTERISTICS OF PROXAN KV3 AS SUPPLIED

FORM	Two part compound
Curing Agent	Paste
Base Compound	: Paste

STORAGE LIFE: 12 months in original container

FLASH POINT:

Gun grad	: not applicable
Pouring grade	-7.2°C (close cup)

SOLID CONTENT

Gun grad	: 100%
Pouring grade	95%

WEIGHT

Gun grade	: 1.64 to 1.73 kg/liter
Pouring grade	1.64 Kg/Liter

CHARACTERISTICS OF AND RECOMMENDED WORKING CRITERIA FOR PRODUCT DURING ITS APPLICATION

COVERAGE FOR PROXAN®- KV 3

A 2.5 liter pack will yield

WIDTH X DEPTH

10 mm x 10 mm	25 meters.
10 mm x 60 mm	4.16 meters.
12 mm x 12 mm	17.36 meters.
25 mm x 12 mm	8.33 meters.

COVERAGE FOR PROXAN PRIMER

- PROXAN CONCRETE PRIMER CP-P
- PROXAN CUT ASPHALT PRIMER CP-A
- PROXAN CAST STEEL PRIMER CP-G

THE ABOVE YIELDS APPROXIMATELY 250 meters per One liter

CURING SYSTEM

Chemical cure

APPLICATION TEMPERATURE

5°C to 50°C

SETTING TIME

72 Hours at 5°C
36 Hours at 15°C
18 Hours at 25°C



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CURING TIME

8 weeks at 5°C
4 weeks at 15°C
2 weeks at 25°C

CHARACTERISTIC OF PRODUCT DURING SERVICE LIFE

FORM

Elastic Solid

COLOUR

Black or Grey

DENSITY

Gun Grade: 1640 to 1730 kg/m³
Pouring grade: 1730 8 weeks at 5°C

HARDNESS INDENTATION

30 TO 35 SHORE A

DURABILITY

15 Years average for joint in Aircraft parking facilities, roads, warehouse floors and other trafficked surfaces.

FLAMMABILITY

Burns but does not readily ignite.

CHEMICAL RESISTANCE

Dilute acids	Good
Dilute alkalis	Good
Petrol	Good
Aviation fuels	Good

RECOMMENDED WORKING CRITERIA FOR PRODUCT DURING SERVICE LIFE

MOVEMENT

TOTAL JOINT RANGE: 35% for butt joints
50% for lap joints

SERVICE TEMPERATURE RANGE

-40°C to 80°C

APPLICATION

SURFACE PREPARATION

Remove Fibercap to expose regulated joint dimension.
Clean joint of surface laitance with compress air.
Install masking tape on both edges of the joint
Prime joint wall surfaces with PROXAN PRIMERS and allow to cure.

MIXING

The two PROXAN[®]-KV 3 components Base and Hardener must be mixed together with a slow mixing attachment to a speed drill

INSTALLATION

After proper mixing of the two components together, dispense directly into joint or use an application gun.

The pouring grade can be dispensed into the joint directly from the tin if the joints are not smaller than 15 mm width. Where joints are smaller than 15 mm width, fill a barrel application gun and dispense PROXAN[®]-KV 3 accordingly.

The Gun grade PROXAN KV3 will be required to be filled into a barrel gun for dispensing to vertical joints.

FINISHING

PROXAN KV3 POURING GRADE is self-leveling and it will find its own level.

PROXAN KV3 GUN GRADE must be tooled to achieve flatness to the adjacent floor finish with a flat spatula.





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HBR XL BACKING RODS OR STRIPS

Specific polyethylene backing cords such as HBR XL which is a cross linked, closed cell polyethylene foam backer rod is used in concrete construction.

HBR XL is used both in hot and cold applied sealants as a as compressible fillers to :

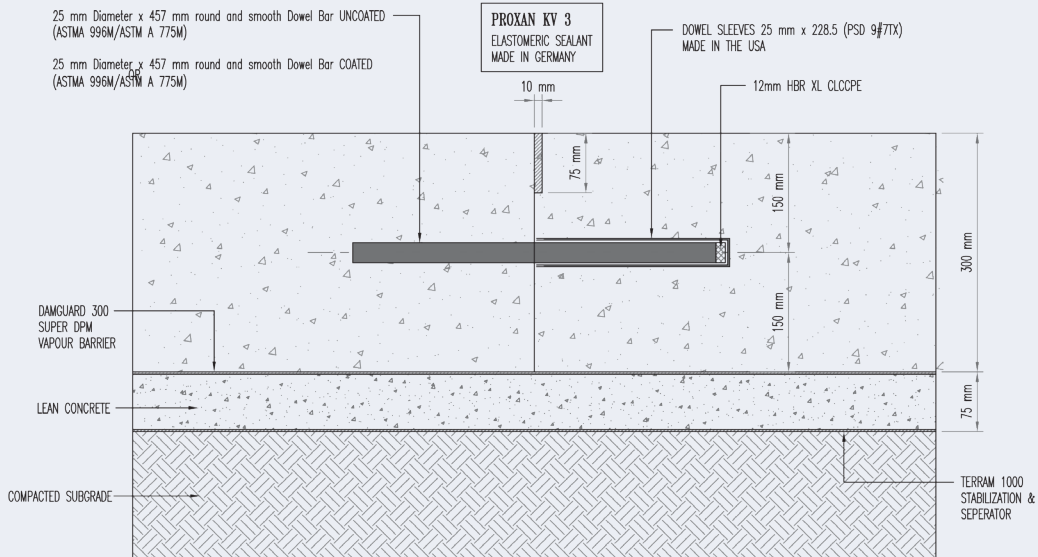
1. Prevent the adhesion of PROXAN®- KV 3 to the base contraction joints and acts as a separator between joint formers such as Flexcell which is impregnated with bitumen solutions.
2. Moderate the depth of PROXAN KV3 to the recommended depth ratio of 2 : 1
3. It reduces the center line of the seal which effectively reduces both the forces needed to strain the seal and provide maximum stress in the bonds between the seal and joint surfaces

PHYSICAL PROPERTIES OF HBR XL

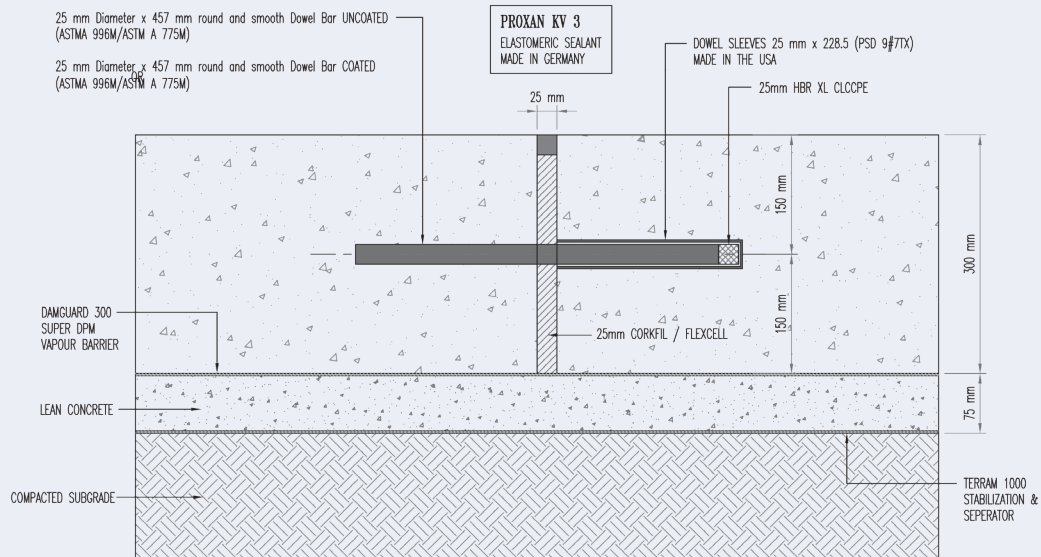
PROPERTY	VALUE	ASTM Test Method
Density lb/ft ² Kg/m ²	1.3-2.3	D1622
Outgassing	>1	D1253
Compressive Recovery, %, min	>96	D5249
Tensile Strength psi (kpa)	23.5 (162)	D3575
Water Absorption (g/cc)	<0.03	C 1016 (Procedure 8)
Heat Resistance	392°F ± 5°F (200°±2.8°C)	D 5249

SELECTION OF HBR XL PROFILES FOR JOINTS

PRODUCT	ROLL LENGTH	JOINT DIMENSION
HBR XL 10 MM	1097 METERS	FOR 6 MM WIDE JOINTS
HBR XL 13 MM	762 METERS	FOR 10 MM WIDE JOINTS
HBR XL 16 MM	472 METERS	FOR 13 MM WIDE JOINTS
HBR XL 22 MM	259 METERS	FOR 16 MM WIDE JOINTS
HBR XL 25 MM	168 METERS	FOR 19 MM WIDE JOINTS
HBR XL 32 MM	122 METERS	FOR 22 MM WIDE JOINTS
HBR XL 38 MM	168 METERS CUT	FOR 29 MM WIDE JOINTS
HBR XL 51 MM	110 METERS CUT	FOR 41MM WIDE JOINTS



TYPICAL CONTRACTION JOINT IN ON GRADE CONCRETE SLABS



TYPICAL EXPANSION JOINT IN ON GRADE CONCRETE SLABS



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PROJECT REFERENCES

AIRPORTS IN GERMANY

Airport Leipzig-Halle (Germany)	PROXAN® KV 3 G
Airport Hamburg (Germany)	PROXAN® KV 3 G
Airport Munich (Germany)	PROXAN® KV 3 G
Airport Nuremberg (Germany)	PROXAN® KV 3 G
Airport Berlin-Tegel (Germany)	PROXAN® KV 3 G und PROXAN KV2G-S
Airport FMO, Greven (Germany)	PROXAN® KV 3 G
Airport Frankfurt a.M. (Germany)	PROXAN® KV 3 G
Airport Hannover-Langenargen (Germany)	PROXAN® KV 3 G
Airport Braunschweig-Wolfsburg (Germany)	PROXAN® KV 3 G
Airport Stuttgart (Germany)	PROXAN® KV 3 G
Fliegerhorst Wunstorf (Germany)	PROXAN® KV 3 G
Fliegerhorst Bückeburg (Germany)	PROXAN® KV 3 G
Fliegerhorst Wittmund (Germany)	PROXAN® KV 3 G
Airbase Spangdahlem (Germany)	PROXAN® KV 3 G
Airbase Ramstein (Germany)	PROXAN® KV 3 G

AIRPORTS IN EUROPE

Airport Charleroi (Belgium)	PROXAN® KV 3 G
Airport Zürich (Switzerland)	PROXAN® KV 3 G
Airport Kattowitz (Poland)	PROXAN® KV 3 G
Airport Kischinau (Moldavite)	PROXAN® KV 3 G
Airport Bratislava (Slovakia)	PROXAN® KV 3 G
Airport Prag (Czech Republic)	PROXAN® KV 3 G
Airport Ostrava (Czech Republic)	PROXAN® KV 3 G
Military Airports (Romania)	PROXAN® KV 3 G
Military Airports (Sweden)	PROXAN® KV 3 G
Diverse Airports (Norway)	PROXAN® KV 3 G
Airport Vilnius (Lithuania)	PROXAN® KV 3 G
Airport Kaunas (Lithuania)	PROXAN® KV 3 G
Airport Manas (Kyrgyztan)	PROXAN® KV 2 G-S
Airport Astana (Kazakstan)	PROXAN® KV 2 G-S
Airport Almaty (Kazakstan)	PROXAN® KV 2 G-S

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