Technical Data Sheet 260
Edition February 2018

PCI®
Für Bau-Profis

Polyurethane sealant

PCI Escutan® TF

for sewage treatment plants, waterways, bridge construction and sewage systems

With official test certificate.

Fields of application

- For indoor and outdoor use.
- For walls and floors.
- Elastic sealing of horizontal and vertical expansion joints and connection joints in civil engineering construction, including exposure to seepage water and non-pressing surface water in accordance with DIN 18 195.
- For sewage treatment plants, harbour facilities, waterways and locks with exposure to water under pressure up to 2 bar (at 2 cm joint width).
- Sealing connections of pipes and precast elements used in sewer channels and ducts in accordance with the appropriate test report issued by Deutsches Institut für Bautechnik (German Centre of Competence for Construction).
- Elastic sealing of joints in screeds and concrete slabs.
- Sealing of sheet metal flashings.
- Sealing of collars on transmission towers.

Reliable sealing of horizontal and vertical connection joints and expansion joints in a sewage treatment plant with PCI Escutan TF.

Features and benefits

- Elastic, good recovery properties.
- Water impermeable and resistant to water under pressure, recommended for exposure to permanent moisture and water under pressure up to 2 bar (at 2 cm joint width).
- Resistant to weather conditions and ageing, no embrittling, resistant to temperatures from -30°C to +80°C.
- Resistant to chemicals, many kinds of acid, lye, grease and oil.
- No thermoplasticity, superior to conventional bitumen and tar pastes.
- Microbe resistant, resistant to the microorganisms contained in sewage water.
- Root-proof, the joint sealant cannot be destroyed by root growth.
- High resistance to mechanical stress, thus well suited for floor joints exposed to vehicular traffic.

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DE0128/02

PCI Escutan TF (DE0128/02)
EN 15651-4:2012

Sealants for non-structural use in joints in buildings and pedestrian walkways
EN 15651-4 Type PW EXT-INT CC
Sealants for pedestrian walkways, Class 12,5E
Conditioning: Method A
Substrate:
Mortar M1 with PCI Elastoprimer 110

Reaction to fire	Class E
Release of chemicals dangerous to the environment and health	Evaluated
Tensile properties at maintained extension	Pass
Loss of volume	≤ 10 %
Tear resistance	Pass
Adhesion/cohesion properties at maintained extension after 28 days water immersion	Pass
Adhesion/cohesion properties at maintained extension after 28 days salt water immersion	Pass
Tensile properties at -30 °C	≤ 0,9 MPa
Tensile properties at maintained extension at -30 °C	Pass
Durability	Pass

Technical data

Material

Material base	polyurethane
Components	two components
Consistency	pasty
Colour	
- base component	grey and/or black
- hardener component	white
Density	approx. 1.4 g/cm³
Shelf life	min. 12 months; store dry, no permanent storage over +30°C
Packaging size	2.5 l unit (1.79 l can base component + 0.71 l sausage hardener component) colour: grey stock no. 1219/2 colour: black stock no. 1237/6 (One box contains 6 units).
Test certificates	quality controlled by SKZ Würzburg, officially approved by DIBt Berlin

Application

Consumption	
- joint 10 x 10 mm	approx. 100 ml/m
- joint 15 x 10 mm	approx. 150 ml/m to be calculated according to the formula: joint width (mm) x joint depth (mm) = ml/m joint. Consumption for triangular joints is reduced by half.
Primer PCI Elastoprimer 110	approx. 10 ml/m joint
Primer PCI Elastoprimer 165	approx. 5 ml/m joint
Primer PCI Elastoprimer 220	approx. 12.5 ml/m joint
Coverage	2.5 l unit covers approx.
- joint 10 x 10 mm	25 m
- joint 15 x 10 mm	16 to 17 m
Processing temperature	+5°C to +30°C (substrate and material temperature)
Mixing ratio 100 : 30 parts by weight	corresponds to 2660 g of base component : 790 g of hardener component and/or 1790 ml of base component : 710 ml of hardener component
Mixing time	approx. 5 minutes
Processing time*	approx. 50 minutes
Curing time**	approx. 36 to 48 hours
Temperature resistance	-30°C to +80°C
Dependable elongation	approx. 20% of joint width
Hardness Shore A	30 to 35

** At +23°C. Lower temperatures increase, higher temperatures reduce the times given.*
*** At +23°C and 50% relative humidity.*

Chemical resistance (test period 500 hours at +20°C)

	Concentration (weight %)	Resistance		Concentration (weight %)	Resistance
Chemicals to DIN 4030		+	**Grease, oil**		
Seawater		+	Brake fluid		+
			Diesel fuel		+
Acid			Fuel oil (EL)		+
Hydrochlorid acid	up to 5%	+	Hydraulic oil		+
Sulphuric acid	up to 30%	+	Mineral oil		+
Organic acids	up to 1%	+			
			Others		
Lye			Ethyl alcohol	up to 20%	+
Ammonia solution	up to 20%	+	Glycerol	up to 20%	+
Caustic soda solution	up to 5%	+	Jet fuel		(-)
			Gasoline unleaded		(-)
			Gasoline leaded		(-)
			Supergrade petrol unleaded		(-)
			Sewage water		+

+ = resistant, (-) = resistant only at short-term contact time

Requirements for sealing joints

Expansion joints between structural elements should be designed in a way that, under consideration of all essential influences, they can move only as much as the dependable elongation of PCI Escutan TF permits. In case of movements in length of structural elements, the movements in length Δ L are not to be considered directly, but the deformations in relation to the initial length L which are called elongation **ε**. In case of elongation they are described with a positive sign, in case of reduction (= compression) with a negative sign:

$$\varepsilon = \frac{\Delta L}{L}$$

Movements in length conditioned by temperature and moisture basically occur on structural elements. The index T for temperature and/or s for shrinkage indicate the cause for the elongation. Movements in length conditioned by temperature can be calculated according to the above mentioned relation or the following general formula:

$\varepsilon_T = \alpha \cdot \Delta T$

or according to above relation

$\Delta L_T = \alpha \cdot \Delta T$

Explanations

ε_T elongation or compression because of fluctuation in temperature

α in K^{-1} ($°C^{-1}$): thermal coefficient of movement in length

ΔT in K (°C): variation in temperature

ΔL_T in mm: movement in length conditioned by temperature

L in m: length of structural element

Additional movements in length by shrinkage might occur on structural elements of concrete or wood which can be calculated as follows:

$\Delta L_S = \varepsilon_S \cdot L$

Explanations

ε_S in mm/m: shrinkage value

ΔL_S in mm: movement in length conditioned by shrinkage

L in m: length of structural element

The difference in temperature ΔT must be related to the installation temperature of the sealant when calculating the elongation and compression process. The exact calculation of the required joint width can be calculated according to the following formula:

$$\text{joint width in mm} = \frac{\Delta L \times 100}{\text{dependable elongation}}$$

In case of materials with good shrinkage properties the movement in length ΔL results as a sum from:

$\Delta L_T + \Delta L_S$:

$\Delta L = \Delta L_T + \Delta L_S$

The guidelines for the joint width between concrete structural elements should be based on the chart "Guidelines for the joint width in structural elements made of concrete". These nominal joint widths were calculated under the assumption of a fluctuation in temperature of ΔT = 70 K (°C). Narrower joint widths can be specified if considerably lower variations in temperature are to be expected in structural members. The dependable elongation of PCI Escutan TF with approx. 20% should be considered when dimensioning the joint width.

Standard values for the joint width in structural concrete elements (in relation to an installation temperature of concrete of +10°C)

Valid for	PCI Escutan TF	
Length of structural element in m	Minimum joint width in mm	Nominal joint depth in mm
up to 2	20	20
2 to 4	25	20
4 to 6	30	25
6 to 8	40	25
8 to 10	45	30
10 to 12	50	30
12 to 14	60	35
14 to 16	65	40
16 to 18	70	40
18 to 20	75	40
20 to 22	80	40
22 to 24	90	40
24 to 26	95	40
26 to 28	100	45
28 to 30	110	45
30 to 32	110	45
32 to 34	120	45

Matter constants

(α - and ε_S-values) of common building materials

Building material	α-values (mm/m · K)	ε_S-values (mm/m)
Concrete in general	0.012 – 0.015	0.20
Steel	0.012	–
Aluminium	0.024	–
Zinc plate	0.018 – 0.021	–
Polymers	approx. 0.08	–
Wood, fibre direction	approx. 0.007	15 – 30
Wood, diagonally to fibre direction	approx. 0.045	approx. 40

Maximum allowable joint distance in structural concrete elements*

Bridge superstructures and binders with roller bearings		100 – 200 m
Base slabs		
with elastic top structure		3 – 40 m
with rigid top structure		15 – 25 m
Skeleton structural elements of reinforced concrete		
with elastic substructure		30 – 40 m
with rigid substructure		15 – 25 m
long stretched-out, delicate parts		below 10 m
Structural ceiling elements		20 – 30 m
Balconies, breastwork, consoles		15 – 20 m
heat-insulated roof (ventilated)		10 – 15 m
non-insulated roof (non-ventilated)		5 – 6 m
non-insulated slopes – light concrete (non-ventilated)		4 – 6 m
Retaining walls and foundation walls		
loose or cohesive soil	reinforced	10 – 15 m
as substrate	unreinforced	below 10 m
rock or concrete	reinforced	8 – 10 m
as substrate	unreinforced	below 5 m
Abutment and wing walls		
thickness of structural elements	below 60 cm	8 – 12 m
	60 – 100 cm	6 – 10 m
	100 – 150 cm	5 – 8 m
	150 – 200 cm	4 – 6 m
Other massive structural elements		
exposed to sunlight		below 6 m
not exposed to sunlight		below 10 m

** according to Dr. Ing. R. Linder*

Preparation of substrate

The substrate must be clean, dry, structurally sound and free of dust, oil, and other contamination. Steel may need to be descaled. Repair damaged joint edges by installing angle sections using PCI Aposan reactive resin mortar. Joints in substrates of poured asphalt in the interior are only allowed to be carried out in combination with angle sections.
Backfill deeper joints with non-rotting, closed-cell DIN Polyband. Do not damage the backfiller during the application. Prevent the sealant from sticking to the bottom of the joint by installing a foil strip before applying the sealant.

Primed with PCI Elastoprimer 110 (evaporation time 50 - 120 minutes), PCI Escutan TF bonds to:
- concrete
- fibrous cement
- wood
- sand-lime brick

Primed with PCI Elastoprimer 165 (evaporation time 15 - 60 minutes), PCI Escutan TF bonds to:
- PVC foil, with plasticizer

Primed with PCI Elastoprimer 220 (evaporation time 6 - 36 hours), PCI Escutan TF bonds to:
- aluminium
- lead
- stainless steel
- glass
- ceramic (glazed/unglazed)
- non-vitrified pipes
- copper
- tinplate
- zinc/galvanized iron

Application procedure of PCI Escutan TF

- Tools for mixing, filling and spraying: paddle stirrer, mixer, suction disc with handle, suction feed spray gun. Suitable tools are available under http://www.dichtstoffe-shop.de.

Mixing

1 Add entire hardener component to the base component. Mix both components intensively for approx. 5 minutes using a suitable paddle attached to a slow-speed electric drill (about 400 rpm). Transfer mixed material to a clean bucket and remix thoroughly.

Filling empty cartridges or spray guns

2 Insert suction disc in the can. Place gun on the suction disc, sealant is taken in.

Sealing joints

3 PCI Escutan TF can be applied horizontally and vertically up to a joint width of approx. 3 cm. In case of wider joints, first inject PCI Escutan TF onto the joint side and spread well to achieve a good bond. Then fill the rest of the joint with additional PCI Escutan TF.

Protective sleeves for transmission towers

Apply a coat of PCI Escutan TF to the transition area where the corner post of the tower is connected to the concrete foundation. Press on well and compact. Smooth the surface.

Add hardener component to the base component.

Mix both components.

Pre-clean paddle.

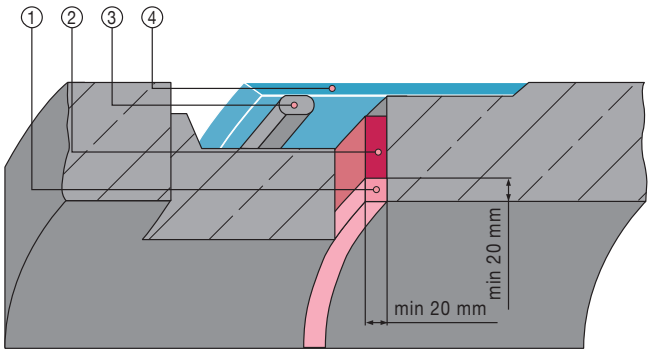
PCI Escutan TF is filled into a gun by means of a suction disc.

Elastic sealing of an expansion joint in a concrete floor exposed to vehicular traffic.

Permanent sealing of pipe penetrations with PCI Escutan TF.

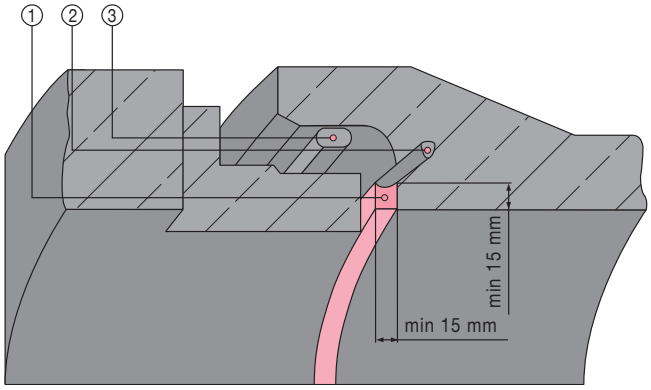
PCI Escutan TF to seal a joint in a flood wall.

① PCI Escutan TF, prime sides with PCI Elastoprimer 110
② spacer
③ rolling ring DIN 4060
④ steel ring



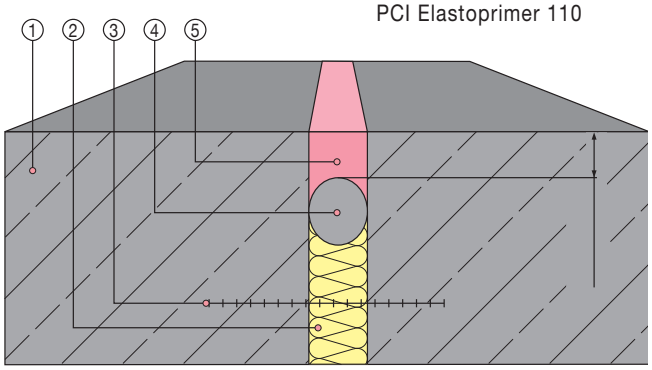
1. Sealing of expansion joints with sealant and rolling ring in ducts produced with pipe jacking method.

① PCI Escutan TF, prime sides with PCI Elastoprimer 110
② DIN-Polyband, closed-cell polyethylene round profile
③ rolling ring DIN 4060



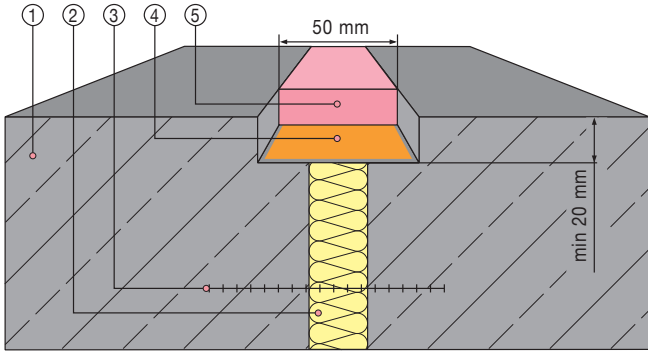
2. Sealing a concrete connection (sleeve) with sealant and seal ring.

① concrete
② HDF/foam
③ joint tape
④ DIN-Polyband, closed-cell polyethylene round profile
⑤ PCI Escutan TF, prime sides with PCI Elastoprimer 110



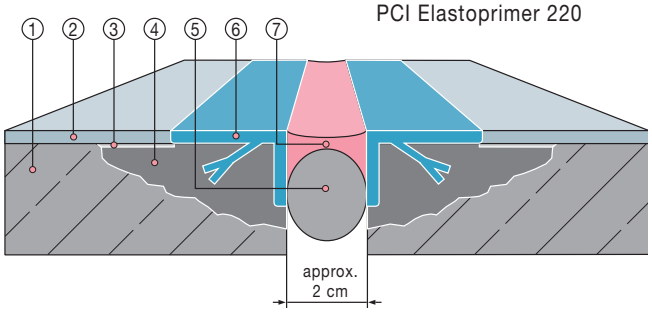
3. Sealing of joints up to 20 mm joint width with sealant at in-situ concrete constructions under pressurised water up to 2 bar.

① in-situ concrete
② HDF/foam
③ joint tape
④ construction foil
⑤ PCI Escutan TF, prime sides with PCI Elastoprimer 110



4. Example for certain joints subject to pressurised water.

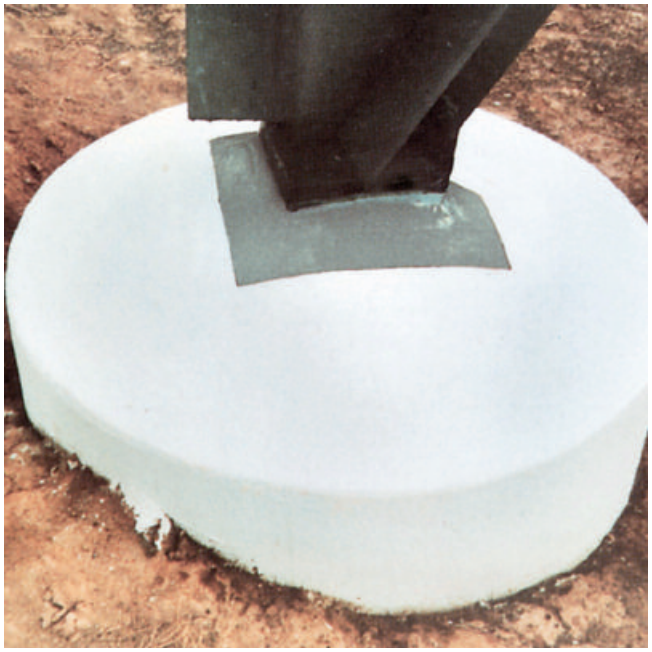
① concrete/reinforced concrete
② PCI Zemtec 1K
③ PCI Durapox NT sanded
④ PCI Bauharz mortar
⑤ DIN-Polyband
⑥ L-beam 45/30/5 (blasted and primed at the contact areas to PCI Durapox NT)
⑦ elastic grouting PCI Escutan TF, prime sides with PCI Elastoprimer 220



5. Repair of expansion joints.

Please note

- For professional/industrial use only.
- Do not apply PCI Escutan TF at substrate temperatures below +5°C and above +30°C.
- In case of horizontal joints in asphalt screeds and synthetic resin screeds, use PCI Escutan TF only in combination with suitable angle sections.
- PCI Escutan TF is not suitable for grouting ceramic coverings in swimming pools.
- The intrinsic temperature of the PCI Escutan TF components should not drop below +10°C during the mixing process.
- Never add water or organic solvents, e.g. Nitro thinner, to a PCI Escutan mix.
- Suitable tools are available from www.dichtstoffe-shop.de.
- Clean tools with PCI Univerdünner immediately after use; the cured product can only be removed by mechanical scraping.
- Shelf life: min. 12 months; store dry, no permanent storage over +30°C.



The elastic membrane of PCI Escutan TF prevents water from penetrating into the concrete foundation of a transmission tower around the corner post.

Declaration of Performance

The Declaration of Performance can be downloaded as pdf file under www.pci-augsburg.eu/dop.

Information on the safe use

- **Base component**
  Contains: OCTYL (R)-2-(4-CHLORO-2-METHYLPHENOXY)PROPIONATE. May produce an allergic reaction. Harmful to aquatic life with long lasting effects. Avoid release to the environment. Dispose of contents/container to hazardous or special waste collection point.
- **Hardener component**
  Contains: tolylidene diisocyanate. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Avoid breathing vapours. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection. IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor. Dispose of contents/container to hazardous or special waste collection point. Giscode PU 40

For further information: see PCI Material Safety Data Sheet.

Accessories

PCI empty cartridge K 02
stock no. 1747/0
DIN Polyband
- Ø 30 mm
stock no. 2222/1
- Ø 25 mm
stock no. 2333/4
- Ø 20 mm
stock no. 2220/7
- Ø 15 mm
stock no. 2265/8
- Ø 10 mm
stock no. 2218/4

Disposal of emptied PCI sales packaging

PCI participates in an area-wide waste disposal system for sales packaging completely emptied. DSD – Duales System Deutschland (Dual System Germany, contract number 1357509) is our partner for waste disposal. PCI sales packaging completely emptied can be disposed of via DSD in accordance with the symbol printed on the packaging.

Services for architects and designers

Consultations at the workplace, supplementary information, testing certificates and sample descriptions can be requested from professional advisors and at the company headquarters.

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zertifiziertes Qualitäts-managementsystem

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