

PRODUCT RANGE

Current data sheets and additional information
are available under www.pagel.com.



PAGEL[®]
Spezial-Beton

For more than four decades, **PAGEL[®] Spezial Beton GmbH & Co. KG**, Essen, has been leading in the development of grouting and other speciality mortars. The **PAGEL[®] Grouting systems** together with the well-known brand **V1[®]** and **PAGEL[®] Concrete repair systems** have become an internationally renowned concept of quality.

Our company develops, produces and distributes **speciality and grouting mortar systems** for high-precision machines, wind turbines, anchoring and injection works, repair systems for concrete, drinking water containers, channel and waste water areas as well as industrial floors.

With this broad range of products, the constant quality and great reliability of our products as well as the solution-oriented expert advice, our company has gained an outstanding reputation worldwide.

The satisfaction of our customers will also remain the core aim of our activities in the future. Our company was certified according to **EN ISO 9001** already in 1995.

Any and all products correspond to the specifications and requirements for the CE labelling whereas the in-house production control is additionally certified according to **DIN EN 1504-2, DIN EN 1504-3, DIN EN 1504-6 and DIN EN 1504-7**.

PAGEL[®] products are distributed by branches and contractual partners in more than 50 countries worldwide.

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These PAGEL® products are available as *evoline*!



STANDARD GROUT



Properties

- › High flowability
- › Controlled swelling
- › High early and final strengths
- › High frost-deicing salt resistance
- › Largely resistant to oils
- › Pumpable
- › Externally monitored
- › Impermeable to water

Areas of application

- › Machines
- › Anchorings, bridge bearings
- › Turbines
- › Drinking water treatment plants
- › Concrete constructions, high rack storage
- › Prefabricated parts
- › Bars
- › Industrial plants

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
V1®/10 evoline	0 - 1	5 - 30	≥ 40	≥ 60	≥ 80	≥ 4	≥ 6	≥ 8	2.000
V1®/50 evoline	0 - 5	20 - 120	≥ 40	≥ 60	≥ 75	≥ 4	≥ 6	≥ 8	2.000
V1®/80 evoline	0 - 8	30 - 200	≥ 40	≥ 60	≥ 80	≥ 4	≥ 6	≥ 8	2.100
V1®/160 evoline	0 - 16	100 - 400	≥ 40	≥ 60	≥ 75	≥ 4	≥ 6	≥ 8	2.100

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class
V1®/10 evoline	Categorisation	f2	-	SKVM II	A
V1®/50 evoline	Categorisation	-	a3	SKVB I	A
V1®/80 evoline	Categorisation	-	a2	SKVB 0	A
V1®/160 evoline	Categorisation	-	a2	SKVB I	A

CONCRETE GROUT *evoline*

Properties

- › High flowability
- › Controlled swelling
- › High frost and frost-deicing salt resistance
- › Largely resistant to oils
- › Low modulus of elasticity
- › Low shrinkage
- › Externally monitored

Areas of application

- › Columns and machines
- › Hydraulic structures, lock constructions and weirs
- › Construction of hydraulic steelworks
- › Noise barriers
- › Building underpinnings
- › Repair
- › Drinking water systems (**V80C45**)

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
V80C45 evoline	0 - 8	60 - 200 (320)*	≥ 15	≥ 40	≥ 60	≥ 1,5	≥ 3,5	≥ 5	2.100
V160C45 evoline	0 - 16	80 - 400 (640)*	≥ 15	≥ 40	≥ 60	≥ 1,5	≥ 3,5	≥ 5	2.000

* According to DAfStb VeBMR-Rili July 2019

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class
V80C45 evoline	Categorisation	-	a2	SKVB 0	C
V160C45 evoline	Categorisation	-	a2	SKVB 0	C

Same quality and same performance!



SUPER HIGH STRENGTH GROUT, DRINKING WATER


SUPER HIGH STRENGTH GROUT C100/115 *evoline*

Properties

- › Low w/c value
- › High strengths after 24 h and high final strengths
- › Pumpable
- › Controlled swelling with frictional bond between prefabricated reinforced concrete parts

Areas of application

- › Wind turbine onshore
- › Grouting joints
- › Filling cavities
- › Grouting of prefabricated parts

CE 	Grain size	Undergrouting height	Compressive strength			Bending tensile strength			Consumption
	mm	mm	N/mm ²			N/mm ²			Dry mortar
			1d	7d	28d	1d	7d	28d	kg/m ³
HF50 <i>evoline</i>	0 - 5	20 - 120 (300)*	≥ 60	≥ 90	≥ 115	≥ 8	≥ 11	≥ 14	2.200

* E DIN 18088-5-2020-10

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
HF50 <i>evoline</i>	Categorisation	-	a2	SKVB 0	A	C100/115


MORTAR FOR DRINKING WATER APPLICATIONS TYPE 1 *evoline*

Properties

- › DVGW W300-5 Type class: Type 1
- › Without concrete additives and without plastic-containing additives
- › Low capillary porosity
- › Microbiologically suitable for use in drinking water
- › Does not promote microbial growth
- › No bactericidal or fungicide properties
- › Suitable for dense flow wet spraying applications
- › Lowest possible rebound and almost dust-free when using the MAWO-nozzle

Areas of application

- › Repair of drinking water containers
- › Coatings in the drinking water sector and in water treatment plants
- › Repair of concrete and screed in the food industry

CE 	Grain size	Layer thickness	Compressive strength			Bending tensile strength			Consumption
	mm	mm	N/mm ²			N/mm ²			Dry mortar
			1d	7d	28d	1d	7d	28d	kg/(m ² · mm)
TWN20 <i>evoline</i>	0 - 2	10 - 40	≥ 10	≥ 35	≥ 50	≥ 3	≥ 5	≥ 6,5	1,8

STANDARD GROUT



Properties

- › High flowability
- › Controlled swelling
- › High early and final strengths
- › High frost-deicing salt resistance
- › Largely resistant to oils
- › Pumpable
- › Externally monitored
- › Impermeable to water

Areas of application

- › Machines
- › Anchorings
- › Turbines
- › Bridge bearings
- › Drinking water treatment plants
- › Concrete constructions
- › High rack storage
- › Prefabricated parts
- › Bars
- › Industrial plants

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
V1®/10	0 - 1	5 - 30	≥ 40	≥ 60	≥ 80	≥ 4	≥ 6	≥ 8	2,000
V1®/50	0 - 5	20 - 120	≥ 40	≥ 60	≥ 75	≥ 4	≥ 6	≥ 8	2,000
V1®/80	0 - 8	30 - 200	≥ 40	≥ 60	≥ 80	≥ 4	≥ 6	≥ 8	2,100
V1®/160	0 - 16	100 - 400	≥ 40	≥ 60	≥ 75	≥ 4	≥ 6	≥ 8	2,100

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
V1®/10	Categorisation	f2	-	SKVM II	A	C55/67
V1®/50	Categorisation	-	a3	SKVB I	A	C60/75
V1®/80	Categorisation	-	a2	SKVB 0	A	C60/75
V1®/160	Categorisation	-	a2	SKVB I	A	C60/75

CONCRETE GROUT

Properties

- › High flowability
- › Controlled swelling
- › High frost and frost-deicing salt resistance
- › Largely resistant to oils
- › Low modulus of elasticity
- › Low shrinkage
- › Externally monitored

Areas of application

- › Columns and machines
- › Hydraulic structures, lock constructions and weirs
- › Construction of hydraulic steelworks
- › Noise barriers
- › Building underpinnings
- › Repair
- › Drinking water systems (V80C45)

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
V80C45	0 - 8	60 - 200 (320)*	≥ 15	≥ 40	≥ 60	≥ 1.5	≥ 3.5	≥ 5.0	2,100
V160C45	0 - 16	80 - 400 (640)*	≥ 15	≥ 40	≥ 60	≥ 1.5	≥ 3.5	≥ 5.0	2,000

* According to DAfStb VeBMR-Rili July 2019

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
V80C45	Categorisation	-	a2	SKVB 0	C	C50/60
V160C45	Categorisation	-	a2	SKVB 0	C	C50/60

STANDARD GROUT

PACKING MORTAR

Properties

- › Plastic consistency
- › Controlled swelling
- › High early and final strengths

Areas of application

- › Columns
- › Bar plates
- › Bearings
- › Bridge bearings

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
V14/10	0 - 1	10 - 30	≥ 45	≥ 65	≥ 75	≥ 5	≥ 8	≥ 9	2,000
V14/40	0 - 4	10 - 70	≥ 45	≥ 65	≥ 75	≥ 5	≥ 8	≥ 9	2,000
V14/80	0 - 8	50 - 100	≥ 45	≥ 65	≥ 70	n. d.	n. d.	n. d.	2,100

n. d. = not determined

QUICK-SETTING GROUT


QUICK-SETTING GROUT

Properties

- › Ready for bearing loads after 2 hours (even at 5 °C)
- › High flowability
- › Controlled swelling
- › High frost and frost-deicing salt resistance
- › Pumpable

Areas of application

- › Turbines
- › Anchor bolts, fixators
- › Steel and concrete columns
- › Bridge bearings
- › Bars

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			2 h	4 h	1 d	28 d	2 h	4 h	1 d	28 d	
			V2/20	0 - 2	6 - 50 (80)	≥ 15	≥ 25	≥ 45	≥ 80	≥ 3	
V2/50	0 - 5	20 - 125 (200)	≥ 15	≥ 25	≥ 45	≥ 90	≥ 3	≥ 4	≥ 7	≥ 9	2,000
V2/160	0 - 16	80 - 400 (640)	≥ 15	≥ 25	≥ 45	≥ 90	≥ 3	≥ 4	≥ 7	≥ 9	2,100

According to the DAfStb-Rili VeBMR, the max. grouting height is limited to 25 times the maximum grain diameter. Any deviating grouting heights must be approved by the designer.

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength	
V2/20	Categorisation	f2	-	SKVM 0	A	C60/75
V2/50	Categorisation	-	a3	SKVB 0	A	C70/85
V2/160	Categorisation	-	a2	SKVB 0	A	C70/85


RAPID-SETTING GROUT

Properties

- › Ready for bearing loads after 30 minutes (20 °C)
- › Extremely high early strength
- › Flowable
- › Controlled swelling
- › High sulfate resistance
- › High frost-deicing salt resistance

Areas of application

- › Manhole cover grouting (DIN 19573)
- › Pipe feedthroughs
- › Installation works
- › Columns and prefabricated parts

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			0.5 h	1 h	1 d	28 d	0.5 h	1 h	1 d	28 d	
			VB20	0 - 2	6 - 80	≥ 5	≥ 10	≥ 40	≥ 70	≥ 2	
VB50	0 - 5	20 - 200	≥ 5	≥ 10	≥ 40	≥ 70	≥ 2	≥ 3	≥ 5	≥ 10	2,000
VB160	0 - 16	80 - 640	≥ 5	≥ 10	≥ 40	≥ 70	≥ 2	≥ 3	≥ 5	≥ 10	2,100

QUICK-SETTING GROUT

RAPID-SETTING MORTAR

Properties

- › Ready for bearing loads after 30 minutes (20 °C)
- › Plastic
- › Extremely high early strength
- › Controlled swelling
- › High sulfate resistance
- › High frost and frost-deicing salt resistance
- › Temperature range: (+5 °C to +30 °C)

Areas of application

- › Bearing of shaft rings (DIN 19573)
- › Shaft coatings
- › Repair measures in the channel
- › Chippings, edge profilings

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			0.5 h	2 h	1 d	28 d	0.5 h	2 h	1 d	28 d	
			VB-P10	0 - 1	5 - 50	≥ 5	≥ 10	≥ 25	≥ 65	≥ 1	

TURBO GROUT

Properties

- › Ready for bearing loads after 30 minutes (20 °C)
- › High flowability
- › Extremely high early strength
- › Controlled swelling
- › High sulfate resistance
- › High frost and frost-deicing salt resistance
- › Temperature range: (+1 °C to +30 °C)

Areas of application

- › Shaft grouting (DIN 19573)
- › Service connections
- › Inspection openings
- › Signalling systems
- › Gas and water installations

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			0.5 h	2 h	1 d	28d	0.5 h	2 h	1 d	28 d	
			VT05	0 - 0.5	10 - 30	≥ 5	≥ 10	≥ 30	≥ 60	≥ 2	
VT10	0 - 1	10 - 50	≥ 5	≥ 10	≥ 30	≥ 60	≥ 2	≥ 2	≥ 4	≥ 8	1,900

TURBO MORTAR

Properties

- › Ready for bearing loads after 30 minutes (20 °C)
- › Plastic
- › Extremely high early strength
- › Controlled swelling
- › High sulfate resistance
- › High frost and frost-deicing salt resistance
- › Temperature range: (+1 °C to +30 °C)

Areas of application

- › Shaft restoration (DIN 19573)

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			0.5 h	2 h	1 d	28d	0.5 h	2 h	1 d	28 d	
			VT-P10	0 - 1	10 - 50	≥ 5	≥ 10	≥ 30	≥ 55	≥ 2	

SUPER HIGH STRENGTH GROUT


SUPER HIGH STRENGTH GROUT C100/115

Properties

- › Very high early and final strengths
- › High fatigue resistance
- › Controlled swelling
- › Pumpable
- › High frost and frost-deicing salt resistance
- › Very high strengths

Areas of application

- › Wind energy plants offshore and onshore
- › Grouting joints
- › Portal and container railway systems
- › **V1/0HF**: Forerun mixture for grouting hoses

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	
V1®/30HF	0 - 3	30 - 75 (300)*	≥ 60	≥ 90	≥ 120	2,300
V1®/60HF	0 - 6	40 - 150 (300)*	≥ 60	≥ 90	≥ 120	2,300
V1®/0HF	0	n. d.	≥ 60	≥ 85	≥ 100	1,850

n. d. = not determined

* E DIN 18088-5-2020-10

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
V1®/30HF	Categorisation	f1	-	SKVM 0	A	C100/115
V1®/60HF	Categorisation	-	a2	SKVB 0	A	C100/115


SUPER HIGH STRENGTH GROUT C100/115

Properties

- › Low w/c value
- › High strengths after 24 h and high final strengths
- › Pumpable
- › Controlled swelling with frictional bond between prefabricated reinforced concrete parts

Areas of application

- › Wind turbine onshore
- › Grouting joints
- › Filling cavities
- › Grouting of prefabricated parts

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
HF10	0 - 1	5 - 30 (100)*	≥ 60	≥ 90	≥ 115	≥ 8	≥ 13	≥ 15	2,000
HF50	0 - 5	20 - 120 (300)*	≥ 60	≥ 90	≥ 115	≥ 8	≥ 11	≥ 14	2,200

* E DIN 18088-5-2020-10

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
HF10	Categorisation	f3	-	SKVM I	A	C100/115
HF50	Categorisation	-	a2	SKVB 0	A	C100/115

SUPER HIGH STRENGTH GROUT


SUPER HIGH STRENGTH GROUT C90/105

Properties

- › Low w/c value
- › High strengths after 24 h and high final strengths
- › Pumpable
- › Controlled swelling with frictional bond between prefabricated reinforced concrete parts

Areas of application

- › Onshore grout for hybrid, steel, reinforced concrete and prestressed concrete towers
- › Grouting joints
- › Filling cavities
- › Grouting of prefabricated parts

CE 	Grain size	Undergrouting height	Compressive strength			Bending tensile strength			Consumption Dry mortar kg/m ³
			N/mm ²			N/mm ²			
			1 d	7 d	28 d	1 d	7 d	28 d	
V1/50HF	0 - 5	20 - 125 (300)*	≥ 50	≥ 80	≥ 105	≥ 7	≥ 10	≥ 13	2,100

* E DIN 18088-5:2020-10

SPECIAL APPLICATIONS

ANCHOR MORTAR

Properties

- › High flowability (E1)
- › Plastic consistency (E1-P)
- › Pumpable and groutable
- › Controlled swelling
- › Building material class A1 (non-combustible)

Areas of application

- › Mining and tunnel construction
- › Stabilisation of subsoil
- › Filling of cavities and joints

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
E1	0 - 0.5	n. d.	≥ 40	≥ 55	≥ 65	≥ 5	≥ 6	≥ 7	1,600
E1-P	0 - 0.5	n. d.	≥ 15	≥ 40	≥ 50	≥ 4	≥ 6	≥ 7	1,800

n. d. = not determined

ANCHOR GROUT

Properties

- › High flowability
- › Controlled swelling
- › Free of aggregates
- › High early and final strength
- › Building material class A1 (non-combustible)

Areas of application

- › Grouting and casting of anchorings
- › Injection of cracks, gravel patches and joint cavities in vertical and horizontal positions
- › Grouting of tensioning ducts

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
E1F	0 - 0.125	n. d.	≥ 30	≥ 45	≥ 60	≥ 4	≥ 6	≥ 7	1,500

n. d. = not determined

SPECIAL APPLICATIONS

STEEL-FIBRE GROUT

Properties

- › Highly durable
- › Steel fibre reinforced
- › Controlled swelling
- › High early and final strengths

Areas of application

- › Crane rails
- › Constructive parts
- › Presses
- › Foundations

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
			V15/50SF	0 - 5	20 - 120	≥ 40	≥ 60	≥ 75	

n. d. = not determined

BASALT GROUT

Properties

- › Heat resistant up to 400 °C (short duration)
- › Controlled swelling
- › High early and final strengths
- › **V15/50SF**: Steel-fibre-basalt grout

Areas of application

- › High temperature areas in steelworks for example
- › Machines
- › Anchorings
- › Steel columns

CE	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
			V15/50	0 - 5	40 - 100	≥ 40	≥ 60	≥ 75	
V15/50SF	0 - 5	40 - 120	≥ 50	≥ 70	≥ 80	≥ 6	≥ 8	≥ 10	2.200

SPECIAL APPLICATIONS


JOINT FILLING GROUT

Properties

- › High flowability, up to at least 90 minutes
- › Easy to process
- › Controlled swelling
- › Low heat development
- › High frost-deicing salt resistance
- › Building material class A1 (non-combustible)

Areas of application

- › 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® SYSTEMS**
- › Grouting of connections with: **PFEIFER Column shoe system, PFEIFER wall connection system**

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²				Consumption Dry mortar kg/m ³
			1 d	7 d	28 d	90 d	1 d	7 d	28 d	90 d	
VS®	0 - 5	20 - 120	≥ 40	≥ 70	≥ 80	≥ 90	≥ 4	≥ 6	≥ 8	≥ 10	2,000

General building authority approval Z-21.8-1792 for **PFEIFER-VS®-BZ-System**^{3D}

General building authority approval Z-21.8-1929 for **PFEIFER-VS®-ISI-System**^{3D}

Classification acc. to the DAfStb VeBMR directive:

	Flowability class	Slump flow class	Shrinkage class	Early strength class	Compressive strength class	
VS®	Categorisation	-	a3	SKVBI	A	C60/75


JOINT FILLING MORTAR

Properties

- › Non-shrinking joint mortar with thixotropic consistency
- › Controlled swelling
- › Pumpable
- › Develops high early and final strengths
- › Impermeable to water
- › Building material class A1 (non-combustible)

Areas of application

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

CE 	Grain size mm	Undergrouting height mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1 d	7 d	28 d	1 d	7 d	28 d	
VS®-P	0 - 2	10 - 40	≥ 40	≥ 60	≥ 80	≥ 4	≥ 6	≥ 8	2,000

General building authority approval Z-21.8-1792 for **PFEIFER-VS®-BZ-System**^{3D}

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

PAGEL® CONCRETE REPAIR-SYSTEM COMPONENTS

Corrosion protection and bonding layer	RM02 Corrosion protection/ Bonding layer	MH02 Corrosion protection/ Bonding layer
Suitable products	CM20 Construction mortar (RM/SRM, XSTAT)	MH20 PCC-I-mortar
	RM20 Repair mortar (RM, M2)	MH80 PCC-I-mortar
	SM20 Spray mortar (SRM, M2)	
	FD/20 WHG-LAU-mortar (RM)	
Surface finish	MS05 PCC-screed	

CORROSION PROTECTION AND BONDING LAYER

CORROSION PROTECTION AND BONDING LAYER

Properties

- › High quality corrosion protection and bonding layer
- › Is only mixed with water
- › Increases the active corrosion protection
- › Easy to process

Areas of application

- › Mineral corrosion protection for reinforcing steel
- › Bonding layer on concrete and cement-bound mortar substrates
- › For pre-watered mineral substrates

CE		Consumption
		Dry mortar kg/m ²
RM02	Corrosion protection	4 - 6
RM02	Bonding layer	2 - 4
MH02	Corrosion protection	4 - 6
MH02	Bonding layer	2 - 4

CONSTRUCTIVE REPAIR

CONSTRUCTION MORTAR (RM/SRM, XSTAT)

Properties

- › Reduces the ingressing of CO₂
 - › Soft-plastic processing consistency
 - › High frost-deicing salt resistance
 - › Open to water vapour diffusion
 - › Building material class A1 (non-combustible)
- RM02:** Corrosion protection and bonding layer

Areas of application

- › Repair of concrete, prestressed concrete and reinforced concrete constructions
- › Repair of chloride-damaged columns
- › Reinforcement of damaged reinforced concrete construction elements
- › Repair of concrete in the sea and inland waterways area

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
			CM20 RM	0 - 2	10 - 60*	≥ 30	≥ 40	≥ 50	
CM20 SRM	0 - 2	10 - 60*	n. d.	≥ 45	≥ 55	n. d.	≥ 5	≥ 8	1,850

* permissible overall thickness of layer acc. to ZTV-ING 50 mm
n. d. = not determined

CARBOrefit® FINE CONCRETE

Properties

- › Verification of usability by general building authority approval (abZ) for the reinforcement of reinforced concrete with carbon concrete in the CARBOrefit® process (Approbal no. Z 31.10-182)
- › Soft plastic thixotropic consistency for CARBOrefit® textile fabrics
- › High-performance fine concrete as a matrix for textile fabric
- › Low modulus of elasticity and high bending tensile strength
- › Building material class A1 (non-combustible)

Areas of application

- › Structural support in the tension zone of reinforced concrete components
- › Reduction of layer thicknesses for structural repair work
- › For the reinforcement of reinforced concrete components in the hand laminating method and in the MAWO-PAGEL® dense phase wet spraying application method

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			24 h	7d	28d	24 h	7d	28d	
			TF10	0 - 1	3 - 30	≥ 15	≥ 40	≥ 80	


SYSTEMS FOR STORING, FILLING AND HANDLING WATER-POLLUTING SUBSTANCES

Properties

- › Verification of usability by general building authority approval (abZ) for restoring the liquid-tightness of concrete sealing structures in LAU systems
- › Reduces the ingressing of CO₂
- › Soft-plastic processing consistency
- › High frost-deicing salt resistance

Areas of application

- › Mortar system for protection against water-polluting liquids
- › Repair of plants and components
- › Repair of sealing constructions made of concrete

CE 	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			24 h	7d	28d	24 h	7d	28d	
			FD20	0 - 2	15 - 50	≥ 30	≥ 40	≥ 50	

REPAIR

REPAIR MORTAR (RM/M2)

Properties

- › Reduces the ingressing of CO₂
- › Soft-plastic processing consistency
- › **RM02:** Corrosion protection and bonding layer
- › Building material class A1 (non-combustible)

Areas of application

- › Repair of concrete, prestressed concrete and reinforced concrete constructions
- › Reprofiling of bridge decks
- › Areas of application PCC I and PCC II according to ZTV-ING

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
			RM20	0 - 2	10 - 60*	≥ 30	≥ 40	≥ 50	

* permissible overall thickness of layer acc. to ZTV-ING 50 mm

PCC-I-MORTAR (RM)

Properties

- › PCC-I areas of repair (ZTV-ING, ZTV-W, Rili-SIB)
- › Easy to process
- › Polymer-modified
- › High frost-deicing salt resistance
- › Applicable and loadable under dynamic stress
- › **MH02:** Corrosion protection and bonding layer

Areas of application

- › Levelling layer for bridges and car parks (under linings and coatings)
- › Concrete coatings
- › Concrete floor spaces
- › Gradient compensation
- › Repairs of chippings
- › Stress and strain classification according to DAfStb-Rili-SIB: M2

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²		Bending tensile strength N/mm ²		Consumption Dry mortar kg/(m ² · mm)
			7d	28d	7d	28d	
			MH20	0 - 2	6 - 40	≥ 35	
MH80	0 - 8	≥ 30	≥ 35	≥ 55	≥ 6	≥ 8	2.0

PCC-SCREED

Properties

- › Highly adhesive
- › Universally applicable
- › Sprayable
- › Open to water vapour diffusion
- › Building material class A2-S1, d0 (non-combustible)

Areas of application

- › For non-walkable/driveable areas
- › Levelling work
- › Cavity and pore closing
- › Joints
- › Scraping
- › Bridges, tunnel
- › Facades, parapets

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²		Bending tensile strength N/mm ²		Consumption Dry mortar kg/(m ² · mm)
			7d	28d	7d	28d	
			MS05	0 - 0.5	1.5 - 6	≥ 35	

REPAIR

SPRAY MORTAR (SRM/M2)

Properties

- › Reduces the ingressing of CO₂ and moisture
- › Soft-plastic processing consistency
- › High frost-deicing salt resistance
- › Open to water vapour diffusion
- › Building material class A1 (non-combustible)

Areas of application

- › Repair of reinforced concrete, concrete and prestressed concrete constructions
- › Repair of chloride-damaged columns
- › Increase of the reinforcement concrete cover
- › Repair of concrete in the sea and inland waterways area

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²		Bending tensile strength N/mm ²		Consumption Dry mortar kg/m ³
			7 d	28 d	7 d	28 d	
SM20	0 - 2	10 - 60*	≥ 40	≥ 50	n. d.	n. d.	1,850

* permissible overall thickness of layer acc. to ZTV-ING 50 mm
n. d. = not determined

REPAIR

REPAIR MORTAR

Properties

- › Easy to process
- › High stability and bonding
- › Sprayable
- › Building material class A1 (non-combustible)

Areas of application

- › For non-walkable/driveable areas (**UM02**)
- › Walls and floors (**UM20, UM50**)
- › Industrial floor
- › Storage and ramp areas
- › Joints of prefabricated parts
- › Concrete replacement

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			1d	7d	28d	1d	7d	28d	
UM02	0 - 0.2	0.5 - 10	≥ 15	≥ 20	≥ 30	≥ 2	≥ 3	≥ 4	1.8
UM20	0 - 2	6 - 80	≥ 20	≥ 35	≥ 45	≥ 3	≥ 4.5	≥ 6	2.0
UM50	0 - 5	20 - 200	≥ 20	≥ 35	≥ 45	n. d.	n. d.	n. d.	2.0

n. d. = not determined

QUICK REPAIR MORTAR

Properties

- › Ready for bearing loads after 2 hours (even at 5 °C)
- › Good bonding
- › Easy to process

Areas of application

- › Areas of quick repair
- › Concrete and mortar areas
- › Screeds, stairs
- › Industrial floor

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²				Consumption Dry mortar kg/(m ² · mm)
			2 h	1 d	7 d	28 d	
R20/02	0 - 0.2	0.5 - 10	≥ 5	≥ 15	≥ 30	≥ 55	1.8
R20/10	0 - 1	3 - 40	≥ 7	≥ 20	≥ 35	≥ 65	1.9
R20/50	0 - 5	20 - 200	≥ 10	≥ 25	≥ 35	≥ 65	2.0

WASTE WATER

CHANNEL MORTAR

Properties

- › High resistance against strong chemical attack
- › Resistant to sulfate attack (industry) and ammonium attack (agriculture)
- › Pumpable and sprayable
- › Impermeable to water
- › **KA20**: Bonding layer, mortar

Areas of application

- › Channel and waste water area
- › Channel pipes
- › Sewage treatment plants
- › Waste water collectors
- › Broken areas, holes, edges
- › Channel repair
- › Shaft restoration

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			1d	7d	28d	1d	7d	28d	
KA20	0 - 2	10 - 60*	≥ 30	≥ 40	≥ 50	≥ 3	≥ 5	≥ 8	1.9

* permissible overall thickness of layer acc. to ZTV-ING 50 mm

REPAIR MORTAR, TURBO REPAIR MORTAR

Properties

- › Extremely rapid setting repair mortar suitable for all kinds of repairs, filling and sealing
- › Particularly easy to process
- › Resilient within a short period of time
- › Impermeable to water
- › Processing time at 20 °C approx. 30 s
- › **KA-TS**: Quicker hardening than **KA-S**

Areas of application

- › Sealing of rigid cracks
- › Temporary sealing of water-bearing cracks, surfaces and water-inrushes
- › Assembly and installation mortar
- › Keeps out pressing water

	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1d	7d	28d	1d	7d	28d	
KA-S	0 - 0.5	0.5 - 30	≥ 30	≥ 50	≥ 60	n. d.	n. d.	n. d.	1,750
KA-TS	0 - 0.5	0.5 - 30	≥ 30	≥ 50	≥ 60	n. d.	n. d.	n. d.	1,750

n. d. = not determined

DRINKING WATER

MORTAR FOR DRINKING WATER APPLICATIONS

Properties

- › Sprayable
- › Impermeable to water
- › Tested according to DVGW Worksheets W270 and W347
- › Tested according to DVGW Worksheet W300 (TW20 bis TW40)

Areas of application

- › Drinking water treatment plants
- › Walls and floors
- › Water pipes
- › Sewage treatment plants

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Adhesive pull strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			1d	7d	28d	7d	7d		
			TW05	0 - 0.5	2 - 6	≥ 15	≥ 35	≥ 45	
TW10	0 - 1	5 - 10	≥ 25	≥ 45	≥ 55	≥ 2	1.9		
TW20	0 - 2	10 - 30	≥ 25	≥ 45	≥ 55	≥ 2	1.9		
TW40	0 - 4	20 - 40	≥ 25	≥ 45	≥ 60	≥ 2	1.9		

MORTAR FOR DRINKING WATER APPLICATIONS TYPE 1

Properties

- › DVGW W300-5 Type class: Type 1
- › Without concrete additives and without plastic-containing additives
- › Low capillary porosity
- › Microbiologically suitable for use in drinking water
- › Does not promote microbial growth
- › No bactericidal or fungicide properties
- › Suitable for dense flow wet spraying applications
- › Lowest possible rebound and almost dust-free when using the MAWO-nozzle

Areas of application

- › Repair of drinking water containers
- › Coatings in the drinking water sector and in water treatment plants
- › Repair of concrete and screed in the food industry

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Consumption Dry mortar kg/(m ² · mm)
			1d	7d	28d	1d	7d	28d	
			TWN20	0 - 2	10 - 40	≥ 10	≥ 35	≥ 50	

SURFACE PROTECTION

CONCRETE PROTECTION COATING

Properties

- › Processable on slightly moist or dry substrate
- › Short waiting times
- › Open to water vapour diffusion
- › Solvent-free
- › Different RAL-colours

Areas of application

- › Bridges
- › Concrete facades
- › Follow-up treatment
- › Tunnel
- › Container

CE	Applications	Layer thickness	Adhesive pull strength	Processing temperature	Processing time	Consumption
	No.	mm	N/mm ²	°C	min	kg/m ²
O2C	2	0.12 - 0.36	≥ 1.3	+5 to +40	unlimited	0.24 - 0.29

CONCRETE PROTECTION COATING

Properties

- › Crack-bridging
- › High elongation when subjected to tearing
- › Open to water vapour diffusion
- › Solvent-free
- › Different RAL-colours

Areas of application

- › Bridges
- › Concrete and mortar areas
- › Tunnel
- › Areas of hairline and shrinkage cracking

CE	Applications	Layer thickness	Adhesive pull strength	Processing temperature	Processing time	Consumption
	No.	mm	N/mm ²	°C	min	kg/m ²
O2DE	3	0.33 - 2.66	≥ 1.3	+5 to +40	unlimited	0.34 - 0.37

PAGELASTIC

Properties

- › High elasticity
- › Crack-bridging
- › Open to water vapour diffusion
- › 2-component
- › Impermeable to water

Areas of application

- › Bridges
- › Concrete and mortar areas
- › Tunnel
- › Areas of hairline and shrinkage cracking
- › Sealing of structures

CE	Applications	Layer thickness	Adhesive pull strength	Processing temperature	Processing time	Consumption
	No.	mm	N/mm ²	°C	min	kg/m ²
D1	2	2	≥ 0.8	+8 to +30	approx. 120	2.50 - 2.70

SURFACE PROTECTION

SILICEOUS IMPREGNATION

Properties

- › Permanent surface protection
- › Protection from carbonation
- › Strengthens the substrate
- › Protection from blooming
- › Heat resistant

Areas of application

- › Concrete, walls, screeds, cellars, pipes and horizontal barriers
- › With a subsequent protective coating of the surface
- › Areas with a high chemical loading
- › Areas that are exposed to salt water

	Applications	Consistency	Viscosity	Processing temperature	Density	Consumption
	No.	mm	mPas	°C	g/cm ³	kg/m ²
SEAL SI100	2	liquid	< 100	+5 to +55	approx. 1,1	0.40 - 0.80

SILICEOUS SEALANT

Properties

- › Strengthens the substrate
- › For sealing against liquids
- › For the protection and repair of fresh water reservoirs
- › Protection from blooming
- › Heat resistant, environment friendly

Areas of application

- › Surface protection for concrete, screeds, pipes
- › Sealing against dampness on walls
- › Areas with a high mechanical and chemical load
- › Areas that are exposed to salt water

	Applications	Consistency	Viscosity	Processing temperature	Density	Consumption
	No.	mm	mPas	°C	g/cm ³	kg/m ²
TOP SEAL SV100	1 - 2	liquid	< 100	+5 to +55	approx. 1.1	0.15 - 0.40

WATERPROOFING OF BUILDINGS

Properties

- › Solvent-free
- › Low odour
- › Multiple use of one container
- › Easy to dose
- › Bridges joints and cracks
- › Very good adhesion to various substrates

Areas of application

- › Detail connections on roof and building waterproofing
- › Permanently elastic, seamless and jointless sealing of wind turbines
- › Can also be used on complex structures thanks to liquid application

	Applications	Layer thickness	Consistency	Processing temperature	Fleece inlay	Consumption
	No.	mm		°C		kg/m ²
SEAL FLEX 1K(thixo)	2	2,5	thixotropic	+5 to +40	yes	3,5
SEAL FLEX 1K(surface)	2	2,5	fliquid	+5 to +40	yes	3,5

Colours: similar to RAL 7040; 7016; 7035

PAGEL® INDUSTRIAL FLOOR-SYSTEM COMPONENTS

Corrosion protection-bonding layer	RM02 Corrosion protection IH10 Industrial floor- bonding layer - EH1 Epoxid resin-primer (as bonding layer)
Suitable products	IB20 Industrial floor IB50PP Industrial floor IB50SF Steelfibre floor

INDUSTRIAL FLOOR BONDING LAYER, INDUSTRIAL FLOOR

INDUSTRIAL FLOOR BONDING LAYER

Properties

- › For mineral industrial floor coatings
- › Low water-cement ratio

Areas of application

- › Bonding layer for:
Industrial floor coatings
Industrial floor coverings
Concrete substrates

CE	Grain size mm	Consumption	
		Dry mortar kg/m ²	
IH10	0 - 1	2 - 3	for IB20 Industrial floor

INDUSTRIAL FLOOR

Properties

- › Low shrinkage
- › Abrasion proof
- › Stress groups II and III (DIN 18560-7)
- › Easy to process
- › Resilient within a short period of time
- › **IB50PP**: Heat resistant up to 400 °C (short duration)

Areas of application

- › Industrial floors
- › Warehouses
- › Aircraft hangars
- › Car parks
- › Repair workshops and garages
- › Exhibition halls
- › Market halls

CE	Grain size mm	Layer thickness mm	Compressive strength			Bending tensile strength			Adhesive pull strength N/mm ²	Consumption Dry mortar kg/m ² · mm
			N/mm ²			N/mm ²				
			1d	7d	28d	1d	7d	28d	28d	
IB20	0 - 2	10 - 100	≥ 30	≥ 45	≥ 60	≥ 3	≥ 5	≥ 7	2.0	2.0
IB50PP	0 - 5	20 - 100	≥ 50	≥ 65	≥ 85	≥ 4	≥ 5	≥ 7	2.0	2.2

STEEL FIBRE BASALT FLOOR, FLOATING SCREED, REPAIR CONCRETE

STEEL FIBRE BASALT FLOOR

Properties

- › Viscoplastic
- › Impact resistant and abrasion proof

Areas of application

- › Rolling and steel plants
- › Tank workshops
- › Industrial halls

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Adhesive pull strength N/mm ²	Consumption Dry mortar N/mm ²
			1d	7d	28d	1d	7d	28d		
			kg/m ² · mm							
IB50SF	0 - 5	20 - 100	≥ 40	≥ 60	≥ 70	≥ 4	≥ 6	≥ 8	2.0	2.2

FLOATING SCREED

Properties

- › Cement-bound floating screed
- › Portland cement-based
- › High density indoors and outdoors
- › High flowability, can be walked on after 3 hours, sped-up construction process
- › Impermeable to water

Areas of application

- › Composite screed for wearing and balance layers
- › Top surface coverings for living and industrial buildings
- › Garages, parking decks, balconies
- › Terraces, cellar soils

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²			Bending tensile strength N/mm ²			Adhesive pull strength N/mm ²	Consumption Dry mortar N/mm ²
			1d	7d	28d	1d	7d	28d		
			kg/m ² · mm							
IB20FL	0 - 2.0	5 - 35	≥ 25	≥ 45	≥ 60	≥ 4	≥ 5	≥ 7	n. d.	1.8

n. d. = not determined

REPAIR CONCRETE

Properties

- › Consistency class of F2 to F3 = plastic to soft (DIN 1045-2/EN 206-1)
- › Reaches full strength after as little as 2 hours, including in low application temperatures
- › Very high early and final strengths
- › High frost and deicing salt resistance after 12 hours and after 28 days

Areas of application

- › Structural maintenance of concrete traffic surfaces
- › **Repair:** of concrete runways, floor slabs and concrete areas
- › Hall floors
- › Airfields, taxiways and aprons
- › In the field of track construction "Solid track" Runway

CE	Grain size mm	Layer thickness mm	Compressive strength N/mm ²		Bending tensile strength N/mm ²		Adhesive pull strength N/mm ²	Consumption Dry mortar N/mm ²
			1d	28d	1d	28d		
			kg/m ³					
RB50	0 - 5.0	60 - 200	≥ 35	≥ 50	≥ 6	≥ 8	n. d.	2,200

n. d. = not determined

RAPID-SETTING MORTAR, TILE ADHESIVE, EVAPORATION PROTECTION

RAPID-SETTING MORTAR

Properties

- › Installation areas
- › Easy to process
- › Quick setting
- › Load bearing

Areas of application

- › Fillings of e.g. anchorings
- › Repair of water breakthroughs
- › Resealing and filling
- › Sealings and assembling
- › Inserting of dowels
- › Sealing of holes

	Grain size mm	Layer thickness mm	Compressive strength N/mm ²				Bending tensile strength N/mm ²			Consumption Dry mortar kg/m ³
			1 h	1 d	7 d	28 d	1 d	7 d	28 d	
			≥ 2.5	≥ 30	≥ 40	≥ 55	n. d.	n. d.	n. d.	
B1	0.1 - 0.5	1 - 3								1,750

n. d. = not determined

EVAPORATION PROTECTION

Properties

- › Protects surfaces from premature water evaporation
- › Provides for slower draining of the concrete, screed and mortar

Areas of application

- › Concrete and mortar areas
- › Cement screeds
- › Concrete bricks and prefabricated parts

	Applications No.	Layer thickness mm	Barrier coefficient %	Application temperature °C	Processing time min	Consumption kg/m ²
O1	1	n. d.	85	+1 to +35	unlimited	0.10 - 0.15

n. d. = not determined

PRIMER/BONDING AGENT, MORTAR, GROUT

EPOXY RESIN PRIMER/BONDING AGENT

Properties

- › Primer
- › Sealant
- › Solidification
- › Bonding layer
- › Top coat

Areas of application

EH1

- › Low viscosity, high penetration depth
- › Bonding layer on dry substrate

EH115

- › High bonding on moist substrate

CE	Applications	Layer thickness	Components	Processing temperature	Processing time (at 20 °C)	Consumption
	No.	mm		°C	min	kg/(m ² · mm)
EH1	1	n. d.	2	+10 to +30	approx. 45	0.25 - 0.80
EH115	1	n. d.	2	+10 to +30	approx. 45	0.25 - 0.80

n. d. = not determined

EPOXY RESIN MORTAR

Properties

- › Easy to process
- › Abrasion proof
- › Impermeable to water
- › 3-component (resin, hardener, sand)

Areas of application

EH2

- › Packing and coating mortar
- › Posts, columns, pigmented

EH192

- › Coating mortar
- › Industrial halls, warehouses, garages, repair sites, transparent

CE	Applications	Layer thickness	Components	Processing temperature	Processing time (at 20 °C)	Consumption
	No.	mm		°C	min	kg/(m ² · mm)
EH2	1	3 - 40	3	+10 at +30	approx. 30	approx. 2.0
EH192	1	3 - 50	3	+10 at +30	approx. 30	approx. 2.0

EPOXY RESIN GROUT

Properties

- › Easy to process
- › Abrasion proof
- › Impermeable to water
- › 2-component epoxy resin grout
- › Fast reaction kinetics (EH196R)

Areas of application

- › Grout
- › Rail and ribbed plates, Galvanized steel components and non-iron-metals, precision bearings

CE	Grain size	Undergrouting height	Components	Compressive strength			Bending tensile strength			Consumption	
				N/mm ²			N/mm ²				Dry mortar
				4 h	1 d	7 d	4 h	1 d	7 d		
EH196R	0.5	6 - 100	2	≥ 50	≥ 80	≥ 90	≥ 15	≥ 30	≥ 40	2.0	
EH196S	0,5	6 - 200	2	n. b.	≥ 70	≥ 90	n. d.	≥ 30	≥ 40	2,0	

n. d. = not determined

APPLICATION AIDS

APPLICATION AIDS - CLEANER AND THINNER

Properties

- › Special cleaner for all kind of contaminated floors
- › Thinner for paints, lacquers, resins, etc.
- › Water-dilutable
- › Non-volatile
- › For easily and efficiently cleaning tools after work
- › For easily and efficiently removing hardened materials from tools

Areas of application

- › Cleaning contaminated industrial floors
- › Cleaning tools
- › Removing oils and grease
- › Will remove paint and coatings when used in concentrated form

For the current version of our technical datasheets²
and test certificates please see our website
WWW.PAGEL.COM



The information provided in this leaflet, application instructions and other recommendations are based on extensive research and experience. They are, however, not binding, in particular with regard to third party proprietary rights, and do not relieve the customer of his responsibility to verify that the products and processes are suitable for the intended application.

All of the test data has been derived under standard climatic conditions and in accordance with DIN 50014. These values are average values and analyses. Deviations are possible when delivery takes place. Recommendations that differ from those provided in this leaflet require written confirmation. Planners and operators are responsible for ensuring that this leaflet is the latest edition and for obtaining information on the latest technological developments.

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