Injection mortar FIS VT 380 C

The expansion-free anchoring in the coaxial cartridge based on vinylester resin.

OVERVIEW

Injection mortar
FIS VT 380 C

Static mixer **FIS S**

Approved for:
- Non-cracked concrete

Suitable for:
- Prestressed hollow-core concrete slabs
- Solid brick
- Sand-lime solid brick
- Solid block made from lightweigth concrete
- Autoclaved lightweight concrete, aircrete
- Vertical perforated brick
- Perforated sand-lime brick
- Slabs made of bricks, concrete blocks, etc.
- Hollow blocks
- No fines lightweight concrete

European Technical Approval - Option 7 for non-cracked concrete

For fixing of:
- Steel constructions
- Railings
- Hand-rails
- Consoles
- Ladders
- Cable trays
- Machines
- Staircases
- Gates
- Facades
- Window elements
- High racks
- Canopies
- Stand-off installations.

DESCRIPTION

- Styrene-free, quick-curing vinylester resin in the coaxial cartridge for concrete and masonry.
- Resin and hardener are stored in two separate chambers and are not mixed and activated until pushed through the static mixer.
- Partially used cartridges can easily be reused by changing the static mixer.
- Defined load-bearing capacity as per approval and secure anchorage like cast-in reinforcement bars to European standard (EC) and DIN EN 1504.

Recommended loads
- for fixing in masonry, see page 88 et seq.
- for fixing in aircrete, see page 98

Advantages/Benefits
- Well performance in almost all building materials.
- Universal fixing system for a broad range of applications on building sites.
- Expansion-free anchoring allows low spacing and edge distances.
- Extensive range of accessories for a wide variety of applications.

Accessories
- for fixing in concrete, see page 82
- for fixing in masonry, see page 88
- for fixing in aircrete, see page 98

TECHNICAL DATA

Injection mortar
FIS VT 380 C

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Type	Art.-No.	languages on the label	contents	Qty. per box pcs.
FIS VT 380 C	**094401**	D, F, NL, DK, S, TR	1 Injection mortar cartridge 380 ml + 2 static mixer	12
FIS VT 380 C	**059118**	GB, I, P, E, PL, CZ, JP	1 Injection mortar cartridge 380 ml + 2 static mixer	12
FIS VT 380 C	**043999**	CZ, SK, PL, H, RO, RUS	1 cartridge 380 ml + 1 static mixer	12
FIS VT 380 C HWK big	**040048**	GB, I, P, E, PL, CZ, JP	16 Injection mortar cartridge 380 ml + 32 static mixer	16
FIS S	**061223**	-	10 static mixer FIS S	10

FIXING PRINCIPLES

In detail: The general principles for installation, the correct drilling procedure and much more on page 26.

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CURING TIME

Gelling and curing time of fischer FIS VT 380 C

Cartridge temperature (mortar)	Gelling time	temperature at anchoring base	Curing time
		- 5°C – ± 0°C	6 hrs.
		± 0°C – + 5°C	3 hrs.
+ 5°C – + 10°C	13 min.	+ 5°C – + 10°C	90 min.
+ 10°C – + 20°C	5 min.	+ 10°C – + 20°C	60 min.
+ 20°C – + 30°C	4 min.	+ 20°C – + 30°C	45 min.
+ 30°C – + 40°C	2 min.	+ 30°C – + 40°C	30 min.

The above times apply from the moment of contact between resin and hardener in the static mixer.
For installation, the cartridge temperature must be at least +5°C. For longer installation times, i.e. when interruptions occur in work, the mixer should be replaced.

LOADS

Mean ultimate loads, design resistant and recommended loads for single anchors of fischer Injection system FIS VT used with fischer threaded rods with large spacing and edge distance.

					non-cracked concrete																				
Anchor size					**M 8**					**M 10**					**M 12**					**M16**				
Kind of steel						**gvz**		**A4**	**C**		**gvz**		**A4**	**C**		**gvz**		**A4**	**C**		**gvz**		**A4**	**C**
Steel grade					**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**	**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**	**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**	**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**
Effektive anchorage depth	$h_{ef,min}$	[mm]			40					40					48					64				
	$h_{ef,max}$	[mm]			96					120					144					192				
Drill hole depth	h_0	[mm]			$h_0 = h_{ef}$																			
Drill hole diameter	d_0	[mm]			10					12					14					18				
Mean ultimate loads N_u and V_u [kN]																								
Tensile	0° N_u	[kN]	$h_{ef,min}$		13.6					17.0					22.4					34.4				
			$h_{ef,max}$		19.0*	29.0*	32.6	26.0*		30.0*	46.0*	50.9	41.0*		44.0*	67.0*	69.5	59.0*		82.0*	114.8		110.0*	
Shear	90° V_u	[kN]	$h_{ef,min}$		9.2*	13.6*		12.8*		14.5*	17.0				21.1*	22.4				39.2*	62.8*	69.1	54.8*	
			$h_{ef,max}$		9.2*	14.6*	17.0*	12.8*		14.5*	23.2*	27.0*	20.3*		21.1*	33.7*	40.0*	29.5*		39.2*	62.8*	74.0	54.8*	
Design resistant loads N_{Rd} and V_{Rd} [kN]																								
Tensile	0° N_{Rd}	[kN]	$h_{ef,min}$		5.3					6.6					9.3					14.4				
			$h_{ef,max}$		12.7					19.9					28.7					45.6				
Shear	90° V_{Rd}	[kN]	$h_{ef,min}$		6.4					8.0					11.2					31.4	34.5			
			$h_{ef,max}$		7.4	11.7	11.3	8.2	10.2	11.6	18.6	18.0	13.0	16.2	16.9	27.0	26.7	18.9	23.6	31.4	50.2	49.3	35.1	43.6
Recommended loads N_{rec} and V_{rec} [kN]																								
Tensile	0° N_{rec}	[kN]	$h_{ef,min}$		3.8					4.7					6.7					10.3				
			$h_{ef,max}$		9.1					14.2					20.5					32.6				
Shear	90° V_{rec}	[kN]	$h_{ef,min}$		4.5					5.7					8.0					22.4	24.6			
			$h_{ef,max}$		5.3	8.3	8.1	5.9	7.3	8.3	13.3	12.9	9.3	11.6	12.1	19.3	19.0	13.5	16.9	22.4	35.9	35.2	25.1	31.3
Recommended bending moment M_{rec} [Nm]																								
	M_{rec}	[Nm]			11.4	17.1	17.6	11.9	14.9	22.3	34.3	35.7	23.8	29.7	38.9	60.0	62.4	42.1	52.6	98.9	152.0	158.1	106.7	133.1
Component dimensions, minimum axial spacings and edge distances																								
Characteristic spacing	$s_{cr,Np}$	[mm]			195					245					290					370				
Characteristic edge distance	$c_{cr,Np}$	[mm]			100					125					145					185				
Minimum spacing [1)]	s_{min}	[mm]			40					45					55					65				
Minimum edge distance [1)]	c_{min}	[mm]			40					45					55					65				
Minimum structural component thickness	h_{min}	[mm]	$h_{ef,min}$		70					70					78					96				
			$h_{ef,max}$		126					150					174					224				
Clearance hole in fixture to be attached for pre-positioned installation	$d_f \leqq$	[mm]			9					12					14					18				
Clearance hole in fixture to be attached for push-through installation	$d_f \leqq$	[mm]			11					14					16					20				
Required torque	T_{inst}	[Nm]			10					20					40					60				
Mortar filling quantity		[scale units]	$h_{ef,min}$		2					2					3					4				
		[scale units]	$h_{ef,max}$		3					5					6					11				

Continued next page.

LOADS

Mean ultimate loads, design resistant and recommended loads for single anchors of fischer Injection system FIS VT used with fischer threaded rods with large spacing and edge distance.

				non-cracked concrete														
Anchor size				**M 20**					**M 24**					**M 30**				
Kind of steel				**gvz**			**A4**	**C**	**gvz**			**A4**	**C**	**gvz**			**A4**	**C**
Steel grade				**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**	**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**	**5.8**	**8.8**	**10.9**	**A4-70**	**1.4529**
Effektive anchorage depth	$h_{ef,min}$	[mm]		80					96					120				
	$h_{ef,max}$			240					288					360				
Drill hole depth	h_0	[mm]		$h_0 = h_{ef}$														
Drill hole diameter	d_0	[mm]		24					28					35				
Mean ultimate loads N_u and V_u [kN]																		
Tensile	0° N_u	[kN]	$h_{ef,min}$	48.3					63.5					88.7				
			$h_{ef,max}$	127,0*	168.9				183.0*	230,2				292.0*	339.3			
Shear	90° V_u	[kN]	$h_{ef,min}$	61.2*	96.6		85.7*		88.2*	127.0		123.4*		140.2*	177.5			
			$h_{ef,max}$	61.2*	98.0*	115.0*	85.7*		88.2*	141.2*	166.0*	123.4*		140.2*	224.4*	264.0*	196.2*	
Design resistant loads N_{Rd} and V_{Rd} [kN]																		
Tensile	0° N_{Rd}	[kN]	$h_{ef,min}$	20.1					26.4					36.9				
			$h_{ef,max}$	67.0					90.5					131.9				
Shear	90° V_{Rd}	[kN]	$h_{ef,min}$	48.2					63.3					88.5				
			$h_{ef,max}$	49.0	78.4	76.7	54.9	68.6	70.6	113.0	110.7	79.1	98.7	112.2	179.5	176.0	125.8	157.0
Recommended loads N_{rec} and V_{rec} [kN]																		
Tensile	0° N_{rec}	[kN]	$h_{ef,min}$	14.3					18.8					26.3				
			$h_{ef,max}$	47.9					64.6					94.2				
Shear	90° V_{rec}	[kN]	$h_{ef,min}$	34.4					45.2					63.2				
			$h_{ef,max}$	35.0	56.0	54.8	39.2	49.0	50.4	80.7	79.0	56.5	70.5	80.1	128.2	125.7	89.8	112.1
Recommended bending moment M_{rec} [Nm]																		
	M_{rec}	[Nm]		193.1	296.6	308.6	207.9	259.4	333.1	512.0	533.3	359.4	448.6	668.0	1026.9	1070.0	720.7	899.4
Component dimensions, minimum axial spacings and edge distances																		
Characteristic spacing	$s_{cr,Np}$	[mm]		450					525					640				
Characteristic edge distance	$c_{cr,Np}$	[mm]		225					265					320				
Minimum spacing [1]	s_{min}	[mm]		85					105					140				
Minimum edge distance [1]	c_{min}	[mm]		85					105					140				
Minimum structural component thickness	h_{min}	[mm]	$h_{ef,min}$	120					144					180				
			$h_{ef,max}$	280					336					420				
Clearance hole in fixture to be attached for pre-positioned installation	$d_f \leqq$	[mm]		22					26					33				
Clearance hole in fixture to be attached for push-through installation	$d_f \leqq$	[mm]		26					30					40				
Required torque	T_{inst}	[Nm]		120					150					300				
Mortar filling quantity		[scale units]	$h_{ef,min}$	10					14					26				
		[scale units]	$h_{ef,max}$	29					42					79				

* Steel failure

[1] For minimum spacing and minimum edge distance the above described loads have to be reduced (see "fischer Technical Handbook" or "fischer Design software COMPUFIX").

Values given above are valid under the following assumptions:

- Sufficient mechanical cleaning of the drill hole using stainless steel brushes.
- Dry concrete, temperature range 50 °C long-term temperature and 80 °C short-term temperature.

All values apply for concrete C 20/25 without edge or spacing influences.

Design resistant loads: material safety factor γ_M is included. Material safety factor γ_M depends on the type of anchor.
Recommended loads: material safety factor γ_M and safety factor for load γ_L = 1.4 are included.