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FIS EB.

The basic epoxy mortar
for applications in
concrete.



The basic epoxy mortar for applications in concrete.



FIS EB the basic epoxy mortar for applications in concrete.
 FIS MR Plus the static mixer for fischer injection cartridges.
 FIS A the flexible anchor rod FIS A.
 RG M the threaded rod with chamfer.
 Steel concrete bar

Building materials

Suitable for:



Non-cracked concrete
C20/C25 to C50/C60



Cracked concrete
C20/C25 to C50/C60



Post-installed rebar
connections

Approvals/ Certificates



Functionality and installation

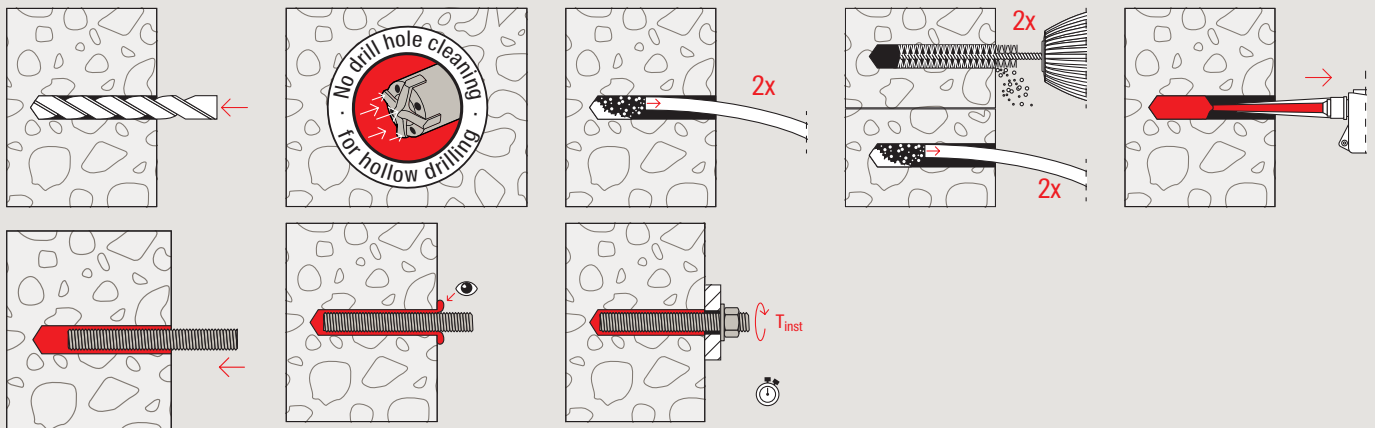
Advantages at a glance

- FIS EB is approved for use in cracked concrete according to ETA and ICC and for rebar connections according to ETA.
- The injection mortar achieves a reliable performance in many applications which enables economical use.
- Can be used under various installation conditions and is approved for seismic applications, making it a safe system.
- Variable anchorage depths allow ideal adaptation to the load to be transmitted.

Functionality

- The epoxy mortar FIS EB combined with the FIS A threaded rod is suitable for pre-positioned and push-through installation and for pre-positioned installation with rebars.
- Resin and hardener are stored in two separate chambers, thus are not mixed and activated until extrusion through the static mixer.
- The mortar is injected bubble-free from the drill-hole base.
- The mortar bonds the entire surface of the anchor with the drill hole wall and seals off the drill hole.
- The anchor is set manually by slightly rotating it until the anchor reaches the drill hole base.
- During push-through installation, the annular gap is filled with FIS EB.

Installation



Applications



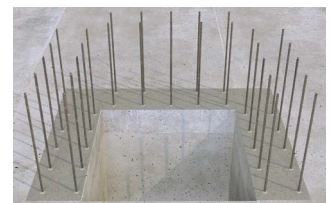
Sound insulation walls



Façade substructure



High racks



Rebar connections

Characteristics and assortment

Processing and curing times FIS EB

FIS EB		
Temperatures at anchoring base [°C]	Maximum processing time t_{work}	Minimum curing time ¹⁾ t_{cure}
+5 to +10	120 min.	45 h
> +10 to +20	30 min.	22 h
> +20 to +30	14 min.	12 h
> +30 to +40	7 min.	6 h

1) In damp concrete and water-filled drill holes, the curing time is to be doubled.

Assortment



FIS EB

FIS MR PLUS

Article description	Art.-No	Languages on the cartridge	Scale unit	Contents	Sales unit
FIS EB 390 S	534984	GB, E, P	180	1x cartridge FIS EB 390 ml, 2x FIS MR Plus	6
FIS EB 390 S	534985	TR, RUS, ROK	180	1x cartridge FIS EB 390 ml, 2x FIS MR Plus	6
FIS EB 585 S	534986	GB, E, P	270	1x cartridge FIS EB 585 ml, 2x FIS FIS UMR	6
FIS EB 390 S in bucket	538547	TR, RU, KO	180	20x cartridges 390 ml, 20x FIS MR Plus	1
FIS EB 390 S in bucket	543652	EN, ES, PT	180	20x cartridges 390 ml, 20x FIS MR Plus	1
FIS MR Plus	545853	–	–	10x static mixer for FIS EB 390 S	10
FIS UMR	520593	–	–	10x static mixer for FIS EB 585 S	10

Loads

Injection system FIS EB with anchor rod FIS A resp. RG M

Permissible loads of a single anchor^{1) 2)} in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-15/0440 has to be considered.

Type	Material / surface ³⁾	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst, max}$ [Nm]	Cracked concrete				Non-cracked concrete			
					Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})				Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})			
					$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]
FIS A M 8	5.8	60	100	10	3.6	5.1	40	40	7.9	5.1	40	40
	5.8	80	110	10	4.8	5.1	40	40	9.0	5.1	40	40
	5.8	160	190	10	9.0	5.1	40	40	9.0	5.1	40	40
	8.8	60	100	10	3.6	7.2	40	40	7.9	8.5	40	40
	8.8	80	110	10	4.8	8.6	40	40	10.5	8.5	40	40
	8.8	160	190	10	9.6	8.6	40	40	13.8	8.5	40	40
FIS A M 10	5.8	60	100	20	4.5	8.6	45	45	9.0	8.6	45	45
	5.8	90	120	20	6.7	8.6	45	45	13.5	8.6	45	45
	5.8	200	230	20	13.8	8.6	45	45	13.8	8.6	45	45
	8.8	60	100	20	4.5	9.0	45	45	9.0	13.1	45	45
	8.8	90	120	20	6.7	13.1	45	45	13.5	13.1	45	45
	8.8	200	230	20	15.0	13.1	45	45	22.4	13.1	45	45
FIS A M 12	5.8	70	100	40	6.3	12.0	55	55	12.6	12.0	55	55
	5.8	110	140	40	9.9	12.0	55	55	19.7	12.0	55	55
	5.8	240	270	40	20.5	12.0	55	55	20.5	12.0	55	55
	8.8	70	100	40	6.3	12.6	55	55	12.6	19.3	55	55
	8.8	110	140	40	9.9	19.4	55	55	19.7	19.3	55	55
	8.8	240	270	40	21.5	19.4	55	55	32.4	19.3	55	55
FIS A M 16	5.8	80	120	60	7.7	15.3	65	65	16.8	22.3	65	65
	5.8	125	170	60	12.0	22.3	65	65	27.0	22.3	65	65
	5.8	320	360	60	30.6	22.3	65	65	37.6	22.3	65	65
	8.8	80	120	60	7.7	15.3	65	65	16.8	33.5	65	65
	8.8	125	170	60	12.0	24.0	65	65	27.0	36.0	65	65
	8.8	320	360	60	30.6	36.0	65	65	60.0	36.0	65	65
FIS A M 20	5.8	90	140	120	10.8	21.5	85	85	20.0	34.9	85	85
	5.8	170	220	120	20.3	34.9	85	85	40.7	34.9	85	85
	5.8	400	450	120	47.9	34.9	85	85	58.6	34.9	85	85
	8.8	90	140	120	10.8	21.5	85	85	20.0	40.0	85	85
	8.8	170	220	120	20.3	40.7	85	85	40.7	56.0	85	85
	8.8	400	450	120	47.9	56.0	85	85	93.3	56.0	85	85
FIS A M 24	5.8	96	160	150	12.9	30.8	105	105	18.4	44.1	105	105
	5.8	210	270	150	31.4	50.9	105	105	50.3	50.9	105	105
	5.8	480	540	150	71.8	50.9	105	105	84.3	50.9	105	105
	8.8	96	160	150	12.9	30.8	105	105	18.4	44.1	105	105
	8.8	210	270	150	31.4	75.4	105	105	50.3	80.6	105	105
	8.8	480	540	150	71.8	80.6	105	105	114.9	80.6	105	105
FIS A M 30	5.8	120	190	300	18.0	43.1	140	140	25.7	61.6	140	140
	5.8	280	350	300	52.4	80.6	140	140	78.5	80.6	140	140
	5.8	600	670	300	112.2	80.6	140	140	133.8	80.6	140	140
	8.8	120	190	300	18.0	43.1	140	140	25.7	61.6	140	140
	8.8	280	350	300	52.4	125.7	140	140	78.5	128.5	140	140
	8.8	600	670	300	112.2	128.6	140	140	168.3	128.5	140	140

¹⁾ Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 72 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} was taken into account with 1.0.

³⁾ Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interior stainless steel (R) and exterior conditions, e.g. material 1.4362 or 1.4401.

⁴⁾ In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend to use our anchor design software C-FIX.

Loads

Injection System FIS EB With Anchor Rod FIS A resp. RGM

Permissible loads of a single anchor^{1) 2)} in normal concrete of strength class 20 MPa resp. 3000 psi.
For the design the complete current ICC-ES Evaluation Report ESR-4495 has to be considered.

Type	Material / surface ³⁾	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum torque moment $T_{inst, max}$ [Nm]	Cracked concrete				Non-cracked concrete			
					Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})				Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})			
					$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]
FIS A M 10	5.8	60	100	20	3.8	4.8	45	45	6.8	7.4	45	45
	5.8	90	120	20	5.6	7.4	45	45	10.3	7.4	45	45
	5.8	200	230	20	12.5	7.4	45	45	13.4	7.4	45	45
	8.8	60	100	20	3.8	4.8	45	45	6.8	8.7	45	45
	8.8	90	120	20	5.6	11.8	45	45	10.3	11.8	45	45
	8.8	200	230	20	12.5	11.8	45	45	21.4	11.8	45	45
FIS A M 12	5.8	70	100	40	4.7	10.8	55	55	9.5	10.8	55	55
	5.8	110	140	40	7.4	10.8	55	55	14.9	10.8	55	55
	5.8	240	270	40	16.3	10.8	55	55	19.5	10.8	55	55
	8.8	70	100	40	4.7	12.1	55	55	9.5	17.3	55	55
	8.8	110	140	40	7.4	17.3	55	55	14.9	17.3	55	55
	8.8	240	270	40	16.3	17.3	55	55	31.1	17.3	55	55
FIS A M 16	5.8	80	116	60	7.2	18.4	65	65	13.8	20.0	65	65
	5.8	125	161	60	11.3	20.0	65	65	21.6	20.0	65	65
	5.8	320	356	60	28.9	20.0	65	65	36.2	20.0	65	65
	8.8	80	116	60	7.2	18.4	65	65	13.8	31.8	65	65
	8.8	125	161	60	11.3	28.7	65	65	21.6	32.0	65	65
	8.8	320	356	60	28.9	32.0	65	65	55.3	32.0	65	65
FIS A M 20	5.8	90	138	120	9.7	24.7	85	85	17.6	31.3	85	85
	5.8	170	218	120	18.4	31.3	85	85	35.5	31.3	85	85
	5.8	400	448	120	43.2	31.3	85	85	56.5	31.3	85	85
	8.8	90	138	120	9.7	24.7	85	85	17.6	38.0	85	85
	8.8	170	218	120	18.4	46.7	85	85	35.5	50.1	85	85
	8.8	400	448	120	43.2	50.1	85	85	83.4	50.1	85	85
FIS A M 24	5.8	96	152	150	11.6	29.5	105	105	19.4	41.8	105	105
	5.8	210	266	150	25.4	45.1	105	105	51.3	45.1	105	105
	5.8	480	536	150	57.9	45.1	105	105	81.4	45.1	105	105
	8.8	96	152	150	11.6	29.5	105	105	19.4	41.8	105	105
	8.8	210	266	150	25.4	64.5	105	105	51.3	72.1	105	105
	8.8	480	536	150	57.9	72.1	105	105	117.3	72.1	105	105
FIS A M 30	5.8	120	190	300	14.6	37.1	140	140	27.1	58.4	140	140
	5.8	280	350	300	34.0	71.7	140	140	79.3	71.7	140	140
	5.8	600	670	300	72.9	71.7	140	140	129.4	71.7	140	140
	8.8	120	190	300	14.6	37.1	140	140	27.1	58.4	140	140
	8.8	280	350	300	34.0	86.6	140	140	79.3	114.6	140	140
	8.8	600	670	300	72.9	114.6	140	140	170.0	114.6	140	140

¹⁾ The partial safety factors for material resistance as regulated in ESR report as well as a partial safety factor for load actions are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see related ESR report.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 72 °C). Drill hole cleaning as per specification in related ESR report.

³⁾ Further steel grades, versions and technical data see related ESR Report.

⁴⁾ In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete related ESR report and the provisions of the ACI 318-14 Ch. 17 or ACI 318-11 appendix D.

Loads

Injection System FIS EB With Fractional Threaded Road

Permissible loads of a single anchor^{1) 2)} in normal concrete of strength class 20 MPa resp. 3000 psi.
For the design the complete current ICC-ES Evaluation Report ESR-4495 has to be considered.

Type	Material / surface ³⁾	Effective anchorage depth h_{ef} [in]	Minimum member thickness h_{min} [in]	Maximum torque moment $T_{inst, max}$ [ft-lb]	Cracked concrete				Non-cracked concrete			
					Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})				Permissible Tension (N_{perm}), Shear loads (V_{perm}), minimum spacing (s_{min}) and edge distances (c_{min})			
					$N_{perm}^{4)}$ [lb]	$V_{perm}^{4)}$ [lb]	$s_{min}^{4)}$ [in]	$c_{min}^{4)}$ [in]	$N_{perm}^{4)}$ [lb]	$V_{perm}^{4)}$ [lb]	$s_{min}^{4)}$ [in]	$c_{min}^{4)}$ [in]
3/8"	ASTM A36	2 1/3	4	15	802	1020	1 2/3	1 2/3	1462	1245	1 2/3	1 2/3
	ASTM A36	3 1/2	4 5/7	15	1203	1245	1 2/3	1 2/3	2193	1245	1 2/3	1 2/3
	ASTM A36	7 1/2	8 5/7	15	2394	1245	1 2/3	1 2/3	2394	1245	1 2/3	1 2/3
	ASTM A193 B7	2 1/3	3 1/2	15	802	1020	1 2/3	1 2/3	1462	1861	1 2/3	1 2/3
	ASTM A193 B7	3 1/2	4 5/7	15	1203	2677	1 2/3	1 2/3	2193	2677	1 2/3	1 2/3
	ASTM A193 B7	7 1/2	8 5/7	15	2552	2677	1 2/3	1 2/3	4654	2677	1 2/3	1 2/3
1/2"	ASTM A36	2 3/4	4	30	1128	2293	2 2/7	2 2/7	2256	2293	2 2/7	2 2/7
	ASTM A36	4 1/3	5 1/2	30	1772	2293	2 2/7	2 2/7	3545	2293	2 2/7	2 2/7
	ASTM A36	10	11 1/6	30	4092	2293	2 2/7	2 2/7	4405	2293	2 2/7	2 2/7
	ASTM A193 B7	2 3/4	4	30	1128	2871	2 2/7	2 2/7	2256	4897	2 2/7	2 2/7
	ASTM A193 B7	4 1/3	5 1/2	30	1772	4511	2 2/7	2 2/7	3545	4897	2 2/7	2 2/7
	ASTM A193 B7	10	11 1/6	30	4092	4897	2 2/7	2 2/7	8185	4897	2 2/7	2 2/7
5/8"	ASTM A36	3 1/9	4 1/2	50	1594	3631	2 5/9	2 5/9	3049	3631	2 5/9	2 5/9
	ASTM A36	5	6 1/3	50	2521	3631	2 5/9	2 5/9	4824	3631	2 5/9	2 5/9
	ASTM A36	12 1/2	14	50	6415	3631	2 5/9	2 5/9	6979	3631	2 5/9	2 5/9
	ASTM A193 B7	3 1/9	4 1/2	50	1594	4056	2 5/9	2 5/9	3049	7017	2 5/9	2 5/9
	ASTM A193 B7	5	6 1/3	50	2521	6418	2 5/9	2 5/9	4824	7802	2 5/9	2 5/9
	ASTM A193 B7	12 1/2	14	50	6415	7802	2 5/9	2 5/9	12271	7802	2 5/9	2 5/9
3/4"	ASTM A36	3 1/2	5 1/4	90	2063	5251	3 1/7	3 1/7	3896	5374	3 1/7	3 1/7
	ASTM A36	6 2/3	8 3/7	90	3940	5374	3 1/7	3 1/7	7612	5374	3 1/7	3 1/7
	ASTM A36	15	16 3/4	90	8831	5374	3 1/7	3 1/7	10331	5374	3 1/7	3 1/7
	ASTM A193 B7	3 1/2	5 1/4	90	2063	5251	3 1/7	3 1/7	3896	8391	3 1/7	3 1/7
	ASTM A193 B7	6 2/3	8 3/7	90	3940	10030	3 1/7	3 1/7	7612	11558	3 1/7	3 1/7
	ASTM A193 B7	15	16 3/4	90	8831	11558	3 1/7	3 1/7	17059	11558	3 1/7	3 1/7
1"	ASTM A36	4	6 2/9	135	2715	6911	4 1/3	4 1/3	4780	9732	4 1/3	4 1/3
	ASTM A36	8 1/4	10 1/2	135	5590	9732	4 1/3	4 1/3	11769	9732	4 1/3	4 1/3
	ASTM A36	20	22 1/5	135	13523	9732	4 1/3	4 1/3	18711	9732	4 1/3	4 1/3
	ASTM A193 B7	4	6 2/9	135	2715	6911	4 1/3	4 1/3	4780	10295	4 1/3	4 1/3
	ASTM A193 B7	8 1/4	10 1/2	135	5590	14229	4 1/3	4 1/3	11769	20926	4 1/3	4 1/3
	ASTM A193 B7	20	22 1/5	135	13523	20926	4 1/3	4 1/3	28469	20926	4 1/3	4 1/3
1 - 1/4"	ASTM A36	5	7 3/4	240	3676	9356	6 2/7	6 2/7	6641	14303	6 2/7	6 2/7
	ASTM A36	11	13 7/9	240	8104	15562	6 2/7	6 2/7	18909	15562	6 2/7	6 2/7
	ASTM A36	25	27 3/4	240	18378	15562	6 2/7	6 2/7	29940	15562	6 2/7	6 2/7
	ASTM A193 B7	5	7 3/4	240	3676	9356	6 2/7	6 2/7	6641	14303	6 2/7	6 2/7
	ASTM A193 B7	11	13 7/9	240	8104	20628	6 2/7	6 2/7	18909	33470	6 2/7	6 2/7
	ASTM A193 B7	25	27 3/4	240	18378	33470	6 2/7	6 2/7	42882	33470	6 2/7	6 2/7

¹⁾ The partial safety factors for material resistance as regulated in ESR report as well as a partial safety factor for load actions are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see related ESR report.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 72 °C). Drill hole cleaning as per specification in related ESR report.

³⁾ Further steel grades, versions and technical data see related ESR Report.

⁴⁾ In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete related ESR report and the provisions of the ACI 318-14 Ch. 17 or ACI 318-11 appendix D.