Provisional specification sheet

Properties:

AKEMI® BF 210 VE injection mortar is a two-component reactive resin mortar on the basis of styrene-free vinyl ester resins. The product is characterized by the following properties:

- general certification for uncracked concrete from the building supervisory authority in accordance with ETAG 001 has been applied for
- safe and reliable processing and application due to the cartridge system
- suitable for concrete, aerated and light-weight concrete, solid brick and masonry
- suitable for dry and damp concrete or in drill holes flooded with water (not seawater)
- uniform load transmission on account of a non-splaying anchorage system
- also suitable for anchoring close to edges
- excellent interconnection and tight fit between the injection mortar, anchor rod and the surrounding embedment material
- low-strain hardening due to the low reaction shrinkage
- little odour
- high chemical resistance
- bonded parts are impermeable to water and have a reliable long-term behaviour
- long-term heat resistance to 72 °C, short-term resistance to 120 °C

Application areas:

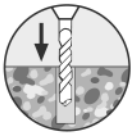
AKEMI® Anchoring system BF 210 VE is mainly used in order to anchor galvanised or stainless steel anchor rods, threaded sleeves, reinforcing bars, profiled sections or the like for the following purposes:
- heavy-duty fixing to solid stone, concrete and
- medium-load fixing to aerated and light-weight concrete, vertically perforated brick ≧ HLz 4 in accordance with DIN 105, perforated sand-lime brick ≥ KSL 4 in accordance with DIN 106, hollow blocks made of light-weight concrete ≥ Hbl 2 in accordance with DIN 18151 and hollow blocks made of concrete ≥ Hbn4 in accordance with DIN 18153

for facades, canopies/porches, wooden and metal constructions, metal profile sections, brackets, balustrades, gratings, heating and sanitary installations, piping, cable runways, high racks, lighting etc.

Instructions for use:

1. Drill the hole (rotary or impact drilling) without cooling liquid in accordance with the characteristic value table; in the case of light-weight or aerated concrete, drill a tapered hole.
2. Clean the drill hole; any water which may be present should be removed before by means of oil-free compressed air (blow out twice, brush out twice, blow out twice again)
3. In the case of perforated bricks, insert a mesh sleeve.
4. Working temperature of the cartridge +20 °C, object temperature +5 to +40 °C.
5. Insert the cartridge into the gun, screw on the mixer and discard approx. 10 cm of the mortar; please pay attention to the working times in the reaction table!
6. Insert the mixer to the bottom of the drill hole and fill from bottom towards the top with the reaction mortar (approx. 2/3 of the drill hole without mesh sleeve, approx. 1/1 of the drill hole with mesh sleeve). If using a mesh sleeve, use the mixer attachment to fill.
7. Insert the threaded rod or the reinforcing iron bar to the marking by turning it with the hand, check the filling level.
8. Refer to the reaction table for the hardening times.
9. Attach the component and apply the torque in accordance with the characteristic value table.

Concrete or solid brick

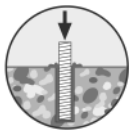

see 1.


see 2.


see 2.

see 5.


see 6.


see 7.

see 8.


see 9.

Aerated or light-weight concrete


see 1.


see 2.


see 2.

see 5.


see 6.


see 7.

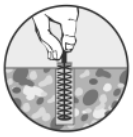
see 8.

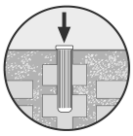

see 9.

Hollow and perforated brick

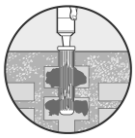

see 1.

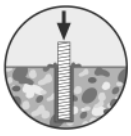

see 2.


see 2.

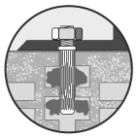

see 3.

see 5.


see 6.


see 7.

see 8.


see 9.

Special remarks:

- use anchor rods made of galvanised steel for covered areas (indoors) with the exception of rooms with high humidity; Use anchor rods made of stainless steel (1.4401/1.4404/1.4571) for rooms with high humidity, in the open air (outdoors), in industrial surroundings and near the sea
- mortar which has already started to jellify, may no longer be used
- at temperatures below +5 °C, hardening will be significantly delayed
- mortar which has already hardened can no longer be removed with solvents. At this stage it can only be removed mechanically or using high temperatures (>200 °C)
- if processed correctly, the fully-hardened product presents no hazard to health
- drill holes may not be made with diamond drills because the surface of the hole would be too smooth, thus considerably reducing mechanical interlocking with the injection mortar
- not suitable for natural stone

Safety notices: Please refer to the EC safety data sheet

Technical specifications:

1. **Reaction table**

Object temperature [°C]	*Working time*	*Hardening time in dry concrete*	*Hardening time in wet concrete*
- 5 - 0	-	360 min	720 min
0 - 5	20 – 25 min	180 min	360 min
5 - 10	10 – 15 min	120 min	240 min
10 - 20	5 – 6 min	80 min	160 min
20 - 30	3 – 4 min	45 min	90 min
30 - 35	1 – 2 min	25 min	50 min
> 35	< 1 min	20 min	40 min

The temperature of the material in which the anchoring is to take place may not fall below - 5 °C during hardening.

2. Characteristic value table - concrete

Wall plug size/anchor rod		M8	M10	M12	M16	M20	M 24
Depth of embedment of the anchor rod	h_{nom} [mm]	80	90	110	125	170	210
Diameter of the anchor	d [mm]	8	10	12	16	200	24
Nominal diameter of drill bit	d_o [mm]	10	12	14	18	24	28
Diameter of drill hole	d_{cut} [mm]	10,45	12,45	14,5	18,5	24,55	28,55
Depth of drill hole	h_0 [mm]	80	90	110	125	170	210
Clearance hole in the component to be attached	d_f [mm]	9	12	14	18	22	26
Brush diameter	d_b [mm]	12	14	16	20	27	30
max. torque when fastening	T_{inst} [Nm]	10	20	40	60	150	200
Distance to edge	c_{min} [mm]	120	135	165	187,5	255	315
Min. spacing	s_{min} [mm]	120	135	165	187,5	255	315
Min. thickness of component	h_{min} [mm]	110	130	160	160	250	300

3. Characteristic value table - masonry

Mesh sleeve		SH 15/85	SH15/100[1)]	
Wall plug/anchor rod		M8	M8	M10
Nominal diameter of drill bit	d_o [mm]	16	16	
Depth of drill hole	t [mm]	90	105	
Depth of the mesh sleeve	[mm]	85	100	
Depth of embedment of the anchor rod	h_{ef} [mm]	80	80	90
Centre distance (group of wall plugs)	≥ a [mm]	100		
	min a [mm]	50		
Min. spacing (single wall plugs)	= a_z [mm]	250		
Distance to edge	≥ a_r [mm]	200 (250)[2)]		
Distance to edge under special conditions[3)]	≥ a_r [mm]	50 (60)[2)]		
Min. thickness of component	d [mm]	110		
Max. torque when fastening	T_{inst} [Nm]	2		
Clearance hole in the component to be attached	≤ [mm]	9		12

1) For the allocation of the mesh sleeves see section 4
2) Value in brackets applies for solid bricks (Mz and KS)
3) Applies for masonry with superimposed load or proof of stability. Does not apply if the shear load is directed towards the free edge.

4. Allocation of the mesh sleeves to the embedment materials

Mesh sleeve		Wall plug size	Embedment material
Type	l_s [mm]		
SH 15/85	85	M8	≥ Mz 12, ≥ Hlz 4
SH 15/100	100	M8	≥ KS 12, ≥ KSL 4
		M10	≥ Mz 12, ≥ Hlz 4
			≥ KS 12, ≥ KSL 4

5. Performance data - concrete

Recommended load $F_{rec.}$ [kN] inclusive of safety factor calculated in accordance with ETAG; values valid for anchor rods made of galvanised steel strength category 5.8 or stainless steel 1.4401/1.4404/1.4571 strength category A4-70

Wall plug size/anchor rod		M8	M10	M12	M16	M20
Concrete ≥ C20/25	$F_{rec.}$ [kN]	5.6	8.8	12.3	17.5	24.5
Concrete ≥ C12/15		4.3	6.8	9.5	13.5	19.0
Aerated concrete		1.2	1.2	1.2	-	-

6. Performance data - solid brick

Permissible load $F_{perm.}$ [kN] (tensile, transverse and diagonal tensile load at every angle)

Wall plug size/anchor rod		M8	M10	M12
Solid brick ≥ Mz 12	$F_{perm.}$ [kN]	1.7	1.7	1.7
Solid sand-lime brick ≥ KS 12		1.7	1.7	1.7

7. Performance characteristics - perforated brick

Permissible/recommended load $F_{perm./rec.}$ [kN] (tensile, transverse and diagonal tensile load at every angle)

Wall plug size/anchor rod		M8	M10	M12
Vertically perforated brick	$F_{perm.}$ [kN] ≧ Hlz 4	0.3	0.3	0.3
	$F_{perm.}$ [kN] ≧ Hlz 6	0.4	0.4	0.4
	$F_{perm.}$ [kN] ≧ Hlz 12	0.8	0.8	0.8
Perforated sand-lime brick	$F_{perm.}$ [kN] ≧ KSL 4	0.4	0.4	0.4
	$F_{perm.}$ [kN] ≥ KSL 6	0.6	0.6	0.6
	$F_{perm.}$ [kN] ≥ KSL 12	0.8	0.8	0.8
Hollow block made of light-weight concrete	$F_{rec.}$[kN] ≥ Hbl 2	0.3	0.3	0.3
	$F_{rec.}$[kN] ≥ Hbl 4	0.6	0.6	0.6
Hollow block made of concrete	$F_{rec.}$[kN] ≥ Hbl 4	0.6	0.6	0.6

8. Shelf life: Approx. 1 year in the firmly closed original container under cool and frost-free conditions.

Notice: The above specifications were made on the basis of the present-day stage of technological development as well as the application research of our company. Because the ways and means of application are beyond our control, the manufacturer cannot be made liable for the contents of this specification sheet.

AKEMI GmbH · Lechstraße 28 · D-90451 Nürnberg · Tel. +49(0)911/64296-0 · Fax +49(0) 911/644456