



Expansion joints

Infrastructure | Buildings | Industrial structures

mageba flexible plug expansion joints – ingenious application in buildings



POLYFLEX®SLIM PU

flexible installation, zero maintenance, watertight



mageba



Product Characteristics

Principle

The POLYFLEX®SLIM PU plug expansion joint achieves a completely new standard in terms of quality and working life for applications in buildings.

Thanks to the new **Polyurethane (PU) flexible material**, that has been developed in cooperation with renowned companies of the chemical industry, as well as our **special joint design**, we have successfully developed a reliable plug expansion joint for the specific requirements of buildings.

Reduced volume for slim design

POLYFLEX®SLIM PU represents a **reliable** alternative when it comes to the requirement of **flexible and watertight** passages. An optimal water tightness is already guaranteed at a **material thickness of 40 mm** only.

Particularly characterising is its slim design. The joint hence does not require any **cover plate**.

Advantages & characteristics

Material assets:

- The avoidance of mechanical wear parts results in an exceptional high working life and non-ageing durability
- The joint guarantees thorough water tightness through the use of the new PU material
- Free of germs and fungus hence enabling proper resistance to environmental influences and chemicals such as alkaline, acids, chlorides

Application assets:

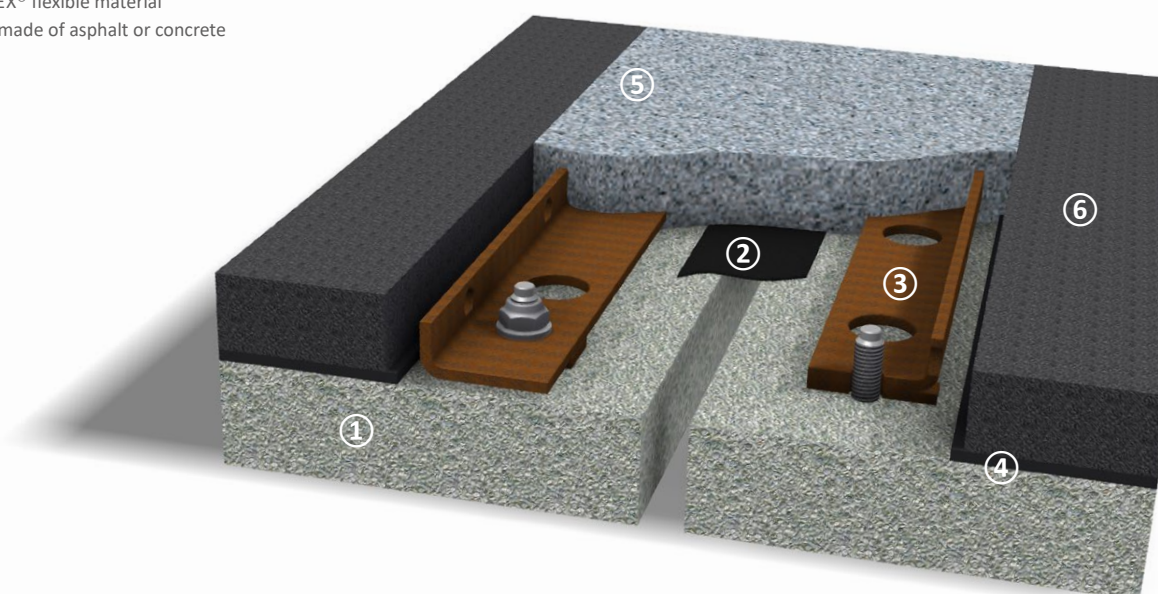
- No additional noise thanks to jointless ground level
- No sound transmission to adjacent construction components
- Super-fast installation with resilience after a few hours
- Design for T- or X-crossing in any shape or angle as well as vertical format possible
- Available in grey or black as standard or additional colours upon request

Scope of application

- Car park and parking decks
- Railway stations and platforms
- Airport buildings and hangers
- Pharmaceutical and chemical industry
- Clinics, hospitals and laboratories
- Food processing industry
- Sliding floors in heavy load industry
- New construction and refurbishments

Product design

- 1 Abutment
- 2 Elastomeric layer
- 3 Perforated steel angle with additional mechanical anchorage
- 4 Structure sealing
- 5 POLYFLEX® flexible material
- 6 Surface made of asphalt or concrete



Types and Design Details

Construction principles

The POLYFLEX® filling material features excellent adhesion to the supporting structure and the adjacent surfacing, and is therefore capable of **safely transferring horizontal loads to the structure**.

Additionally, perforated steel angles, which are fully embedded within the joint material, are bolted to the structure and can transfer even the highest loads (e. g. from heavy vehicles braking on the joint at downward slopes).

These steel angles also support the adjacent surfacing so as to **prevent the asphalt from being depressed** into the sides of the joint material.

Material description

- Elastic, solvent-free grout system
- 2-component mixture
- Verified, constant mixing proportion ensures easy handling; mixing errors are therefore almost certainly excluded
- Cold material processing for more flexible storage and installation
- A polymer concrete for the supporting structure is recommended
- Both materials are optimally coordinated with relation to processability and strain

Quality and certification

Since July 2012 mageba owns the **European Technical Approval ETA-12/0260** for the installation of POLYFLEX® in bridge structures.

The mageba system for application in buildings was developed on the basis of ETAG 032 (European Approval for expansion joints in bridges).

A valid **ISO 9001 certification, 100 % factory production control and continuous third party quality control** of the Polyurethane material by the German governmental body, the Material Testing Institute of the University in Stuttgart (MPA) ensure both the high quality level of products and manufacturing facilities.

Type selection in practice

The table shows a selection of joint types that are capable of covering a joint gap up to 30 mm at middle position. All types allow vertical movements of min. ± 5 mm.

A specific characteristic of the application system in buildings is the thickness of max. 40 mm:



System types PA 15 – PA 40

| | PA 15 [mm] | PA 20 [mm] | PA 30 [mm] | PA 40 [mm] |
|---|---------------|---------------|---------------|---------------|
| total movement e | 15 | 20 | 30 | 40 |
| movement tension e' | 10 | 13 | 20 | 26 |
| movement compression e- | 5 | 7 | 10 | 14 |
| thickness D | 40 | 40 | 40 | 40 |
| joint width in middle position B ₀ | 240 | 260 | 280 | 300 |
| gap at middle position S ₀ | 10-30 | 12-30 | 15-30 | 19-30 |
| steel angle | 55 x 25 x 5 | | | |

Note: Achievable movements in Serviceability Limit State (SLS) observing maximum permissible vertical deflections. at Ultimate Limit State (ULS) significantly larger movements can be accommodated. Please contact mageba experts for further details. For refurbishments, the actual width of the structural gap shall be considered for detail design of joint.

Technical data of PU material*)

| | | |
|--|-------------------|------------|
| density | g/cm ³ | 1,05 |
| hardness shore A according to DIN 53505 | Shore A | approx. 65 |
| tensile strength according to DIN 53504 | N/mm ² | 14 |
| elongation at break according to DIN 53504 | % | 650 |
| tear strength according to DIN 53515 | N/mm ² | 20 |
| processing time („pot life“) | | |
| at 10 °C | min. | 40 |
| at 20 °C | min. | 30 |
| at 30 °C | min. | 20 |
| trafficability | | |
| at 10 °C | h | max. 48 |
| at 20 °C | h | max. 24 |
| full cure | | |
| at 10 °C | d | 5 |
| at 20 °C | d | 4 |
| recommended substrate temperatures | °C | min. 5 |
| | °C | max. 35 |
| recommended relative humidity | % | max. 90 |

**) indications only*



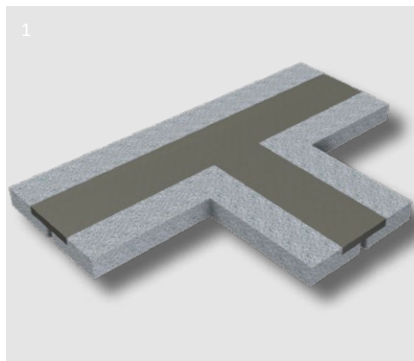
Expansion joints

Installation & Consultancy

Application example: intersections

Intersection of POLYFLEX®SLIM PU joints, such as T-crossing or X-crossing in any shape or angle, is possible.

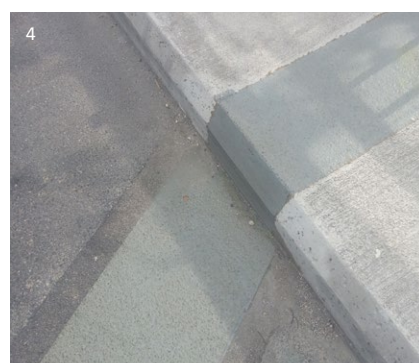
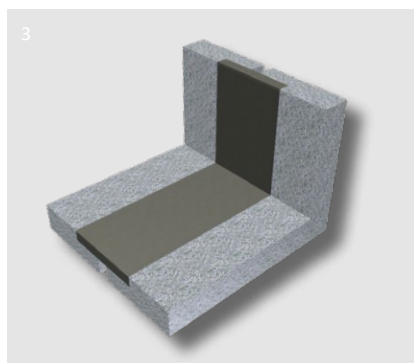
- Picture 1 illustrates a schematic design of the joint for use as intersection
- Picture 2 demonstrates an installed joint at National House in St. Pölten, Austria



Application example: vertical joints

The special PU material also allows the design of vertical joints with no limit to inclination or width. Butt joints to horizontal joints can be easily casted in any shape.

- Picture 3 illustrates a schematic design of the vertical joint for a kerb or upstand
- Picture 4 demonstrates an installed joint at National Service Centre in Linz, Austria



Consultancy & installation

We provide **advanced technical consultancy** for the optimal dimensioning of joint width and further details under consideration of all technical and economical conditions.

Installation can be carried out either by our **skilled installation team** or by **customer experts that have been trained and certified**. We further offer on-site installation surveillance.

Reference projects – POLYFLEX®SLIM PU



Main Station Zurich (CH)



LDZ Linz (AT)



AUDI Brussels (BE)



Brussels Airport (BE)

Product groups Building Division



Bearings



Vibration damping



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