

JOINT FILLING MORTAR

VS[®]-P MORTAR

TEST CERTIFICATES AND SUPPORTING DOCUMENTS

- › General building inspections approval Z-21.8-1792 for **PFEIFER-VS**[®]-BZ-system
- › General building inspections approval Z-21.8-1929 for **PFEIFER-VS**[®]-ISI-system
- › Certificate of conformity DAfStb Directive (VeBMR) "Herstellung und Verwendung von zementgebundenem Vergussbeton und Vergussmörtel" (Manufacture and use of cement-bonded concrete grout and grout) (QDB)
- › Company certification acc. to DIN EN ISO 9001:2015

PROPERTIES

- › Non-shrinking joint mortar with thixotropic consistency and very good formability for mechanical filling of joints between prefabricated parts
- › Easy preparation of the mixtures with double shaft hand mixers, compulsory mixers and suitable flow mixers that employ the new "sump mixing principle"
- › Can be pumped with conventional spiral pumps with feeding quantities adapted to the joint sections
- › Develops high early and final strengths
- › Controlled swelling, and consequently forms optimum shear joints within the filled joint sections
- › Impermeable to water
- › Complies with the requirements of building material class A1 (non-combustible) as specified under decision 2000/605/EC of the European Commission dated September 26, 2000 (published in the official journal L258)

AREAS OF APPLICATION

- › Joint mortar approved under the building authority's regulations within the scope of **PFEIFER-VS®** ISI/BZ-Systems ^{3D}
- › For filling of vertical and horizontal joints of precast concrete parts
- › For filling building joints, groves and hollow spaces

MOISTURE CLASSES BASED ON CONCRETE CORROSION FROM ALKALI-SILICIC ACID REACTIONS

Moisture class	WO	WF	WA	WS
VS®-P	•	•	•	•

The aggregates in PAGEL®'s products comply with the requirements of alkali sensitivity class E1 from non-hazardous sources specified under DIN EN 12620.

EXPOSURE CLASS ALLOCATION ACC. TO: DIN EN 206-1 / DIN 1045-2

	XO	XC	XD	XS	XF	XA*	XM
		1 2 3 4	1 2 3	1 2 3	1 2 3 4	1 2 3**	1 2 3
VS®-P	•	••••	•••	•••	•••	•••	•

* Having sulfate attack up to 600 mg/l

** With protective measures according to DIN 1045-2

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
VS®-P	Categorisation	plastic	-	SKVM II	A	C55/67



TECHNICAL DATA

TYPE		VS [®] -P	
Grain size		mm	0-2
Layer thickness*		mm	10-40
Amount of water	max.	%	13
Consumption approx.		kg/m ³	2,000
Processing time approx.	20 °C	min	60
Measure of extension DIN EN 13395 Part 1 approx.		mm	170
Measure of extension construction site testing**		mm	70-160
Swelling	24 h	Vol.-%	≥ 0.1
Compressive strength***	1 d	N/mm ²	≥ 40
	7 d	N/mm ²	≥ 60
	28 d	N/mm ²	≥ 80
Bending tensile strength***	1 d	N/mm ²	≥ 4
	7 d	N/mm ²	≥ 6
	28 d	N/mm ²	≥ 8

* Not relevant to the filling of the **PFEIFER-VS**[®] Rail System^{3D} prefabricated part joint sections

** Measure of extension construction site testing: Alternatively, use a PVC pipe with internal diameter 70 mm, height 100 mm, coated with a release agent, on a smooth, wetted plate; lift and measure

*** Testing of bending tensile and compressive strength in accordance with DIN EN 196-1

Note: All stated test values correspond to the DAfStb VeBMR directive.

The fresh and solid mortars are tested at 20 °C ± 2 °C. Higher or lower temperatures result in deviating properties of fresh respectively solid mortars and test results. Depending on the temperature, the consistency can be adapted with a slight reduction of the mixing water.

Storage: 12 months. Cool, dry, free from frost. Unopened in its original container.

Delivery form: 25-kg bag, Euro pallet 1,000 kg

Hazard class: Non-hazardous material, observe information on packaging.

GISCODE: ZP1

PAGEL[®] PRODUCT COMPOSITION:

Cement: acc. to DIN EN 197-1

Aggregate: acc. to DIN EN 12620

Additions: acc. to DIN EN 450, general building inspection approval (abZ),
DIN EN 13263 (fly ash, microsilica, etc.)

Admixtures: acc. to DIN EN 934-4

APPLICATION

SUBSTRATE/CONTACT AREAS CONCRETE

SUBSTRATE:

Clean thoroughly, remove all loose and unsound material, as well as any cement slurry, oil, grease, etc. using suitable preparation procedures until the solid grain structure has been exposed; a sufficient average tear strength ($\geq 1.5 \text{ N/mm}^2$) must be ensured. Prewet surface to capillary saturation (e.g. using a mist spray nozzle, crop sprayer or wet sponge)

Non-iron metals:

Cement and cement-bound building materials may cause non-iron-metals in the transitional area of the contact surface (e.g. aluminium, copper, zinc) to loosen. Please contact us for technical advice.

PFEIFER-VS® RAIL SYSTEMS:

Remove the covering tape before assembly and move the cable loops into their intended position. If necessary, remove adhesion inhibiting and/or loose components (grease, oil, etc.). Once the prefabricated concrete parts have been positioned inside the structure, insert a $\varnothing 12 \text{ mm}$ concrete reinforcing rod into the entire joint where it overlaps with other joints by threading it through the loops in accordance with the building authority's regulations. The insides of the VS® Rail profiles do not need any prewetting.

FORMWORK/SEALING:

Fully seal one side of the prefabricated parts' joints using a foam cord, rubber hose or, alternatively, VS®-P JOINT MORTAR. After the sealing of the joint with VS®-P JOINT MORTAR leave to set. Once set, fill the joint now sealed on one side from the opposite side by working from bottom to top.

MIXING:

The VS®-P GROUT is mixed with a compulsory mixer. The dry mortar is supplied ready to use and only needs to be mixed with water. Fill the specified amount of water apart from a residual amount into a clean and suitable mixing device. Add the dry mortar and mix for at least 3 minutes. Add the remaining water and mix for at least another 2 minutes until it forms a homogeneous mass.

FILLING:

The VS®-P JOINT MORTAR is fed into the cross section of the prefabricated part with a suitable spiral pump with variable speed-drive for the adaption of the conveying speed. The joint nozzle (e.g. VS®-P JOINT NOZZLE) should be equipped with a remote control for the feed pump. The joint section is filled from the bottom to the top by keeping the nozzle in the already filled mass at all times and by this it is pressing the grout upwards in the joint section without air pockets.

At this, the nozzle is alternately directed to the both outer sides of the joint geometry to achieve a complete filling.

Suitable mortar pumps: Putzmeister Strobl Strobot 406S; PFT N2V; Putzmeister S3V, Putzmeister S5; M-Tec Speedy P15V (380V only); Mader Variojet FU; Mader WM Mini.

Suitable mixing and feed pump: M-TEC Duo 2000.

Temperature range: + 5 °C to + 35 °C

Mixing water: Drinking water quality

FOLLOW-UP TREATMENT:

Immediately after filling the joint, remove any seals that may have been applied to keep for future use and smoothen the joint grout so as to make it flush with the surface of the prefabricated part.

FOLLOW-UP TREATMENT:

Depending on weather conditions, it may be necessary to protect the joints against water evaporation or excessive erosion. Any such measures must comply with the specifications detailed under DIN 1045-3:2008-08, section 8.7.