

JOINT FILLING GROUT

VS[®] GROUT

TEST CERTIFICATES AND SUPPORTING DOCUMENTS

- › General building inspections approval Z-21.8-1792 for **PFEIFER-VS[®]-BZ-system^{3D}** (Approval until 04.2025)
- › General building inspections approval Z-21.8-1929 for **PFEIFER-VS[®]-ISI-system^{3D}** (Approval until 04.2025)
- › 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)
- › Factory production control in accordance with DIN EN 1504-3 and DIN 1504-6
- › Company certification acc. to DIN EN ISO 9001:2015

PROPERTIES

- › High flowability, up to at least 90 minutes
- › Controlled swelling with frictional bond
- › Low modulus of elasticity
- › Pumpable, also with mixing and feed pumps
- › Ready to use joint grout, only requires mixing with water
- › Impermeable to water, highly resistant to oil, inhibits corrosion
- › 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

- › Grout in the **PFEIFER-VS[®] ISI/BZ System^{3D}**, **VS[®]-Plus-Box** and **VS[®]-Slim-Box** approved by the building authorities
- › Rigid joint grouting to connect concrete parts with **PFEIFER-VS[®]** system elements
- › Grouting of tensile- and transverse-force stressed joints of prefabricated parts in connection with **PFEIFER-VS[®]-SYSTEM**
- › Grouting of connections with:
 - PFEIFER** Column shoe system - connection of precast columns with concrete foundation
 - PFEIFER** wall shoe system - connection of prefabricated walls with base plates respectively wall discs

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

Moisture class	WO	WF	WA	WS
VS[®]	•	•	•	•

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
VS[®]	•	••••	••••	••••	••••	••••	•

* Having sulfate attack up to 1.500 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[®]	Categorisation	-	a3	SKVB I	A	C60/75

TECHNICAL DATA

TYPE			VS®
Grain size		mm	0-5
Grouting height		mm	20-120
Amount of water	max.	%	12
Consumption approx.		kg/m ³	2,000
Fresh mortar raw density approx.		kg/m ³	2,300
Processing time approx.	20 °C	min	90
Measure of extension	5 min	mm	≥ 700
	30 min	mm	≥ 620
Swelling	24 h	Vol.-%	≥ 0.1
Compressive strength*	1 d	N/mm ²	≥ 40
	7 d	N/mm ²	≥ 70
	28 d	N/mm ²	≥ 80
	90 d	N/mm ²	≥ 90
Bending tensile strength**	1 d	N/mm ²	≥ 4
	7 d	N/mm ²	≥ 6
	28 d	N/mm ²	≥ 8
	90 d	N/mm ²	≥ 10
E-Module (static)	7 d	N/mm ²	≤ 30,000
	90 d	N/mm ²	≤ 35,000

* DIN EN 12390-3-compliant concrete compressive strength testing

** DIN EN 12390-5-compliant concrete bending tensile strength testing

The specified maximum amount of mixing water is valid for the predefined application temperature range and must not be exceeded.

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

PROCESSING

SUBSTRATE PREPARATION:

Prewet prepared concrete contact surfaces before fitting the joint formwork and just before grouting the joint itself. For factory produced prefabricated reinforced concrete parts it may be assumed that around the joints no cement slurries respectively substances with a separating effect exist. Should this be contrary to expectations the case, any soiling must be removed from the contact surfaces of the joint faces by means of suitable measures before fitting the joint formwork.

Prewetting:

Prewet the concrete substrate to capillary saturation for approx. 6-24 hours.

JOINT FORMWORK:

In general, the prefabricated wall elements are positioned with a gap of 20 mm. After the VS[®] loops have been connected with a steel rod, the wall joints are shuttered with suitable formwork materials. For greater wall heights or formwork material not correspondingly resistant, if necessary, the grouting has to be carried out in grouting sections (see separate processing recommendations).

MIXING:

Der VS[®] 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.

Mixing water:

Drinking water quality

Temperature range:

+5 °C to + 35 °C

Low temperatures and cold mixing water reduce strength development, require intensive forced mixing and reduce flowability. Higher temperatures accelerate strength development and can also reduce the flowability.

GROUTING:

Place the grout in one continuous pour until the desired filling height is reached. The filling of the VS[®] grout can take place via a hose-funnel system. For larger grouting works the utilisation of an open conveying system with spiral gearing is recommended (please request a separate processing recommendation).

FOLLOW-UP TREATMENT:

Exposed grout areas must be protected from premature water evaporation (from wind, draughts, direct exposure to sun, etc.) immediately on completion of the work for a period of 3-5 days.

Suitable curing methods:

Water spray, foil covers with jute sheets, thermofoils or moisture-retaining covering sheets, O1 Evaporation protection.

The technical data sheet must be observed when using O1 Evaporation protection.

