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European Technical Assessment

ETA 17/0368 of 24/04/2017

Technical Assessment Body issuing the ETA: Technical and Test Institute for Construction Prague

Trade name of the construction product	G&B Fissagi Gebofix EPO PLUS RE
Product family to which the construction product belongs	Product area code: 33 Post installed rebar connections with EPO PLUS RE
Manufacturer	G&B FISSAGGI Corso Savona, 22 10029 Villatellone (TO) ITALY
Manufacturing plant	G&B Fissaggi S.R.L., Plant 4
This European Technical Assessment contains	14 pages including 10 Annexes which form an integral part of this assessment.
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	ETAG 001-Part 1 and Part 5, edition 2013, used as European Assessment Document (EAD)

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

1. Technical description of the product

The G&B Fissagi Gebofix EPO PLUS RE is used for the connection, by anchoring or overlap joint, of reinforcing bars (rebars) in existing structures made of normal weight concrete. The design of the post-installed rebar connections is done in accordance with the regulations for reinforced concrete constructions.

Reinforcing bars made of steel with a diameter d from 8 to 40 mm and EPO PLUS RE chemical mortar are used for rebar connections. The steel element is placed into a drilled hole filled with injection mortar and is anchored via the bond between embedded element, injection mortar and concrete.

The illustration and the description of the product are given in Annex A.

2. Specification of the intended use in accordance with the applicable EAD

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the products in relation to the expected economically reasonable working life of the works.

3. Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Design values of the ultimate bond resistance	See Annex C 1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorages satisfy requirements for Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and environment (BWR 3)

Regarding dangerous substances contained in this European Technical Assessment, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

For basic requirement safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

3.5 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

3.6 General aspects relating to fitness for use

Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.

4. Assessment and verification of constancy of performance (AVCP) system applied with reference to its legal base

According to the Decision 96/582/EC of the European Commission[1] the system of assessment verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or class	System
Metal anchors for use in concrete	For fixing and/or supporting to concrete, structural elements or heavy units such as cladding and suspended ceilings.	-	1

5. Technical details necessary for the implementation of the AVCP system, as provided in the applicable EAD

5.1 Tasks of the manufacturer

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use raw materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the control plan which is a part of the technical documentation of this European Technical Assessment. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Technický a zkušební ústav stavební Praha, s.p.[2] The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in the field of anchors in order to undertake the actions laid down in section 5.2. For this purpose, the control plan referred to in this section and section 5.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of performance, stating that the construction product is in conformity with the provisions of this European Technical Assessment.

[1] Official Journal of the European Communities L 254 of 08.10.1996

[2] The control plan is a confidential part of the documentation of the European Technical Assessment, but not published together with the ETA and only handed over to the approved body involved in the procedure of AVCP.

5.2 Tasks of the notified bodies

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified certification body involved by the manufacturer shall issue a certificate of constancy of performance of the product stating the conformity with the provisions of this European Technical Assessment.

In cases where the provisions of the European Technical Assessment and its control plan are no longer fulfilled the notified body shall withdraw the certificate of constancy of performance and inform Technický a zkušební ústav stavební Praha, s.p without delay.

Issued in Prague on 24.04.2017

By

Ing. Mária Schaan
Head of the Technical Assessment Body

Figure A1: Overlap joint for rebar connections of slabs and beams

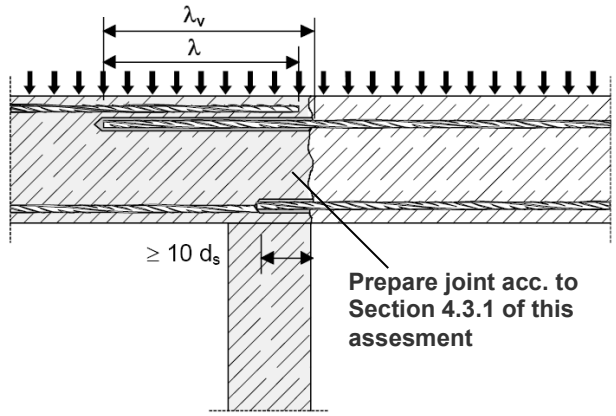


Figure A2: Overlap joint at a foundation of a column or wall where the rebars are stressed in tension

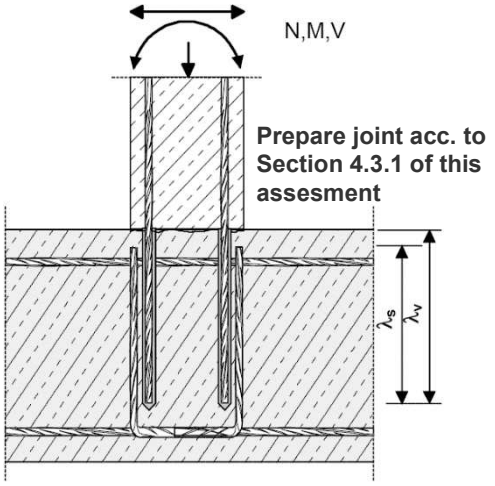


Figure A3: End anchoring of slabs or beams, designed as simply supported

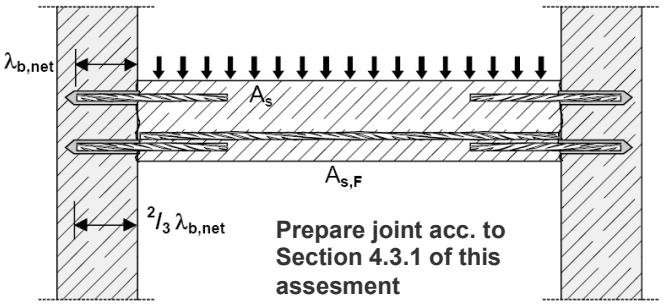


Figure A4: Rebar connection for components stressed primarily in compression.
The rebars are stressed in compression.

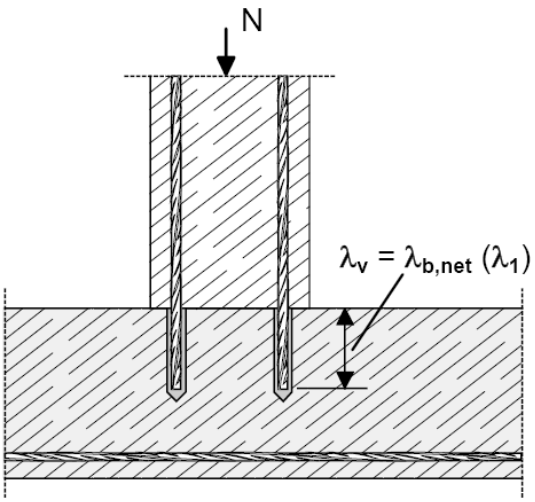
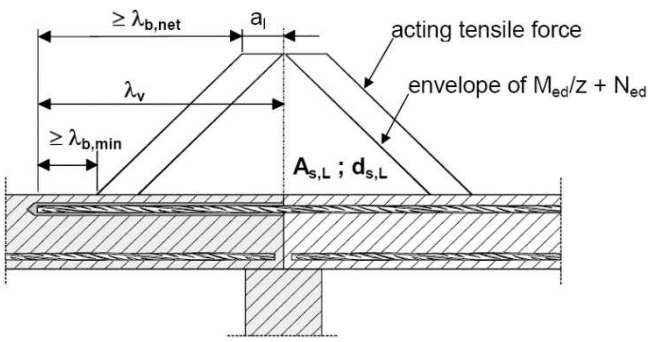


Figure A5: Anchoring of reinforcement to cover the line of acting tensile force



Note to Figure A1 to A5:

In the Figures no transverse reinforcement is plotted, the transverse reinforcement as required by EC 2 shall be present.

The shear transfer between old and new concrete shall be designed according to EC2.

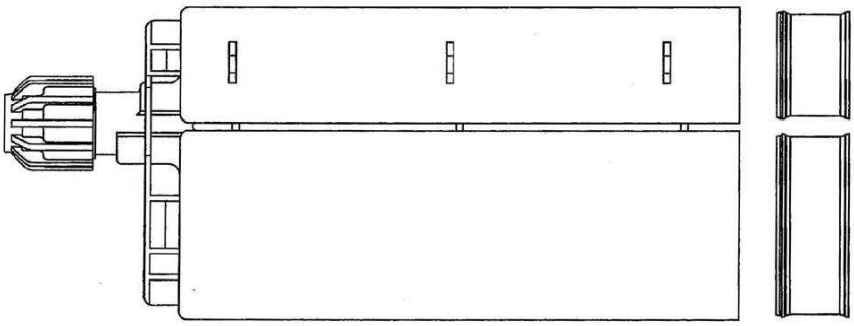
G&B Fissagi Gebofix EPO PLUS RE	**Annex A 1**
Product description Installed condition and examples of use for rebars	

G&B Fissagi Gebofix EPO PLUS RE:

Injection mortar: G&B Fissagi Gebofix EPO PLUS RE

Side-by-side cartridge
385ml and 585ml

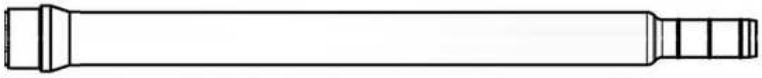
Cartridge label: EPO PLUS RE, processing notes, charge-code, shelf life, hazard-code, curing- and processing time (depending on the temperature), with as well as without travel scale.

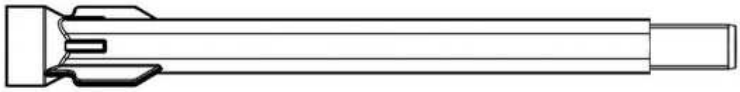


Static Mixer

Standard Mixer

High Flow Mixer





Reinforcing Bar (rebar) Ø8, Ø10, Ø12, Ø14, Ø16, Ø20, Ø25, Ø28, Ø32, Ø40

Minimum value of related rib area $f_{R,min}$ according to EN 1992-1-1:2004.

- The maximum outer rebar diameter over the ribs shall be:
  Nominal diameter of the rib d + 2 • h (h≤0,07 • d)
  (d: nominal diameter of the bar; h: rib height of the bar)

Table A1: Materials

Product form			**Bars and de-coiled rods**	
Class			B	C
Characteristic yield strength f_{yk} or $f_{0,2k}$ (MPa)			400 to 600	
Minimum value of $k = (f_t / f_y)_k$			≥ 1,08	≥ 1,15 < 1,35
Characteristic strain at maximum force ε_{uk} (%)			≥ 5,0	≥ 7,5
Bendability			Bend / Rebend test	
Maximum deviation from nominal mass (individual bar) (%)	Nominal bar size (mm)	≤ 8 > 8	± 6,0 ± 4,5	
Bond: Minimum relative rib area, $f_{R,min}$	Nominal bar size (mm)	8 to 12 > 12	0,040 0,056	

G&B Fissagi Gebofix EPO PLUS RE	**Annex A 2**
Product description Injection mortar / Static mixer / Rebar Materials	

Specifications of intended use

Anchorages subject to:
- Static and quasi-static load.

Base materials
- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000-12
- Strength classes C12/15 to C50/60 according to EN 206-1:2000-12.
- Maximum chloride concrete of 0,40% (CL 0.40) related to the cement content according to EN 206-1:2000-12.
- Non-carbonated concrete.
  Note: In case of a carbonated surface of the existing concrete structure the carbonated layer shall be removed in the area of the post installed rebar connection (with a diameter d_s + 60 mm) prior to the installation of the new rebar. The depth of concrete to be removed shall correspond to at least minimum concrete cover in accordance with EN 1992-1-1:2004.
  The foregoing may be neglected if building components are new and not carbonated.

Temperature range:
- -40°C to +80°C (max. short. term temperature +80°C and max. long term temperature +50°C)

Use conditions (Environmental conditions)
- The rebars may be installed in dry or wet concrete.

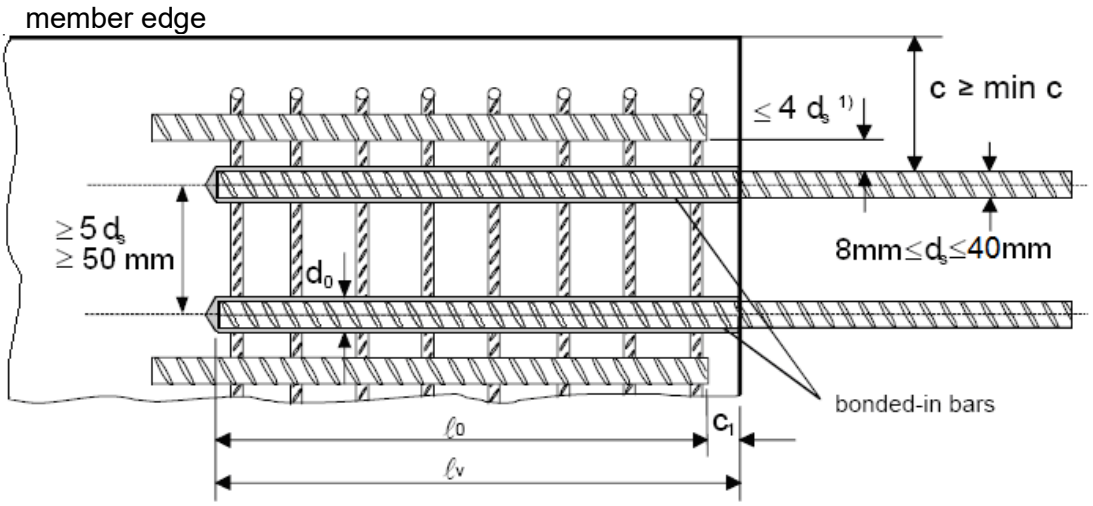
Design:
- The anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the forces to be transmitted.
- Design according to EN 1992-1-1:2004
- The position of the reinforcement in the existing structure shall be determined on the basis of the construction documentation and taken into account when designing.

Installation:
- Dry or wet concrete.
- It must not be installed in flooded holes.
- Hole drilling by hammer drill, compressed air drill mode or diamond core drilling.
- The installation of post-installed rebars shall be done only by suitable trained installer and under supervision on site. The conditions under which an installer may be considered as suitable trained and the conditions for supervision on site are up to the Member States in which the installation is done.
- Check the position of the existing rebars

G&B Fissagi Gebofix EPO PLUS RE	**Annex B 1**
Intended use Specifications	

Figure B1: General design rules of construction for bonded-in rebars

- Only tension forces in the axis of the rebar may be transmitted
- The transfer of shear forces between new concrete and existing structure shall be designed additionally according to EN 1992-1-1.
- The joints for concreting must be roughened to at least such an extent that aggregate protrude.



[1)] If the clear distance between lapped bars exceeds $4d_s$ then the lap length shall be increased by the difference between the clear bar distance and $4d_s$

c	concrete cover of bonded-in bar
c_1	concrete cover at end-face of bonded-in bar
min c	minimum concrete cover acc. Table B1 of this assessment
d_s	diameter of bonded-in bar
ℓ_0	lap length acc. to EN 1992-1-1:2004
ℓ_v	effective embedment depth ≥ $\ell_0 + c_1$
d_0	nominal drill bit diameter, see Table B3

G&B Fissagi Gebofix EPO PLUS RE	
Intended use General design rules of construction	**Annex B 2**

Table B1: Minimum concrete cover min c[1)] of the bonded-in rebar depending on drilling method

Drilling method	
Hammer drilling	30mm + 0,06 $\ell_v \geq 2\ d_s$
Compressed air drilling	50 mm + 0,08 ℓ_v
Diamond core drilling	50 mm + 0,08 ℓ_v

[1)]see Annexes B2, Figures B1

Table B2: Minimum anchorage length[1)] and lap lengths for C20/25 and maximum installation length l_{max} for good bond conditions.

Rebar		$\ell_{b,min}$	$\ell_{0,min}$	ℓ_{max}
Ød_s [mm]	$f_{y,k}$ [N/mm^2]	[mm]	[mm]	[mm]
8	500	113	200	400
10	500	142	200	500
12	500	170	200	600
14	500	198	210	700
16	500	227	240	800
20	500	284	300	1000
25	500	354	375	1000
28	500	397	420	1000
32	500	454	480	1000
40	500	851	900	1000

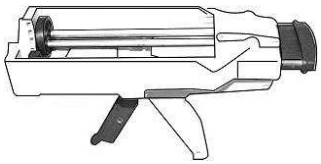
[1)] According to EN 1992-1-1: $\ell_{b,min}$ (8.6) and $\ell_{0,min}$ (8.11) for good bond conditions and α_6 = 1,0 with maximum yield stress σ_{sd} = 435 N/mm^2 for rebar B500-B and γ_M = 1,15 and maximum installation length.

Table B3: Base material temperature, gelling time and curing time

Base material temperature	Gel time (working time)	Minimum curing time in dry concrete	Minimum curing time in wet concrete
+5°C to +9°C	120 min	50 h	100 h
+10°C to +14°C	45 min	30 h	60 h
+15°C to +19°C	25 min	18 h	36 h
+20°C to +29°C	12 min	10 h	20 h
+30°C to +39°C	6 min	6 h	12 h
+40°C	5 min	4 h	8 h

G&B Fissagi Gebofix EPO PLUS RE	**Annex B 3**
Intended use Minimum concrete cover / Maximum installation depth Working time and curing times	

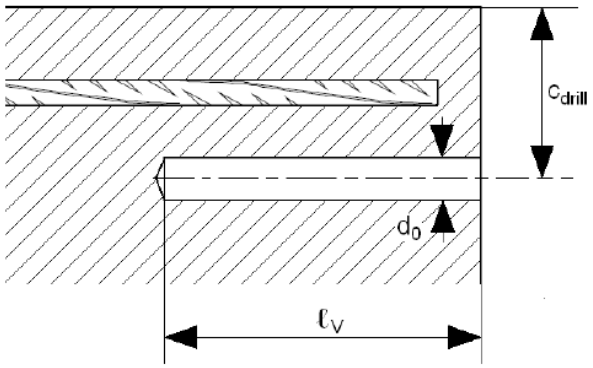
Table B4: Dispensing tools

Cartridge type/size	Hand tool		Pneumatic tool
Side-by-side cartridge 385ml			
Side-by-side cartridge 585ml			-

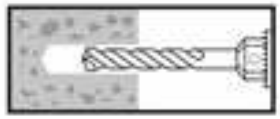
G&B Fissagi Gebofix EPO PLUS RE	
Intended use Dispensing tools	**Annex B 4**

A) Bore hole drilling

Before drilling remove carbonized concrete. In case of aborted drill hole the drill hole shall be filled with mortar.

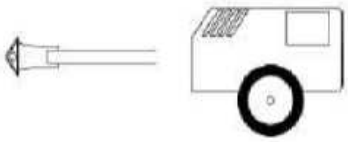


- Observe concrete cover c, as per setting plan and Table B1
- Drill parallel to the edge and to existing rebar.



1. Drill with hammer drill a hole into the base material to the size and embedment depth required by the selected reinforcing bar with carbide hammer drill or a compressed air drill or diamond core drill.

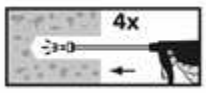
Hammer drill (HD)



Compressed air drill (CD)

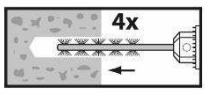
Rebar - ø	Drill - ø	Max. Embedment
[mm]	[mm]	[mm]
8	12	400
10	14	500
12	16	600
14	18	700
16	20	800
20	25	1000
25	32	1000
28	35	1000
32	40	1000
40	55	1000

B) Bore hole cleaning

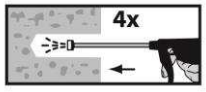


Attention! Standing water in the bore hole must be removed before cleaning.

2a. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air (min. 6 bar) minimum of four times. If the bore hole ground is not reached an extension shall be used.



2b. Check brush diameter and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriate sized wire brush > $d_{b,min}$ a minimum of four times. If the bore hole ground is not reached with the brush, a brush extension shall be used.

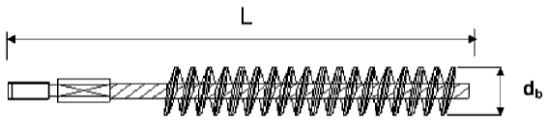
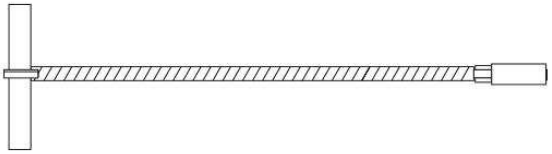
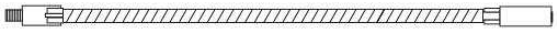


2c. Finally blow the hole clean again with compressed air a minimum of four times. If the bore hole ground is not reached an extension shall be used.

G&B Fissagi Gebofix EPO PLUS RE	**Annex B 5**
Intended use Installation instruction: Bore hole drilling and Bore hole cleaning	

Table B5: Cleaning tools

Brush

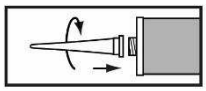
Part (a)	Part (b)
	
Part (c)	
	

If required, use additional accessories and extension for air nozzle and brush to reach back of hole.

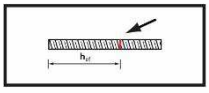
Max. hole depth	Brush / extension configuration	Part
375 mm	Brush head + handle	(a) + (b)
675 mm	Brush head + extension + handle	(a) + (b) + (c)
975 mm	Brush head + 2x extensions + handle	(a) + (b) + (b) + (c)

Rebar - Ø	**d_0 Drill bit - Ø**	**d_b Brush - Ø**
[mm]	**[mm]**	**[mm]**
8	12	13
10	14	15
12	16	18
14	18	22
16	20	22
20	25	27
25	32	35
28	35	38
32	40	43
40	55	58

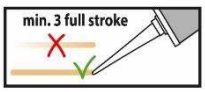
C) Preparation of bar and cartridge



3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. For foil tube cartridges, cut off the foil tube clip before use. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.



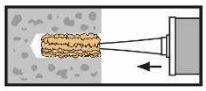
4. Prior to inserting the anchor rod into the filled bore hole, the position of the embedment depth shall be marked on the anchor rods



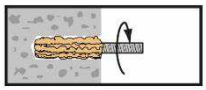
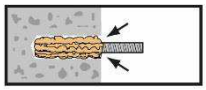
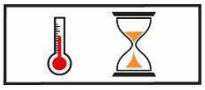
5. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

G&B Fissagi Gebofix EPO PLUS RE	
Intended use Installation instruction: Cleaning tools and Preparation of cartridge	**Annex B 6**

D) Filling the bore hole

	6.	Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. For embedment larger than 190 mm an extension nozzle shall be used.

E) Inserting the rebar

	7.	Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor should be free of dirt, grease, oil or other foreign material.
	8.	Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.
	9.	Allow the adhesive to cure to the specified time prior to applying any load or torque. Do not move or load the anchor until it is fully cured.

G&B Fissagi Gebofix EPO PLUS RE	
Intended use Installation instruction: Filling the hole Inserting the rebar	**Annex B 7**

Table C1: Design values of the ultimate bond resistance f_{bd}[1)] in N/mm² for hammer drilling methods for good bond conditions

Size	Concrete class								
d_s [mm]	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
8 to 25	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
28	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
32								3,7	
40	1,5	1,8	2,1						

1) Tabulated values f_{bd} are valid for good bond conditions according to EN 1992-1-1. For all other bond conditions multiply the values for f_{bd} by 0,7.

Table C2: Design values of the ultimate bond resistance f_{bd}[1)] in N/mm² for diamond core drilling methods for good bond conditions

Size	Concrete class								
d_s [mm]	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
8 to 25	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
28	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,0
32							3,4		
40	1,5	1,8	2,1						

1) Tabulated values f_{bd} are valid for good bond conditions according to EN 1992-1-1. For all other bond conditions multiply the values for f_{bd} by 0,7.

G&B Fissagi Gebofix EPO PLUS RE	
Performances Design values of the ultimate bond resistance	**Annex C 1**

G&B Fissaggi S.r.l. Italia

C.so Savona 22,1029 Villastellone (TO), Italia
tel. +39 011 9619433 - fax +39 011 9619382
www.gebfissaggi.com - info@gebfissaggi.com

G&B Fissaggi UK
G&B Fissaggi Vertretung Deutschland
G&B Fissaggi Ibérica
G&B Fissaggi Benelux
G&B Fissaggi France

Gebofix EPO PLUS RE ancorante chimico epossidico ad alte prestazioni

Certificazioni

ETA 17/0347 Certificazione Opzione 1 per utilizzo su calcestruzzo non fessurato e fessurato con barra filettata e con barre ad aderenza migliorata. Classe di prestazione C2 per azioni sismiche, barre filettate M12, M16, M20
ETA 17/0368 Certificazione per barre ad aderenza migliorata, progettazione secondo Eurocodice 2 (EN 1992-1-1)
Classe A+ di emissione di composti organici volatili (COV) in ambienti abitati

Supporti

uso certificato	**uso specifico**
calcestruzzo non fessurato calcestruzzo fessurato	pietra compatta mattoni pieni, semipieni e forati legno

Formati

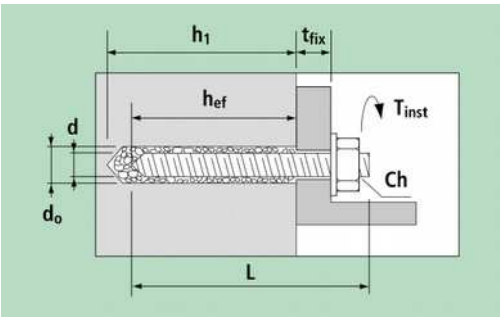
art.	**formato**	**miscelatore**	**pistola**
CCPE585	585 ml	03064	CP19
CCPE385	385 ml	03064	CP18, CP19

Condizioni di utilizzo

Calcestruzzo asciutto o bagnato
Calcestruzzo con fori pieni d'acqua
Temperatura di posa: tra +5 e +40 °C
Temperature di esercizio: I tra -40 e +40 °C (temperatura massima per breve periodo +40 °C; per lungo periodo +24 °C)
II tra -40 e +60 °C (temperatura massima per breve periodo +60 °C; per lungo periodo +43 °C)
III tra -40 e +72 °C (temperatura massima per breve periodo +72 °C; per lungo periodo +43 °C)
Scadenza dalla data di produzione: 24 mesi (temperatura di stoccaggio compresa fra +5 e +25 °C)

Tempi e temperature di posa

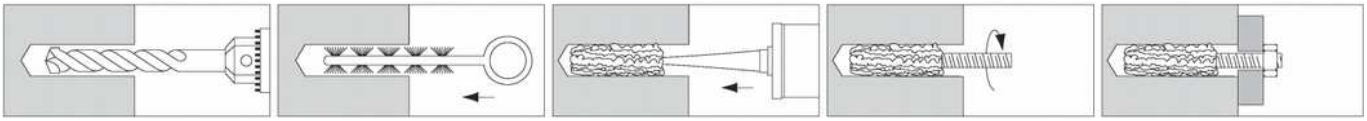
temperatura del supporto	**tempo di lavorabilità**	**applicazione del carico supporti asciutti**	**applicazione del carico supporti bagnati**
+5 ÷ +9 °C	120 min	50 h	100 h
+10 ÷ +14 °C	45 min	30 h	60 h
+15 ÷ +19 °C	25 min	18 h	36 h
+20 ÷ +29 °C	12 min	10 h	20 h
+30 ÷ +39 °C	6 min	6 h	12 h
+40 °C	5 min	4 h	8 h



d = diametro barra
L = lunghezza barra
t_{fix} = spessore fissabile
d_0 = diametro foro
h_1 = profondità minima foro
h_{nom} = profondità di inserimento
h_{ef} = profondità effettiva di ancoraggio
d_f = diametro del foro nell'oggetto da fissare
T_{inst} = coppia di serraggio

$h_{ef} = h_1 = h_{nom}$

Installazione



• Utilizzo su calcestruzzo non fessurato e fessurato con barre filettate

Caratteristiche di posa e di installazione

misura barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
diametro foro	d_0 (mm)	10	12	14	18	22	26	30	35
profondità foro = profondità effettiva di ancoraggio	$h_{ef,min}$ (mm)	60	60	70	80	90	96	108	120
	$h_{ef,max}$ (mm)	160	200	240	320	400	480	540	600
diametro del foro nell'oggetto fa fissare	d_f (mm)	9	12	14	18	22	26	30	33
interasse minimo	s_{min} (mm)	$\max(h_{ef} / 2; 5d)$							
distanza minima dal bordo	c_{min} (mm)	$\max(h_{ef} / 2; 5d)$							
spessore minimo del supporto	h_{min} (mm)	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$				
coppia di serraggio	T_{inst} (Nm)	10	20	40	80	120	160	180	200

Dati di carico

Per installazione su calcestruzzo asciutto o umido e per temperatura di esercizio I (temperatura minima -40 °C, temperatura massima per breve periodo +40 °C, per lungo periodo +24 °C).
Validi per un ancorante singolo e lontano dal bordo, su calcestruzzo C20/25 di grande spessore e con armatura rada.

○ Barre filettate su calcestruzzo non fessurato

Resistenza caratteristica della resina
a profondità di inserimento standard

misura barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
trazione	$N_{Rk,p}$ (kN)	30,2	42,4	58,3	70,6	111,9	153,7	187,8	224,0

Resistenza di progetto
a profondità di inserimento standard, per barre filettate in acciaio classe 5.8 e 8.8

misura barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
trazione	N_{Rd} (kN)	12,0 19,3	19,3 28,3	28,0 38,8	47,1	74,6	102,5	125,2	149,4
taglio	V_{Rd} (kN)	7,2 12,0	12,0 18,4	16,8 27,2	31,2 50,4	48,8 78,4	70,4 112,8	92,0 147,2	112,0 179,2

Carico raccomandato
a profondità di inserimento standard, per barre filettate in acciaio classe 5.8 e 8.8

misura barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
trazione	N_{rec} (kN)	8,6 13,8	13,8 20,2	20,0 27,7	33,6	53,3	73,2	89,4	106,7
taglio	V_{rec} (kN)	5,1 8,6	8,6 13,1	12,0 19,4	22,3 36,0	34,9 56,0	50,3 80,6	65,7 105,1	80,0 128,0

1 kN ≈ 100 kg
cedimento dell'acciaio classe 5.8 – cedimento dell'acciaio classe 8.8

○ Barre filettate su calcestruzzo fessurato

Resistenza caratteristica della resina
a profondità di inserimento standard

misura barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
trazione	$N_{Rk,p}$ (kN)	31,1	40,8	64,1	87,1	112,0	140,0

Resistenza di progetto
a profondità di inserimento standard, per barre filettate in acciaio classe 5.8 e 8.8

misura barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
trazione	N_{Rd} (kN)	20,7	27,2	42,7	58,1	74,6	93,3
taglio	V_{Rd} (kN)	16,8 27,2	31,2 50,4	48,8 78,4	70,4 112,8	92,0 147,2	112,0 179,2

Carico raccomandato
a profondità di inserimento standard, per barre filettate in acciaio classe 5.8 e 8.8

misura barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profondità di inserimento	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
trazione	N_{rec} (kN)	14,8	19,4	30,5	41,5	53,3	66,6
taglio	V_{rec} (kN)	12,0 19,4	22,3 36,0	34,9 56,0	50,3 80,6	65,7 105,1	80,0 128,0

1 kN ≈ 100 kg
cedimento dell'acciaio classe 5.8 – cedimento dell'acciaio classe 8.8

- **Utilizzo su calcestruzzo non fessurato e fessurato con barre ad aderenza migliorata** (usate come ancoranti)

Caratteristiche di posa e di installazione – barre ad aderenza migliorata

misura barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
diametro foro	d_0 mm	12	14	16	20	25	32	40
profondità foro = profondità effettiva di ancoraggio	$h_{ef,min}$ mm	60	60	70	80	90	100	128
	$h_{ef,max}$ mm	160	200	240	320	400	500	640
interasse minimo	s_{min} mm	$\max(h_{ef}/2; 40)$				$\max(h_{ef}/2; 50)$		$\max(h_{ef}/2; 70)$
distanza minima dal bordo	c_{min} mm	$\max(h_{ef}/2; 40)$				$\max(h_{ef}/2; 50)$		$\max(h_{ef}/2; 70)$
spessore minimo del supporto	h_{min} mm	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$			

Dati di carico
Per installazione su calcestruzzo asciutto o umido e per temperatura di esercizio I (temperatura minima -40 °C, temperatura massima per breve periodo +40 °C, per lungo periodo +24 °C).
Validi per un ancorante singolo e lontano dal bordo, su calcestruzzo C20/25 di grande spessore e con armatura rada.

- **Barre ad aderenza migliorata su calcestruzzo non fessurato**

Resistenza caratteristica della resina
a profondità di inserimento standard

misura barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
trazione	$N_{Rk,p}$ (kN)	26,1	36,8	53,9	87,5	111,9	153,7	241,3

Resistenza di progetto
a profondità di inserimento standard, per barre ad aderenza migliorata con f_{uk} = 550 N/mm²

misura barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
trazione	N_{Rd} (kN)	17,4	24,5	35,9	58,3	74,6	102,5	160,8
taglio	V_{Rd} (kN)	9,2	14,4	20,7	36,9	57,6	90,0	147,4

Carico raccomandato
a profondità di inserimento standard, per barre ad aderenza migliorata con f_{uk} = 550 N/mm²

misura barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
trazione	N_{rec} (kN)	12,4	17,5	25,7	41,6	53,3	73,2	114,9
taglio	V_{rec} (kN)	6,6	10,3	14,8	26,3	41,1	64,3	105,3

1 kN ≈ 100 kg
cedimento dell'acciaio

- **Barre ad aderenza migliorata su calcestruzzo fessurato**

Resistenza caratteristica della resina
a profondità di inserimento standard

misura barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
trazione	$N_{Rk,p}$ (kN)	31,1	47,4	64,1	90,7	165,9

Resistenza di progetto
a profondità di inserimento standard, per barre ad aderenza migliorata con f_{uk} = 550 N/mm²

misura barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
trazione	N_{Rd} (kN)	20,7	31,6	42,7	60,5	110,6
taglio	V_{Rd} (kN)	20,7	36,9	57,6	90,0	147,4

Carico raccomandato
a profondità di inserimento standard, per barre ad aderenza migliorata con f_{uk} = 550 N/mm²

misura barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profondità di inserimento	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
trazione	N_{rec} (kN)	14,8	22,6	30,5	43,2	79,0
taglio	V_{rec} (kN)	14,8	26,3	41,1	64,3	105,3

1 kN ≈ 100 kg
cedimento dell'acciaio

I dati di carico derivano dai parametri certificati nella Valutazione Tecnica Europea ETA 17/0347. La resistenza caratteristica N_{Rk} riguarda esclusivamente la resistenza della resina al cedimento per sfilamento e per rottura a cono del calcestruzzo. Le resistenze di progetto N_{Rd} e V_{Rd} riguardano tutte le modalità di cedimento e comprendono i coefficienti parziali di sicurezza sulle resistenze. I carichi raccomandati N_{rec} e V_{rec} comprendono l'ulteriore coefficiente di sicurezza 1,4.

Per il calcolo di ancoraggi con interassi ridotti, per ancoraggi vicini al bordo o per il fissaggio su calcestruzzo di resistenza superiore, di spessore ridotto o con armatura fitta fare riferimento alll'ETA 17/0347 o alla Dichiarazione di Prestazione DPGEB1009 ed utilizzare il metodo di calcolo descritto nel *Technical Report 029* dell'EOTA o nel CEN/TS 1992-4-5:2009. Allo stesso modo, per installazione in fori pieni d'acqua e per diverse temperature di esercizio (II, tra -40 e +60 °C, e III, tra -40 e +72 °C) fare riferimento all'ETA. È anche possibile calcolare e verificare gli ancoraggi realizzati con Gebofix EPO PLUS RE mediante il programma di calcolo *G&B Calculation Program* disponibile sul sito internet www.gebfissaggi.com.

Azioni sismiche

L'ancorante può essere utilizzato sotto azioni sismiche per categoria di prestazione C1 e C2, con barre filettate M12, M16, M20.

Per il calcolo della resistenza degli ancoraggi sotto azioni sismiche fare riferimento alll'ETA 17/0347 o alla Dichiarazione di Prestazione DPGEB1009 ed utilizzare il metodo di calcolo descritto nel *Technical Report 045* dell'EOTA.

SCHEDA DI DATI DI SICUREZZA
GEBOFIX EPO PLUS RE comp A

A norma del Regolamento (CE) n. 1907/2006, Allegato II, come modificato.

SEZIONE 1: Identificazione della sostanza/miscela e della società/impresa

1.1. Identificatore del prodotto

Nome del prodotto GEBOFIX EPO PLUS RE comp A

1.2. Usi identificati pertinenti della sostanza o della miscela e usi sconsigliati

Usi identificati Adesivo a base epossidica a due componenti. Resina.

1.3. Informazioni sul fornitore della scheda di dati di sicurezza

Fornitore
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Persona di contatto info@gebfissaggi.com

1.4. Numero telefonico di emergenza

Numero telefonico di emergenza +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SEZIONE 2: Identificazione dei pericoli

2.1. Classificazione della sostanza o della miscela

Classificazione (CE 1272/2008)

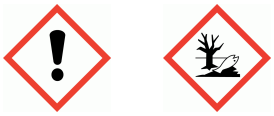
Pericoli fisici Non Classificato

Pericoli per la salute Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317

Pericoli per l'ambiente Aquatic Chronic 2 - H411

2.2. Elementi dell'etichetta

Pittogrammi di pericolo



Avvertenza Attenzione

Indicazioni di pericolo
H315 Provoca irritazione cutanea.
H319 Provoca grave irritazione oculare.
H317 Può provocare una reazione allergica cutanea.
H411 Tossico per gli organismi acquatici con effetti di lunga durata.

GEBOFIX EPO PLUS RE comp A

Consigli di prudenza

P273 Non disperdere nell'ambiente.
P280 Indossare guanti/ indumenti protettivi/ Proteggere gli occhi/ Proteggere il viso.
P302+P352 IN CASO DI CONTATTO CON LA PELLE: lavare abbondantemente con acqua.
P305+P351+P338 IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare.
P333+P313 In caso di irritazione o eruzione della pelle: consultare un medico.
P501 Smaltire il prodotto/ recipiente in conformità alla regolamentazione nazionale.

Contiene

EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN, REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Consigli di prudenza supplementari

P261 Evitare di respirare i vapori/ aerosol.
P264 Lavare accuratamente la pelle contaminata dopo l'uso.
P272 Gli indumenti da lavoro contaminati non devono essere portati fuori dal luogo di lavoro.
P321 Trattamento specifico (vedere i consigli medici su questa etichetta).
P332+P313 In caso di irritazione della pelle: consultare un medico.
P337+P313 Se l'irritazione degli occhi persiste, consultare un medico.
P362+P364 Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente.
P391 Raccogliere il materiale fuoriuscito.

2.3. Altri pericoli

SEZIONE 3: Composizione/informazioni sugli ingredienti

3.2. Miscele

EPOXY RESIN (Number average MW <= 700) **20-50%**

Numero CAS: 25068-38-6 Numero CE: 500-033-5

Classificazione
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

EPOXY PHENOL FORMALDEHYDE RESIN **10-20%**

Numero CAS: 9003-36-5 Numero CE: 500-006-8 Numero di registrazione REACH: 01-2119454392-40

Classificazione
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp A

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)		5-10%
Numero CAS: 933999-84-9	Numero CE: 618-939-5	Numero di registrazione REACH: 01-2119463471-41

Classificazione
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 3 - H412

TITANIUM DIOXIDE		<0.5%
Numero CAS: 13463-67-7	Numero CE: 236-675-5	

Classificazione
Non Classificato

Il testo completo di tutte le indicazioni di pericolo (frasi R e frasi H) è riportato nella sezione 16.

Commenti sulla composizione CAS 28064-14-4 = CAS 9003-36-5 (EU) CAS 933999-84-9 = CAS 16096-31-4 (RoW)

SEZIONE 4: Misure di primo soccorso

4.1. Descrizione delle misure di primo soccorso

Inalazione Allontanare il soggetto interessato dalla fonte di contaminazione. Consultare un medico se il disagio continua.

Ingestione Non provocare il vomito. Consultare immediatamente un medico.

Contatto con la pelle Togliersi di dosso immediatamente gli indumenti contaminati e lavare la pelle con acqua e sapone.

Contatto con gli occhi Sciacquare immediatamente e abbondantemente con acqua. Togliere le eventuali lenti a contatto e tenere le palpebre ben separate. Continuare a sciacquare per almeno 15 minuti. Consultare un medico se l'irritazione persiste dopo il lavaggio. Mostrare questa scheda di dati di sicurezza al personale medico.

4.2. Principali sintomi ed effetti, sia acuti che ritardati

Inalazione Può irritare le vie respiratorie.

Ingestione Può provocare dolori addominali o vomito.

Contatto con la pelle Il contatto prolungato o ripetuto con la pelle può provocare irritazione, arrossamento e dermatite. Può provocare sensibilizzazione per contatto con la pelle.

Contatto con gli occhi Irritante per gli occhi.

4.3. Indicazione dell'eventuale necessità di consultare immediatamente un medico e di trattamenti speciali

Note per il medico Nessuna raccomandazione specifica. In caso di dubbi, consultare immediatamente un medico.

SEZIONE 5: Misure antincendio

5.1. Mezzi di estinzione

Mezzi di estinzione idonei Estinguere con schiuma resistente all'alcool, diossido di carbonio o polvere secca.

Mezzi di estinzione non idonei Non utilizzare acqua, se possibile.

GEBOFIX EPO PLUS RE comp A

5.2. Pericoli speciali derivanti dalla sostanza o dalla miscela

Pericoli specifici Non è considerato un pericolo significativo in considerazione delle ridotte quantità utilizzate.

Prodotti di combustione pericolosi Ossidi di carbonio. Ossidi di azoto.

5.3. Raccomandazioni per gli addetti all'estinzione degli incendi

Misure di protezione durante l'estinzione degli incendi Non sono previsti requisiti specifici nelle condizioni d'uso normali.

Dispositivi di protezione speciali per gli addetti all'estinzione degli incendi Indossare un autorespiratore (SCBA) a pressione positiva e indumenti protettivi adatti.

SEZIONE 6: Misure in caso di rilascio accidentale

6.1. Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza

Precauzioni personali Indossare indumenti protettivi come descritto nella Sezione 8 di questa scheda di dati di sicurezza.

6.2. Precauzioni ambientali

Precauzioni ambientali Non disperdere nell'ambiente.

6.3. Metodi e materiali per il contenimento e per la bonifica

Metodi per la bonifica Raccogliere e riporre all'interno di recipienti idonei allo smaltimento dei rifiuti e sigillare in sicurezza. Per lo smaltimento dei rifiuti vedere la Sezione 13.

6.4. Riferimenti ad altre sezioni

Riferimenti ad altre sezioni Per le misure di protezione personale, vedere la Sezione 8. Raccogliere e smaltire la fuoriuscita come indicato nella Sezione 13.

SEZIONE 7: Manipolazione e immagazzinamento

7.1. Precauzioni per la manipolazione sicura

Precauzioni d'uso Evitare il contatto con gli occhi. Evitare il contatto con la pelle.

Raccomandazioni generiche sull'igiene del lavoro Non mangiare, né bere, né fumare durante l'uso. Non è consigliata alcuna procedura specifica per l'igiene ma è necessario adottare sempre buone prassi di igiene personale quando si opera con prodotti chimici.

7.2. Condizioni per lo stoccaggio sicuro, comprese eventuali incompatibilità

Precauzioni per l'immagazzinamento Conservare lontano da alimenti o mangimi e da bevande. Tenere il recipiente ben sigillato quando non è utilizzato.

7.3. Usi finali particolari

Usi finali specifici Gli usi identificati di questo prodotto sono indicati nei dettagli nella Sezione 1.2.

SEZIONE 8: Controllo dell'esposizione/protezione individuale

8.1. Parametri di controllo

Valori limite di esposizione professionale

TITANIUM DIOXIDE

Limite di esposizione a lungo termine (media ponderata nel tempo di 8 ore): ACGIH 10 mg/m³
Limite di esposizione a breve termine (15 minuti): ACGIH
ACGIH = American Conference of Governmental Industrial Hygienists.

GEBOFIX EPO PLUS RE comp A

EPOXY RESIN (Number average MW <= 700) (CAS: 25068-38-6)

DNEL

Industria - Inalazione; Lungo termine effetti sistemici: 12.25 mg/m³
Industria - Inalazione; Breve termine effetti sistemici: 12.25 mg/m³
Industria - Contato con la pelle; Lungo termine effetti sistemici: 8.33 mg/kg/giorno
Industria - Contato con la pelle; Breve termine effetti sistemici: 8.33 mg/kg/giorno
REACH fascicolo informazioni

PNEC

- acqua dolce; 0.006 mg/L
- acqua marina; 0.0006 mg/L
- Rilascio intermittente; 0.018 mg/L
- STP; 10 mg/L
- Sedimenti (acqua dolce); 0.996 mg/kg
- Sedimenti (acqua marina); 0.0996 mg/kg
- Suolo; 0.196 mg/kg

REACH fascicolo informazioni

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2) (CAS: 933999-84-9)

DNEL

Industria - Inalazione; Lungo termine effetti sistemici: 4.9 mg/m³
Industria - Inalazione; Breve termine effetti sistemici: 4.9 mg/m³
Industria - Inalazione; Lungo termine effetti locali: 0.44 mg/m³
Industria - Contato con la pelle; Lungo termine effetti sistemici: 2.8 mg/kg/giorno
Industria - Contato con la pelle; Lungo termine effetti locali: 22.6 µg/cm²
Industria - Contato con la pelle; Breve termine effetti locali: 22.6 µg/cm²
REACH fascicolo informazioni

PNEC

- acqua dolce; 0.0115 mg/L
- acqua marina; 0.00115 mg/L
- Rilascio intermittente; 0.115 mg/L
- STP; 1 mg/L
- Sedimenti (acqua dolce); 0.283 mg/kg
- Sedimenti (acqua marina); 0.0283 mg/kg
- Suolo; 0.223 mg/kg

REACH fascicolo informazioni

TITANIUM DIOXIDE (CAS: 13463-67-7)

DNEL

Industria - Inalazione; Lungo termine effetti sistemici: 10 mg/m³
REACH fascicolo informazioni

PNEC

- acqua dolce; 0.127 mg/L
- acqua marina; 1.0 mg/L
- Rilascio intermittente; 0.61 mg/L
- STP; 100 mg/L
- Sedimenti (acqua dolce); 1000 mg/kg
- Sedimenti (acqua marina); 100 mg/kg
- Suolo; 100 mg/kg

REACH fascicolo informazioni

8.2. Controlli dell'esposizione

Dispositivi di protezione

GEBOFIX EPO PLUS RE comp A

Controlli tecnici idonei	Nessun requisito specifico di ventilazione.
Protezioni per gli occhi/il volto	Proteggere gli occhi.
Protezione delle mani	Indossare guanti di protezione realizzati con il seguente materiale: Gomma nitrilica.
Misure d'igiene	Predisporre una postazione di lavaggio oculare. Lavarsi al termine di ogni turno di lavoro e prima di mangiare, fumare e utilizzare i servizi igienici. Lavarsi immediatamente in caso di contaminazione cutanea. Togliersi di dosso immediatamente gli indumenti che hanno subito contaminazione.
Protezione respiratoria	Non rilevante.
Controlli dell'esposizione ambientale	Tenere il recipiente ben sigillato quando non è utilizzato. Residui e recipienti vuoti devono essere trattati come rifiuti pericolosi in conformità alle disposizioni locali e nazionali.

SEZIONE 9: Proprietà fisiche e chimiche

9.1. Informazioni sulle proprietà fisiche e chimiche fondamentali

Aspetto	Liquido.
Colore	Grigio.
Odore	Caratteristico.
Soglia olfattiva	Non determinate.
pH	Non applicabile.
Punto di fusione	Non applicabile.
Punto di ebollizione iniziale e intervallo di ebollizione	>35°C @ 760 mm Hg
Punto di infiammabilità	>100°C Vaso chiuso.
Velocità di evaporazione	Nessuna informazione disponibile.
Fattore di evaporazione	Non applicabile.
Infiammabilità (solidi, gas)	Non applicabile.
Limiti superiore/inferiore di infiammabilità o di esplosività	Non applicabile.
Altra infiammabilità	Non disponibile.
Tensione di vapore	<500 Pa @ °C
Densità di vapore	Nessuna informazione disponibile.
Densità relativa	1.5 - 1.6
Densità apparente	Non applicabile.
La solubilità/le solubilità	Insolubile in acqua.
Coefficiente di ripartizione	Non determinate.
Temperatura di autoaccensione	Non determinate.
Temperatura di decomposizione	Non determinate.
Viscosità	> 60 S ISO2431

GEBOFIX EPO PLUS RE comp A

Proprietà esplosive	Nessuna informazione disponibile.
Esplosivo sotto l'influenza di una fiamma	No
Proprietà ossidanti	Non soddisfa i criteri per la classificazione come ossidante.

9.2. Altre informazioni

SEZIONE 10: Stabilità e reattività

10.1. Reattività

Reattività	I seguenti materiali possono reagire con il prodotto: Acidi. Ammidi. Ammine. Fenoli, cresoli.

10.2. Stabilità chimica

Stabilità	Stabile alle normali temperature ambiente e se utilizzato come consigliato.

10.3. Possibilità di reazioni pericolose

Possibilità di reazioni pericolose	I seguenti materiali possono reagire con il prodotto: Acidi. Ammidi. Ammine. Fenoli, cresoli.

10.4. Condizioni da evitare

Condizioni da evitare	Evitare il contatto con acidi e alcali.

10.5. Materiali incompatibili

Materiali da evitare	Acidi. Ammine. Ammidi.

10.6. Prodotti di decomposizione pericolosi

Prodotti di decomposizione pericolosi	Ossidi di carbonio. Ossidi di azoto.

SEZIONE 11: Informazioni tossicologiche

11.1. Informazioni sugli effetti tossicologici

Sensibilizzazione cutanea

Sensibilizzazione cutanea	Sensibilizzante.

Informazioni generali	Contiene componenti epossidici. Può provocare una reazione allergica.
Inalazione	Non sono noti pericoli specifici per la salute.
Ingestione	Non si prevedono effetti nocivi associati alle quantità che possono essere ingerite accidentalmente.
Contatto con la pelle	Irritante per la pelle. Può provocare sensibilizzazione per contatto con la pelle.
Contatto con gli occhi	Può provocare grave irritazione oculare.
Pericoli per la salute acuti e cronici	Irritante per la pelle. Irritante per gli occhi.
Via di esposizione	Contatto con la pelle e/o gli occhi.
Sintomi medici	Irritazione della pelle.
Considerazioni mediche	Allergie e disturbi cutanei.

Informazioni tossicologiche sugli ingredienti

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

GEBOFIX EPO PLUS RE comp A

Tossicità acuta - orale

Tossicità acuta orale (DL_{50} mg/kg) 3.010,0

Specie Ratto

SEZIONE 12: Informazioni ecologiche

12.1. Tossicità

Informazioni ecologiche sugli ingredienti

EPOXY RESIN (Number average MW <= 700)

Tossicità acquatica acuta

Tossicità acuta - pesci LC50, 96 ore: 2 mg/L, Oncorhynchus mykiss (Trota iridea)

Tossicità acuta - invertebrati acquatici CE_{50}, 48 ore: 1.8 mg/L, Daphnia magna

Tossicità acuta - piante acquatiche CE_{50}, 72 ore: 11 mg/L, Alghe d'acqua dolce
CE_{50}, 96 ore: 220 mg/L, Scenedesmus subspicatus

Tossicità acquatica cronica

Tossicità cronica - invertebrati acquatici NOEC, 21 giorni: 0.3 mg/L, Daphnia magna

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Tossicità acquatica acuta

Tossicità acuta - pesci LC50, 96 ore: 30 mg/L, Oncorhynchus mykiss (Trota iridea)

12.2. Persistenza e degradabilità

Persistenza e degradabilità Il prodotto non è biodegradabile.

Informazioni ecologiche sugli ingredienti

EPOXY RESIN (Number average MW <= 700)

Biodegradazione - 12% Degradation (%): 28 giorni

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Biodegradazione - 47% Degradation (%): 28 giorni
OECD 301D

12.3. Potenziale di bioaccumulo

Potenziale di bioaccumulo Nessun dato disponibile sul bioaccumulo.

Coefficiente di ripartizione Non determinate.

Informazioni ecologiche sugli ingredienti

EPOXY RESIN (Number average MW <= 700)

Potenziale di bioaccumulo Può accumularsi nel suolo e nei sistemi idrici. BCF: 100 - 3000,

Coefficiente di ripartizione log Pow: 3.242 Valore stimato

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

GEBOFIX EPO PLUS RE comp A

Potenziale di bioaccumulo BCF: < 100, Valore stimato

Coefficiente di ripartizione log Pow: -0.272 Valore stimato

12.4. Mobilità nel suolo

Mobilità Il prodotto è insolubile in acqua e si disperde sugli specchi d'acqua. Il prodotto è non volatile. Semi-mobile.

Informazioni ecologiche sugli ingredienti

EPOXY RESIN (Number average MW <= 700)

Mobilità Semi-mobile.

Coefficiente di adsorbimento/desorbimento Acqua - Koc: 1800 - 4400 @ 25°C Valore stimato

Costante della legge di Henry 4.93E-05 Pa m3/mol @ 25°C

12.5. Risultati della valutazione PBT e vPvB

Risultati della valutazione PBT e vPvB Questo prodotto non contiene alcuna sostanza classificata come PBT (persistente, bioaccumulabile e tossica) o vPvB (molto persistente e molto bioaccumulabile).

Informazioni ecologiche sugli ingredienti

EPOXY RESIN (Number average MW <= 700)

Risultati della valutazione PBT e vPvB Questa sostanza non è classificata come PBT (persistente, bioaccumulabile e tossica) o vPvB (molto persistente e molto bioaccumulabile) in base agli attuali criteri UE.

12.6. Altri effetti avversi

SEZIONE 13: Considerazioni sullo smaltimento

13.1. Metodi di trattamento dei rifiuti

Metodi di smaltimento Residui e recipienti vuoti devono essere trattati come rifiuti pericolosi in conformità alle disposizioni locali e nazionali. Smaltire i rifiuti tramite un'impresa di smaltimento rifiuti autorizzata.

Classe di rifiuti La classificazione dei codici di smaltimento deve essere eseguita in conformità al Catalogo europeo dei rifiuti (CER).

SEZIONE 14: Informazioni sul trasporto

14.1. Numero ONU

Numero ONU (ADR/RID) 3082

Numero ONU (IMDG) 3082

Numero ONU (ICAO) 3082

Numero ONU (ADN) 3082

14.2. Nome di spedizione dell'ONU

Nome di spedizione (ADR/RID) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

GEBOFIX EPO PLUS RE comp A

Nome di spedizione (IMDG)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nome di spedizione (ICAO)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nome di spedizione (ADN)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

14.3. Classi di pericolo connesso al trasporto

Classe ADR/RID	9
Codice di classificazione ADR/RID	M6
Etichetta ADR/RID	9
Classe IMDG	9
Classe/divisione ICAO	9
Classe ADN	9

Etichette per il trasporto

14.4. Gruppo d'imballaggio

Gruppo d'imballaggio ADR/RID	III
Gruppo d'imballaggio IMDG	III
Gruppo d'imballaggio ICAO	III
Gruppo d'imballaggio ADN	III

14.5. Pericoli per l'ambiente

Sostanza pericolosa per l'ambiente/inquinante marino

14.6. Precauzioni speciali per gli utilizzatori

Programma di emergenza	F-A, S-F
Categoria di trasporto ADR	3
Codice di azione di emergenza	•3Z
Numero di identificazione del pericolo (ADR/RID)	90
Codice di restrizione in galleria	(-)

14.7. Trasporto di rinfuse secondo l'allegato II di MARPOL ed il codice IBC

GEBOFIX EPO PLUS RE comp A

Trasporto di rinfuse secondo l'allegato II di MARPOL 73/78 ed il codice IBC	Non applicabile.

SEZIONE 15: Informazioni sulla regolamentazione

15.1. Disposizioni legislative e regolamentari su salute, sicurezza e ambiente specifiche per la sostanza o la miscela

Legislazione UE	(EU) No 2015/830
Orientamenti	Workplace Exposure Limits EH40.

15.2. Valutazione della sicurezza chimica

Non è stata effettuata una valutazione della sicurezza chimica.

SEZIONE 16: Altre informazioni

Commenti sulla revisione	NOTA: le linee entro il margine indicano modifiche significative rispetto alla revisione precedente.
Data di revisione	09/01/2020
Numero versione	2.002
Sostituisce la data	27/07/2018
Numero SDS	20841
Indicazioni di pericolo per esteso	H315 Provoca irritazione cutanea. H317 Può provocare una reazione allergica cutanea. H319 Provoca grave irritazione oculare. H411 Tossico per gli organismi acquatici con effetti di lunga durata. H412 Nocivo per gli organismi acquatici con effetti di lunga durata.

SCHEDA DI DATI DI SICUREZZA
GEBOFIX EPO PLUS RE comp B

A norma del Regolamento (CE) n. 1907/2006, Allegato II, come modificato.

SEZIONE 1: Identificazione della sostanza/miscela e della società/impresa

1.1. Identificatore del prodotto

Nome del prodotto GEBOFIX EPO PLUS RE comp B

1.2. Usi identificati pertinenti della sostanza o della miscela e usi sconsigliati

Usi identificati Adesivo a base epossidica a due componenti. Indurente.

1.3. Informazioni sul fornitore della scheda di dati di sicurezza

Fornitore
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Persona di contatto info@gebfissaggi.com

1.4. Numero telefonico di emergenza

Numero telefonico di emergenza +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SEZIONE 2: Identificazione dei pericoli

2.1. Classificazione della sostanza o della miscela

Classificazione (CE 1272/2008)

Pericoli fisici Non Classificato

Pericoli per la salute Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

Pericoli per l'ambiente Aquatic Chronic 3 - H412

Salute umana Corrosivo. Il contatto prolungato provoca gravi lesioni oculari e tissutali.

Ambiente Il prodotto contiene una sostanza che può avere effetti pericolosi per l'ambiente.

2.2. Elementi dell'etichetta

Pittogrammi di pericolo

Avvertenza Pericolo

GEBOFIX EPO PLUS RE comp B

Indicazioni di pericolo	H302 Nocivo se ingerito. H314 Provoca gravi ustioni cutanee e gravi lesioni oculari. H317 Può provocare una reazione allergica cutanea. H412 Nocivo per gli organismi acquatici con effetti di lunga durata.
Consigli di prudenza	P273 Non disperdere nell'ambiente. P280 Indossare guanti/ indumenti protettivi/ Proteggere gli occhi/ Proteggere il viso. P303+P361+P353 IN CASO DI CONTATTO CON LA PELLE (o con i capelli): togliersi di dosso immediatamente tutti gli indumenti contaminati. Sciacquare la pelle o fare una doccia. P305+P351+P338 IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare. P501 Smaltire il prodotto/ recipiente in conformità alla regolamentazione nazionale.
Contiene	1,3-CYCLOHEXANEBIS(METHYLAMINE), STYRENATED PHENOL, SALICYLIC ACID, 1,3-BENZENEDIMETHANAMINE
Consigli di prudenza supplementari	P264 Lavare accuratamente la pelle contaminata dopo l'uso. P260 Non respirare i vapori. P301+P330+P331 IN CASO DI INGESTIONE: sciacquare la bocca. NON provocare il vomito. P304+P340 IN CASO DI INALAZIONE: trasportare l'infortunato all'aria aperta e mantenerlo a riposo in posizione che favorisca la respirazione. P333+P313 In caso di irritazione o eruzione della pelle: consultare un medico. P362+P364 Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente. P405 Conservare sotto chiave.

2.3. Altri pericoli

SEZIONE 3: Composizione/informazioni sugli ingredienti

3.2. Miscele

1,3-CYCLOHEXANEBIS(METHYLAMINE) **20-50%**

Numero CAS: 2579-20-6 | Numero CE: 219-941-5 | Numero di registrazione REACH: 01-2119543741-41

Classificazione
Acute Tox. 4 - H302
Acute Tox. 4 - H312
Skin Corr. 1A - H314
Aquatic Chronic 3 - H412

STYRENATED PHENOL **5-10%**

Numero CAS: 61788-44-1 | Numero CE: 262-975-0 | Numero di registrazione REACH: 01-2119979575-18

Classificazione
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp B

SALICYLIC ACID		**5-10%**
Numero CAS: 69-72-7	Numero CE: 200-712-3	Numero di registrazione REACH: 01-2119486984-17

Classificazione
Acute Tox. 4 - H302
Eye Dam. 1 - H318

1,3-BENZENEDIMETHANAMINE		**1-5%**
Numero CAS: 1477-55-0	Numero CE: 216-032-5	

Classificazione
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Corr. 1B - H314
Skin Sens. 1B - H317
Aquatic Chronic 3 - H412

Il testo completo di tutte le indicazioni di pericolo (frasi R e frasi H) è riportato nella sezione 16.

SEZIONE 4: Misure di primo soccorso

4.1. Descrizione delle misure di primo soccorso

Inalazione Allontanare il soggetto interessato dalla fonte di contaminazione. Consultare un medico se il disagio continua.

Ingestione Non provocare il vomito. Consultare immediatamente un medico.

Contatto con la pelle Togliersi di dosso immediatamente gli indumenti contaminati e lavare la pelle con acqua e sapone. Consultare un medico se il disagio continua.

Contatto con gli occhi Sciacquare immediatamente e abbondantemente con acqua. Togliere le eventuali lenti a contatto e tenere le palpebre ben separate. Continuare a sciacquare per almeno 15 minuti. Consultare un medico se l'irritazione persiste dopo il lavaggio. Mostrare questa scheda di dati di sicurezza al personale medico.

4.2. Principali sintomi ed effetti, sia acuti che ritardati

Inalazione Irritazione di naso, gola e vie aeree.

Ingestione Può provocare dolori addominali o vomito.

Contatto con la pelle Dolore bruciante e gravi lesioni da corrosione della pelle. Può verificarsi formazione di vesciche. Ustioni chimiche.

Contatto con gli occhi Può provocare annebbiamento della vista e gravi lesioni oculari.

4.3. Indicazione dell'eventuale necessità di consultare immediatamente un medico e di trattamenti speciali

Note per il medico Nessuna raccomandazione specifica. In caso di dubbi, consultare immediatamente un medico.

SEZIONE 5: Misure antincendio

5.1. Mezzi di estinzione

Mezzi di estinzione idonei Estinguere con schiuma resistente all'alcool, diossido di carbonio o polvere secca.

Mezzi di estinzione non idonei Non utilizzare acqua, se possibile.

GEBOFIX EPO PLUS RE comp B

5.2. Pericoli speciali derivanti dalla sostanza o dalla miscela

Pericoli specifici Non sono previste precauzioni specifiche per la lotta agli incendi se l'incendio interessa piccole quantità.

Prodotti di combustione pericolosi Ossidi di carbonio. Ossidi di azoto.

5.3. Raccomandazioni per gli addetti all'estinzione degli incendi

Misure di protezione durante l'estinzione degli incendi Non sono note precauzioni antincendio specifiche.

Dispositivi di protezione speciali per gli addetti all'estinzione degli incendi Indossare un autorespiratore (SCBA) a pressione positiva e indumenti protettivi adatti.

SEZIONE 6: Misure in caso di rilascio accidentale

6.1. Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza

Precauzioni personali Indossare indumenti protettivi come descritto nella Sezione 8 di questa scheda di dati di sicurezza.

6.2. Precauzioni ambientali

Precauzioni ambientali Raccogliere e smaltire la fuoriuscita come indicato nella Sezione 13. Contenere la fuoriuscita utilizzando sabbia, terra o altro materiale non combustibile adeguato. Non scaricare nei sistemi di scolo, nei corsi d'acqua o sul terreno.

6.3. Metodi e materiali per il contenimento e per la bonifica

Metodi per la bonifica Raccogliere e riporre all'interno di recipienti idonei allo smaltimento dei rifiuti e sigillare in sicurezza. Per lo smaltimento dei rifiuti vedere la Sezione 13.

6.4. Riferimenti ad altre sezioni

Riferimenti ad altre sezioni Per le misure di protezione personale, vedere la Sezione 8. Raccogliere e smaltire la fuoriuscita come indicato nella Sezione 13.

SEZIONE 7: Manipolazione e immagazzinamento

7.1. Precauzioni per la manipolazione sicura

Precauzioni d'uso Evitare il contatto con la pelle. Evitare il contatto con gli occhi. Non gettare i residui nelle fognature.

Raccomandazioni generiche sull'igiene del lavoro Non mangiare, né bere, né fumare durante l'uso. Non è consigliata alcuna procedura specifica per l'igiene ma è necessario adottare sempre buone prassi di igiene personale quando si opera con prodotti chimici.

7.2. Condizioni per lo stoccaggio sicuro, comprese eventuali incompatibilità

Precauzioni per l'immagazzinamento Conservare lontano da alimenti e bevande. Tenere il recipiente ben sigillato quando non è utilizzato.

7.3. Usi finali particolari

Usi finali specifici Gli usi identificati di questo prodotto sono indicati nei dettagli nella Sezione 1.2.

SEZIONE 8: Controllo dell'esposizione/protezione individuale

8.1. Parametri di controllo

Valori limite di esposizione professionale

1,3-BENZENEDIMETHANAMINE

GEBOFIX EPO PLUS RE comp B

Limite di esposizione a lungo termine (media ponderata nel tempo di 8 ore): ACGIH
Limite di esposizione a breve termine (15 minuti): ACGIH 0,1 mg/m³
ACGIH = American Conference of Governmental Industrial Hygienists.

1,3-CYCLOHEXANEBIS(METHYLAMINE) (CAS: 2579-20-6)

DNEL

REACH fascicolo informazioni
Industria - Inalazione; Breve termine effetti sistemici: 21.2 mg/m³
Industria - Contato con la pelle; Lungo termine effetti sistemici: 0.2 mg/kg/giorno
Industria - Inalazione; Lungo termine effetti sistemici: 0.71 mg/m³
Industria - Contato con la pelle; Breve termine effetti sistemici: 6 mg/kg/giorno

PNEC

REACH fascicolo informazioni
- Rilascio intermittente; 0.331 mg/L
- acqua marina; 0.00331 mg/L
- acqua dolce; 0.0331 mg/L
- STP; 10 mg/L

STYRENATED PHENOL (CAS: 61788-44-1)

DNEL

REACH fascicolo informazioni
Industria - Contato con la pelle; Lungo termine effetti sistemici: 0.416666667 mg/kg/giorno
Industria - Inalazione; Lungo termine effetti sistemici: 0.734649123 mg/m³

PNEC

REACH fascicolo informazioni
- Sedimenti (acqua marina); 43.65269484 mg/kg
- Rilascio intermittente; 0.01371 mg/L
- STP; 1.0638 mg/L
- acqua marina; 0.0001371 mg/L
- Sedimenti (acqua dolce); 43.65269484 mg/kg
- Suolo; 20.64517608 mg/kg
- acqua dolce; 0.001371 mg/L

SALICYLIC ACID (CAS: 69-72-7)

DNEL

REACH fascicolo informazioni
Industria - Inalazione; Lungo termine effetti sistemici: 16 mg/m³
Industria - Contato con la pelle; Lungo termine effetti sistemici: 2 mg/kg/giorno

PNEC

REACH fascicolo informazioni
- Sedimenti (acqua dolce); 1.42 mg/kg
- Suolo; 0.166 mg/kg
- Sedimenti (acqua marina); 0.142 mg/kg
- Rilascio intermittente; 1 mg/L
- acqua dolce; 0.2 mg/L
- STP; 162 mg/L
- acqua marina; 0.02 mg/L

1,3-BENZENEDIMETHANAMINE (CAS: 1477-55-0)

GEBOFIX EPO PLUS RE comp B

PNEC	- Sedimenti (acqua dolce); 0.43 mg/kg - acqua dolce; 0.094 mg/L - Suolo; 0.045 mg/kg - acqua marina; 0.0094 mg/L - Sedimenti (acqua marina); 0.043 mg/kg - STP; 10 mg/L - Rilascio intermittente; 0.152 mg/L

8.2. Controlli dell'esposizione

Dispositivi di protezione

Controlli tecnici idonei	Predisporre un'adeguata ventilazione generale e aerazione locale per estrazione. Rispettare i limiti di esposizione professionale per il prodotto o gli ingredienti.
Protezioni per gli occhi/il volto	Indossare i seguenti indumenti protettivi: Occhiali di sicurezza ben aderenti. Non indossare lenti a contatto quando si opera con questa sostanza chimica.
Protezione delle mani	Indossare guanti di protezione realizzati con il seguente materiale: Gomma nitrilica.
Altra protezione della pelle e del corpo	Evitare il contatto con la pelle. Indossare indumenti adeguati per prevenire il contatto ripetuto o prolungato con la pelle.
Misure d'igiene	Non mangiare, né bere, né fumare durante l'uso. Lavarsi al termine di ogni turno di lavoro e prima di mangiare, fumare e utilizzare i servizi igienici. Utilizzare misure tecniche di controllo per ridurre la contaminazione dell'aria a un livello di esposizione ammissibile.
Protezione respiratoria	Se la ventilazione è insufficiente, è necessario utilizzare un apparecchio respiratorio adatto.
Controlli dell'esposizione ambientale	Tenere il recipiente ben sigillato quando non è utilizzato. Residui e recipienti vuoti devono essere trattati come rifiuti pericolosi in conformità alle disposizioni locali e nazionali.

SEZIONE 9: Proprietà fisiche e chimiche

9.1. Informazioni sulle proprietà fisiche e chimiche fondamentali

Aspetto	Liquido.
Colore	Camoscio.
Odore	Caratteristico. Ammina.
Soglia olfattiva	Non determinate.
pH	Non applicabile.
Punto di fusione	Non determinate.
Punto di ebollizione iniziale e intervallo di ebollizione	Non determinate.
Punto di infiammabilità	>100°C Vaso chiuso.
Velocità di evaporazione	Non determinate.
Fattore di evaporazione	Non determinate.
Infiammabilità (solidi, gas)	Non determinate.
Limiti superiore/inferiore di infiammabilità o di esplosività	Non determinate.

GEBOFIX EPO PLUS RE comp B

Altra infiammabilità	Non applicabile.
Tensione di vapore	Non determinate.
Densità di vapore	Non determinate.
Densità relativa	1.4 - 1.5
Densità apparente	Non disponibile.
La solubilità/le solubilità	Non determinate.
Coefficiente di ripartizione	Non determinate.
Temperatura di autoaccensione	Non determinate.
Temperatura di decomposizione	Non determinate.
Viscosità	Non determinate.
Proprietà esplosive	Nessuna informazione disponibile.
Esplosivo sotto l'influenza di una fiamma	Non è considerato esplosivo.
Proprietà ossidanti	Non soddisfa i criteri per la classificazione come ossidante.

9.2. Altre informazioni

SEZIONE 10: Stabilità e reattività

10.1. Reattività

Reattività I seguenti materiali possono reagire con il prodotto: Acidi. Epossidi. Agenti ossidanti. Perossidi.

10.2. Stabilità chimica

Stabilità Stabile alle normali temperature ambiente e se utilizzato come consigliato.

10.3. Possibilità di reazioni pericolose

Possibilità di reazioni pericolose I seguenti materiali possono reagire con il prodotto: Acidi. Epossidi. Agenti ossidanti. Perossidi.

10.4. Condizioni da evitare

Condizioni da evitare Non sono previsti requisiti specifici nelle condizioni d'uso normali.

10.5. Materiali incompatibili

Materiali da evitare Acidi. Epossidi. Agenti ossidanti. Perossidi.

10.6. Prodotti di decomposizione pericolosi

Prodotti di decomposizione pericolosi Ossidi di carbonio. Ossidi di azoto.

SEZIONE 11: Informazioni tossicologiche

11.1. Informazioni sugli effetti tossicologici

Tossicità acuta - orale

STA orale (mg/kg) 1.244,54

Tossicità acuta - dermica

STA dermico (mg/kg) 3.234,71

GEBOFIX EPO PLUS RE comp B

Tossicità acuta - inalazione

STA inalazione (polveri/nebbie mg/L)	58,23

Sensibilizzazione cutanea

Sensibilizzazione cutanea	Sensibilizzante.

Inalazione	Il vapore può irritare le vie respiratorie/i polmoni.
Ingestione	Può provocare dolori addominali o vomito.
Contatto con la pelle	Può provocare sensibilizzazione per contatto con la pelle. Può provocare gravi ustioni chimiche alla pelle.
Contatto con gli occhi	Rischio di gravi lesioni oculari. Può provocare ustioni chimiche degli occhi.
Pericoli per la salute acuti e cronici	Può provocare sensibilizzazione per contatto con la pelle. Provoca gravi ustioni.
Via di esposizione	Contatto con la pelle e/o gli occhi. Inalazione
Organi bersaglio	Non sono noti organi bersaglio specifici.
Sintomi medici	I sintomi successivi alla sovraesposizione possono includere quanto segue: Ustioni chimiche.

Informazioni tossicologiche sugli ingredienti

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Tossicità acuta - orale

Tossicità acuta orale (DL_{50} mg/kg)	700,0
Specie	Ratto

Tossicità acuta - dermica

Tossicità acuta dermica (DL_{50} mg/kg)	1.700,0
Specie	Coniglio

STYRENATED PHENOL

Tossicità acuta - orale

Tossicità acuta orale (DL_{50} mg/kg)	2.000,0
Specie	Ratto

Tossicità acuta - dermica

Tossicità acuta dermica (DL_{50} mg/kg)	2.000,0
Specie	Ratto

SALICYLIC ACID

Tossicità acuta - orale

GEBOFIX EPO PLUS RE comp B

Tossicità acuta orale (DL_{50} mg/kg)	891,0
Specie	Ratto

Tossicità acuta - dermica

Tossicità acuta dermica (DL_{50} mg/kg)	2.000,0
Specie	Ratto

1,3-BENZENEDIMETHANAMINE

Tossicità acuta - orale

Tossicità acuta orale (DL_{50} mg/kg)	1.090,0
Specie	Ratto
STA orale (mg/kg)	1.090,0

Tossicità acuta - dermica

Tossicità acuta dermica (DL_{50} mg/kg)	2.000,0
Specie	Ratto

Tossicità acuta - inalazione

Tossicità acuta per inalazione (CL_{50} polvere/nebbia mg/L)	1,34
Specie	Ratto
STA inalazione (polveri/nebbie mg/L)	1,34

SEZIONE 12: Informazioni ecologiche

12.1. Tossicità

Informazioni ecologiche sugli ingredienti

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Tossicità acquatica acuta

Tossicità acuta - pesci	LC50, > 96 ore: 100 mg/L, Leuciscus idus (Ido dorato)
Tossicità acuta - invertebrati acquatici	CE_{50}, 48 ore: 29 mg/L, Daphnia magna
Tossicità acuta - piante acquatiche	CE_{50}, > 96 ore: 100 mg/L, Scenedesmus subspicatus
Tossicità acuta - organismi terrestri	CE_{50}, > 14 giorni: 1000 mg/kg, Eisenia Fetida (Earthworm)

STYRENATED PHENOL

Tossicità acquatica acuta

GEBOFIX EPO PLUS RE comp B

Tossicità acuta - pesci	LC50, 96 ore: 14.8 mg/L,
Tossicità acuta - invertebrati acquatici	CE_{50}, 48 ore: 1-10 mg/L, Daphnia magna
Tossicità acuta - piante acquatiche	CE_{50}, 72 ore: 3.14 mg/L, Scenedesmus subspicatus

Tossicità acquatica cronica

NOEC	$0.01 < NOEC \leq 0.1$

SALICYLIC ACID

Tossicità acquatica acuta

Tossicità acuta - pesci	LC50, 48 ore: 90 mg/L, Leuciscus idus (Ido dorato)
Tossicità acuta - microrganismi	CE_{50}, > 3 ore: 3200 mg/L, Fanghi attivi

1,3-BENZENEDIMETHANAMINE

Tossicità acquatica acuta

Tossicità acuta - pesci	LC50, 96 ore: 75 mg/L, Leuciscus idus (Ido dorato)
Tossicità acuta - invertebrati acquatici	CE_{50}, 48 ore: 15.2 mg/L, Daphnia magna
Tossicità acuta - piante acquatiche	CE_{50}, 72 ore: 12 mg/L, Scenedesmus subspicatus

12.2. Persistenza e degradabilità

Persistenza e degradabilità Non sono disponibili dati sulla degradabilità di questo prodotto.

12.3. Potenziale di bioaccumulo

Potenziale di bioaccumulo Nessun dato disponibile sul bioaccumulo.

Coefficiente di ripartizione Non determinate.

12.4. Mobilità nel suolo

Mobilità Mobile. Il prodotto è miscibile con l'acqua e può disperdersi nei sistemi idrici.

12.5. Risultati della valutazione PBT e vPvB

Risultati della valutazione PBT e vPvB Questo prodotto non contiene alcuna sostanza classificata come PBT (persistente, bioaccumulabile e tossica) o vPvB (molto persistente e molto bioaccumulabile).

12.6. Altri effetti avversi

SEZIONE 13: Considerazioni sullo smaltimento

13.1. Metodi di trattamento dei rifiuti

Informazioni generali Residui e recipienti vuoti devono essere trattati come rifiuti pericolosi in conformità alle disposizioni locali e nazionali.

Metodi di smaltimento Smaltire i rifiuti tramite un'impresa di smaltimento rifiuti autorizzata.

Classe di rifiuti La classificazione dei codici di smaltimento deve essere eseguita in conformità al Catalogo europeo dei rifiuti (CER).

SEZIONE 14: Informazioni sul trasporto

GEBOFIX EPO PLUS RE comp B

14.1. Numero ONU

Numero ONU (ADR/RID)	2735
Numero ONU (IMDG)	2735
Numero ONU (ICAO)	2735
Numero ONU (ADN)	2735

14.2. Nome di spedizione dell'ONU

Nome di spedizione (ADR/RID)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nome di spedizione (IMDG)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nome di spedizione (ICAO)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nome di spedizione (ADN)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

14.3. Classi di pericolo connesso al trasporto

Classe ADR/RID	8
Codice di classificazione ADR/RID	C7
Etichetta ADR/RID	8
Classe IMDG	8
Classe/divisione ICAO	8
Classe ADN	8

Etichette per il trasporto

14.4. Gruppo d'imballaggio

Gruppo d'imballaggio ADR/RID	II
Gruppo d'imballaggio IMDG	II
Gruppo d'imballaggio ICAO	II
Gruppo d'imballaggio ADN	II

14.5. Pericoli per l'ambiente

Sostanza pericolosa per l'ambiente/inquinante marino

No.

14.6. Precauzioni speciali per gli utilizzatori

Gruppo di segregazione da Codice IMDG	18. Alcali
Programma di emergenza	F-A, S-B

GEBOFIX EPO PLUS RE comp B

Categoria di trasporto ADR	2
Codice di azione di emergenza	2X
Numero di identificazione del pericolo (ADR/RID)	80
Codice di restrizione in galleria	(E)

14.7. Trasporto di rinfuse secondo l'allegato II di MARPOL ed il codice IBC

Trasporto di rinfuse secondo l'allegato II di MARPOL 73/78 ed il codice IBC	Non applicabile.

SEZIONE 15: Informazioni sulla regolamentazione

15.1. Disposizioni legislative e regolamentari su salute, sicurezza e ambiente specifiche per la sostanza o la miscela

Legislazione UE	(EU) No 2015/830
Orientamenti	Workplace Exposure Limits EH40.

15.2. Valutazione della sicurezza chimica

Non è stata effettuata una valutazione della sicurezza chimica.

SEZIONE 16: Altre informazioni

Commenti sulla revisione	NOTA: le linee entro il margine indicano modifiche significative rispetto alla revisione precedente.
Data di revisione	09/01/2020
Numero versione	3.001
Sostituisce la data	27/07/2018
Numero SDS	20842
Indicazioni di pericolo per esteso	H302 Nocivo se ingerito. H312 Nocivo per contatto con la pelle. H314 Provoca gravi ustioni cutanee e gravi lesioni oculari. H315 Provoca irritazione cutanea. H317 Può provocare una reazione allergica cutanea. H318 Provoca gravi lesioni oculari. H319 Provoca grave irritazione oculare. H332 Nocivo se inalato. H411 Tossico per gli organismi acquatici con effetti di lunga durata. H412 Nocivo per gli organismi acquatici con effetti di lunga durata.

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Dichiarazione di prestazione

N. **DPGEB1009** v4

1. Codice di identificazione unico del prodotto-tipo: **Gebofix EPO PLUS RE**

2. Usi previsti:

Uso previsto per il prodotto da costruzione conformemente a ETA 17/0347	
Tipologia	Ancorante chimico per uso in calcestruzzo non fessurato e fessurato
Ancoraggi soggetti a	Carichi statici e quasi-statici: barre filettate M8, M10, M12, M16, M20, M24, M27, M30 barre ad aderenza migliorata Ø8, Ø10, Ø12, Ø16, Ø20, Ø25, Ø32 Azioni sismiche per Categoria di Prestazione C2 (max w = 0,8 mm): barre filettate M12, M16, M20, acciaio con allungamento a rottura $A_5 \geq 19$ %
Supporto	- Calcestruzzo rinforzato o non rinforzato di peso normale secondo la EN 206:2013 - Classi di resistenza da C20/25 a C50/60 secondo la EN 206:2013 - Calcestruzzo non fessurato barre filettate M8, M10, M12, M16, M20, M24, M27, M30 barre ad aderenza migliorata Ø8, Ø10, Ø12, Ø16, Ø20, Ø25, Ø32 - Calcestruzzo fessurato barre filettate M12, M16, M20, M24, M27, M30 barre ad aderenza migliorata Ø12, Ø16, Ø20, Ø25, Ø32
Temperature di servizio	T1: Da -40 °C a +40 °C (max. temperatura di breve periodo +40 °C e max. temperatura continuativa di lungo periodo +24 °C) T3a: Da -40 °C a +60 °C (max. temperatura di breve periodo +60 °C e max. temperatura continuativa di lungo periodo +43 °C) T3b: Da -40 °C a +72 °C (max. temperatura di breve periodo +72 °C e max. temperatura continuativa di lungo periodo +43 °C)
Condizioni ambientali	- X1: Strutture soggette a condizioni interne asciutte acciaio zincato o galvanizzato a caldo classe 4.6, 5.8 o 8.8 acciaio inox A2-70, A4-70 o A4-80 acciaio inox ad alta resistenza alla corrosione - X2: Strutture soggette a esposizione atmosferica esterna (incluse zone industriali e marine) e esposizione interna permanentemente umida, se non esistono condizioni particolarmente aggressive acciaio inox A2-70, A4-70 o A4-80 acciaio inox ad alta resistenza alla corrosione - X3: Strutture soggette a esposizione atmosferica esterna o esposizione interna permanentemente umida, esistono altre condizioni particolarmente aggressive acciaio inox ad alta resistenza alla corrosione Nota: Condizioni particolarmente aggressive sono ad esempio immersione permanente e alternata in acqua di mare o splash-zone in acqua di mare, atmosfera ricca di cloruri delle piscine coperte o atmosfere con estremo inquinamento chimico (come impianti di desolforazione o tunnel stradali dove si usano sali disgelanti)
Condizioni del calcestruzzo	I1: Installazione in calcestruzzo asciutto o umido (saturato d'acqua) e uso in servizio in calcestruzzo asciutto o umido I2: Installazione in fori allagati (non acqua di mare) e uso in servizio in calcestruzzo asciutto o umido
Installazione	Foratura a percussione Installazione praticata da personale adeguatamente qualificato a sotto la supervisione della persona responsabile per le questioni tecniche del cantiere Direzione di installazione: D3 - installazione verso il basso, orizzontale e verso l'alto (ad esempio a soffitto)

Uso previsto per il prodotto da costruzione conformemente a ETA 17/0347	
Progettazione	Ancoraggi progettati in conformità con EN 1992-4 o Technical Report EOTA TR 055 sotto la responsabilità di un ingegnere esperto in ancoraggi e lavori in calcestruzzo. Note di calcolo e disegni verificabili e preparati tenendo conto dei carichi da ancorare. La posizione dell'ancorante indicata sui disegni di progetto. Gli ancoraggi sottoposti ad azioni sismiche (calcestruzzo fessurato) devono essere progettati in conformità con EN 1992-4.

Uso previsto per il prodotto da costruzione conformemente a ETA 17/0368	
Tipologia	Ancorante chimico a iniezione per connessioni post-installate di barre di rinforzo in strutture esistenti
Ancoraggi soggetti a	Carichi statici e quasi-statici: barre ad aderenza migliorata Ø8, Ø10, Ø12, Ø14, Ø16, Ø20, Ø25, Ø28, Ø32, Ø40
Supporto	- Calcestruzzo rinforzato o non rinforzato di peso normale secondo EN 206-1:2000-12 - Classi di resistenza da C12/1 a C50/60 secondo EN 206-1:2000-12 - Calcestruzzo non carbonatato - Contenuto massimo di cloruro 0,40% (CL 0.40) secondo EN 206-1:2000-12
Temperature di servizio	Da -40 °C a +40 °C (max. temperatura di breve periodo +40 °C e max. temperatura continuativa di lungo periodo +24 °C)
Condizioni del calcestruzzo	Installazione in calcestruzzo asciutto o umido
Installazione	Calcestruzzo asciutto e umido. Non deve essere eseguita l'installazione in fori allagati. Foratura a percussione, ad aria compressa o con utensili diamantati. L'installazione di ferri d'armatura post-installati deve essere effettuata solo da installatore adeguatamente addestrato e sotto supervisione in loco. Le condizioni alle quali un installatore può essere considerato adeguatamente addestrato e le condizioni della supervisione in loco sono competenza degli Stati Membri in cui si è fatta l'installazione. Controllare la posizione delle armature esistenti.
Progettazione	Ancoraggi progettati sotto la responsabilità di un ingegnere esperto in ancoraggi e lavori in calcestruzzo. Note di calcolo e disegni verificabili e preparati tenendo conto dei carichi da trasmettere. Progettazione in conformità con EN 1992-1-1:2004. La posizione dei rinforzi nella struttura esistente deve essere determinata sulla base della documentazione di costruzione e presa in considerazione durante la progettazione.

3. Fabbricante: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italia

5. Sistema di VVCP: 1

6b.
Documento per la Valutazione Europea: EAD 330499-00-0601
Valutazione Tecnica Europea: ETA 17/0347
Organismo di Valutazione Tecnica: TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Organismo Notificato: 1020 TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.

Documento per la Valutazione Europea: ETAG 001 Parte 1 e Parte 5, edizione 2013, usato come DVE
Valutazione Tecnica Europea: ETA 17/0368
Organismo di Valutazione Tecnica: TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Organismo Notificato: 1020 TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.

7. Prestazioni dichiarate:

Prestazioni dichiarate in base a EAD 330499-00-0601, ETA 17/0347 (Metodo di progetto EN 1992-4, *Technical Report* TR 055)

Resistenza meccanica e stabilità (Requisito di Base / BWR 1)

Diametro barre filettate					**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Caratteristiche essenziali					**Prestazione**							
Parametri di installazione												
d	Diametro nominale della barra			[mm]	8	10	12	16	20	24	27	30
d_0	Diametro del foro			[mm]	10	12	14	18	22	26	30	35
d_b	Diametro dello scovolino in acciaio			[mm]	11	14	15	22	24	31	31	38
$h_{ef,min}$	Minima profondità effettiva di ancoraggio			[mm]	60	60	70	80	90	96	108	120
$h_{ef,max}$	Massima profondità effettiva di ancoraggio			[mm]	160	200	240	320	400	480	540	600
h_1	Profondità del foro			[mm]	h_{ef}							
h_{min}	Spessore minimo del supporto in calcestruzzo			[mm]	h_{ef} + 30 ≥ 100			h_{ef} + 2d_0				
d_{fix}	Diametro del foro nell'oggetto da fissare			[mm]	9	12	14	18	22	26	30	33
T_{inst}	Massima coppia di serraggio			[Nm]	10	20	40	80	120	160	180	200
t_{fix}	Spessore fissabile			[mm]	0 to 1500							
s_{min}	Minimo interasse			[mm]	max (h_{ef}/2; 5d)							
c_{min}	Minima distanza dai bordi			[mm]	max (h_{ef}/2; 5d)							
Rottura a trazione dell'acciaio												
$N_{Rk,s}$	Resistenza caratteristica dell'acciaio a trazione, carichi statici			[kN]	$A_s \cdot f_{uk}$							
$N_{Rk,s,eq,C2}$	Resistenza caratteristica dell'acciaio a trazione, azioni sismiche cat. C2	classe 4.6		[kN]	NPD		34	63	98	NPD		
		classe 5.8		[kN]	NPD		42	78	122	NPD		
		classe 8.8		[kN]	NPD		67	125	196	NPD		
		acciaio inox A2, A4 e ad alta resistenza alla corrosione		[kN]	NPD		59	110	171	NPD		
Modalità di rottura combinata per sfilamento e rottura del calcestruzzo												
Resistenza caratteristica di adesione												
cls non fessurato	temp. T1	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	15	15	15	12	12	12	11	9,5
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	15	14	13	10	9,5	8,5	7,5	7,0
	temp. T3a	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	9,5	9,5	9,0	8,5	8,0	7,5	7,5	7,5
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	9,5	9,5	9,0	8,5	7,5	7,0	6,5	6,0
	temp. T3b	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	8,5	8,5	8,0	7,5	7,0	7,0	6,5	6,5
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	8,5	8,5	8,0	7,5	7,0	6,0	5,5	5,5

Diametro barre filettate					**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Caratteristiche essenziali					**Prestazione**							
cls fessurato	temp. T1	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		7,5	6,5	6,0	5,5	5,5	5,5
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		7,5	6,0	5,0	4,5	4,0	4,0
	temp. T3a	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,5	4,0	3,5	3,5	3,5	3,5
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,5	4,0	3,5	3,5	3,5	3,5
	temp. T3b	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,0	3,5	3,0	3,0	3,0	3,0
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,0	3,5	3,0	3,0	3,0	3,0
azioni sismiche cat. C2	temp. T1	calcestruzzo asciutto e umido	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,5	3,2	3,0	NPD		
		fori allagati	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,5	3,2	3,0	NPD		
	temp. T3a	calcestruzzo asciutto e umido	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,0	2,7	2,5	NPD		
		fori allagati	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,0	2,7	2,5	NPD		
	temp. T3b	calcestruzzo asciutto e umido	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		2,8	2,5	2,3	NPD		
		fori allagati	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		2,8	2,5	2,3	NPD		
$\psi_{c,C30/37}$	Fattore di incremento per cls C30/37			[-]	1,04							
$\psi_{c,C40/50}$	Fattore di incremento per cls C40/50			[-]	1,07							
$\psi_{c,C50/60}$	Fattore di incremento per cls C50/60			[-]	1,09							
Modalità di rottura a cono del calcestruzzo												
k_1	Fattore per progettazione secondo TR 055 in calcestruzzo non fessurato			[-]	10,1							
$k_{ucr,N}$	Fattore per progettazione secondo EN 1992-4 in calcestruzzo non fessurato			[-]	11,0							
k_1	Fattore per progettazione secondo TR 055 in calcestruzzo fessurato			[-]	NPD		7,2					
$k_{cr,N}$	Fattore per progettazione secondo EN 1992-4 in calcestruzzo fessurato			[-]	NPD		7,7					
$c_{cr,N}$	Distanza dal bordo critica			[mm]	1,5 h_{ef}							
Modalità di rottura per fessurazione												
$s_{cr,sp}$	Interasse critico per fessurazione			[mm]	2 $c_{cr,sp}$							
$c_{cr,sp}$	Distanza dal bordo critica per fessurazione per $h/h_{ef} \geq 2,0$			[mm]	1,0 h_{ef}							
	Distanza dal bordo critica per fessurazione per $2,0 > h/h_{ef} > 1,3$			[mm]	4,6 h_{ef} - 1,8 h							
	Distanza dal bordo critica per fessurazione per $h/h_{ef} \leq 1,3$			[mm]	2,26 h_{ef}							
Coefficiente di sicurezza per l'installazione												
γ_{inst}	Coefficiente di sicurezza, calcestruzzo asciutto e umido			[-]	1,0							
	Coefficiente di sicurezza, fori allagati			[-]	1,0							

Diametro barre filettate				**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Caratteristiche essenziali				**Prestazione**							
Rottura dell'acciaio a taglio senza braccio di leva											
$V_{Rk,s}$	Resistenza caratteristica dell'acciaio a taglio, carichi statici		[kN]	$0,5 \cdot A_s \cdot f_{uk}$							
$V_{Rk,s,eq,C2}$	Resistenza caratteristica dell'acciaio a taglio, azioni sismiche cat. C2	classe 4.6	[kN]	NPD		13	18	28	NPD		
		classe 5.8	[kN]	NPD		16	22	35	NPD		
		classe 8.8	[kN]	NPD		25	36	56	NPD		
		fatt. di riduzione per acciaio galvanizzato a caldo $\alpha_{v,hdg,C2}$	[-]	NPD		0,46	0,61	0,61	NPD		
		acciaio inox A2, A4 e ad alta resistenza alla corrosione	[kN]	NPD		22	31	49	NPD		
k_7	Fattore di duttilità per gruppi di ancoranti		[-]	1,0 per acciaio con allungamento a rottura $A_5 > 8$ %							
α_{gap}	Fattore per lo spazio anulare, azioni sismiche cat. C2		[-]	0,5							
Rottura dell'acciaio a taglio con braccio di leva											
$M^0_{Rk,s}$	Resistenza caratteristica dell'acciaio a flessione, carichi statici		[Nm]	$1,2 \cdot W_{el} \cdot f_{uk}$							
Rottura per scalzamento del calcestruzzo											
k / k_3	Fattore per resistenza a rottura per scalzamento		[-]	2,0							
γ_{inst}	Coefficiente di sicurezza per l'installazione		[-]	1,0							
Rottura del bordo del calcestruzzo											
d_{nom}	Diametro esterno dell'ancorante		[mm]	8	10	12	16	20	24	27	30
l_f	Lunghezza effettiva dell'ancorante		[mm]	$\min(h_{ef}; 8\ d_{nom})$							
γ_{inst}	Coefficiente di sicurezza per l'installazione		[-]	1.0							
Spostamento a carico di trazione, calcestruzzo non fessurato											
N	Carico di servizio a trazione		[kN]	11,9	14,3	19,0	23,8	35,7	35,7	45,2	45,2
δ_{N0}	Spostamento a breve termine sotto carico di trazione		[mm]	0,3	0,3	0,3	0,4	0,4	0,5	0,5	0,5
$\delta_{N\infty}$	Spostamento a lungo termine sotto carico di trazione		[mm]	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
Spostamento a carico di trazione, calcestruzzo fessurato											
N	Carico di servizio a trazione		[kN]	NPD		14,3	16,7	23,8	28,6	28,6	28,6
δ_{N0}	Spostamento a breve termine sotto carico di trazione		[mm]	NPD		0,4	0,5	0,5	0,6	0,6	0,7
$\delta_{N\infty}$	Spostamento a lungo termine sotto carico di trazione		[mm]	NPD		2,0	2,0	2,0	2,0	2,0	2,0
Spostamento a carico di trazione, azioni sismiche cat. C2											
$\delta_{N,eq(DLS)}$	Spostamento Stato Limite di Danno		[mm]	NPD		0,20	0,40	0,77	NPD		
$\delta_{N,eq(ULS)}$	Spostamento Stato Limite Ultimo		[mm]	NPD		0,76	0,74	1,68	NPD		

Diametro barre filettate			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Caratteristiche essenziali			**Prestazione**							
Spostamento a carico di taglio, calcestruzzo non fessurato e fessurato										
V	Carico di servizio a taglio	[kN]	3,5	5,5	8,0	15,0	23,3	33,6	43,7	53,4
δ_{V0}	Spostamento a breve termine sotto carico di taglio	[mm]	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5
$\delta_{V\infty}$	Spostamento a lungo termine sotto carico di taglio	[mm]	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7
Spostamento a carico di taglio, azioni sismiche cat. C2										
$\delta_{V,eq(DLS)}$	Spostamento Stato Limite di Danno	[mm]	NPD		5,29	4,12	4,94	NPD		
$\delta_{V,eq(ULS)}$	Spostamento Stato Limite Ultimo	[mm]	NPD		10,20	9,05	10,99	NPD		

Diametro della barra ad aderenza migliorata			**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Caratteristiche essenziali			**Prestazione**						
Parametri di installazione									
d	Diametro nominale della barra	[mm]	8	10	12	16	20	25	32
d_0	Diametro del foro	[mm]	12	14	16	20	25	32	40
d_b	Diametro dello scovolino in acciaio	[mm]	12	14	18	22	27	35	43
$h_{ef,min}$	Minima profondità effettiva di ancoraggio	[mm]	60	60	70	80	90	100	128
$h_{ef,max}$	Massima profondità effettiva di ancoraggio	[mm]	160	200	240	320	400	500	640
h_1	Profondità del foro	[mm]	h_{ef}						
h_{min}	Spessore minimo del supporto in calcestruzzo	[mm]	h_{ef} + 30 ≥ 100			$h_{ef} + 2d_0$			
s_{min}	Minimo interasse	[mm]	$\max(h_{ef}/2; 40)$				$\max(h_{ef}/2; 50)$		$\max(h_{ef}/2; 70)$
c_{min}	Minima distanza dai bordi	[mm]	$\max(h_{ef}/2; 40)$				$\max(h_{ef}/2; 50)$		$\max(h_{ef}/2; 70)$
Rottura a trazione dell'acciaio									
$N_{Rk,s}$	Resistenza caratteristica dell'acciaio a trazione	[kN]	$A_s \cdot f_{uk}$						
Modalità di rottura combinata per sfilamento e rottura del calcestruzzo									
Resistenza caratteristica di adesione									
cls non fessurato	temp. T1	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	13	13	13	12	12	11	8,0
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	13	13	11	9,5	8,5	7,5	6,0
	temp. T3a	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	8,5	8,5	8,0	7,5	7,0	7,0	6,5
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	8,5	8,5	8,0	7,5	7,0	6,0	5,0
	temp. T3b	calcestruzzo asciutto e umido	$\tau_{Rk,ucr}$	[N/mm²]	7,5	7,5	7,5	7,0	6,5	6,0	6,0
		fori allagati	$\tau_{Rk,ucr}$	[N/mm²]	7,5	7,5	7,5	7,0	6,0	5,5	4,5

Diametro della barra ad aderenza migliorata					**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Caratteristiche essenziali					**Prestazione**						
cls fessurato	temp. T1	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		7,5	6,5	6,0	5,5	5,5
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		7,5	6,0	5,0	4,5	4,0
	temp. T3a	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,5	4,0	3,5	3,5	3,5
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,5	4,0	3,5	3,5	3,0
	temp. T3b	calcestruzzo asciutto e umido	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,0	3,5	3,0	3,0	3,0
		fori allagati	$\tau_{Rk,cr}$	[N/mm²]	NPD		4,0	3,5	3,0	3,0	3,0
$\psi_{c,C30/37}$	Fattore di incremento per cls C30/37			[-]	1,04						
$\psi_{c,C40/50}$	Fattore di incremento per cls C40/50			[-]	1,07						
$\psi_{c,C50/60}$	Fattore di incremento per cls C50/60			[-]	1,09						
Modalità di rottura a cono del calcestruzzo											
k_1	Fattore per progettazione secondo TR 055 in calcestruzzo non fessurato			[-]	10,1						
$k_{ucr,N}$	Fattore per progettazione secondo EN 1992-4 in calcestruzzo non fessurato			[-]	11,0						
k_1	Fattore per progettazione secondo TR 055 in calcestruzzo fessurato			[-]	NPD		7,2				
$k_{cr,N}$	Fattore per progettazione secondo EN 1992-4 in calcestruzzo fessurato			[-]	NPD		7,7				
$c_{cr,N}$	Distanza dal bordo critica			[mm]	1,5 h_{ef}						
Modalità di rottura per fessurazione											
$s_{cr,sp}$	Interasse critico per fessurazione			[mm]	2 $c_{cr,sp}$						
$c_{cr,sp}$	Distanza dal bordo critica per fessurazione per $h/h_{ef} \geq 2,0$			[mm]	1,0 h_{ef}						
	Distanza dal bordo critica per fessurazione per $2,0 > h/h_{ef} > 1,3$			[mm]	4,6 h_{ef} - 1,8 h						
	Distanza dal bordo critica per fessurazione per $h/h_{ef} \leq 1,3$			[mm]	2,26 h_{ef}						
Coefficiente di sicurezza per l'installazione											
γ_{inst}	Coefficiente di sicurezza, calcestruzzo asciutto e umido			[-]	1,0						
	Coefficiente di sicurezza, fori allagati			[-]	1,2						
Rottura dell'acciaio a taglio senza braccio di leva											
$V_{Rk,s}$	Resistenza caratteristica dell'acciaio a taglio			[kN]	0,50 · A_s · f_{uk}						
k_7	Fattore di duttilità per gruppi di ancoranti			[-]	1,0 per acciaio con allungamento a rottura $A_5 > 8$ %						
Rottura dell'acciaio a taglio con braccio di leva											
$M^0_{Rk,s}$	Resistenza caratteristica dell'acciaio a flessione			[Nm]	1,2 · W_{el} · f_{uk}						

Diametro della barra ad aderenza migliorata			**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Caratteristiche essenziali			**Prestazione**						
Rottura per scalzamento del calcestruzzo									
k / k_3	Fattore per resistenza a rottura per scalzamento	[mm]	2,0						
γ_{inst}	Coefficiente di sicurezza per l'installazione	[-]	1,0						
Rottura del bordo del calcestruzzo									
d_{nom}	Diametro esterno dell'ancorante	[mm]	8	10	12	16	20	25	32
l_f	Lunghezza effettiva dell'ancorante	[mm]	$\min(h_{ef}; 8\ d_{nom})$						
γ_{inst}	Coefficiente di sicurezza per l'installazione	[-]	1.0						
Spostamento a carico di trazione, calcestruzzo non fessurato									
N	Carico di servizio a trazione	[kN]	7,6	11,9	16,7	28,6	35,7	45,2	66,7
δ_{N0}	Spostamento a breve termine sotto carico di trazione	[mm]	0,3	0,3	0,4	0,4	0,4	0,5	0,5
$\delta_{N\infty}$	Spostamento a lungo termine sotto carico di trazione	[mm]	0,6	0,6	0,6	0,6	0,6	0,6	0,6
Spostamento a carico di trazione, calcestruzzo fessurato									
N	Carico di servizio a trazione	[kN]	NPD		11,9	19,0	23,8	28,6	35,7
δ_{N0}	Spostamento a breve termine sotto carico di trazione	[mm]	NPD		0,4	0,5	0,5	0,6	0,6
$\delta_{N\infty}$	Spostamento a lungo termine sotto carico di trazione	[mm]	NPD		2,0	2,0	2,0	2,0	2,0
Spostamento a carico di taglio, calcestruzzo non fessurato e fessurato									
V	Carico di servizio a taglio	[kN]	6,6	10,3	14,8	26,3	41,1	64,3	105,3
δ_{V0}	Spostamento a breve termine sotto carico di taglio	[mm]	2,5	2,5	2,5	2,5	2,5	2,5	2,5
$\delta_{V\infty}$	Spostamento a lungo termine sotto carico di taglio	[mm]	3,7	3,7	3,7	3,7	3,7	3,7	3,7

Igiene, salute e ambiente (Requisito di Base / BWR 3)

Nessuna Prestazione Determinata

Prestazioni dichiarate in base a ETAG 001:2013 Parte 1 e Parte 5, ETA 17/0368 (Metodo di progetto EN 1992-1-1:2004)

Diametro della barra ad aderenza migliorata				**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**	**Ø40**
Caratteristiche essenziali				**Prestazione**									
Parametri di installazione													
d_s	Diametro nominale della barra		[mm]	8	10	12	14	16	20	25	28	32	40
d_0	Diametro del foro		[mm]	12	14	16	18	20	25	32	35	40	55
min c	Minimo copriferro	foratura a percussione	[mm]	$30 + 0{,}06 \cdot l_v \geq 2 \cdot d_s$									
		foratura ad aria compressa	[mm]	$50 + 0{,}08 \cdot l_v$									
		foratura con utensili diamantati	[mm]	$50 + 0{,}08 \cdot l_v$									

Diametro della barra ad aderenza migliorata				**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**	**Ø40**
Caratteristiche essenziali				**Prestazione**									
$l_{b,min}$	Minima profondità di ancoraggio (condizioni buone)		[mm]	113	142	170	198	227	284	354	397	454	851
$l_{0,min}$	Minima lunghezza di sovrapposizione (condizioni buone)		[mm]	200	200	200	210	240	300	375	420	480	900
l_{max}	Lunghezza massima di installazione (condizioni buone)		[mm]	400	500	600	700	800	1000	1000	1000	1000	1000
Bond resistance													
f_{bd}	Valore di progetto della tensione di aderenza ultima per metodi di foratura a percussione e buone condizioni	C12/15	[N/mm^2]	1,6									1,5
		C16/20	[N/mm^2]	2,0									1,8
		C20/25	[N/mm^2]	2,3									2,1
		C25/30	[N/mm^2]	2,7									2,1
		C30/37	[N/mm^2]	3,0									2,1
		C35/45	[N/mm^2]	3,4									2,1
		C40/50	[N/mm^2]	3,7									2,1
		C45/55	[N/mm^2]	4,0								3,7	2,1
		C50/60	[N/mm^2]	4,3								3,7	2,1
f_{bd}	Valore di progetto della tensione di aderenza ultima per metodo di foratura con utensili diamantati e buone condizioni	C12/15	[N/mm^2]	1,6									1,5
		C16/20	[N/mm^2]	2,0									1,8
		C20/25	[N/mm^2]	2,3									2,1
		C25/30	[N/mm^2]	2,7									2,1
		C30/37	[N/mm^2]	3,0									2,1
		C35/45	[N/mm^2]	3,4									2,1
		C40/50	[N/mm^2]	3,7								3,4	2,1
		C45/55	[N/mm^2]	4,0								3,4	2,1
		C50/60	[N/mm^2]	4,3								3,4	2,1

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:

Andrea Maggioni, General manager

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10029 VILLASTELLONE (TO)
Tel. 011 9619433 - Fax 011 9619382

Villastellone, 27 agosto 2018

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TECHNICAL DATASHEET

Gebofix EPO PLUS RE high performance epoxy chemical anchor

Certificates

ETA 17/0347 Certification Option 1 for anchoring of threaded bars and reinforcing bars on non-cracked and cracked concrete. Performance category C2 for seismic actions, threaded bars M12, M16, M20
ETA 17/0368 Certification for reinforcing bars, design according to Eurocode 2 (EN 1992-1-1)
Class A+ for emission of volatile organic compounds (VOCs) in living spaces

Base material

certified use	specific use
non-cracked concrete cracked concrete	natural stone solid, perforated and hollow masonry wood

Sizes

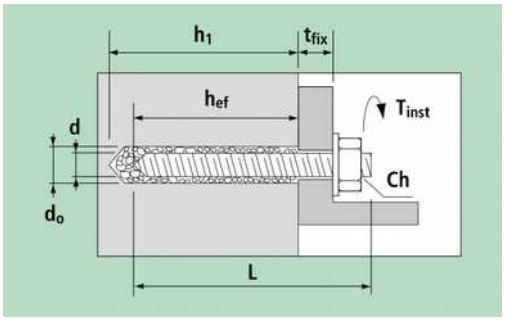
art.	content	mixer	gun
CCPE585	585 ml	03064	CP19
CCPE385	385 ml	03064	CP18, CP19

Intended use

Dry or wet concrete
Flooded holes on concrete
Installation temperature: between +5 and +40 °C
Work temperature: I between -40 and +40 °C (maximum short term temperature +40 °C; long term +24 °C)
II between -40 and +60 °C (maximum short term temperature +60 °C; long term +43 °C)
II between -40 and +72 °C (maximum short term temperature +72 °C; long term +43 °C)
Shelf life: 24 months (storage temperature between +5 and +25 °C)

Time and temperatures

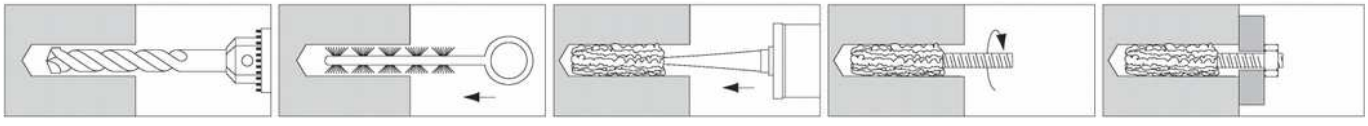
temperature of base material	working time	full curing dry base material	full curing wet base material
+5 ÷ +9 °C	120 min	50 h	100 h
+10 ÷ +14 °C	45 min	30 h	60 h
+15 ÷ +19 °C	25 min	18 h	36 h
+20 ÷ +29 °C	12 min	10 h	20 h
+30 ÷ +39 °C	6 min	6 h	12 h
+40 °C	5 min	4 h	8 h



d = bar diameter
L = bar length
t_{fix} = fixable thickness
d_0 = hole diameter
h_1 = minimum hole depth
h_{nom} = setting depth
h_{ef} = effective anchorage depth
d_f = diameter of clearance hole in fixture
T_{inst} = tightening torque

$h_{ef} = h_1 = h_{nom}$

Installation



- **Use on non-cracked and cracked concrete with threaded bars**

Setting parameters

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
hole diameter	d_0 mm	10	12	14	18	22	26	30	35
hole depth = effective anchorage depth	$h_{ef,min}$ mm	60	60	70	80	90	96	108	120
	$h_{ef,max}$ mm	160	200	240	320	400	480	540	600
diameter of clearance hole in fixture	d_f (mm)	9	12	14	18	22	26	30	33
minimum spacing	s_{min} mm	$\max(h_{ef} / 2; 5d)$							
minimum edge distance	c_{min} mm	$\max(h_{ef} / 2; 5d)$							
min. base material thickness	h_{min} mm	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$				
tightening torque	T_{inst} Nm	10	20	40	80	120	160	180	200

Strength data

For installation on dry or wet concrete and work temperature I (minimum temperature -40 °C, maximum short term temperature +40 °C; long term +24 °C)
Valid for a single anchor far from the edges, on a thick concrete member of class C20/25 with sparse reinforcing.

○ Threaded bars on non-cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tension	$N_{Rk,p}$ (kN)	30.2	42.4	58.3	70.6	111.9	153.7	187.8	224.0

Design resistance
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tension	N_{Rd} (kN)	12.0 19.3	19.3 28.3	28.0 38.8	47.1	74.6	102.5	125.2	149.4
shear	V_{Rd} (kN)	7.2 12.0	12.0 18.4	16.8 27.2	31.2 50.4	48.8 78.4	70.4 112.8	92.0 147.2	112.0 179.2

Recommended load
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tension	N_{rec} (kN)	8.6 13.8	13.8 20.2	20.0 27.7	33.6	53.3	73.2	89.4	106.7
shear	V_{rec} (kN)	5.1 8.6	8.6 13.1	12.0 19.4	22.3 36.0	34.9 56.0	50.3 80.6	65.7 105.1	80.0 128.0

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

○ Threaded bars on cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tension	$N_{Rk,p}$ (kN)	31.1	40.8	64.1	87.1	112.0	140.0

Design resistance
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tension	N_{Rd} (kN)	20.7	27.2	42.7	58.1	74.6	93.3
shear	V_{Rd} (kN)	16.8 27.2	31.2 50.4	48.8 78.4	70.4 112.8	92.0 147.2	112.0 179.2

Recommended load (kN)
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
embedment depth	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tension	N_{rec} (kN)	14.8	19.4	30.5	41.5	53.3	66.6
shear	V_{rec} (kN)	12.0 19.4	22.3 36.0	34.9 56.0	50.3 80.6	65.7 105.1	80.0 128.0

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

- **Use on non-cracked and cracked concrete with reinforcing bars** (used as anchors)

Setting parameters

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
hole diameter	d_0 mm	12	14	16	20	25	32	40
hole depth = effective anchorage depth	$h_{ef,min}$ mm	60	60	70	80	90	100	128
	$h_{ef,max}$ mm	160	200	240	320	400	500	640
minimum spacing	s_{min} mm	$\max(h_{ef} / 2; 40)$				$\max(h_{ef} / 2; 50)$		$\max(h_{ef} / 2; 70)$
minimum edge distance	c_{min} mm	$\max(h_{ef} / 2; 40)$				$\max(h_{ef} / 2; 50)$		$\max(h_{ef} / 2; 70)$
min. base material thickness	h_{min} mm	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$			

Strength data

For installation on dry or wet concrete and work temperature I (minimum temperature -40 °C, maximum short term temperature +40 °C; long term +24 °C)
Valid for a single anchor far from the edges, on a thick concrete member of class C20/25 with sparse reinforcing.

- **Reinforcing bars on non-cracked concrete**

Characteristic resistance of resin
at standard embedment depth

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tension	$N_{Rk,p}$ (kN)	26.1	36.8	53.9	87.5	111.9	153.7	241.3

Design resistance
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tension	N_{Rd} (kN)	17.4	24.5	35.9	58.3	74.6	102.5	160.8
shear	V_{Rd} (kN)	9.2	14.4	20.7	36.9	57.6	90.0	147.4

Recommended load
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tension	N_{rec} (kN)	12.4	17.5	25.7	41.6	53.3	73.2	114.9
shear	V_{rec} (kN)	6.6	10.3	14.8	26.3	41.1	64.3	105.3

1 kN ≈ 100 kg
steel failure

○ Reinforcing bars on cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tension	$N_{Rk,p}$ (kN)	31.1	47.4	64.1	90.7	165.9

Design resistance
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tension	N_{Rd} (kN)	20.7	31.6	42.7	60.5	110.6
shear	V_{Rd} (kN)	20.7	36.9	57.6	90.0	147.4

Recommended load
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
embedment depth	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tension	N_{rec} (kN)	14.8	22.6	30.5	43.2	79.0
shear	V_{rec} (kN)	14.8	26.3	41.1	64.3	105.3

1 kN ≈ 100 kg
steel failure

Load values derive from parameters certified in European Technical Assessment ETA 17/0347. Characteristic resistance N_{Rk} refers uniquely to the resin resistance to failure due to pull-out and concrete cone. Design resistances N_{Rd} and V_{Rd} refer to all failure modes and include partial safety factors on strengths. Recommended loads N_{rec} and V_{rec} include the further 1.4 safety factor.

For the design of fixing with reduced spacing, near the edge or on concrete with increased resistance, reduced thickness or dense reinforcement refer to ETA 17/0347 or to Declaration of Performance DPGEB1009 and use the design method outlined in EOTA's *Technical Report 029* or in CEN/TS 1992-4-5:2009. In the same way, for anchors installed in flooded holes and for different working temperatures (II, between -40 and +60 °C, and III, between -40 and +72 °C) refer to ETA. One can also calculate and verify the fixings made with Gebofix EPO PLUS RE by means of *G&B Calculation Program* available on the website www.gebfissaggi.com.

Seismic actions

The anchor can be used under seismic actions for performance category C1 and C2, with threaded bars M12, M16, M20.

For the design of strength of anchors under seismic actions refer to ETA 17/0347 or to Declaration of Performance DPGEB1009 and use the design method outlined in EOTA's *Technical Report 045*.

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Declaration of Performance

No. **DPGEB1009** v4

1. Unique identification code of the product-type: **Gebofix EPO PLUS RE**

2. Intended uses:

Intended use of the construction product according to ETA 17/0347	
Generic type	Bonded injection type anchor for use in non-cracked and cracked concrete
Anchorages subject to	Static and quasi-static loads: threaded rod M8, M10, M12, M16, M20, M24, M27, M30 reinforcing bar Ø8, Ø10, Ø12, Ø16, Ø20, Ø25, Ø32 Seismic actions for Performance Category C2 (max w = 0.8 mm): threaded rod M12, M16, M20, steel with rupture elongation $A_5 \geq 19$ %
Base materials	- Reinforced or unreinforced normal weight concrete according to EN 206:2013 - Strength class C20/25 to C50/60 according to EN 206:2013 - Non-cracked concrete threaded rod M8, M10, M12, M16, M20, M24, M27, M30 reinforcing bar Ø8, Ø10, Ø12, Ø16, Ø20, Ø25, Ø32 - Cracked concrete threaded rod M12, M16, M20, M24, M27, M30 reinforcing bar Ø12, Ø16, Ø20, Ø25, Ø32
Service temperature range	T1: -40 °C to +40 °C (max. short term temperature +40 °C and max. long term temperature +24 °C) T3a: -40 °C to +60 °C (max. short term temperature +60 °C and max. long term temperature +43 °C) T3b: -40 °C to +72 °C (max. short term temperature +72 °C and max. long term temperature +43 °C)
Environmental conditions	- X1: Structures subject to dry internal conditions zinc plated or hot-dip galvanised steel class 4.6, 5.8 or 8.8 stainless steel A2-70, A4-70 or A4-80 high corrosion resistant steel - X2: Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist stainless steel A2-70, A4-70 or A4-80 high corrosion resistant steel - X3: Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist high corrosion resistant steel Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used)
Concrete conditions	I1: installation in dry or wet (water saturated) concrete and use in service in dry or wet concrete I2: installation in water-filled (not sea water) and use in service in dry or wet concrete
Installation	Perforation by hammer drilling Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on job site Installation direction: D3 - downward and horizontal and upwards (e.g. overhead) installation

Intended use of the construction product according to ETA 17/0347	
Design	Anchorages designed in accordance with EN 1992-4 or EOTA Technical Report TR 055 under the responsibility of an engineer experienced in anchorages and concrete work. Verifiable calculation notes and drawings prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings. Anchorages under seismic actions (cracked concrete) have to be designed in accordance with EN 1992-4.

Intended use of the construction product according to ETA 17/0368	
Generic type	Injection system for post-installed connections of reinforcing bars in existing structures
Anchorages subject to	Static and quasi-static loads: reinforcing bar Ø8, Ø10, Ø12, Ø14, Ø16, Ø20, Ø25, Ø28, Ø32, Ø40
Base materials	- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000-12 - Strength class C12/15 to C50/60 according to EN 206-1:2000-12 - Non-carbonated concrete - Maximum chloride content 0.40% (CL 0.40) according to EN 206-1:2000-12
Service temperature range	-40 °C to +80 °C (max. short term temperature +80 °C and max. long term temperature +50 °C)
Installation	Dry or wet concrete. Installation in flooded holes is not allowed. Hole drilling by hammer drill, compressed air drill mode or diamond core drilling. The installation of post-installed rebars shall be done only by suitable trained installer and under supervision on site. The conditions under which an installer may be considered as suitable trained and the conditions for supervision on site are up to the Member States in which the installation is done. Check the position of the existing rebars.
Design	Anchorages designed under the responsibility of an engineer experienced in anchorages and concrete work. Verifiable calculation notes and drawings prepared taking account of the forces to be transmitted. Design according to EN 1992-1-1:2004 The position of the reinforcement in the existing structure shall be determined on the basis of the construction documentation and taken into account when designing.

3. Manufacturer: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italia

5. System of AVCP: 1

6b.
European Assessment Document: EAD 330499-00-0601
European Technical Assessment: ETA 17/0347
Technical Assessment Body: TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Notified body: 1020 TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.

European Assessment Document: ETAG 001 Part 1 and Part 5, edition 2013, used as EAD
European Technical Assessment: ETA 17/0368
Technical Assessment Body: TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Notified body: 1020 TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.

7. Declared performances:

Declared performances according to EAD 330499-00-0601, ETA 17/0347 (Design method EN 1992-4, Technical Report TR 055)

Mechanical resistance and stability (Basic Work Requirement / BWR 1)

Threaded rod diameter					**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Essential characteristics					**Performance**							
Installation parameters												
d	Nominal diameter of bar			[mm]	8	10	12	16	20	24	27	30
d_0	Hole diameter			[mm]	10	12	14	18	22	26	30	35
d_b	Diameter of steel brush			[mm]	11	14	15	22	24	31	31	38
$h_{ef,min}$	Minimum effective anchorage depth			[mm]	60	60	70	80	90	96	108	120
$h_{ef,max}$	Maximum effective anchorage depth			[mm]	160	200	240	320	400	480	540	600
h_1	Depth of the drilling hole			[mm]	h_{ef}							
h_{min}	Minimum thickness of the concrete member			[mm]	h_{ef} + 30 ≥ 100			h_{ef} + $2d_0$				
d_{fix}	Diameter of clearance hole in the fixture			[mm]	9	12	14	18	22	26	30	33
T_{inst}	Maximum installation torque			[Nm]	10	20	40	80	120	160	180	200
t_{fix}	Thickness of fixture			[mm]	0 to 1500							
s_{min}	Minimum spacing			[mm]	max (h_{ef}/2; 5d)							
c_{min}	Minimum edge distance			[mm]	max (h_{ef}/2; 5d)							
Tension steel failure mode												
$N_{Rk,s}$	Characteristic tension resistance of steel, static loads			[kN]	$A_s \cdot f_{uk}$							
$N_{Rk,s,eq,C2}$	Characteristic tension resistance of steel, seismic actions cat. C2	class 4.6		[kN]	NPD		34	63	98	NPD		
		class 5.8		[kN]	NPD		42	78	122	NPD		
		class 8.8		[kN]	NPD		67	125	196	NPD		
		A2, A4 and HCR stainless steel		[kN]	NPD		59	110	171	NPD		
Combined pull-out and concrete failure mode												
Characteristic bond resistance												
non-cracked concrete	temp. T1	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	15	15	15	12	12	12	11	9.5
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	15	14	13	10	9.5	8.5	7.5	7.0
	temp. T3a	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	9.5	9.5	9.0	8.5	8.0	7.5	7.5	7.5
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	9.5	9.5	9.0	8.5	7.5	7.0	6.5	6.0
	temp. T3b	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8.0	7.5	7.0	7.0	6.5	6.5
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8.0	7.5	7.0	6.0	5.5	5.5

Threaded rod diameter					**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Essential characteristics					**Performance**							
cracked concrete	temp. T1	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		7.5	6.5	6.0	5.5	5.5	5.5
		flooded holes	$\tau_{Rk,cr}$	[N/mm²]	NPD		7.5	6.0	5.0	4.5	4.0	4.0
	temp. T3a	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.5	4.0	3.5	3.5	3.5	3.5
		flooded holes	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.5	4.0	3.5	3.5	3.5	3.5
	temp. T3b	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.0	3.5	3.0	3.0	3.0	3.0
		flooded holes	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.0	3.5	3.0	3.0	3.0	3.0
seismic actions cat. C2	temp. T1	dry and wet concrete	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,5	3,2	3,0	NPD		
		flooded holes	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,5	3,2	3,0	NPD		
	temp. T3a	dry and wet concrete	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,0	2,7	2,5	NPD		
		flooded holes	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		3,0	2,7	2,5	NPD		
	temp. T3b	dry and wet concrete	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		2,8	2,5	2,3	NPD		
		flooded holes	$\tau_{Rk,cr,eq,C2}$	[N/mm²]	NPD		2,8	2,5	2,3	NPD		
$\psi_{c,C30/37}$	Increasing factor for concrete C30/37			[-]	1.04							
$\psi_{c,C40/50}$	Increasing factor for concrete C40/50			[-]	1.07							
$\psi_{c,C50/60}$	Increasing factor for concrete C50/60			[-]	1.09							
Concrete cone failure mode												
k_1	Factor for design acc. to TR 055 in non-cracked concrete			[-]	10.1							
$k_{ucr,N}$	Factor for design acc. to EN 1992-4 in non-cracked concrete			[-]	11.0							
k_1	Factor for design acc. to TR 055 in cracked concrete			[-]	NPD		7.2					
$k_{cr,N}$	Factor for design acc. to EN 1992-4 in cracked concrete			[-]	NPD		7.7					
$c_{cr,N}$	Critical edge distance			[mm]	1.5 h_{ef}							
Splitting failure mode												
$s_{cr,sp}$	Critical spacing			[mm]	2 $c_{cr,sp}$							
$c_{cr,sp}$	Critical edge distance for $h/h_{ef} \geq 2.0$			[mm]	1.0 h_{ef}							
	Critical edge distance for $2.0 > h/h_{ef} > 1.3$			[mm]	4.6 h_{ef} - 1.8 h							
	Critical edge distance for $h/h_{ef} \leq 1.3$			[mm]	2.26 h_{ef}							
Installation safety factor												
γ_{inst}	Safety factor, dry and wet concrete			[-]	1.0							
	Safety factor, flooded holes			[-]	1.0							

Threaded rod diameter				**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Essential characteristics				**Performance**							
Shear steel failure mode without lever arm											
$V_{Rk,s}$	Characteristic shear resistance of steel, static loads		[kN]	$0.5 \cdot A_s \cdot f_{uk}$							
$V_{Rk,s,eq,C2}$	Characteristic shear resistance of steel, seismic actions cat. C2	class 4.6	[kN]	NPD		13	18	28	NPD		
		class 5.8	[kN]	NPD		16	22	35	NPD		
		class 8.8	[kN]	NPD		25	36	56	NPD		
		reduction factor for hot-dip galvanized steel $\alpha_{v,hdg,C2}$	[-]	NPD		0,46	0,61	0,61	NPD		
		A2, A4 and HCR stainless steel	[kN]	NPD		22	31	49	NPD		
k_7	Ductility factor for groups of fasteners		[-]	1.0 for steel with rupture elongation A_5 > 8 %							
α_{gap}	Factor for annular gap, seismic actions cat. C2		[-]	0.5							
Shear steel failure mode with lever arm											
$M^0_{Rk,s}$	Characteristic bending resistance of steel, static loads		[Nm]	$1.2 \cdot W_{el} \cdot f_{uk}$							
Concrete pry-out failure mode											
k / k_3	Factor for resistance to pry-out failure		[mm]	2.0							
γ_{inst}	Installation safety factor		[-]	1.0							
Concrete edge failure mode											
d_{nom}	Outside diameter of anchor		[mm]	8	10	12	16	20	24	27	30
l_f	Effective length of anchor		[mm]	$\min(h_{ef}; 8\ d_{nom})$							
γ_{inst}	Installation safety factor		[-]	1.0							
Displacement on tension load, non-cracked concrete											
N	Service tension load		[kN]	11.9	14.3	19.0	23.8	35.7	35.7	45.2	45.2
δ_{N0}	Short term displacement under tension load		[mm]	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5
$\delta_{N\infty}$	Long term displacement under tension load		[mm]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Displacement on tension load, cracked concrete											
N	Service tension load		[kN]	NPD		14.3	16.7	23.8	28.6	28.6	28.6
δ_{N0}	Short term displacement under tension load		[mm]	NPD		0.4	0.5	0.5	0.6	0.6	0.7
$\delta_{N\infty}$	Long term displacement under tension load		[mm]	NPD		2.0	2.0	2.0	2.0	2.0	2.0
Displacement on tension load, seismic actions cat. C2											
$\delta_{N,eq(DLS)}$	Damage Limitation State displacement		[mm]	NPD		0,20	0,40	0,77	NPD		
$\delta_{N,eq(ULS)}$	Ultimate Limit State displacement		[mm]	NPD		0,76	0,74	1,68	NPD		
Displacement on shear load, non-cracked and cracked concrete											
V	Service shear load		[kN]	3.5	5.5	8.0	15.0	23.3	33.6	43.7	53.4
δ_{V0}	Short term displacement under shear load		[mm]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$\delta_{V\infty}$	Long term displacement under shear load		[mm]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Threaded rod diameter			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Essential characteristics			**Performance**							
Displacement on shear load, seismic actions cat. C2										
$\delta_{V,eq(DLS)}$	Damage Limitation State displacement	[mm]	NPD		5,29	4,12	4,94	NPD		
$\delta_{V,eq(ULS)}$	Ultimate Limit State displacement	[mm]	NPD		10,20	9,05	10,99	NPD		

Reinforcing bar diameter				**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Essential characteristics				**Performance**						
Installation parameters										
d	Nominal diameter of bar		[mm]	8	10	12	16	20	25	32
d_0	Hole diameter		[mm]	12	14	16	20	24	32	37
d_b	Diameter of steel brush		[mm]	12	14	18	22	27	35	43
$h_{ef,min}$	Minimum effective anchorage depth		[mm]	60	60	70	80	90	100	128
$h_{ef,max}$	Maximum effective anchorage depth		[mm]	160	200	240	320	400	500	640
h_1	Depth of the drilling hole		[mm]	h_{ef}						
h_{min}	Minimum thickness of the concrete member		[mm]	h_{ef} + 30 ≥ 100			h_{ef} + 2d_0			
s_{min}	Minimum spacing		[mm]	max(h_{ef}/2; 40)				max(h_{ef}/2; 50)		max(h_{ef}/2; 70)
c_{min}	Minimum edge distance		[mm]	max(h_{ef}/2; 40)				max(h_{ef}/2; 50)		max(h_{ef}/2; 70)
Tension steel failure mode										
$N_{Rk,s}$	Characteristic tension resistance of steel		[kN]	$A_s \cdot f_{uk}$						
Combined pull-out and concrete failure mode										
Characteristic bond resistance										
non-cracked concrete	temp. T1	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	13	13	13	12	12	11	8.0
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	13	13	11	9.5	8.5	7.5	6.0
	temp. T3a	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8.0	7.5	7.0	7.0	6.5
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8.0	7.5	7.0	6.0	5.0
	temp. T3b	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	7.5	7.5	7.5	7.0	6.5	6.0	6.0
		flooded holes	$\tau_{Rk,ucr}$	[N/mm²]	7.5	7.5	7.5	7.0	6.0	5.5	4.5
cracked concrete	temp. T1	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		7.5	6.5	6.0	5.5	5.5
		dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		7.5	6.0	5.0	4.5	4.0
	temp. T3a	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.5	4.0	3.5	3.5	3.5
		dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.5	4.0	3.5	3.5	3.0
	temp. T3b	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.0	3.5	3.0	3.0	3.0
		dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	NPD		4.0	3.5	3.0	3.0	3.0
$\psi_{c,C30/37}$	Increasing factor for concrete C30/37			[-]	1.04						
$\psi_{c,C40/50}$	Increasing factor for concrete C40/50			[-]	1.07						
$\psi_{c,C50/60}$	Increasing factor for concrete C50/60			[-]	1.09						

Reinforcing bar diameter			**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Essential characteristics			**Performance**						
Concrete cone failure mode									
k_1	Factor for design acc. to TR 055 in non-cracked concrete	[-]	10.1						
$k_{ucr,N}$	Factor for design acc. to EN 1992-4 in non-cracked concrete	[-]	11.0						
k_1	Factor for design acc. to TR 055 in cracked concrete	[-]	NPD		7.2				
$k_{cr,N}$	Factor for design acc. to EN 1992-4 in cracked concrete	[-]	NPD		7.7				
$c_{cr,N}$	Critical edge distance	[mm]	1.5 h_{ef}						
Splitting failure mode									
$s_{cr,sp}$	Critical spacing	[mm]	2 $c_{cr,sp}$						
$c_{cr,sp}$	Critical edge distance for $h/h_{ef} \geq 2.0$	[mm]	1.0 h_{ef}						
	Critical edge distance for $2.0 > h/h_{ef} > 1.3$	[mm]	4.6 h_{ef} - 1.8 h						
	Critical edge distance for $h/h_{ef} \leq 1.3$	[mm]	2.26 h_{ef}						
Installation safety factor									
γ_{inst}	Safety factor, dry and wet concrete	[-]	1.0						
	Safety factor, flooded holes	[-]	1.2						
Shear steel failure mode without lever arm									
$V_{Rk,s}$	Characteristic shear resistance of steel	[kN]	0.50 · A_s · f_{uk}						
k_7	Ductility factor for groups of fasteners	[-]	1.0 for steel with rupture elongation $A_5 > 8$ %						
Shear steel failure mode with lever arm									
$M^0_{Rk,s}$	Characteristic bending resistance of steel	[Nm]	1.2 · W_{el} · f_{uk}						
Concrete pry-out failure mode									
k / k_3	Factor for resistance to pry-out failure	[mm]	2.0						
γ_{inst}	Installation safety factor	[-]	1.0						
Concrete edge failure mode									
d_{nom}	Outside diameter of anchor	[mm]	8	10	12	16	20	25	32
l_f	Effective length of anchor	[mm]	min(h_{ef}; 8 d_{nom})						
γ_{inst}	Installation safety factor	[-]	1,0						
Displacement on tension load, non-cracked concrete									
N	Service tension load	[kN]	7.6	11.9	16.7	28.6	35.7	45.2	66.7
δ_{N0}	Short term displacement under tension load	[mm]	0.3	0.3	0.4	0.4	0.4	0.5	0.5
$\delta_{N\infty}$	Long term displacement under tension load	[mm]	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Displacement on tension load, cracked concrete									
N	Service tension load	[kN]	NPD		11.9	19.0	23.8	28.6	35.7
δ_{N0}	Short term displacement under tension load	[mm]	NPD		0.4	0.5	0.5	0.6	0.6
$\delta_{N\infty}$	Long term displacement under tension load	[mm]	NPD		2.0	2.0	2.0	2.0	2.0

Reinforcing bar diameter			**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Essential characteristics			**Performance**						
Displacement on shear load, non-cracked and cracked concrete									
V	Service shear load	[kN]	6.6	10.3	14.8	26.3	41.1	64.3	105.3
δ_{V0}	Short term displacement under shear load	[mm]	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Hygiene, health and environment (Basic Work Requirement / BWR 3)

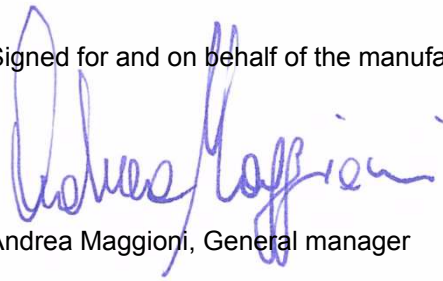
No Performance Determined

Declared performances according to ETAG 001:2013 Part 1 and Part 5, ETA 17/0368 (Design method EN 1992-1-1:2004)

Reinforcing bar diameter				**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**	**Ø40**
Essential Characteristics				**Performance**									
Installation parameters													
d_s	Nominal diameter of bar		[mm]	8	10	12	14	16	20	25	28	32	40
d_0	Nominal diameter of drill bit		[mm]	12	14	16	18	20	25	32	35	40	55
min c	Minimum concrete cover	hammer drilling	[mm]	$30 + 0.06 \cdot l_v \geq 2 \cdot d_s$									
		compressed air drilling	[mm]	$50 + 0.08 \cdot l_v$									
		diamond core drilling	[mm]	$50 + 0.08 \cdot l_v$									
$l_{b,min}$	Minimum anchorage length for good bond conditions		[mm]	113	142	170	198	227	284	354	397	454	851
$l_{0,min}$	Minimum lap length for good bond conditions		[mm]	200	200	200	210	240	300	375	420	480	900
l_{max}	Maximum installation length for good bond conditions		[mm]	400	500	600	700	800	1000	1000	1000	1000	1000
Bond resistance													
f_{bd}	Design ultimate bond resistance for hammer drilling methods and good conditions	C12/15	[N/mm²]	1.6									1.5
		C16/20	[N/mm²]	2.0									1.8
		C20/25	[N/mm²]	2.3									2.1
		C25/30	[N/mm²]	2.7									2.1
		C30/37	[N/mm²]	3.0									2.1
		C35/45	[N/mm²]	3.4									2.1
		C40/50	[N/mm²]	3.7									2.1
		C45/55	[N/mm²]	4.0								3.7	2.1
		C50/60	[N/mm²]	4.3								3.7	2.1
f_{bd}	Design ultimate bond resistance for diamond core drilling methods and good conditions	C12/15	[N/mm²]	1.6									1.5
		C16/20	[N/mm²]	2.0									1.8
		C20/25	[N/mm²]	2.3									2.1
		C25/30	[N/mm²]	2.7									2.1
		C30/37	[N/mm²]	3.0									2.1
		C35/45	[N/mm²]	3.4									2.1
		C40/50	[N/mm²]	3.7								3.4	2.1
		C45/55	[N/mm²]	4.0								3.4	2.1
		C50/60	[N/mm²]	4.3								3.4	2.1

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:



Andrea Maggioni, General manager

Villastellone, 27 August 2018

SAFETY DATA SHEET
GEBOFIX EPO PLUS RE comp A

According to Regulation (EC) No 1907/2006, Annex II, as amended.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name GEBOFIX EPO PLUS RE comp A

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Two-component, epoxy-based adhesive. Resin.

1.3. Details of the supplier of the safety data sheet

Supplier
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Contact person info@gebfissaggi.com

1.4. Emergency telephone number

Emergency telephone +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317

Environmental hazards Aquatic Chronic 2 - H411

2.2. Label elements

Hazard pictograms

Signal word Warning

Hazard statements
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H411 Toxic to aquatic life with long lasting effects.

GEBOFIX EPO PLUS RE comp A

Precautionary statements	P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302+P352 IF ON SKIN: Wash with plenty of water. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333+P313 If skin irritation or rash occurs: Get medical advice/ attention. P501 Dispose of contents/ container in accordance with national regulations.
Contains	EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN, REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)
Supplementary precautionary statements	P261 Avoid breathing vapour/ spray. P264 Wash contaminated skin thoroughly after handling. P272 Contaminated work clothing should not be allowed out of the workplace. P321 Specific treatment (see medical advice on this label). P332+P313 If skin irritation occurs: Get medical advice/ attention. P337+P313 If eye irritation persists: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse. P391 Collect spillage.

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

EPOXY RESIN (Number average MW <= 700) **20-50%**

CAS number: 25068-38-6 EC number: 500-033-5

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

EPOXY PHENOL FORMALDEHYDE RESIN **10-20%**

CAS number: 9003-36-5 EC number: 500-006-8 REACH registration number: 01-2119454392-40

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp A

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)	**5-10%**
CAS number: 933999-84-9	EC number: 618-939-5
REACH registration number: 01-2119463471-41	
Classification Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1A - H317 Aquatic Chronic 3 - H412	

TITANIUM DIOXIDE	**<0.5%**
CAS number: 13463-67-7	EC number: 236-675-5
Classification Not Classified	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments CAS 28064-14-4 = CAS 9003-36-5 (EU) CAS 933999-84-9 = CAS 16096-31-4 (RoW)

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Remove affected person from source of contamination. Get medical attention if any discomfort continues.

Ingestion Do not induce vomiting. Get medical attention immediately.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water.

Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists after washing. Show this Safety Data Sheet to the medical personnel.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation May cause respiratory irritation.

Ingestion May cause stomach pain or vomiting.

Skin contact Prolonged or repeated contact with skin may cause irritation, redness and dermatitis. May cause sensitisation by skin contact.

Eye contact Irritating to eyes.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations. If in doubt, get medical attention promptly.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide or dry powder.

Unsuitable extinguishing media Do not use water, if avoidable.

5.2. Special hazards arising from the substance or mixture

GEBOFIX EPO PLUS RE comp A

Specific hazards Not considered to be a significant hazard due to the small quantities used.

Hazardous combustion products Oxides of carbon. Oxides of nitrogen.

5.3. Advice for firefighters

Protective actions during firefighting No specific requirements are anticipated under normal conditions of use.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. Collect and dispose of spillage as indicated in Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid contact with eyes. Avoid contact with skin.

Advice on general occupational hygiene Do not eat, drink or smoke when using this product. No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

TITANIUM DIOXIDE

Long-term exposure limit (8-hour TWA): WEL 4 mg/m³ respirable dust
Long-term exposure limit (8-hour TWA): WEL 10 mg/m³ inhalable dust
WEL = Workplace Exposure Limit

EPOXY RESIN (Number average MW <= 700) (CAS: 25068-38-6)

GEBOFIX EPO PLUS RE comp A

DNEL

Industry - Inhalation; Long term systemic effects: 12.25 mg/m³
Industry - Inhalation; Short term systemic effects: 12.25 mg/m³
Industry - Dermal; Long term systemic effects: 8.33 mg/kg/day
Industry - Dermal; Short term systemic effects: 8.33 mg/kg/day
REACH dossier information

PNEC

- Fresh water; 0.006 mg/l
- marine water; 0.0006 mg/l
- Intermittent release; 0.018 mg/l
- STP; 10 mg/l
- Sediment (Freshwater); 0.996 mg/kg
- Sediment (Marinewater); 0.0996 mg/kg
- Soil; 0.196 mg/kg

REACH dossier information

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2) (CAS: 933999-84-9)

DNEL

Industry - Inhalation; Long term systemic effects: 4.9 mg/m³
Industry - Inhalation; Short term systemic effects: 4.9 mg/m³
Industry - Inhalation; Long term local effects: 0.44 mg/m³
Industry - Dermal; Long term systemic effects: 2.8 mg/kg/day
Industry - Dermal; Long term local effects: 22.6 µg/cm²
Industry - Dermal; Short term local effects: 22.6 µg/cm²
REACH dossier information

PNEC

- Fresh water; 0.0115 mg/l
- marine water; 0.00115 mg/l
- Intermittent release; 0.115 mg/l
- STP; 1 mg/l
- Sediment (Freshwater); 0.283 mg/kg
- Sediment (Marinewater); 0.0283 mg/kg
- Soil; 0.223 mg/kg

REACH dossier information

TITANIUM DIOXIDE (CAS: 13463-67-7)

DNEL

Industry - Inhalation; Long term systemic effects: 10 mg/m³
REACH dossier information

PNEC

- Fresh water; 0.127 mg/l
- marine water; 1.0 mg/l
- Intermittent release; 0.61 mg/l
- STP; 100 mg/l
- Sediment (Freshwater); 1000 mg/kg
- Sediment (Marinewater); 100 mg/kg
- Soil; 100 mg/kg

REACH dossier information

8.2. Exposure controls

Protective equipment

Appropriate engineering controls

No specific ventilation requirements.

GEBOFIX EPO PLUS RE comp A

Eye/face protection	Wear eye protection.
Hand protection	Wear protective gloves made of the following material: Nitrile rubber.
Hygiene measures	Provide eyewash station. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated.
Respiratory protection	Not relevant.
Environmental exposure controls	Keep container tightly sealed when not in use. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Grey.
Odour	Characteristic.
Odour threshold	Not determined.
pH	Not applicable.
Melting point	Not applicable.
Initial boiling point and range	>35°C @ 760 mm Hg
Flash point	>100°C Closed cup.
Evaporation rate	No information available.
Evaporation factor	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not applicable.
Other flammability	Not available.
Vapour pressure	<500 Pa @ °C
Vapour density	No information available.
Relative density	1.5 - 1.6
Bulk density	Not applicable.
Solubility(ies)	Insoluble in water.
Partition coefficient	Not determined.
Auto-ignition temperature	Not determined.
Decomposition Temperature	Not determined.
Viscosity	> 60 S ISO2431
Explosive properties	No information available.
Explosive under the influence of a flame	No
Oxidising properties	Does not meet the criteria for classification as oxidising.

GEBOFIX EPO PLUS RE comp A

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity The following materials may react with the product: Acids. Amides. Amines. Phenols, cresols.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions The following materials may react with the product: Acids. Amides. Amines. Phenols, cresols.

10.4. Conditions to avoid

Conditions to avoid Avoid contact with acids and alkalis.

10.5. Incompatible materials

Materials to avoid Acids. Amines. Amides.

10.6. Hazardous decomposition products

Hazardous decomposition products Oxides of carbon. Oxides of nitrogen.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Skin sensitisation

Skin sensitisation Sensitising.

General information Contains epoxy constituents. May produce an allergic reaction.

Inhalation No specific health hazards known.

Ingestion No harmful effects expected from quantities likely to be ingested by accident.

Skin contact Irritating to skin. May cause sensitisation by skin contact.

Eye contact May cause severe eye irritation.

Acute and chronic health hazards Irritating to skin. Irritating to eyes.

Route of exposure Skin and/or eye contact

Medical symptoms Skin irritation.

Medical considerations Skin disorders and allergies.

Toxicological information on ingredients.

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 3,010.0

Species Rat

SECTION 12: Ecological information

GEBOFIX EPO PLUS RE comp A

12.1. Toxicity

Ecological information on ingredients.

EPOXY RESIN (Number average MW <= 700)

Acute aquatic toxicity

Acute toxicity - fish	LC50, 96 hours: 2 mg/l, Oncorhynchus mykiss (Rainbow trout)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 1.8 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 11 mg/l, Freshwater algae EC_{50}, 96 hours: 220 mg/l, Scenedesmus subspicatus

Chronic aquatic toxicity

Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 0.3 mg/l, Daphnia magna

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Acute aquatic toxicity

Acute toxicity - fish	LC50, 96 hours: 30 mg/l, Oncorhynchus mykiss (Rainbow trout)

12.2. Persistence and degradability

Persistence and degradability The product is not biodegradable.

Ecological information on ingredients.

EPOXY RESIN (Number average MW <= 700)

Biodegradation	- 12% Degradation (%): 28 days

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Biodegradation	- 47% Degradation (%): 28 days OECD 301D

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not determined.

Ecological information on ingredients.

EPOXY RESIN (Number average MW <= 700)

Bioaccumulative potential	May accumulate in soil and water systems. BCF: 100 - 3000,
Partition coefficient	log Pow: 3.242 Estimated Value

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Bioaccumulative potential	BCF: < 100, Estimated Value
Partition coefficient	log Pow: -0.272 Estimated Value

12.4. Mobility in soil

Mobility The product is insoluble in water and will spread on the water surface. The product is non-volatile. Semi-mobile.

GEBOFIX EPO PLUS RE comp A

Ecological information on ingredients.

EPOXY RESIN (Number average MW <= 700)

Mobility	Semi-mobile.
Adsorption/desorption coefficient	Water - Koc: 1800 - 4400 @ 25°C Estimated Value
Henry's law constant	4.93E-05 Pa m3/mol @ 25°C

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

EPOXY RESIN (Number average MW <= 700)

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Residues and empty containers should be taken care of as hazardous waste according to local and national provisions. Dispose of waste via a licensed waste disposal contractor.

Waste class The waste code classification is to be carried out according to the European Waste Catalogue (EWC).

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 3082

UN No. (IMDG) 3082

UN No. (ICAO) 3082

UN No. (ADN) 3082

14.2. UN proper shipping name

Proper shipping name (ADR/RID) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

Proper shipping name (IMDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

Proper shipping name (ICAO) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

Proper shipping name (ADN) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

14.3. Transport hazard class(es)

ADR/RID class 9

ADR/RID classification code M6

GEBOFIX EPO PLUS RE comp A

ADR/RID label	9
IMDG class	9
ICAO class/division	9
ADN class	9

Transport labels

14.4. Packing group

ADR/RID packing group	III
IMDG packing group	III
ICAO packing group	III
ADN packing group	III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

14.6. Special precautions for user

EmS	F-A, S-F
ADR transport category	3
Emergency Action Code	•3Z
Hazard Identification Number (ADR/RID)	90
Tunnel restriction code	(-)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation	(EU) No 2015/830
Guidance	Workplace Exposure Limits EH40.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision comments	NOTE: Lines within the margin indicate significant changes from the previous revision.
Revision date	09/01/2020

GEBOFIX EPO PLUS RE comp A

Version number	2.002
Supersedes date	27/07/2018
SDS number	20841
Hazard statements in full	H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H411 Toxic to aquatic life with long lasting effects. H412 Harmful to aquatic life with long lasting effects.

SAFETY DATA SHEET
GEBOFIX EPO PLUS RE comp B

According to Regulation (EC) No 1907/2006, Annex II, as amended.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name GEBOFIX EPO PLUS RE comp B

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Two-component, epoxy-based adhesive. Hardener.

1.3. Details of the supplier of the safety data sheet

Supplier
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Contact person info@gebfissaggi.com

1.4. Emergency telephone number

Emergency telephone +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

Environmental hazards Aquatic Chronic 3 - H412

Human health Corrosive. Prolonged contact causes serious eye and tissue damage.

Environmental The product contains a substance which may have hazardous effects on the environment.

2.2. Label elements

Hazard pictograms

Signal word Danger

Hazard statements
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.

GEBOFIX EPO PLUS RE comp B

Precautionary statements	P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P501 Dispose of contents/ container in accordance with national regulations.
Contains	1,3-CYCLOHEXANEBIS(METHYLAMINE), STYRENATED PHENOL, SALICYLIC ACID, 1,3-BENZENEDIMETHANAMINE
Supplementary precautionary statements	P264 Wash contaminated skin thoroughly after handling. P260 Do not breathe vapours. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P333+P313 If skin irritation or rash occurs: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse. P405 Store locked up.

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

1,3-CYCLOHEXANEBIS(METHYLAMINE) **20-50%**

CAS number: 2579-20-6 | EC number: 219-941-5 | REACH registration number: 01-2119543741-41

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H312
Skin Corr. 1A - H314
Aquatic Chronic 3 - H412

STYRENATED PHENOL **5-10%**

CAS number: 61788-44-1 | EC number: 262-975-0 | REACH registration number: 01-2119979575-18

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 2 - H411

SALICYLIC ACID **5-10%**

CAS number: 69-72-7 | EC number: 200-712-3 | REACH registration number: 01-2119486984-17

Classification
Acute Tox. 4 - H302
Eye Dam. 1 - H318

GEBOFIX EPO PLUS RE comp B

1,3-BENZENEDIMETHANAMINE		1-5%
CAS number: 1477-55-0	EC number: 216-032-5	

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Corr. 1B - H314
Skin Sens. 1B - H317
Aquatic Chronic 3 - H412

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Remove affected person from source of contamination. Get medical attention if any discomfort continues.

Ingestion Do not induce vomiting. Get medical attention immediately.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.

Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists after washing. Show this Safety Data Sheet to the medical personnel.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation Irritation of nose, throat and airway.

Ingestion May cause stomach pain or vomiting.

Skin contact Burning pain and severe corrosive skin damage. Blistering may occur. Chemical burns.

Eye contact May cause blurred vision and serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations. If in doubt, get medical attention promptly.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide or dry powder.

Unsuitable extinguishing media Do not use water, if avoidable.

5.2. Special hazards arising from the substance or mixture

Specific hazards No specific firefighting precautions applicable when small quantities are involved in the fire.

Hazardous combustion products Oxides of carbon. Oxides of nitrogen.

5.3. Advice for firefighters

Protective actions during firefighting No specific firefighting precautions known.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

GEBOFIX EPO PLUS RE comp B

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Collect and dispose of spillage as indicated in Section 13. Contain spillage with sand, earth or other suitable non-combustible material. Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. Collect and dispose of spillage as indicated in Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid contact with skin. Avoid contact with eyes. Do not empty into drains.

Advice on general occupational hygiene Do not eat, drink or smoke when using this product. No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep away from food and drink. Keep container tightly sealed when not in use.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Long-term exposure limit (8-hour TWA): WEL 0.1 ppm(Sk) 0.8 mg/m3(Sk)

Sk

WEL = Workplace Exposure Limit
Sk = Can be absorbed through skin.

1,3-CYCLOHEXANEBIS(METHYLAMINE) (CAS: 2579-20-6)

DNEL

REACH dossier information
Industry - Inhalation; Short term systemic effects: 21.2 mg/m³
Industry - Dermal; Long term systemic effects: 0.2 mg/kg/day
Industry - Inhalation; Long term systemic effects: 0.71 mg/m³
Industry - Dermal; Short term systemic effects: 6 mg/kg/day

PNEC

REACH dossier information
- Intermittent release; 0.331 mg/l
- marine water; 0.00331 mg/l
- Fresh water; 0.0331 mg/l
- STP; 10 mg/l

GEBOFIX EPO PLUS RE comp B

STYRENATED PHENOL (CAS: 61788-44-1)

DNEL

REACH dossier information
Industry - Dermal; Long term systemic effects: 0.416666667 mg/kg/day
Industry - Inhalation; Long term systemic effects: 0.734649123 mg/m³

PNEC

REACH dossier information
- Sediment (Marinewater); 43.65269484 mg/kg
- Intermittent release; 0.01371 mg/l
- STP; 1.0638 mg/l
- marine water; 0.0001371 mg/l
- Sediment (Freshwater); 43.65269484 mg/kg
- Soil; 20.64517608 mg/kg
- Fresh water; 0.001371 mg/l

SALICYLIC ACID (CAS: 69-72-7)

DNEL

REACH dossier information
Industry - Inhalation; Long term systemic effects: 16 mg/m³
Industry - Dermal; Long term systemic effects: 2 mg/kg/day

PNEC

REACH dossier information
- Sediment (Freshwater); 1.42 mg/kg
- Soil; 0.166 mg/kg
- Sediment (Marinewater); 0.142 mg/kg
- Intermittent release; 1 mg/l
- Fresh water; 0.2 mg/l
- STP; 162 mg/l
- marine water; 0.02 mg/l

1,3-BENZENEDIMETHANAMINE (CAS: 1477-55-0)

PNEC

- Sediment (Freshwater); 0.43 mg/kg
- Fresh water; 0.094 mg/l
- Soil; 0.045 mg/kg
- marine water; 0.0094 mg/l
- Sediment (Marinewater); 0.043 mg/kg
- STP; 10 mg/l
- Intermittent release; 0.152 mg/l

8.2. Exposure controls

Protective equipment

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

The following protection should be worn: Tight-fitting safety glasses. Contact lenses should not be worn when working with this chemical.

Hand protection

Wear protective gloves made of the following material: Nitrile rubber.

Other skin and body protection

Avoid contact with skin. Wear appropriate clothing to prevent repeated or prolonged skin contact.

GEBOFIX EPO PLUS RE comp B

Hygiene measures	Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Use engineering controls to reduce air contamination to permissible exposure level.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn.
Environmental exposure controls	Keep container tightly sealed when not in use. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Buff.
Odour	Characteristic. Amine.
Odour threshold	Not determined.
pH	Not applicable.
Melting point	Not determined.
Initial boiling point and range	Not determined.
Flash point	>100°C Closed cup.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Not determined.
Upper/lower flammability or explosive limits	Not determined.
Other flammability	Not applicable.
Vapour pressure	Not determined.
Vapour density	Not determined.
Relative density	1.4 - 1.5
Bulk density	Not available.
Solubility(ies)	Not determined.
Partition coefficient	Not determined.
Auto-ignition temperature	Not determined.
Decomposition Temperature	Not determined.
Viscosity	Not determined.
Explosive properties	No information available.
Explosive under the influence of a flame	Not considered to be explosive.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

SECTION 10: Stability and reactivity

GEBOFIX EPO PLUS RE comp B

10.1. Reactivity

Reactivity The following materials may react with the product: Acids. Epoxides. Oxidising agents. Peroxides.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions The following materials may react with the product: Acids. Epoxides. Oxidising agents. Peroxides.

10.4. Conditions to avoid

Conditions to avoid No specific requirements are anticipated under normal conditions of use.

10.5. Incompatible materials

Materials to avoid Acids. Epoxides. Oxidising agents. Peroxides.

10.6. Hazardous decomposition products

Hazardous decomposition products Oxides of carbon. Oxides of nitrogen.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 1,244.54

Acute toxicity - dermal

ATE dermal (mg/kg) 3,234.71

Acute toxicity - inhalation

ATE inhalation (dusts/mists mg/l) 58.23

Skin sensitisation

Skin sensitisation Sensitising.

Inhalation Vapour may irritate respiratory system/lungs.

Ingestion May cause stomach pain or vomiting.

Skin contact May cause sensitisation by skin contact. May cause serious chemical burns to the skin.

Eye contact Risk of serious damage to eyes. May cause chemical eye burns.

Acute and chronic health hazards May cause sensitisation by skin contact. Causes severe burns.

Route of exposure Skin and/or eye contact Inhalation

Target organs No specific target organs known.

Medical symptoms Symptoms following overexposure may include the following: Chemical burns.

Toxicological information on ingredients.

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Acute toxicity - oral

GEBOFIX EPO PLUS RE comp B

Acute toxicity oral (LD_{50} mg/kg)	700.0
Species	Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	1,700.0
Species	Rabbit

STYRENATED PHENOL

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	2,000.0
Species	Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	2,000.0
Species	Rat

SALICYLIC ACID

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	891.0
Species	Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	2,000.0
Species	Rat

1,3-BENZENEDIMETHANAMINE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	1,090.0
Species	Rat
ATE oral (mg/kg)	1,090.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	2,000.0
Species	Rat

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} dust/mist mg/l)	1.34

GEBOFIX EPO PLUS RE comp B

Species	Rat
ATE inhalation (dusts/mists mg/l)	1.34

SECTION 12: Ecological information

12.1. Toxicity

Ecological information on ingredients.

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Acute aquatic toxicity

Acute toxicity - fish	LC50, > 96 hours: 100 mg/l, Leuciscus idus (Golden orfe)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 29 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, > 96 hours: 100 mg/l, Scenedesmus subspicatus
Acute toxicity - terrestrial	EC_{50}, > 14 days: 1000 mg/kg, Eisenia Fetida (Earthworm)

STYRENATED PHENOL

Acute aquatic toxicity

Acute toxicity - fish	LC50, 96 hours: 14.8 mg/l,
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 1-10 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 3.14 mg/l, Scenedesmus subspicatus

Chronic aquatic toxicity

NOEC	$0.01 < NOEC \leq 0.1$

SALICYLIC ACID

Acute aquatic toxicity

Acute toxicity - fish	LC50, 48 hours: 90 mg/l, Leuciscus idus (Golden orfe)
Acute toxicity - microorganisms	EC_{50}, > 3 hours: 3200 mg/l, Activated sludge

1,3-BENZENEDIMETHANAMINE

Acute aquatic toxicity

Acute toxicity - fish	LC50, 96 hours: 75 mg/l, Leuciscus idus (Golden orfe)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 15.2 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 12 mg/l, Scenedesmus subspicatus

12.2. Persistence and degradability

Persistence and degradability There are no data on the degradability of this product.

12.3. Bioaccumulative potential

GEBOFIX EPO PLUS RE comp B

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not determined.

12.4. Mobility in soil

Mobility Mobile. The product is miscible with water and may spread in water systems.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

Disposal methods Dispose of waste via a licensed waste disposal contractor.

Waste class The waste code classification is to be carried out according to the European Waste Catalogue (EWC).

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 2735

UN No. (IMDG) 2735

UN No. (ICAO) 2735

UN No. (ADN) 2735

14.2. UN proper shipping name

Proper shipping name (ADR/RID) AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

Proper shipping name (IMDG) AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

Proper shipping name (ICAO) AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

Proper shipping name (ADN) AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

14.3. Transport hazard class(es)

ADR/RID class 8

ADR/RID classification code C7

ADR/RID label 8

IMDG class 8

ICAO class/division 8

ADN class 8

GEBOFIX EPO PLUS RE comp B

Transport labels

14.4. Packing group

ADR/RID packing group	II
IMDG packing group	II
ICAO packing group	II
ADN packing group	II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

IMDG Code segregation group	18. Alkalis
EmS	F-A, S-B
ADR transport category	2
Emergency Action Code	2X
Hazard Identification Number (ADR/RID)	80
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation	(EU) No 2015/830
Guidance	Workplace Exposure Limits EH40.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision comments	NOTE: Lines within the margin indicate significant changes from the previous revision.
Revision date	09/01/2020
Version number	3.001
Supersedes date	27/07/2018
SDS number	20842

GEBOFIX EPO PLUS RE comp B

Hazard statements in full

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

European Technical Assessment

ETA 17/0347 of 31/07/2018

Technical Assessment Body issuing the ETA: Technical and Test Institute for Construction Prague	
Trade name of the construction product	G&B Fissagi Gebofix EPO PLUS RE
Product family to which the construction product belongs	Product area code: 33 Bonded injection type anchor for use in cracked and uncracked concrete
Manufacturer	G&B FISSAGGI Corso Savona, 22 10029 Villatellone (TO) ITALY
Manufacturing plant	G&B Fissaggi S.R.L., Plant 4
This European Technical Assessment contains	20 pages including 17 Annexes which form an integral part of this assessment.
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	EAD 330499-00-0601
This version replaces	ETA 17/0347 issued on 24/04/2017

1. Technical description of the product

The G&B Fissagi Gebofix EPO PLUS RE with steel elements is bonded anchor (injection type).

Steel elements can be galvanized or stainless steel threaded rods or rebars.

Steel element is placed into a drilled hole filled with injection mortar. The steel element is anchored via the bond between metal part, injection mortar and concrete. The anchor is intended to be used with various embedment depth up to 20 diameters.

The illustration and the description of the product are given in Annex A.

2. Specification of the intended use in accordance with the applicable EAD

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the products in relation to the expected economically reasonable working life of the works.

3. Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Static and quasi-static loading	
Resistance to steel failure (tension)	See Annex C1, C2, C4, C5
Resistance to combined pull-out and concrete failure	See Annex C1, C2, C4, C5
Resistance to concrete cone failure	See Annex C1, C2, C4, C5
Edge distance to prevent splitting under load	See Annex C1, C2, C4, C5
Robustness	See Annex C1, C2, C4, C5
Maximum setting torque moment	See Annex B2
Minimum edge distance and spacing	See Annex B2
Resistance to steel failure (shear)	See Annex C3, C6
Resistance to pry-out failure	See Annex C3, C6
Resistance to concrete edge failure	See Annex C3, C6
Displacements under short term and long term loading	See Annex C7
Durability of metal parts	See Annex A4
Seismic performance C2	
Resistance to steel failure	See Annex C8
Resistance to pull-out	See Annex C8
Factor for annular gap	See Annex C8
Displacement	See Annex C8

3.2 Hygiene, health and environment (BWR 3)

No performance determined.

3.3 General aspects relating to fitness for use

Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.

4. Assessment and verification of constancy of performance (AVCP) system applied with reference to its legal base

According to the Decision 96/582/EC of the European Commission[1] the system of assessment verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or class	System
Metal anchors for use in concrete	For fixing and/or supporting to concrete, structural elements (which contributes to the stability of the works) or heavy units	-	1

5. Technical details necessary for the implementation of the AVCP system, as provided in the applicable EAD

5.1 Tasks of the manufacturer

The manufacturer may only use raw materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the control plan which is a part of the technical documentation of this European Technical Assessment. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Technický a zkušební ústav stavební Praha, s.p.[2] The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

5.2 Tasks of the notified bodies

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified certification body involved by the manufacturer shall issue a certificate of constancy of performance of the product stating the conformity with the provisions of this European Technical Assessment.

In cases where the provisions of the European Technical Assessment and its control plan are no longer fulfilled the notified body shall withdraw the certificate of constancy of performance and inform Technický a zkušební ústav stavební Praha, s.p without delay.

Issued in Prague on 31.07.2018

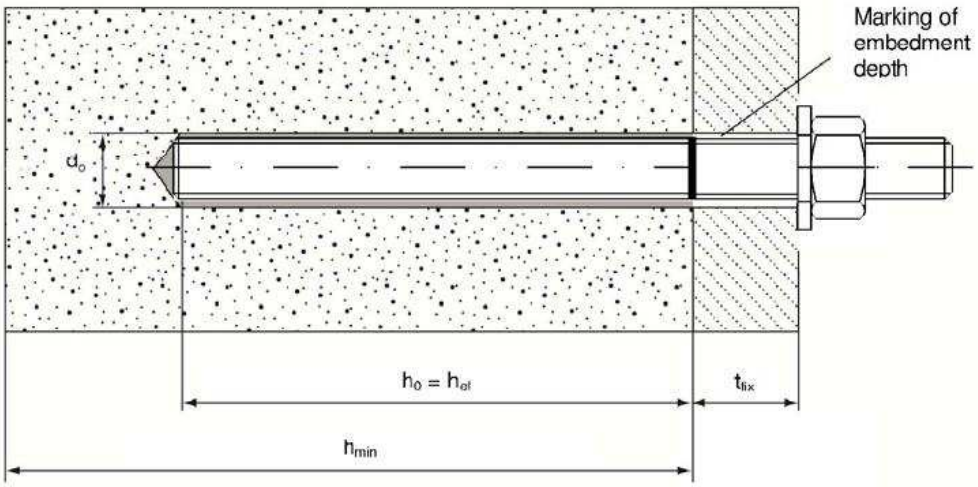
By

Ing. Mária Schaan
Head of the Technical Assessment Body

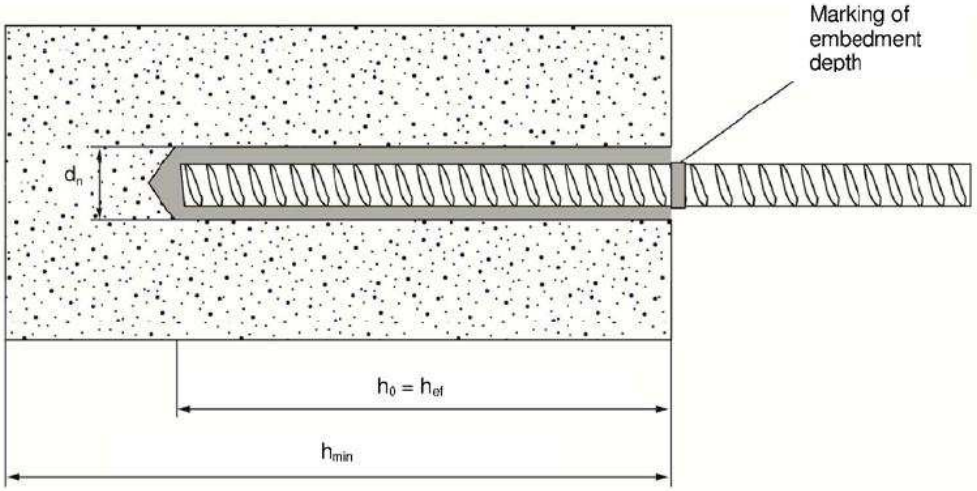
[1] Official Journal of the European Communities L 254 of 08.10.1996

[2] The control plan is a confidential part of the documentation of the European Technical Assessment, but not published together with the ETA and only handed over to the approved body involved in the procedure of AVCP.

Installation threaded rod



Installation reinforcing bar

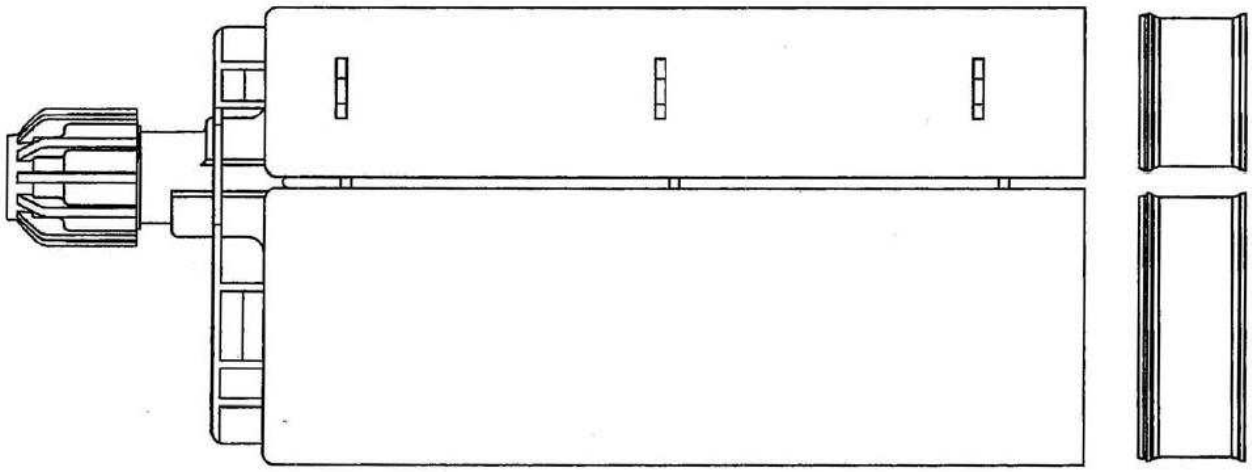


d_0 = diameter of bore hole
t_{fix} = thickness of fixture
h_{ef} = effective anchorage depth
h_0 = depth of drill hole
h_{min} = minimum member thickness

G&B Fissagi Gebofix EPO PLUS RE for concrete	**Annex A 1**
Product description Installed conditions	

Injection mortar: G&B Fissagi Gebofix EPO PLUS RE

Side by side cartridge
385ml and 585ml

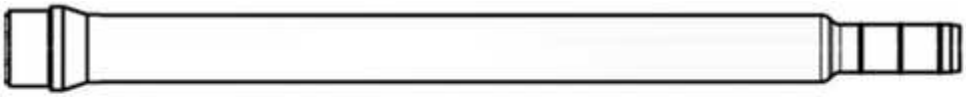


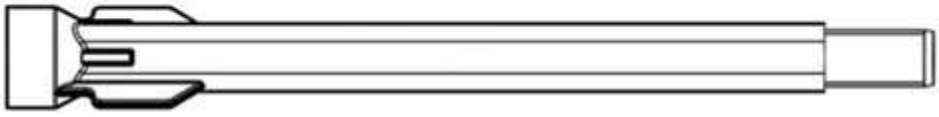
Cartridge label: G&B Fissagi Gebofix EPO PLUS RE, processing notes, charge-code, shelf life, hazard-code, curing- and processing time (depending on the temperature), with as well as without travel scale.

Static mixer

Standard Mixer

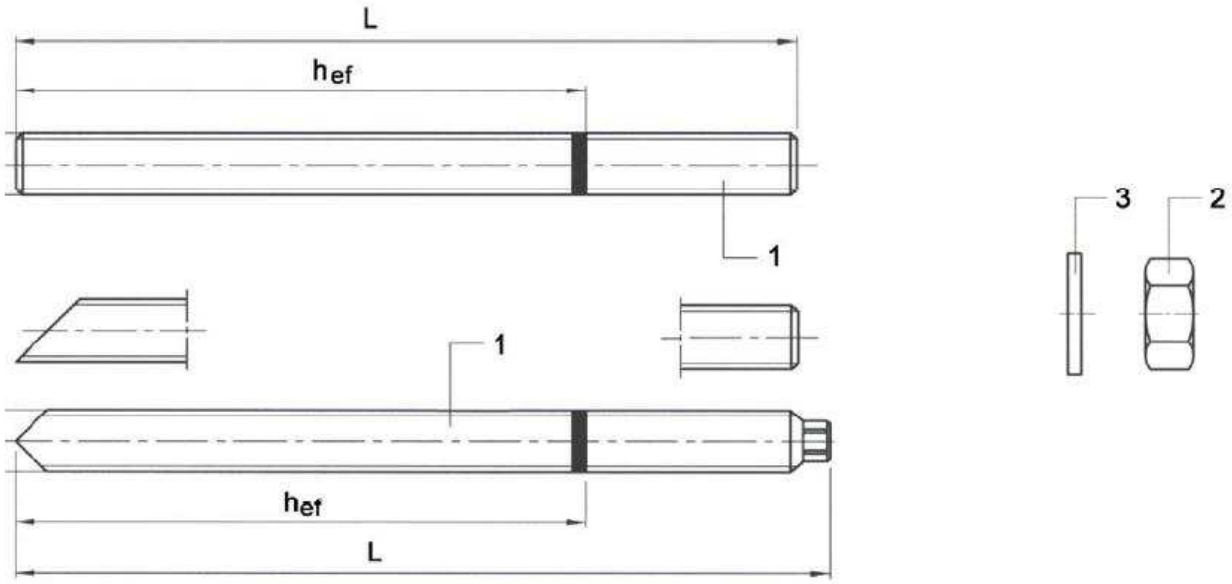
High Flow Mixer





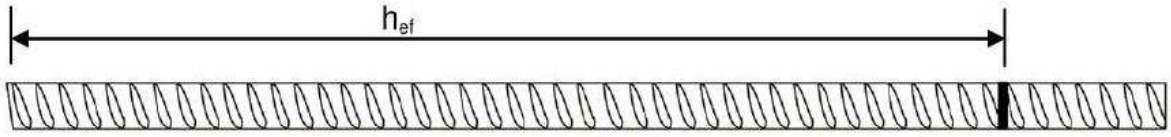
G&B Fissagi Gebofix EPO PLUS RE for concrete	**Annex A 2**
Product description Injection system	

Threaded rod M8, M10, M12, M16, M20, M24, M27, M30 with washer and hexagon nut



Commercial standard rod with:
- Materials, dimensions and mechanical properties acc. Table A1
- Inspection certificate 3.1 acc. to EN 10204:2004
- Marking of embedment depth

Reinforcing Bar Ø8, Ø10, Ø12, Ø16, Ø20, Ø25, Ø32



Minimum value of related rib area $f_{R,min}$ according to EN 1992-1-12004+AC:2010
Rib height of the bar shall be in the range $0,05 * d \leq h_{rib} \leq 0,07 * d$
(d = Nominal diameter of the rebar; h: Rib height of the rebar)

G&B Fissagi Gebofix EPO PLUS RE for concrete	**Annex A 3**
Product description Threaded rod and reinforcing bar	

Table A1: Materials

Part	Designation	Material
Steel, zinc plated ≥ 5 µm acc. to EN ISO 4042 or Steel, Hot-dip galvanised ≥ 40 µm acc. to EN ISO 1461:2009 and EN ISO 10684:2004+AC:2009		
1	Anchor rod	Steel, EN 10087:1998 or EN 10263:2001 Property class 4.6, 5.8, 8.8, EN 1993-1-8:2005+AC:2009
2	Hexagon nut, EN ISO 4032:2012	Steel acc. to EN 10087:1998 or EN 10263:2001 Property class 4 (for 4.6 rod) EN ISO 898-2-2012, Property class 5 (for 5.8 rod) EN ISO 898-2-2012, Property class 8 (for 8.8 rod) EN ISO 898-2-2012,
3	Washer, EN ISO 887:2006, EN ISO 7094:2000	Steel, zinc plated or hot-dip galvanised
Stainless steel		
1	Anchor rod	Material: A2-70, A4-70, A4-80, EN ISO 3506
2	Hexagon nut, EN ISO 4032:2012	According to the threaded rod
3	Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000 or EN ISO 7094:2000	According to the threaded rod
High corrosion resistance steel		
1	Anchor rod	Material: 1.4529, 1.4565, EN 10088-1
2	Hexagon nut, EN ISO 4032:2012	According to the threaded rod
3	Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000 or EN ISO 7094:2000	According to the threaded rod
Reinforcing bars		
1	Rebar EN 1992-1-1:2004+AC2010, Annex C	Bars and de-coiled rods class B or C f_{yk} and k according to NDP or NCL of EN 1992-1-1/NA:2013 $f_{uk} = f_{tk} = k*f_{yk}$

G&B Fissagi Gebofix EPO PLUS RE for concrete

Product description
Materials

Annex A 4

Specifications of intended use

Anchorages subject to:

- Static and quasi-static loads: M8 to M30 and Rebar Ø8 to Ø32.
- Seismic actions category C2 (max w = 0,8 mm): threaded rod size M12, M16, M20

Base materials

- Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according EN 206:2013
- Uncracked concrete: M8 to M30, Rebar Ø8 to Ø32
- Cracked concrete: M12 to M30, Rebar Ø12 to Ø32

Temperature range:

- T1: -40°C to +40°C (max. short. term temperature +40°C and max. long term temperature +24°C)
- T3a: -40°C to +60°C (max. short. term temperature +60°C and max. long term temperature +43°C)
- T3b: -40°C to +72°C (max. short. term temperature +72°C and max. long term temperature +43°C)

Use conditions (Environmental conditions)

- (X1) Structures subject to dry internal conditions (zinc coated steel, stainless steel, high corrosion resistance steel).
- (X2) Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel A4, high corrosion resistant steel).
- (X3) Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant steel).

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Concrete conditions:

- I1 – installation in dry or wet (water saturated) concrete and use in service in dry or wet concrete.
- I2 – installation in water-filled (not sea water) and use in service in dry or wet concrete

Design:

- The anchorages are designed in accordance with the EN 1992-4 or EOTA Technical Report TR 055 under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Anchorages under seismic actions (cracked concrete) have to be designed in accordance with EN 1992-4.

Installation:

- Hole drilling by hammer drill mode.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

Installation direction:

- D3 – downward and horizontal and upwards (e.g. overhead) installation

G&B Fissagi Gebofix EPO PLUS RE for concrete	**Annex B 1**
Intended use Specifications	

Table B1: Installation parameters for threaded rod

Anchor size		M8	M10	M12	M16	M20	M24	M27	M30
Nominal drill hole diameter	d_0 [mm]	10	12	14	18	22	26	30	35
Effective anchorage depth	$h_{ef,min}$ [mm]	60	60	70	80	90	96	108	120
	$h_{ef,max}$ [mm]	160	200	240	320	400	480	540	600
Diameter of clearance hole in fixture	d_f [mm]	9	12	14	18	22	26	30	33
Diameter of steel brush	d_b [mm]	11	14	15	22	24	31	31	38
Torque moment	max T_{inst} [Nm]	10	20	40	80	120	160	180	200
Thickness of fixture	$t_{fix,min}$ [mm]	0							
	$t_{fix,max}$ [mm]	1500							
Minimum thickness of member	h_{min} [mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + $2d_0$				
Minimum spacing	s_{min} [mm]	$s_{min} = \max(h_{ef}/2; 5d_{nom})$							
Minimum edge distance	c_{min} [mm]	$c_{min} = \max(h_{ef}/2; 5d_{nom})$							

Table B2: Installation parameters for rebar

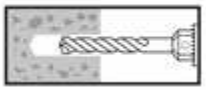
Anchor size		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Nominal drill hole diameter	d_0 [mm]	12	14	16	20	25	32	40
Effective anchorage depth	$h_{ef,min}$ [mm]	60	60	70	80	90	100	128
	$h_{ef,max}$ [mm]	160	200	240	320	400	500	640
Diameter of steel brush	d_b [mm]	12	14	18	22	27	35	43
Minimum thickness of member	h_{min} [mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + $2d_0$			
Minimum spacing, $h_{ef,min}$	s_{min} [mm]	40	40	40	40	50	50	70
Minimum spacing, $h_{ef,max}$	s_{min} [mm]	80	100	120	160	200	250	320
Minimum edge distance, $h_{ef,min}$	c_{min} [mm]	40	40	40	40	50	50	70
Minimum edge distance, $h_{ef,max}$	c_{min} [mm]	80	100	120	160	200	250	320

G&B Fissagi Gebofix EPO PLUS RE for concrete

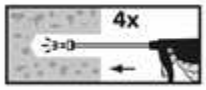
Intended use
Installation parameters

Annex B 2

Installation instructions

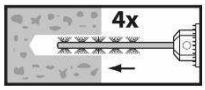


1. Drill with hammer drill a hole into the base material to the size and embedment depth required by the selected anchor (Table B2).

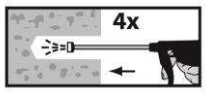


Attention! Standing water in the bore hole must be removed before cleaning.

2a. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air a minimum of four times. If the bore hole ground is not reached an extension shall be used.

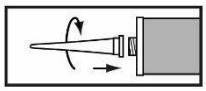


2b. Check brush diameter (Table B1) and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriate sized wire brush > db,min (Table B1) a minimum of four times. If the bore hole ground is not reached with the brush, a brush extension shall be used (Table B1).

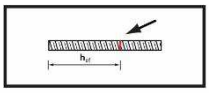


2c. Finally blow the hole clean again with compressed air a minimum of four times. If the bore hole ground is not reached an extension shall be used.

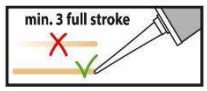
After cleaning, the bore hole has to be protected against re-contamination in an appropriate way, until dispensing the mortar in the bore hole. If necessary, the cleaning repeated has to be directly before dispensing the mortar.
In-flowing water must not contaminate the bore hole again



3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. For foil tube cartridges, cut off the foil tube clip before use.
For every working interruption longer than the recommended working time (Table B3) as well as for new cartridges, a new static-mixer shall be used.



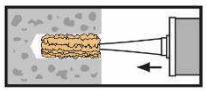
4. Prior to inserting the anchor rod into the filled bore hole, the position of the embedment depth shall be marked on the anchor rods



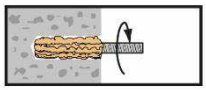
5. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

G&B Fissagi Gebofix EPO PLUS RE for concrete	
Intended use Installation instructions	**Annex B 3**

Installation instructions (continuation)

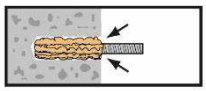


6. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. For embedment larger than 190 mm an extension nozzle shall be used. Observe the gel-/ working times given in Table B3.

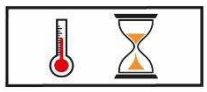


7. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached.

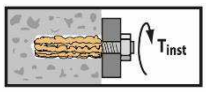
   The anchor should be free of dirt, grease, oil or other foreign material.



8. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.



9. Allow the adhesive to cure to the specified time prior to applying any load or torque. Do not move or load the anchor until it is fully cured (attend Table B3).



10. After full curing, the add-on part can be installed with the max. torque (Table B2) by using a calibrated torque wrench.

Table B3: Minimum curing time

Base material temperature	Gel time (working time)	Minimum curing time in dry concrete	Minimum curing time in wet concrete
+5°C to +9°C	120 min	50 h	100 h
+10°C to +14°C	45 min	30 h	60 h
+15°C to +19°C	25 min	18 h	36 h
+20°C to +29°C	12 min	10 h	20 h
+30°C to +39°C	6 min	6 h	12 h
+40°C	5 min	4 h	8 h

G&B Fissagi Gebofix EPO PLUS RE for concrete	
Intended use Installation instructions (continuation) Curing time	**Annex B 4**

Table B4: Parameter cleaning and setting tools

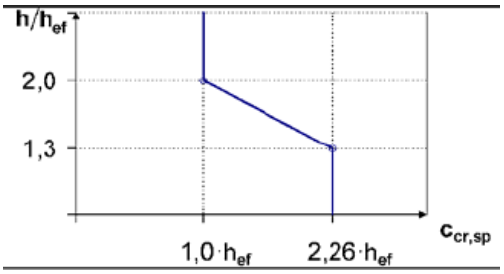
Anchor	Size (mm)	Nominal drill bit diameter d_0 (mm)	Steel Brush d_b (mm)	Piston plug
Threaded Rod 	M8	10	11	Not necessary
	M10	12	14	
	M12	14	15	
	M16	18	22	
	M20	22	24	#24
	M24	26	31	#28
	M27	30	31	#32
	M30	35	38	#35
Rebar 	Ø8	12	12	Not necessary
	Ø10	14	14	
	Ø12	16	18	
	Ø16	20	22	
	Ø20	25	27	#24
	Ø25	32	35	#32
	Ø32	40	43	#38

Compressed air tool (min 6 bar)
Drill bit diameter (d_0): 10 mm to 40 mm

G&B Fissagi Gebofix EPO PLUS RE for concrete	**Annex B 5**
Intended use Cleaning and setting tools	

Table C1: Characteristic values of resistance for threaded rods under tension loads in uncracked concrete (Design according to EN 1992-4)

Anchor size threaded rod				M8	M10	M12	M16	M20	M24	M27	M30
Steel failure											
Characteristic tension resistance		$N_{Rk,s}$	[kN]	$A_s \times f_{uk}$							
Combined pull-out and concrete cone failure											
Characteristic bond resistance in uncracked concrete C20/25											
Temperature range T1:40°C/24°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	15	15	15	12	12	12	11	9.5
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	15	14	13	10	9.5	8.5	7.5	7
Temperature range T3a:60°C/43°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	9.5	9.5	9	8.5	8	7.5	7.5	7.5
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	9.5	9.5	9	8.5	7.5	7	6.5	6
Temperature range T3b:72°C/43°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8	7.5	7	7	6.5	6.5
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8	7.5	7	6	5.5	5.5
Increasing factors for concrete Ψ_c		C30/37		1.04							
		C40/50		1.07							
		C50/60		1.09							
Concrete cone failure											
Factor for concrete cone failure for uncracked concrete		k_1 [1)]		10.1							
		$k_{ucr,N}$ [2)]		11							
Edge distance		$c_{cr,N}$	[mm]	$1.5h_{ef}$							
Splitting failure											
Edge distance		$h / h_{ef} \geq 2,0$		$1,0\ h_{ef}$							
		$2,0 > h / h_{ef} > 1,3$		$4,6\ h_{ef} - 1,8\ h$							
		$h / h_{ef} \leq 1.3$		$2,26\ h_{ef}$							
Axial distance		$s_{cr,sp}$	[mm]	$2\ c_{cr,sp}$							
Installation safety factor (dry and wet concrete)		γ_2 [1)]=γ_{inst} [2)]		1.0							
Installation safety factor (flooded bore hole)		γ_2 [1)]=γ_{inst} [2)]		1.0							



[1)] Design according EOTA Technical Report TR 055
[2)] Design according EN 1992-4:2016

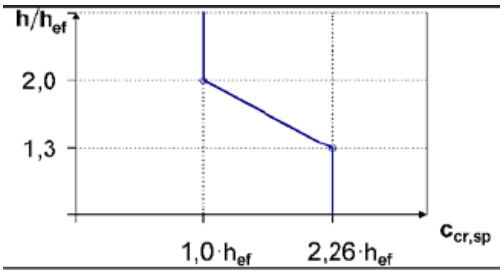
G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic resistance for tension loads - threaded rod
Design according to EN 1992-4

Annex C 1

Table C2: Characteristic values of resistance for threaded rods under tension loads in cracked concrete (Design according to EN 1992-4)

Anchor size threaded rod				M12	M16	M20	M24	M27	M30
Steel failure									
Characteristic tension resistance		$N_{Rk,s}$	[kN]	$A_s \times f_{uk}$					
Combined pull-out and concrete cone failure									
Characteristic bond resistance in cracked concrete C20/25									
Temperature range T1: 40°C/24°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	7.5	6.5	6	5.5	5.5	5.5
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	7.5	6	5	4.5	4	4
Temperature range T3a: 60°C/43°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4.5	4	3.5	3.5	3.5	3.5
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	4.5	4	3.5	3.5	3.5	3.5
Temperature range T3b: 72°C/43°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4	3.5	3	3	3	3
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	4	3.5	3	3	3	3
Increasing factor for concrete (only static or quasi-static actions) ψ_c		C30/37		1.04					
		C40/50		1.07					
		C50/60		1.09					
Concrete cone failure									
Factor for concrete cone failure for cracked concrete		k_1 [1]		7.2					
		$k_{cr,N}$ [2]		7.7					
Edge distance		$c_{cr,N}$	[mm]	$1.5h_{ef}$					
Splitting failure									
Edge distance		$h / h_{ef} \geq 2,0$		$1,0\ h_{ef}$					
		$2,0 > h / h_{ef} > 1,3$		$4,6\ h_{ef} - 1,8\ h$					
		$h / h_{ef} \leq 1.3$		$2,26\ h_{ef}$					
Axial distance		$s_{cr,sp}$	[mm]	$2\ c_{cr,sp}$					
Installation safety factor (dry and wet concrete)		γ_2 [1] = γ_{inst} [2]		1.0					
Installation safety factor (flooded bore hole)		γ_2 [1] = γ_{inst} [2]		1.0					



[1] Design according EOTA Technical Report TR 055
[2] Design according EN 1992-4:2016

G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic resistance for tension loads – threaded rod
Design according to EN 1992-4

Annex C 2

Table C3: Characteristic values of resistance for threaded rods under shear loads in cracked and uncracked concrete (Design according to EN 1992-4)

Anchor size threaded rod			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel failure without lever arm										
Characteristic shear resistance	$V_{Rk,s}$	[kN]	$0.5 \times A_s \times f_{uk}$							
Characteristic resistance of group of fasteners										
Ductility factor			k_7 = 1,0 for steel with rupture elongation $A_5 > 8\%$							
Steel failure with lever arm										
Characteristic bending moment	M^0_{Rk}	[Nm]	$1.2 \times W_{el} \times f_{uk}$							
Concrete pry-out failure										
Factor for resistance to pry-out failure			2.0							
Installation safety factor	γ_2 [1] = γ_{inst} [2]		1.0							
Concrete edge failure										
Outside diameter of fastener	d_{nom}	[mm]	8	10	12	16	20	24	27	30
Effective length of fastener	ℓ_f	[mm]	$\min (h_{ef}, 8\ d_{nom})$							
Installation safety factor	γ_2 [1] = γ_{inst} [2]		1.0							

[1] Design according EOTA Technical Report TR 055
[2] Design according EN 1992-4:2016

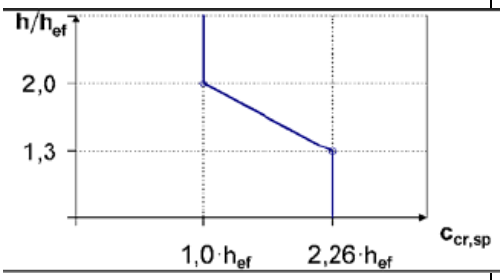
G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic values of resistance for threaded rods under shear loads in cracked and uncracked concrete, Design according to EN 1992-4

Annex C 3

Table C4: Characteristic values of resistance for rebar under tension loads in uncracked concrete (Design according to EN 1992-4)

Anchor size threaded rod				Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Steel failure										
Characteristic tension resistance		$N_{Rk,s}$	[kN]	$A_s \times f_{uk}$						
Combined pull-out and concrete cone failure										
Characteristic bond resistance in uncracked concrete C20/25										
Temperature range T1: 40°C/24°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	13	13	13	12	12	11	8
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	13	13	11	9.5	8.5	7.5	6
Temperature range T3a: 60°C/43°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8	7.5	7	7	6.5
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	8.5	8.5	8	7.5	7	6	5
Temperature range T3b: 72°C/43°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	7.5	7.5	7.5	7	6.5	6	6
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	7.5	7.5	7.5	7	6	5.5	4.5
Increasing factors for concrete Ψ_c		C30/37		1.04						
		C40/50		1.07						
		C50/60		1.09						
Concrete cone failure										
Factor for concrete cone failure for uncracked concrete		k_1 [1)]		10.1						
		$k_{ucr,N}$ [2)]		11						
Edge distance		$c_{cr,N}$	[mm]	$1.5h_{ef}$						
Splitting failure										
Edge distance		$h / h_{ef} \geq 2,0$		$1,0\ h_{ef}$						
		$2,0 > h / h_{ef} > 1,3$		$4,6\ h_{ef} - 1,8\ h$						
		$h / h_{ef} \leq 1.3$		$2,26\ h_{ef}$						
Axial distance		$s_{cr,sp}$	[mm]	$2\ c_{cr,sp}$						
Installation safety factor (dry and wet concrete)		γ_2 [1)]=γ_{inst} [2)]		1.0						
Installation safety factor (flooded bore hole)		γ_2 [1)]=γ_{inst} [2)]		1.2						



[1)] Design according EOTA Technical Report TR 055
[2)] Design according EN 1992-4:2016

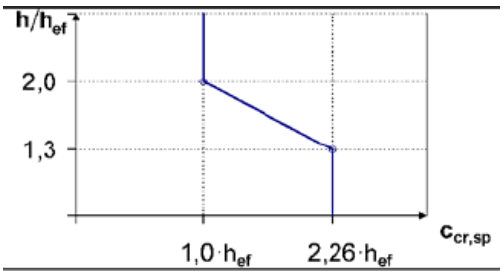
G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic values of resistance for rebar under tension loads in uncracked concrete, Design according to EN 1992-4

Annex C 4

Table C5: Characteristic values of resistance for rebar under tension loads in cracked concrete (Design according to EN 1992-4)

Anchor size threaded rod				**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Steel failure								
Characteristic tension resistance		$N_{Rk,s}$	[kN]	$A_s \times f_{uk}$				
Combined pull-out and concrete cone failure								
Characteristic bond resistance in uncracked concrete C20/25								
Temperature range T1: 40°C/24°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	7.5	6.5	6	5.5	5.5
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	7.5	6	5	4.5	4
Temperature range T3a: 60°C/43°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4.5	4	3.5	3.5	3.5
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	4.5	4	3.5	3.5	3
Temperature range T3b: 72°C/43°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4	3.5	3	3	3
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	4	3.5	3	3	3
Increasing factors for concrete Ψ_c		C30/37		1.04				
		C40/50		1.07				
		C50/60		1.09				
Concrete cone failure								
Factor for concrete cone failure for cracked concrete		k_1 [1)]		7.2				
		$k_{cr,N}$ [2)]		7.7				
Edge distance		$c_{cr,N}$	[mm]	$1.5h_{ef}$				
Splitting failure								
Edge distance		$h / h_{ef} \geq 2,0$		$1,0\ h_{ef}$				
		$2,0 > h / h_{ef} > 1,3$		$4,6\ h_{ef} - 1,8\ h$				
		$h / h_{ef} \leq 1.3$		$2,26\ h_{ef}$				
Axial distance		$s_{cr,sp}$	[mm]	$2\ c_{cr,sp}$				
Installation safety factor (dry and wet concrete)		γ_2 [1)]=γ_{inst} [2)]		1.0				
Installation safety factor (flooded bore hole)		γ_2 [1)]=γ_{inst} [2)]		1.2				



[1)] Design according EOTA Technical Report TR 055
[2)] Design according EN 1992-4:2016

G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic values of resistance for rebar under tension loads in cracked concrete, Design according to EN 1992-4

Annex C 5

Table C6: Characteristic values of resistance for rebar under shear loads in cracked and uncracked concrete (Design according to EN 1992-4)

Anchor size threaded rod			**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
Steel failure without lever arm									
Characteristic shear resistance	$V_{Rk,s}$	[kN]	$0.5 \times A_s \times f_{uk}$						
Characteristic resistance of group of fasteners									
Ductility factor			k_7 = 1,0 for steel with rupture elongation A_5 > 8%						
Steel failure with lever arm									
Characteristic bending moment	M^0_{Rk}	[N.m]	$1.2 \times W_{el} \times f_{uk}$						
Concrete pry-out failure									
Factor for resistance to pry-out failure	k_8		2.0						
Installation safety factor	γ_2 [1] = γ_{inst} [2]		1.0						
Concrete edge failure									
Outside diameter of fastener	d_{nom}	[mm]	8	10	12	16	20	25	32
Effective length of fastener	ℓ_f	[mm]	min (h_{ef}, 8 d_{nom})						
Installation safety factor	γ_2 [1] = γ_{inst} [2]		1.0						

[1] Design according EOTA Technical Report TR 055
[2] Design according EN 1992-4:2016

G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Characteristic values of resistance for rebar under shear loads in cracked and uncracked concrete, Design according to EN 1992-4

Annex C 6

Table C7: Displacement of threaded rod under tension and shear load

Size		M8	M10	M12	M16	M20	M24	M27	M30
Tension load									
Uncracked concrete									
F	[kN]	11.9	14.3	19.0	23.8	35.7	35.7	45.2	45.2
δ_{N0}	[mm]	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5
$\delta_{N\infty}$	[mm]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Cracked concrete									
F	[kN]			14.3	16.7	23.8	28.6	28.6	28.6
δ_{N0}	[mm]			0.4	0.5	0.5	0.6	0.6	0.7
$\delta_{N\infty}$	[mm]			2.0	2.0	2.0	2.0	2.0	2.0
Shear load									
F	[kN]	3.5	5.5	8.0	15.0	23.3	33.6	43.7	53.4
δ_{N0}	[mm]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$\delta_{N\infty}$	[mm]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Table C8: Displacement of rebar under tension and shear load

Size		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Tension load								
Uncracked concrete								
F	[kN]	7.6	11.9	16.7	28.6	35.7	45.2	66.7
δ_{N0}	[mm]	0.3	0.3	0.4	0.4	0.4	0.5	0.5
$\delta_{N\infty}$	[mm]	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Cracked concrete								
F	[kN]			11.9	19.0	23.8	28.6	35.7
δ_{N0}	[mm]			0.4	0.5	0.5	0.6	0.6
$\delta_{N\infty}$	[mm]			2.0	2.0	2.0	2.0	2.0
Shear load								
F	[kN]	6.6	10.3	14.8	26.3	41.1	64.3	105.3
δ_{N0}	[mm]	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$\delta_{N\infty}$	[mm]	3.7	3.7	3.7	3.7	3.7	3.7	3.7

G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Displacement for threaded rods and rebar

Annex C 7

Table C9: Seismic performance category C2

Anchor size threaded rod				M12	M16	M20
Tension load						
Steel failure						
Characteristic tension resistance, Steel, property class 4.6		$N_{Rk,s,eq,C2}$	[kN]	34	63	98
Characteristic tension resistance, Steel, property class 5.8		$N_{Rk,s,eq,C2}$	[kN]	42	78	122
Characteristic tension resistance, Steel, property class 8.8		$N_{Rk,s,eq,C2}$	[kN]	67	125	196
Characteristic tension resistance, Stainless steel A4 and HCR		$N_{Rk,s,eq,C2}$	[kN]	59	110	171
Characteristic resistance to pull-out						
Temperature range T1:40°C/24°C	dry and wet concrete	$\tau_{Rk,p,eq,C2}$	[N/mm²]	3.5	3.2	3.0
	flooded bore hole	$\tau_{Rk,p,eq,C2}$	[N/mm²]	3.5	3.2	3.0
Temperature range T3a:60°C/43°C	dry and wet concrete	$\tau_{Rk,p,eq,C2}$	[N/mm²]	3.0	2.7	2.5
	flooded bore hole	$\tau_{Rk,p,eq,C2}$	[N/mm²]	3.0	2.7	2.5
Temperature range T3b:72°C/43°C	dry and wet concrete	$\tau_{Rk,p,eq,C2}$	[N/mm²]	2.8	2.5	2.3
	flooded bore hole	$\tau_{Rk,p,eq,C2}$	[N/mm²]	2.8	2.5	2.3
Installation safety factor (dry and wet concrete)		$\gamma_2 = \gamma_{inst}$		1.0		
Installation safety factor (flooded bore hole)		$\gamma_2 = \gamma_{inst}$		1.0		
Shear load						
Steel failure without lever arm						
Characteristic shear resistance, Steel, property class 4.6		$V_{Rk,s,eq,C2}$	[kN]	13	18	28
Characteristic shear resistance, Steel, property class 5.8		$V_{Rk,s,eq,C2}$	[kN]	16	22	35
Characteristic shear resistance, Steel, property class 8.8		$V_{Rk,s,eq,C2}$	[kN]	25	36	56
Characteristic shear resistance, Stainless steel A4 and HCR		$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C8 shall be multiplied by following reduction factor for **hot-dip galvanized** commercial standard rods						
Reduction factor for hot-dip galvanized rods		$\alpha_{v,h\text{-}dg,c2}$		0.46	0.61	0.61
Factor for annular gap		α_{gap}		0.5		

Table C10: Displacement of threaded rod under tension and shear load – seismic performance category C2

Anchor size threaded rod		M12	M16	M20
$\delta_{N,eq(DLS)}$	[mm]	0.20	0.40	0.77
$\delta_{N,eq(ULS)}$	[mm]	0.76	0.74	1.68
$\delta_{V,eq(DLS)}$	[mm]	5.29	4.12	4.94
$\delta_{V,eq(ULS)}$	[mm]	10.20	90.5	10.99

The anchor shall be used with minimum rupture elongation after fracture A_5 equal to 19%.

G&B Fissagi Gebofix EPO PLUS RE for concrete

Performances
Seismic performance category C2

Annex C 8

FICHA DE DATOS DE SEGURIDAD
GEBOFIX EPO PLUS RE comp A

De acuerdo con el Reglamento (CE) n º 1907/2006, Anexo II, en su versión modificada.

SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

1.1. identificador del producto

Nombre del producto GEBOFIX EPO PLUS RE comp A

1.2. Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados

Usos identificados Dos componentes, adhesivo a base de epoxi. Resina.

1.3. Datos del proveedor de la ficha de datos de seguridad

Proveedor
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Persona de contacto info@gebfissaggi.com

1.4. Teléfono de emergencia

Teléfono de urgencias +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SECCIÓN 2: Identificación de los peligros

2.1. Clasificación de la sustancia o de la mezcla

Clasificación (CE 1272/2008)

Peligros físicos No Clasificado

Riesgos para la salud Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317

Peligros ambientales Aquatic Chronic 2 - H411

2.2. Elementos de la etiqueta

Pictogramas de peligro

Palabra de advertencia Atención

Indicaciones de peligro
H315 Provoca irritación cutánea.
H319 Provoca irritación ocular grave.
H317 Puede provocar una reacción alérgica en la piel.
H411 Tóxico para los organismos acuáticos, con efectos nocivos duraderos.

GEBOFIX EPO PLUS RE comp A

Consejos preventivos

P273 Evitar su liberación al medio ambiente.
P280 Llevar guantes/prendas/gafas/máscara de protección.
P302+P352 EN CASO DE CONTACTO CON LA PIEL: Lavar con abundante agua.
P305+P351+P338 EN CASO DE CONTACTO CON LOS OJOS: Enjuagar con agua cuidadosamente durante varios minutos. Quitar las lentes de contacto cuando estén presentes y pueda hacerse con facilidad. Proseguir con el lavado.
P333+P313 En caso de irritación o erupción cutánea: Consultar a un médico.
P501 Eliminar el contenido/ el recipiente de acuerdo con las normas nacionales.

Contiene

RESINA EPOXI (PESO MOLECULAR MEDIO <= 700), EPOXY PHENOL FORMALDEHYDE RESIN, REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Medidas de precaución suplementarias

P261 Evitar respirar el vapor/ el aerosol.
P264 Lavarse la piel contaminada concienzudamente tras la manipulación.
P272 Las prendas de trabajo contaminadas no podrán sacarse del lugar de trabajo.
P321 Se necesita un tratamiento específico (ver consejos médicos en esta etíqueta).
P332+P313 En caso de irritación cutánea: Consultar a un médico.
P337+P313 Si persiste la irritación ocular: Consultar a un médico.
P362+P364 Quitar las prendas contaminadas y lavarlas antes de volver a usarlas.
P391 Recoger el vertido.

2.3. Otros peligros

SECCIÓN 3: Composición/información sobre los componentes

3.2. Mezclas

EPOXY RESIN (Number average MW <= 700) **20-50%**

Número CAS: 25068-38-6 Número CE: 500-033-5

Clasificación
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

EPOXY PHENOL FORMALDEHYDE RESIN **10-20%**

Número CAS: 9003-36-5 Número CE: 500-006-8 Número de Registro REACH: 01-2119454392-40

Clasificación
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp A

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)			**5-10%**
Número CAS: 933999-84-9	Número CE: 618-939-5	Número de Registro REACH: 01-2119463471-41	
Clasificación Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1A - H317 Aquatic Chronic 3 - H412			

TITANIUM DIOXIDE		**<0.5%**
Número CAS: 13463-67-7	Número CE: 236-675-5	
Clasificación No Clasificado		

El texto completo de todas las frases R e indicaciones de peligro (frases H) figura en la sección 16.

Comentarios sobre la composición CAS 28064-14-4 = CAS 9003-36-5 (EU) CAS 933999-84-9 = CAS 16096-31-4 (RoW)

SECCIÓN 4: Primeros auxilios

4.1. Descripción de los primeros auxilios

Inhalación Quitar a la persona afectada de la fuente de contaminación. Conseguir atención médica si continúa cualquier malestar.

Ingestión No induce vómitos. Obtenga atención médica inmediatamente.

Contacto con la piel Quitar la ropa contaminada inmediatamente y lavar la piel con agua y jabón.

Contacto con los ojos Enjuague inmediatamente con abundante agua. Retire las lentes de contacto y separe bien los párpados. Continúe enjuagando por lo menos durante 15 minutos. Obtenga atención médica si la irritación persiste después de lavarse. Mostrar esta ficha de seguridad al personal médico.

4.2. Principales síntomas y efectos, agudos y retardados

Inhalación Puede irritar las vías respiratorias.

Ingestión Puede causar dolores de estómago o vómitos.

Contacto con la piel El contacto prolongado o repetido con la piel puede causar irritación, enrojecimiento y dermatitis. Posibilidad de sensibilización en contacto con la piel.

Contacto con los ojos Irrita los ojos.

4.3. Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente

Notas para el médico Recomendaciones no específicas. En caso de duda, solicite atención médica inmediatamente.

SECCIÓN 5: Medidas de lucha contra incendios

5.1. Medios de extinción

Medios de extinción adecuados Extinguir con espuma resistente al alcohol, dióxido de carbono o polvo seco.

GEBOFIX EPO PLUS RE comp A

Medios de extinción inadecuados No use agua, si es evitable.

5.2. Peligros específicos derivados de la sustancia o de la mezcla

Riesgos específicos No se considera que represente un riesgo significativo debido a las pequeñas cantidades utilizadas.

Productos de combustión peligrosos Óxidos de carbono. Óxidos de nitrógeno.

5.3. Recomendaciones para el personal de lucha contra incendios

Medidas protectoras durante la lucha contra el fuego No se preveen requisitos específicos bajo condiciones normales de uso.

Equipo de protección especial para los bomberos Utilizar un aparato de respiración autónomo de presión positiva (SCBA) y ropa protectora adecuada.

SECCIÓN 6: Medidas en caso de vertido accidental

6.1. Precauciones personales, equipo de protección y procedimientos de emergencia

Precauciones personales Usar ropa de protección como se describe en la Sección 8 de esta ficha de datos de seguridad.

6.2. Precauciones relativas al medio ambiente

Precauciones ambientales Eviar su liberación al medio ambiente.

6.3. Métodos y material de contención y de limpieza

Métodos de limpieza Recoger y colocar en recipientes de eliminación de residuos adecuados y sellar firmemente. Para la eliminación de residuos, ver Sección 13.

6.4. Referencia a otras secciones

Referencia a otras secciones Para la protección personal, ver Sección 8. Recoger y eliminar el derrame, como se indica en la Sección 13.

SECCIÓN 7: Manipulación y almacenamiento

7.1. Precauciones para una manipulación segura

Precauciones de uso Evítese el contacto con los ojos. Evítese el contacto con la piel.

Asesoramiento sobre higiene ocupacional general No comer, beber y fumar durante su utilización. Ningún procedimiento específico de higiene recomendadas, pero siempre se deben observar las buenas prácticas de higiene personal cuando se trabaja con productos químicos.

7.2. Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades

Precauciones de almacenamiento Manténgase lejos de alimentos, bebidas y piensos. Mantenga el envase bien cerrado cuando no esté en uso.

7.3. Usos específicos finales

Uso específico final(es) Los usos identificados para este producto están detallados en la Sección 1.2.

SECCIÓN 8: Controles de exposición/protección individual

8.1 Parámetros de control

Límites de exposición laboral

TITANIUM DIOXIDE

Límite de exposición a largo plazo (8-horas TWA): LEP 10 mg/m³
LEP = Valor límite de exposición profesional.

GEBOFIX EPO PLUS RE comp A

EPOXY RESIN (Number average MW <= 700) (CAS: 25068-38-6)

DNEL

Industria - Inhalación; Larga duración Efectos sistemicos: 12.25 mg/m³
Industria - Inhalación; Corta duración Efectos sistemicos: 12.25 mg/m³
Industria - Contacto dermal; Larga duración Efectos sistemicos: 8.33 mg/kg/dia
Industria - Contacto dermal; Corta duración Efectos sistemicos: 8.33 mg/kg/dia
REACH carpeta de información

PNEC

- agua dulce; 0.006 mg/l
- Agua marina; 0.0006 mg/l
- Liberación intermitente; 0.018 mg/l
- STP; 10 mg/l
- Sedimento (de agua dulce); 0.996 mg/kg
- Sedimento (de agua marina); 0.0996 mg/kg
- Suelo; 0.196 mg/kg

REACH carpeta de información

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2) (CAS: 933999-84-9)

DNEL

Industria - Inhalación; Larga duración Efectos sistemicos: 4.9 mg/m³
Industria - Inhalación; Corta duración Efectos sistemicos: 4.9 mg/m³
Industria - Inhalación; Larga duración Efectos locales: 0.44 mg/m³
Industria - Contacto dermal; Larga duración Efectos sistemicos: 2.8 mg/kg/dia
Industria - Contacto dermal; Larga duración Efectos locales: 22.6 µg/cm²
Industria - Contacto dermal; Corta duración Efectos locales: 22.6 µg/cm²
REACH carpeta de información

PNEC

- agua dulce; 0.0115 mg/l
- Agua marina; 0.00115 mg/l
- Liberación intermitente; 0.115 mg/l
- STP; 1 mg/l
- Sedimento (de agua dulce); 0.283 mg/kg
- Sedimento (de agua marina); 0.0283 mg/kg
- Suelo; 0.223 mg/kg

REACH carpeta de información

TITANIUM DIOXIDE (CAS: 13463-67-7)

DNEL

Industria - Inhalación; Larga duración Efectos sistemicos: 10 mg/m³
REACH carpeta de información

PNEC

- agua dulce; 0.127 mg/l
- Agua marina; 1.0 mg/l
- Liberación intermitente; 0.61 mg/l
- STP; 100 mg/l
- Sedimento (de agua dulce); 1000 mg/kg
- Sedimento (de agua marina); 100 mg/kg
- Suelo; 100 mg/kg

REACH carpeta de información

8.2 Controles de la exposición

Equipo especial de protección

GEBOFIX EPO PLUS RE comp A

Controles técnicos apropiados	No hay requisitos específicos de ventilación.
Protección de los ojos/la cara	Llevar gafas.
Protección de las manos	Usar guantes protectores hechos de los siguientes materiales: Goma de nitrilo.
Medidas de higiene	Suministrar estación lavaojos. Lavarse al terminar cada turno de trabajo y antes de comer, fumar y usar el baño. Lavarse inmediatamente la piel que ha sido contaminada. Quitarse inmediatamente cualquier ropa que ha sido contaminada.
Protección respiratoria	No relevante.
Controles de la exposición del medio ambiente	Mantenga el envase bien cerrado cuando no esté en uso. Los residuos y envases vacíos deben ser cuidados como residuos peligrosos de acuerdo con las disposiciones locales y nacionales.

SECCIÓN 9: Propiedades físicas y químicas

9.1. Información sobre propiedades físicas y químicas básicas

Apariencia	Líquido.
Color	Gris.
Olor	Características.
Umbral del olor	No determinado.
pH	No aplicable.
Punto de fusión	No aplicable.
Punto de ebullición inicial y rango	>35°C @ 760 mm Hg
Punto de inflamación	>100°C Tazo cerrada.
Indice de evaporación	Información no disponible.
Factor de evaporación	No aplicable.
Inflamabilidad (sólido, gas)	No aplicable.
Limites superior/inferior de inflamabilidad o explosión	No aplicable.
Otros inflamabilidad	No disponible.
Presión de vapor	<500 Pa @ °C
Densidad de vapor	Información no disponible.
Densidad relativa	1.5 - 1.6
Densidad aparente	No aplicable.
Solubilidad(es)	Insoluble en agua.
Coeficiente de reparto	No determinado.
Temperatura de autoignición	No determinado.
Temperatura de descomposición	No determinado.
Viscosidad	> 60 S ISO2431
Propiedades de explosión	Información no disponible.

GEBOFIX EPO PLUS RE comp A

Explosivo bajo la influencia de una llama	No
Propiedades oxidantes	No cumple con los criterios para ser clasificadas como oxidantes.

9.2. Otros datos

SECCIÓN 10: Estabilidad y reactividad

10.1. Reactividad

Reactividad	Los siguientes materiales pueden reaccionar con el producto: Ácidos. Amidas. Aminas. Fenoles, cresoles.

10.2. Estabilidad química

Estabilidad	Estable a temperatura ambiente normal y cuando es usado como se recomienda.

10.3. Posibilidad de reacciones peligrosas

Posibilidad de reacciones peligrosas	Los siguientes materiales pueden reaccionar con el producto: Ácidos. Amidas. Aminas. Fenoles, cresoles.

10.4. Condiciones que deben evitarse

Condiciones que deben evitarse	Evitar el contacto con ácidos y alcalinos.

10.5. Materiales incompatibles

Materiales que deben evitarse	Ácidos. Aminas. Amidas.

10.6. Productos de descomposición peligrosos

Productos de descomposición peligrosos	Óxidos de carbono. Óxidos de nitrógeno.

SECCIÓN 11: Información toxicológica

11.1. Información sobre los efectos toxicológicos

Sensibilización dérmica

Sensibilización de la piel	Sensibilización.

Información general	Contiene componentes epoxídicos. Puede provocar reacción alérgica.
Inhalación	No conocidos riesgos específicos para la salud.
Ingestión	No se esperan efectos nocivos para las cantidades que se pueden ingerir accidentalmente.
Contacto con la piel	Irrita la piel. Posibilidad de sensibilización en contacto con la piel.
Contacto con los ojos	Puede causar irritación severa en los ojos.
Riesgos para la salud agudos y crónicos	Irrita la piel. Irrita los ojos.
Ruta de exposición	Piel y/o contacto con los ojos
Sintomas médicos	Irritación de la piel.
Consideraciones médicas	Trastornos de la piel y alergias.

Información toxicológica sobre los componentes

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Toxicidad aguda - oral

GEBOFIX EPO PLUS RE comp A

Toxicidad oral aguda (DL_{50} mg/kg)	3.010,0
Especies	Rata

SECCIÓN 12: Información Ecológica

12.1. Toxicidad

Información ecológica sobre los componentes

EPOXY RESIN (Number average MW <= 700)

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, 96 horas: 2 mg/l, Oncorhynchus mykiss
Toxicidad aguda - invertebrados acuáticos	CE_{50}, 48 horas: 1.8 mg/l, Daphnia magna
Toxicidad aguda - plantas acuáticas	CE_{50}, 72 horas: 11 mg/l, Alga de agua dulce CE_{50}, 96 horas: 220 mg/l, Scenedesmus subspicatus

Toxicidad acuática crónica

Toxicidad crónica - invertebrados acuáticos	NOEC, 21 días: 0.3 mg/l, Daphnia magna

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, 96 horas: 30 mg/l, Oncorhynchus mykiss

12.2. Persistencia y degradabilidad

Persistencia y degradabilidad El producto no es biodegradable.

Información ecológica sobre los componentes

EPOXY RESIN (Number average MW <= 700)

Biodegradación	- 12% Degradation (%): 28 días

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Biodegradación	- 47% Degradation (%): 28 días OECD 301D

12.3.Potencial de bioacumulación

Potencial de bioacumulación No hay datos sobre la bioacumulación.

Coeficiente de reparto No determinado.

Información ecológica sobre los componentes

EPOXY RESIN (Number average MW <= 700)

Potencial de bioacumulación	Puede acumularse en suelo y sistemas acuosos. BCF: 100 - 3000,
Coeficiente de reparto	log Pow: 3.242 Valor calculado

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

GEBOFIX EPO PLUS RE comp A

Potencial de bioacumulación	BCF: < 100, Valor calculado
Coeficiente de reparto	log Pow: -0.272 Valor calculado

12.4. Movilidad en el suelo

Movilidad El producto es insoluble en agua y se extenderá en la superficie del agua. El producto no es volátil. Semi-móvil.

Información ecológica sobre los componentes

EPOXY RESIN (Number average MW <= 700)

Movilidad	Semi-móvil.
Coeficiente de adsorción / desorción	Agua - Koc: 1800 - 4400 @ 25°C Valor calculado
Constante de Henry	4.93E-05 Pa m3/mol @ 25°C

12.5. Resultados de la valoración PBT y mPmB

Resultados de la evaluación PBT y mPmB Este producto no contiene sustancias clasificadas como PBT o vPvB.

Información ecológica sobre los componentes

EPOXY RESIN (Number average MW <= 700)

Resultados de la evaluación PBT y mPmB	Esta sustancia no está clasificada como PBT o vPvB según los criterios actuales de la UE.

12.6. Otros efectos adversos

SECCIÓN 13: Consideraciones relativas a la eliminación

13.1. Métodos para el tratamiento de residuos

Métodos de eliminación Los residuos y envases vacíos deben ser cuidados como residuos peligrosos de acuerdo con las disposiciones locales y nacionales. Deshágase de los desechos a través de un contratista autorizado para la eliminación.

Clase de residuo La clasificación como residuo debe realizarse de acuerdo con la Lista Europea de Residuos (LER)

SECCIÓN 14: Información relativa al transporte

14.1. Número ONU

N º ONU (ADR/RID)	3082
N º ONU (IMDG)	3082
N º ONU (ICAO)	3082
N º ONU (ADN)	3082

14.2. Designación oficial de transporte de las Naciones Unidas

Nombre apropiado para el transporte (ADR/RID)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nombre apropiado para el transporte (IMDG)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

GEBOFIX EPO PLUS RE comp A

Nombre apropiado para el transporte (ICAO)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nombre apropiado para el transporte (ADN)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

14.3. Clase(s) de peligro para el transporte

Clase ADR/RID	9
Código de clasificación ADR/RID	M6
Etiqueta ADR/RID	9
Clase IMDG	9
Clase/división ICAO	9
Clase ADN	9

Etiquetas de Transporte

14.4. Grupo de embalaje

Grupo empaquetado ADR/RID	III
Grupo empaquetado IMDG	III
Grupo empaquetado ICAO	III
Grupo empaquetado ADN	III

14.5. Peligros para el medio ambiente

Sustancia contaminante peligrosa/contaminante marino

14.6. Precauciones particulares para los usuarios

SmE	F-A, S-F
Categoría de transporte ADR	3
Código de acción de emergencia	•3Z
Número de Identificación de Riesgos (ADR/RID)	90
Código de restricción del túnel	(-)

14.7. Transporte a granel con arreglo al anexo II del Convenio MARPOL y el Código IBC

Transporte a granel con arreglo al anexo II del Convenio Marpol 73/78 y del Código IBC	No aplicable.

SECCIÓN 15: Información reglamentaria

GEBOFIX EPO PLUS RE comp A

15.1. Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla

Legislación de la UE (EU) No 2015/830

Guía Workplace Exposure Limits EH40.

15.2. Evaluación de la seguridad química

Ninguna evaluación de la seguridad química has sido llevada a cabo.

SECCIÓN 16: Otra información

Comentarios de revisión NOTA: Las lineas dentro del margen indican cambios significativos respecto a la revisión anterior.

Fecha de revisión 09/01/2020

Número de versión 2.002

Fecha de remplazo 27/07/2018

Número SDS 20841

Indicaciones de peligro en su totalidad
H315 Provoca irritación cutánea.
H317 Puede provocar una reacción alérgica en la piel.
H319 Provoca irritación ocular grave.
H411 Tóxico para los organismos acuáticos, con efectos nocivos duraderos.
H412 Nocivo para los organismos acuáticos, con efectos nocivos duraderos.

FICHA DE DATOS DE SEGURIDAD
GEBOFIX EPO PLUS RE comp B

De acuerdo con el Reglamento (CE) n º 1907/2006, Anexo II, en su versión modificada.

SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

1.1. identificador del producto

Nombre del producto GEBOFIX EPO PLUS RE comp B

1.2. Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados

Usos identificados Dos componentes, adhesivo a base de epoxi. Endurecedor.

1.3. Datos del proveedor de la ficha de datos de seguridad

Proveedor
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Persona de contacto info@gebfissaggi.com

1.4. Teléfono de emergencia

Teléfono de urgencias +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

SECCIÓN 2: Identificación de los peligros

2.1. Clasificación de la sustancia o de la mezcla

Clasificación (CE 1272/2008)

Peligros físicos No Clasificado

Riesgos para la salud Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

Peligros ambientales Aquatic Chronic 3 - H412

Salud humana Corrosivo. El contacto prolongado causa daño ocular grave y tisular.

Ambiental El producto contiene una sustancia que puede tener efectos nocivos sobre el medio ambiente.

2.2. Elementos de la etiqueta

Pictogramas de peligro

Palabra de advertencia Peligro

GEBOFIX EPO PLUS RE comp B

Indicaciones de peligro	H302 Nocivo en caso de ingestión. H314 Provoca quemaduras graves en la piel y lesiones oculares graves. H317 Puede provocar una reacción alérgica en la piel. H412 Nocivo para los organismos acuáticos, con efectos nocivos duraderos.
Consejos preventivos	P273 Evitar su liberación al medio ambiente. P280 Llevar guantes/prendas/gafas/máscara de protección. P303+P361+P353 EN CASO DE CONTACTO CON LA PIEL (o el pelo): Quitar inmediatamente toda la ropa contaminada. Enjuagar la piel con agua o ducharse. P305+P351+P338 EN CASO DE CONTACTO CON LOS OJOS: Enjuagar con agua cuidadosamente durante varios minutos. Quitar las lentes de contacto cuando estén presentes y pueda hacerse con facilidad. Proseguir con el lavado. P501 Eliminar el contenido/ el recipiente de acuerdo con las normas nacionales.
Contiene	1,3-CYCLOHEXANEBIS(METHYLAMINE), STYRENATED PHENOL, SALICYLIC ACID, 1,3-BENZENEDIMETHANAMINE
Medidas de precaución suplementarias	P264 Lavarse la piel contaminada concienzudamente tras la manipulación. P260 No respirar los vapores. P301+P330+P331 EN CASO DE INGESTIÓN: Enjuagar la boca. NO provocar el vómito. P304+P340 EN CASO DE INHALACIÓN: Transportar a la persona al aire libre y mantenerla en una posición que le facilite la respiración. P333+P313 En caso de irritación o erupción cutánea: Consultar a un médico. P362+P364 Quitar las prendas contaminadas y lavarlas antes de volver a usarlas. P405 Guarde bajo llave.

2.3. Otros peligros

SECCIÓN 3: Composición/información sobre los componentes

3.2. Mezclas

1,3-CYCLOHEXANEBIS(METHYLAMINE) **20-50%**

Número CAS: 2579-20-6 | Número CE: 219-941-5 | Número de Registro REACH: 01-2119543741-41

Clasificación
Acute Tox. 4 - H302
Acute Tox. 4 - H312
Skin Corr. 1A - H314
Aquatic Chronic 3 - H412

STYRENATED PHENOL **5-10%**

Número CAS: 61788-44-1 | Número CE: 262-975-0 | Número de Registro REACH: 01-2119979575-18

Clasificación
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp B

SALICYLIC ACID		**5-10%**
Número CAS: 69-72-7	Número CE: 200-712-3	Número de Registro REACH: 01-2119486984-17

Clasificación
Acute Tox. 4 - H302
Eye Dam. 1 - H318

1,3-BENZENEDIMETHANAMINE		**1-5%**
Número CAS: 1477-55-0	Número CE: 216-032-5	

Clasificación
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Corr. 1B - H314
Skin Sens. 1B - H317
Aquatic Chronic 3 - H412

El texto completo de todas las frases R e indicaciones de peligro (frases H) figura en la sección 16.

SECCIÓN 4: Primeros auxilios

4.1. Descripción de los primeros auxilios

Inhalación Quitar a la persona afectada de la fuente de contaminación. Conseguir atención médica si continúa cualquier malestar.

Ingestión No induce vómitos. Obtenga atención médica inmediatamente.

Contacto con la piel Quitar la ropa contaminada inmediatamente y lavar la piel con agua y jabón. Conseguir atención médica si continúa cualquier malestar.

Contacto con los ojos Enjuague inmediatamente con abundante agua. Retire las lentes de contacto y separe bien los párpados. Continúe enjuagando por lo menos durante 15 minutos. Obtenga atención médica si la irritación persiste después de lavarse. Mostrar esta ficha de seguridad al personal médico.

4.2. Principales síntomas y efectos, agudos y retardados

Inhalación Irritación de la nariz, la garganta y las vías respiratorias.

Ingestión Puede causar dolores de estómago o vómitos.

Contacto con la piel Ardor y dolor y daño de corrosión severa de la piel . Pueden existir quemaduras. Quemaduras químicas.

Contacto con los ojos Puede causar visión borrosa y lesiones oculares graves.

4.3. Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente

Notas para el médico Recomendaciones no específicas. En caso de duda, solicite atención médica inmediatamente.

SECCIÓN 5: Medidas de lucha contra incendios

5.1. Medios de extinción

Medios de extinción adecuados Extinguir con espuma resistente al alcohol, dióxido de carbono o polvo seco.

GEBOFIX EPO PLUS RE comp B

Medios de extinción inadecuados No use agua, si es evitable.

5.2. Peligros específicos derivados de la sustancia o de la mezcla

Riesgos específicos No aplicables precauciones específicas contra incendios cuando están implicadas pequeñas cantidades en el incendio.

Productos de combustión peligrosos Óxidos de carbono. Óxidos de nitrógeno.

5.3. Recomendaciones para el personal de lucha contra incendios

Medidas protectoras durante la lucha contra el fuego Precauciones contra incendios no específicos conocidos.

Equipo de protección especial para los bomberos Utilizar un aparato de respiración autónomo de presión positiva (SCBA) y ropa protectora adecuada.

SECCIÓN 6: Medidas en caso de vertido accidental

6.1. Precauciones personales, equipo de protección y procedimientos de emergencia

Precauciones personales Usar ropa de protección como se describe en la Sección 8 de esta ficha de datos de seguridad.

6.2. Precauciones relativas al medio ambiente

Precauciones ambientales Recoger y eliminar el derrame, como se indica en la Sección 13. Contener el derrame con arena, tierra u otro material no combustible adecuado. Evite verter en desagües o cursos de agua o en el suelo.

6.3. Métodos y material de contención y de limpieza

Métodos de limpieza Recoger y colocar en recipientes de eliminación de residuos adecuados y sellar firmemente. Para la eliminación de residuos, ver Sección 13.

6.4. Referencia a otras secciones

Referencia a otras secciones Para la protección personal, ver Sección 8. Recoger y eliminar el derrame, como se indica en la Sección 13.

SECCIÓN 7: Manipulación y almacenamiento

7.1. Precauciones para una manipulación segura

Precauciones de uso Evítese el contacto con la piel. Evítese el contacto con los ojos. No tirar los residuos por el desagüe.

Asesoramiento sobre higiene ocupacional general No comer, beber y fumar durante su utilización. Ningún procedimiento específico de higiene recomendadas, pero siempre se deben observar las buenas prácticas de higiene personal cuando se trabaja con productos químicos.

7.2. Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades

Precauciones de almacenamiento Manténgase lejos de alimentos y bebidas. Mantenga el envase bien cerrado cuando no esté en uso.

7.3. Usos específicos finales

Uso específico final(es) Los usos identificados para este producto están detallados en la Sección 1.2.

SECCIÓN 8: Controles de exposición/protección individual

8.1 Parámetros de control

GEBOFIX EPO PLUS RE comp B

1,3-CYCLOHEXANEBIS(METHYLAMINE) (CAS: 2579-20-6)

DNEL

REACH carpeta de información
Industria - Inhalación; Corta duración Efectos sistemicos: 21.2 mg/m³
Industria - Contacto dermal; Larga duración Efectos sistemicos: 0.2 mg/kg/dia
Industria - Inhalación; Larga duración Efectos sistemicos: 0.71 mg/m³
Industria - Contacto dermal; Corta duración Efectos sistemicos: 6 mg/kg/dia

PNEC

REACH carpeta de información
- Liberación intermitente; 0.331 mg/l
- Agua marina; 0.00331 mg/l
- agua dulce; 0.0331 mg/l
- STP; 10 mg/l

STYRENATED PHENOL (CAS: 61788-44-1)

DNEL

REACH carpeta de información
Industria - Contacto dermal; Larga duración Efectos sistemicos: 0.416666667 mg/kg/dia
Industria - Inhalación; Larga duración Efectos sistemicos: 0.734649123 mg/m³

PNEC

REACH carpeta de información
- Sedimento (de agua marina); 43.65269484 mg/kg
- Liberación intermitente; 0.01371 mg/l
- STP; 1.0638 mg/l
- Agua marina; 0.0001371 mg/l
- Sedimento (de agua dulce); 43.65269484 mg/kg
- Suelo; 20.64517608 mg/kg
- agua dulce; 0.001371 mg/l

SALICYLIC ACID (CAS: 69-72-7)

DNEL

REACH carpeta de información
Industria - Inhalación; Larga duración Efectos sistemicos: 16 mg/m³
Industria - Contacto dermal; Larga duración Efectos sistemicos: 2 mg/kg/dia

PNEC

REACH carpeta de información
- Sedimento (de agua dulce); 1.42 mg/kg
- Suelo; 0.166 mg/kg
- Sedimento (de agua marina); 0.142 mg/kg
- Liberación intermitente; 1 mg/l
- agua dulce; 0.2 mg/l
- STP; 162 mg/l
- Agua marina; 0.02 mg/l

1,3-BENZENEDIMETHANAMINE (CAS: 1477-55-0)

PNEC

- Sedimento (de agua dulce); 0.43 mg/kg
- agua dulce; 0.094 mg/l
- Suelo; 0.045 mg/kg
- Agua marina; 0.0094 mg/l
- Sedimento (de agua marina); 0.043 mg/kg
- STP; 10 mg/l
- Liberación intermitente; 0.152 mg/l

8.2 Controles de la exposición

GEBOFIX EPO PLUS RE comp B

Equipo especial de protección

Controles técnicos apropiados	Proveer ventilación adecuada de escape general y local. Respete los límites de exposición profesional para los productos o ingredientes.
Protección de los ojos/la cara	Se debe usar la siguiente protección: Gafas de seguridad bien ajustadas. Las lentes de contacto no deben ser usadas cuando se trabaja con este producto químico.
Protección de las manos	Usar guantes protectores hechos de los siguientes materiales: Goma de nitrilo.
Otra protección de piel y cuerpo	Evítese el contacto con la piel. Usar ropa adecuada para prevenir un contacto con la piel repetitivo o prolongado.
Medidas de higiene	No comer, beber y fumar durante su utilización. Lavarse al terminar cada turno de trabajo y antes de comer, fumar y usar el baño. Utilice controles de ingeniería para reducir la contaminación del aire a nivel de exposición permisible.
Protección respiratoria	Si la ventilación es insuficiente, debe ser usada una protección respiratoria adecuada.
Controles de la exposición del medio ambiente	Mantenga el envase bien cerrado cuando no esté en uso. Los residuos y envases vacíos deben ser cuidados como residuos peligrosos de acuerdo con las disposiciones locales y nacionales.

SECCIÓN 9: Propiedades físicas y químicas

9.1. Información sobre propiedades físicas y químicas básicas

Apariencia	Líquido.
Color	Pulir.
Olor	Características. Amina.
Umbral del olor	No determinado.
pH	No aplicable.
Punto de fusión	No determinado.
Punto de ebullición inicial y rango	No determinado.
Punto de inflamación	>100°C Tazo cerrada.
Indice de evaporación	No determinado.
Factor de evaporación	No determinado.
Inflamabilidad (sólido, gas)	No determinado.
Limites superior/inferior de inflamabilidad o explosión	No determinado.
Otros inflamabilidad	No aplicable.
Presión de vapor	No determinado.
Densidad de vapor	No determinado.
Densidad relativa	1.4 - 1.5
Densidad aparente	No disponible.

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Solubilidad(es)	No determinado.
Coeficiente de reparto	No determinado.
Temperatura de autoignición	No determinado.
Temperatura de descomposición	No determinado.
Viscosidad	No determinado.
Propiedades de explosión	Información no disponible.
Explosivo bajo la influencia de una llama	No está considerado como explosivo.
Propiedades oxidantes	No cumple con los criterios para ser clasificadas como oxidantes.

9.2. Otros datos

SECCIÓN 10: Estabilidad y reactividad

10.1. Reactividad

Reactividad	Los siguientes materiales pueden reaccionar con el producto: Ácidos. Epoxidos. Agentes oxidantes. Peróxidos.

10.2. Estabilidad química

Estabilidad	Estable a temperatura ambiente normal y cuando es usado como se recomienda.

10.3. Posibilidad de reacciones peligrosas

Posibilidad de reacciones peligrosas	Los siguientes materiales pueden reaccionar con el producto: Ácidos. Epoxidos. Agentes oxidantes. Peróxidos.

10.4. Condiciones que deben evitarse

Condiciones que deben evitarse	No se preveen requisitos específicos bajo condiciones normales de uso.

10.5. Materiales incompatibles

Materiales que deben evitarse	Ácidos. Epoxidos. Agentes oxidantes. Peróxidos.

10.6. Productos de descomposición peligrosos

Productos de descomposición peligrosos	Óxidos de carbono. Óxidos de nitrógeno.

SECCIÓN 11: Información toxicológica

11.1. Información sobre los efectos toxicológicos

Toxicidad aguda - oral

ETA oral (mg/kg)	1.244,54

Toxicidad aguda - dérmica

ETA dérmico (mg/kg)	3.234,71

Toxicidad aguda - inhalación

ETA inhalación (polvo/niebla mg/l)	58,23

Sensibilización dérmica

Sensibilización de la piel	Sensibilización.

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Inhalación	El vapor puede irritar el sistema respiratorio/pulmones.
Ingestión	Puede causar dolores de estómago o vómitos.
Contacto con la piel	Posibilidad de sensibilización en contacto con la piel. Puede causar serias quemaduras en la piel.
Contacto con los ojos	Riesgo de lesiones oculares graves. Puede causar quemaduras químicas en los ojos.
Riesgos para la salud agudos y crónicos	Posibilidad de sensibilización en contacto con la piel. Provoca quemaduras graves.
Ruta de exposición	Piel y/o contacto con los ojos Inhalación
Órganos diana	No hay órganos objetivos específicos conocidos.
Sintomas médicos	Después de la exposición excesiva pueden incluir los siguientes síntomas: Quemaduras químicas.

Información toxicológica sobre los componentes

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Toxicidad aguda - oral

Toxicidad oral aguda (DL_{50} mg/kg)	700,0
Especies	Rata

Toxicidad aguda - dérmica

Toxicidad dérmica aguda (DL_{50} mg/kg)	1.700,0
Especies	Conejo

STYRENATED PHENOL

Toxicidad aguda - oral

Toxicidad oral aguda (DL_{50} mg/kg)	2.000,0
Especies	Rata

Toxicidad aguda - dérmica

Toxicidad dérmica aguda (DL_{50} mg/kg)	2.000,0
Especies	Rata

SALICYLIC ACID

Toxicidad aguda - oral

Toxicidad oral aguda (DL_{50} mg/kg)	891,0
Especies	Rata

Toxicidad aguda - dérmica

Toxicidad dérmica aguda (DL_{50} mg/kg)	2.000,0

GEBOFIX EPO PLUS RE comp B

Especies	Rata

1,3-BENZENEDIMETHANAMINE

Toxicidad aguda - oral

Toxicidad oral aguda (DL_{50} mg/kg)	1.090,0
Especies	Rata
ETA oral (mg/kg)	1.090,0

Toxicidad aguda - dérmica

Toxicidad dérmica aguda (DL_{50} mg/kg)	2.000,0
Especies	Rata

Toxicidad aguda - inhalación

Toxicidad aguda por inhalación (CL_{50} polvo/niebla mg/l)	1,34
Especies	Rata
ETA inhalación (polvo/niebla mg/l)	1,34

SECCIÓN 12: Información Ecológica

12.1. Toxicidad

Información ecológica sobre los componentes

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, > 96 horas: 100 mg/l, Leuciscus idus
Toxicidad aguda - invertebrados acuáticos	CE_{50}, 48 horas: 29 mg/l, Daphnia magna
Toxicidad aguda - plantas acuáticas	CE_{50}, > 96 horas: 100 mg/l, Scenedesmus subspicatus
Toxicidad aguda - terrestre	CE_{50}, > 14 días: 1000 mg/kg, Eisenia Fetida (Earthworm)

STYRENATED PHENOL

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, 96 horas: 14.8 mg/l,
Toxicidad aguda - invertebrados acuáticos	CE_{50}, 48 horas: 1-10 mg/l, Daphnia magna
Toxicidad aguda - plantas acuáticas	CE_{50}, 72 horas: 3.14 mg/l, Scenedesmus subspicatus

Toxicidad acuática crónica

NOEC	$0.01 < NOEC \leq 0.1$

GEBOFIX EPO PLUS RE comp B

SALICYLIC ACID

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, 48 horas: 90 mg/l, Leuciscus idus
Toxicidad aguda - microorganismos	CE_{50}, > 3 horas: 3200 mg/l, Lodo activado

1,3-BENZENEDIMETHANAMINE

Toxicidad acuática aguda

Toxicidad aguda - Peces	LC50, 96 horas: 75 mg/l, Leuciscus idus
Toxicidad aguda - invertebrados acuáticos	CE_{50}, 48 horas: 15.2 mg/l, Daphnia magna
Toxicidad aguda - plantas acuáticas	CE_{50}, 72 horas: 12 mg/l, Scenedesmus subspicatus

12.2. Persistencia y degradabilidad

Persistencia y degradabilidad No existen datos sobre la degradabilidad de este producto.

12.3.Potencial de bioacumulación

Potencial de bioacumulación No hay datos sobre la bioacumulación.

Coeficiente de reparto No determinado.

12.4. Movilidad en el suelo

Movilidad Móvil. El producto es miscible con agua y puede dispersarse en medios acuosos.

12.5. Resultados de la valoración PBT y mPmB

Resultados de la evaluación PBT y mPmB Este producto no contiene sustancias clasificadas como PBT o vPvB.

12.6. Otros efectos adversos

SECCIÓN 13: Consideraciones relativas a la eliminación

13.1. Métodos para el tratamiento de residuos

Información general Los residuos y envases vacíos deben ser cuidados como residuos peligrosos de acuerdo con las disposiciones locales y nacionales.

Métodos de eliminación Deshágase de los desechos a través de un contratista autorizado para la eliminación.

Clase de residuo La clasificación como residuo debe realizarse de acuerdo con la Lista Europea de Residuos (LER)

SECCIÓN 14: Información relativa al transporte

14.1. Número ONU

N º ONU (ADR/RID)	2735
N º ONU (IMDG)	2735
N º ONU (ICAO)	2735
N º ONU (ADN)	2735

14.2. Designación oficial de transporte de las Naciones Unidas

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Nombre apropiado para el transporte (ADR/RID)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nombre apropiado para el transporte (IMDG)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nombre apropiado para el transporte (ICAO)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nombre apropiado para el transporte (ADN)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

14.3. Clase(s) de peligro para el transporte

Clase ADR/RID	8
Código de clasificación ADR/RID	C7
Etiqueta ADR/RID	8
Clase IMDG	8
Clase/división ICAO	8
Clase ADN	8

Etiquetas de Transporte

14.4. Grupo de embalaje

Grupo empaquetado ADR/RID	II
Grupo empaquetado IMDG	II
Grupo empaquetado ICAO	II
Grupo empaquetado ADN	II

14.5. Peligros para el medio ambiente

Sustancia contamiante peligrosa/contaminante marino
No.

14.6. Precauciones particulares para los usuarios

Grupo de segregación código IMDG	18. Alcalinos
SmE	F-A, S-B
Categoría de transporte ADR	2
Código de acción de emergencia	2X
Número de Identificación de Riesgos (ADR/RID)	80
Código de restricción del túnel	(E)

14.7. Transporte a granel con arreglo al anexo II del Convenio MARPOL y el Código IBC

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Transporte a granel con arreglo al anexo II del Convenio Marpol 73/78 y del Código IBC	No aplicable.

SECCIÓN 15: Información reglamentaria

15.1. Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla

Legislación de la UE	(EU) No 2015/830
Guía	Workplace Exposure Limits EH40.

15.2. Evaluación de la seguridad química

Ninguna evaluación de la seguridad química has sido llevada a cabo.

SECCIÓN 16: Otra información

Comentarios de revisión	NOTA: Las lineas dentro del margen indican cambios significativos respecto a la revisión anterior.
Fecha de revisión	09/01/2020
Número de versión	3.001
Fecha de remplazo	27/07/2018
Número SDS	20842
Indicaciones de peligro en su totalidad	H302 Nocivo en caso de ingestión. H312 Nocivo en contacto con la piel. H314 Provoca quemaduras graves en la piel y lesiones oculares graves. H315 Provoca irritación cutánea. H317 Puede provocar una reacción alérgica en la piel. H318 Provoca lesiones oculares graves. H319 Provoca irritación ocular grave. H332 Nocivo en caso de inhalación. H411 Tóxico para los organismos acuáticos, con efectos nocivos duraderos. H412 Nocivo para los organismos acuáticos, con efectos nocivos duraderos.

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DOCUMENTO TÉCNICO

Gebofix EPO PLUS RE anclaje químico epoxy puro para un alto rendimiento

Certificación

ETA 17/0347 Certificación Opción 1 para uso sobre hormigón no fisurado y fisurado con varillas roscadas y barras corrugadas. Clase de prestaciones C2 para acciones sísmicas, barras roscadas M12, M16, M20
ETA 17/0368 Certificación para barras corrugadas, diseño según Eurocódigo 2 (EN 1992-1-1)
Clase de emisión A+ para compuestos orgánicos volátiles (COV) en ambiente cerrado

Soportes

uso certificado	uso específico
hormigón no fisurado hormigón fisurado	piedra compacta mampostería maciza, semihueca y hueca madera

Medidas

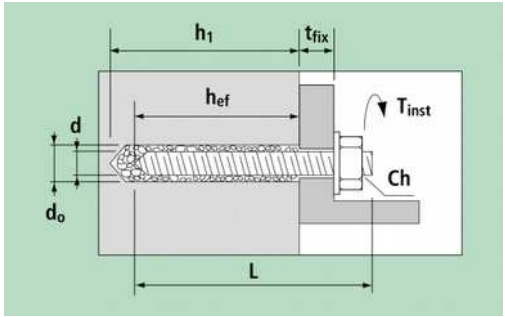
art.	contenido	mezclador	pistola
CCPE585	585 ml	03064	CP19
CCPE385	385 ml	03064	CP18, CP19

Uso previsto

Hormigón seco o húmedo
Hormigón con taladros inundados
Temperatura de instalación: entre +5 y +40 °C
Temperatura de trabajo: I entre -40 y +40 °C (temperatura máxima periodo corto +40 °C; periodo largo +24 °C)
II entre -40 y +60 °C (temperatura máxima periodo corto +60 °C; periodo largo +43 °C)
III entre -40 y +72 °C (temperatura máxima periodo corto +72 °C; periodo largo +43 °C)
Caducidad de la fecha de fabricación: 24 meses (temperatura de almacenamiento comprendida entre +5 y +25 °C)

Tiempos y temperaturas

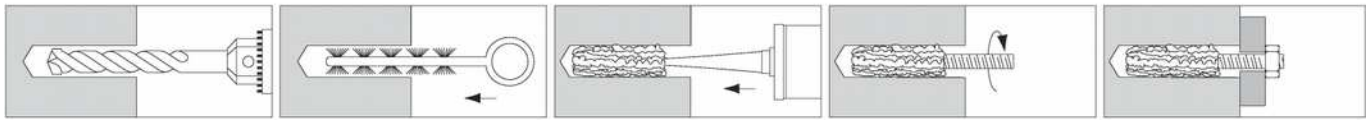
temperatura material base	tiempo de trabajabilidad	aplicación de carga soportes secos	aplicación de carga soportes mojados
+5 ÷ +9 °C	120 min	50 h	100 h
+10 ÷ +14 °C	45 min	30 h	60 h
+15 ÷ +19 °C	25 min	18 h	36 h
+20 ÷ +29 °C	12 min	10 h	20 h
+30 ÷ +39 °C	6 min	6 h	12 h
+40 °C	5 min	4 h	8 h



d = diámetro barra
L = largo de la barra
t_{fix} = espesor a fijar
d_0 = diámetro agujero
h_1 = profundidad mínima taladro
h_{nom} = profundidad de inserción
h_{ef} = profundidad efectiva del anclaje
d_f = diámetro del hueco del elemento a fijar
T_{inst} = par de apriete

$h_{ef} = h_1 = h_{nom}$

Instalación



• Uso en el hormigón no fisurado y fisurado con varillas roscadas

Características de emplazamiento e instalación

medida de la barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
diámetro del agujero	d_0 (mm)	10	12	14	18	22	26	30	35
profundidad agujero = profundidad efectiva del anclaje	$h_{ef,min}$ (mm)	60	60	70	80	90	96	108	120
	$h_{ef,max}$ (mm)	160	200	240	320	400	480	540	600
diámetro del hueco del elemento a fijar	d_f (mm)	9	12	14	18	22	26	30	33
distancia mínima entre anclajes	s_{min} (mm)	max(h_{ef} / 2; 5d)							
distancia mínima al borde	c_{min} (mm)	max(h_{ef} / 2; 5d)							
espesor mínimo del soporte	h_{min} (mm)	h_{ef} + 30 ≥ 100			h_{ef} + 2d_0				
par de apriete	T_{inst} (Nm)	10	20	40	80	120	160	180	200

Datos de carga

Para instalación en hormigón seco o húmedo y para temperatura de trabajo I (temperatura mínima -40 °C, temperatura máxima periodo corto +40 °C, periodo largo +24 °C).
Valido para un anclaje aislado y lejos del borde, sobre hormigón de calidad C20/25 de gran espesor y con refuerzo escaso.

○ Varillas roscadas en hormigón no fisurado

Resistencia característica de la resina
a profundidad de inserción estándar

medida de la barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tracción	$N_{Rk,p}$ (kN)	30,2	42,4	58,3	70,6	111,9	153,7	187,8	224,0

Resistencia de proyecto
a profundidad de inserción estándar, para varillas roscadas de acero clase 5.8 y 8.8

medida de la barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tracción	N_{Rd} (kN)	12,0 19,3	19,3 28,3	28,0 38,8	47,1	74,6	102,5	125,2	149,4
cortante	V_{Rd} (kN)	7,2 12,0	12,0 18,4	16,8 27,2	31,2 50,4	48,8 78,4	70,4 112,8	92,0 147,2	112,0 179,2

Carga recomendada
a profundidad de inserción estándar, para varillas roscadas de acero clase 5.8 y 8.8

medida de la barra		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**	**240**	**270**
tracción	N_{rec} (kN)	8,6 13,8	13,8 20,2	20,0 27,7	33,6	53,3	73,2	89,4	106,7
cortante	V_{rec} (kN)	5,1 8,6	8,6 13,1	12,0 19,4	22,3 36,0	34,9 56,0	50,3 80,6	65,7 105,1	80,0 128,0

1 kN ≈ 100 kg
fallo del acero clase 5.8 – fallo del acero clase 8.8

○ Varillas roscadas en hormigón fisurado

Resistencia característica de la resina
a profundidad de inserción estándar

medida de la barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tracción	$N_{Rk,p}$ (kN)	31,1	40,8	64,1	87,1	112,0	140,0

Resistencia de proyecto
a profundidad de inserción estándar, para varillas roscadas de acero clase 5.8 y 8.8

medida de la barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tracción	N_{Rd} (kN)	20,7	27,2	42,7	58,1	74,6	93,3
cortante	V_{Rd} (kN)	16,8 27,2	31,2 50,4	48,8 78,4	70,4 112,8	92,0 147,2	112,0 179,2

Carga recomendada
a profundidad de inserción estándar, para varillas roscadas de acero clase 5.8 y 8.8

medida de la barra		**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
profundidad de inserción	h_{ef} (mm)	**110**	**125**	**170**	**210**	**240**	**270**
tracción	N_{rec} (kN)	14,8	19,4	30,5	41,5	53,3	66,6
cortante	V_{rec} (kN)	12,0 19,4	22,3 36,0	34,9 56,0	50,3 80,6	65,7 105,1	80,0 128,0

1 kN ≈ 100 kg
fallo del acero clase 5.8 – fallo del acero clase 8.8

- **Uso en el hormigón no fisurado y fisurado con barras corrugadas** (usadas como anclajes)

Características de emplazamiento e instalación

medida de la barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
diámetro del agujero	d_0 mm	12	14	16	20	25	32	40
profundidad agujero = profundidad efectiva del anclaje	$h_{ef,min}$ mm	60	60	70	80	90	100	128
	$h_{ef,max}$ mm	160	200	240	320	400	500	640
distancia mínima entre anclajes	s_{min} mm	$\max(h_{ef} / 2; 40)$				$\max(h_{ef} / 2; 50)$		$\max(h_{ef} / 2; 70)$
distancia mínima al borde	c_{min} mm	$\max(h_{ef} / 2; 40)$				$\max(h_{ef} / 2; 50)$		$\max(h_{ef} / 2; 70)$
espesor mínimo del soporte	h_{min} mm	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$			

Datos de carga

Para instalación en hormigón seco o húmedo y para temperatura de trabajo I (temperatura mínima -40 °C, temperatura máxima periodo corto +40 °C, periodo largo +24 °C).
Valido para un anclaje aislado y lejos del borde, sobre hormigón de calidad C20/25 de gran espesor y con refuerzo escaso.

- **Barras corrugadas en hormigón no fisurado**

Resistencia característica de la resina
a profundidad de inserción estándar

medida de la barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tracción	$N_{Rk,p}$ (kN)	26,1	36,8	53,9	87,5	111,9	153,7	241,3

Resistencia de proyecto
a profundidad de inserción estándar, para barras corrugadas con f_{uk} = 550 N/mm²

medida de la barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tracción	N_{Rd} (kN)	17,4	24,5	35,9	58,3	74,6	102,5	160,8
cortante	V_{Rd} (kN)	9,2	14,4	20,7	36,9	57,6	90,0	147,4

Carga recomendada
a profundidad de inserción estándar, para barras corrugadas con f_{uk} = 550 N/mm²

medida de la barra		**Ø8**	**Ø10**	**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**80**	**90**	**110**	**145**	**170**	**210**	**300**
tracción	N_{rec} (kN)	12,4	17,5	25,7	41,6	53,3	73,2	114,9
cortante	V_{rec} (kN)	6,6	10,3	14,8	26,3	41,1	64,3	105,3

1 kN ≈ 100 kg
fallo del acero

○ Barras corrugadas en hormigón fisurado

Resistencia característica de la resina
a profundidad de inserción estándar

medida de la barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tracción	$N_{Rk,p}$ (kN)	31,1	47,4	64,1	90,7	165,9

Resistencia de proyecto
a profundidad de inserción estándar, para barras corrugadas con f_{uk} = 550 N/mm²

medida de la barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tracción	N_{Rd} (kN)	20,7	31,6	42,7	60,5	110,6
cortante	V_{Rd} (kN)	20,7	36,9	57,6	90,0	147,4

Carga recomendada
a profundidad de inserción estándar, para barras corrugadas con f_{uk} = 550 N/mm²

medida de la barra		**Ø12**	**Ø16**	**Ø20**	**Ø25**	**Ø32**
profundidad de inserción	h_{ef} (mm)	**110**	**145**	**170**	**210**	**300**
tracción	N_{rec} (kN)	14,8	22,6	30,5	43,2	79,0
cortante	V_{rec} (kN)	14,8	26,3	41,1	64,3	105,3

1 kN ≈ 100 kg
fallo del acero

Los datos de carga son derivados de los parámetros certificados en la Evaluación Técnica Europea ETA 17/0347. La resistencia característica N_{Rk} solo se refiere a la resistencia de la resina al fallo por extracción y por cono de hormigón. Las resistencias de proyecto N_{Rd} y V_{Rd} se refieren a todos los tipo de fallos y incluyen el coeficiente parcial de seguridad sobre las resistencias. Las cargas recomendadas N_{rec} y V_{rec} incluyen el factor de seguridad adicional de 1,4.

Para el cálculo de anclajes con distancias reducidas, para anclajes cercanos al borde o para fijaciones sobre hormigón de resistencia superior, de espesor reducido o con armadura densa consultar la ETA 17/0347 o la Declaración de Prestaciones DPGEB1009 y utilizar el método de cálculo descrito en el *Technical Report 029* de la EOTA o en el CEN/TS 1992-4-5:2009. Del mismo modo, para instalación en taladros llenos de agua y para diferentes temperaturas de funcionamiento (II, entre -40 y +60 °C, y III, entre -40 y + 72 °C) consulte la ETA. También se puede calcular y verificar los anclajes hechos con Gebofix EPO PLUS RE usando el programa de cálculo *G&B Calculation Program* disponible en el sitio web www.gebfissaggi.com.

Acciones sísmicas

El anclaje se puede usar bajo acciones sísmicas para la categoría de prestaciones C1 y C2, con barras roscadas M12, M16, M20.

Para el cálculo de la resistencia de los anclajes bajo acciones sísmicas, consulte la ETA 17/0347 o la Declaración de Prestaciones DPGEB1009 y utilice el método de cálculo descrito en el *Technical Report 045* de la EOTA.

FICHE DE DONNÉES DE SÉCURITÉ
GEBOFIX EPO PLUS RE comp A

Conforme au règlement (CE) n° 1907/2006, Annexe II, modifié.

RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1. Identificateur de produit

Nom du produit GEBOFIX EPO PLUS RE comp A

1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Utilisations identifiées Colle époxyde à deux composants. Résine.

1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

Fournisseur
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Personne à contacter info@gebfissaggi.com

1.4. Numéro d'appel d'urgence

Numéro d'appel d'urgence +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

RUBRIQUE 2: Identification des dangers

2.1. Classification de la substance ou du mélange

Classification (CE N° 1272/2008)

Dangers physiques Non Classé

Dangers pour la santé humaine Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317

Dangers pour l'environnement Aquatic Chronic 2 - H411

2.2. Éléments d'étiquetage

Pictogrammes de danger

Mention d'avertissement Attention

Mentions de danger
H315 Provoque une irritation cutanée.
H319 Provoque une sévère irritation des yeux.
H317 Peut provoquer une allergie cutanée.
H411 Toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.

GEBOFIX EPO PLUS RE comp A

Mentions de mise en garde

P273 Éviter le rejet dans l'environnement.
P280 Porter des gants de protection/ des vêtements de protection/ un équipement de protection des yeux/ du visage.
P302+P352 EN CAS DE CONTACT AVEC LA PEAU: laver abondamment à l'eau.
P305+P351+P338 EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
P333+P313 En cas d'irritation ou d'éruption cutanée: consulter un médecin.
P501 Éliminer le contenu/ récipient selon les réglementations nationales.

Contient

RÉSINES ÉPOXYDIQUES (MW moyen <= 700), EPOXY PHENOL FORMALDEHYDE RESIN, REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Mentions de mise en garde supplémentaires

P261 Éviter de respirer les vapeurs/aérosols.
P264 Se laver la peau contaminée soigneusement après manipulation.
P272 Les vêtements de travail contaminés ne devraient pas sortir du lieu de travail.
P321 Traitement spécifique (voir conseils médicaux sur cette étiquette).
P332+P313 En cas d'irritation cutanée: consulter un médecin.
P337+P313 Si l'irritation oculaire persiste: consulter un médecin.
P362+P364 Enlever les vêtements contaminés et les laver avant réutilisation.
P391 Recueillir le produit répandu.

2.3. Autres dangers

RUBRIQUE 3: Composition/informations sur les composants

3.2. Mélanges

EPOXY RESIN (Number average MW <= 700) **20-50%**

Numéro CAS: 25068-38-6 Numéro CE: 500-033-5

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

EPOXY PHENOL FORMALDEHYDE RESIN **10-20%**

Numéro CAS: 9003-36-5 Numéro CE: 500-006-8 Numéro d'enregistrement REACH: 01-2119454392-40

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp A

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)			**5-10%**
Numéro CAS: 933999-84-9	Numéro CE: 618-939-5	Numéro d'enregistrement REACH: 01-2119463471-41	

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 3 - H412

TITANIUM DIOXIDE		**<0.5%**
Numéro CAS: 13463-67-7	Numéro CE: 236-675-5	

Classification
Non Classé

L'intégralité du texte des phrases de risque et des mentions de danger figure à la Section 16.

Commentaires sur la composition CAS 28064-14-4 = CAS 9003-36-5 (EU) CAS 933999-84-9 = CAS 16096-31-4 (RoW)

RUBRIQUE 4: Premiers secours

4.1. Description des premiers secours

Inhalation Eloigner la personne touchée de la source de contamination. Consulter un médecin si une gêne persiste.

Ingestion Ne pas faire vomir. Consulter un médecin immédiatement.

Contact cutané Enlever immédiatement les vêtements contaminés et laver la peau à l'eau et au savon.

Contact oculaire Rincer immédiatement avec beaucoup d'eau. Enlever les lentilles de contact et ouvrir largement les paupières. Continuer de rincer pendant au moins 15 minutes. Consulter un médecin si l'irritation persiste après le lavage. Montrer cette Fiche de Données Sécurité au personnel médical.

4.2. Principaux symptômes et effets, aigus et différés

Inhalation Peut irriter les voies respiratoires.

Ingestion Peut provoquer des maux d'estomac ou vomissements.

Contact cutané Un contact prolongé ou répété avec la peau peut provoquer des irritations, des rougeurs et des dermatites. Peut entraîner une sensibilisation par contact avec la peau.

Contact oculaire Irritant pour les yeux.

4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Indications pour le médecin Aucune recommandation particulière. En cas de doute, consulter un médecin rapidement.

RUBRIQUE 5: Mesures de lutte contre l'incendie

5.1. Moyens d'extinction

Moyens d'extinction appropriés Eteindre l'incendie avec de la mousse résistant aux alcools, du dioxyde de carbone ou de la poudre sèche.

GEBOFIX EPO PLUS RE comp A

Moyens d'extinction inappropriés Ne pas utiliser d'eau, si vous pouvez l'éviter.

5.2. Dangers particuliers résultant de la substance ou du mélange

Dangers particuliers Pas considéré être un danger significatif du fait des petites quantités utilisées.

Produits de combustion dangereux Oxydes de carbone. Oxydes d'azote.

5.3. Conseils aux pompiers

Mesures de protection à prendre lors de la lutte contre un incendie Aucune exigence spécifique n'est présumée dans des conditions normales d'utilisation.

Equipements de protection particuliers pour les pompiers Porter un appareil respiratoire isolant à pression positive (ARI) et des vêtements de protection appropriés.

RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

6.1. Précautions individuelles, équipement de protection et procédures d'urgence

Précautions individuelles Porter un vêtement de protection comme décrit à la Section 8 de cette fiche de données de sécurité.

6.2. Précautions pour la protection de l'environnement

Précautions pour la protection de l'environnement Éviter le rejet dans l'environnement.

6.3. Méthodes et matériel de confinement et de nettoyage

Méthodes de nettoyage Collecter et mettre dans des conteneurs à déchets appropriés et sceller fermement. Pour l'élimination des déchets, voir Section 13.

6.4. Référence à d'autres rubriques

Référence à d'autres sections Pour les équipements de protection individuelle, voir la Section 8. Collecter et éliminer le déversement comme indiqué en Section 13.

RUBRIQUE 7: Manipulation et stockage

7.1. Précautions à prendre pour une manipulation sans danger

Précautions d'utilisations Éviter le contact avec les yeux. Éviter le contact avec la peau.

Conseils d'ordre général en matière d'hygiène du travail Ne pas manger, boire ou fumer en manipulant le produit. Aucune procédure d'hygiène particulière recommandée mais de bonnes pratiques d'hygiène personnelle doivent toujours être observées lorsque l'on travaille avec des produits chimiques.

7.2. Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Précautions de stockage Conserver à l'écart des aliments et boissons, y compris ceux pour animaux. Garder le conteneur fermement scellé quand il n'est pas utilisé.

7.3. Utilisation(s) finale(s) particulière(s)

Utilisation(s) finale(s) particulière(s) Les utilisations identifiées pour ce produit sont détaillées en Section 1.2.

RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

8.1. Paramètres de contrôle

Valeurs limites d'exposition professionnelle

TITANIUM DIOXIDE

GEBOFIX EPO PLUS RE comp A

Valeur moyenne d'exposition (8 heures VME): VLEP 10 mg/m³
en Ti
VLEP = Valeurs limites d'exposition professionnelle.

EPOXY RESIN (Number average MW <= 700) (CAS: 25068-38-6)

DNEL
Industrie - Inhalatoire; Long terme Effets systémiques: 12.25 mg/m³
Industrie - Inhalatoire; Court terme Effets systémiques: 12.25 mg/m³
Industrie - Contact avec la peau; Long terme Effets systémiques: 8.33 mg/kg/jour
Industrie - Contact avec la peau; Court terme Effets systémiques: 8.33 mg/kg/jour
REACH dossier d'information

PNEC
- eau douce; 0.006 mg/l
- eau de mer; 0.0006 mg/l
- rejet intermittent; 0.018 mg/l
- STP; 10 mg/l
- Sédiments (eau douce); 0.996 mg/kg
- Sédiments (eau de mer); 0.0996 mg/kg
- Sol; 0.196 mg/kg
REACH dossier d'information

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2) (CAS: 933999-84-9)

DNEL
Industrie - Inhalatoire; Long terme Effets systémiques: 4.9 mg/m³
Industrie - Inhalatoire; Court terme Effets systémiques: 4.9 mg/m³
Industrie - Inhalatoire; Long terme Effets locaux: 0.44 mg/m³
Industrie - Contact avec la peau; Long terme Effets systémiques: 2.8 mg/kg/jour
Industrie - Contact avec la peau; Long terme Effets locaux: 22.6 µg/cm²
Industrie - Contact avec la peau; Court terme Effets locaux: 22.6 µg/cm²
REACH dossier d'information

PNEC
- eau douce; 0.0115 mg/l
- eau de mer; 0.00115 mg/l
- rejet intermittent; 0.115 mg/l
- STP; 1 mg/l
- Sédiments (eau douce); 0.283 mg/kg
- Sédiments (eau de mer); 0.0283 mg/kg
- Sol; 0.223 mg/kg
REACH dossier d'information

TITANIUM DIOXIDE (CAS: 13463-67-7)

DNEL
Industrie - Inhalatoire; Long terme Effets systémiques: 10 mg/m³
REACH dossier d'information

PNEC
- eau douce; 0.127 mg/l
- eau de mer; 1.0 mg/l
- rejet intermittent; 0.61 mg/l
- STP; 100 mg/l
- Sédiments (eau douce); 1000 mg/kg
- Sédiments (eau de mer); 100 mg/kg
- Sol; 100 mg/kg
REACH dossier d'information

8.2. Contrôles de l'exposition

GEBOFIX EPO PLUS RE comp A

Equipements de protection

Contrôles techniques appropriés	Aucune ventilation particulière requise.
Protection des yeux/du visage	Porter un équipement de protection des yeux.
Protection des mains	Porter des gants de protection faits des matériaux suivants: Caoutchouc nitrile.
Mesures d'hygiène	Prévoir une fontaine oculaire. Se laver à la fin de chaque période de travail et avant de manger, fumer et utiliser les toilettes. Laver rapidement si la peau devient contaminée. Enlever rapidement tout vêtement qui devient contaminé.
Protection respiratoire	Non pertinent.
Contrôles d'exposition liés à la protection de l'environnement	Garder le conteneur fermement scellé quand il n'est pas utilisé. Les résidus et conteneurs vides doivent être considérés comme des déchets dangereux selon les dispositions locales et nationales.

RUBRIQUE 9: Propriétés physiques et chimiques

9.1. Informations sur les propriétés physiques et chimiques essentielles

Aspect	Liquide.
Couleur	Gris.
Odeur	Caractéristique.
Seuil olfactif	Indéterminé.
pH	Non applicable.
Point de fusion	Non applicable.
Point initial d'ébullition et intervalle d'ébullition	>35°C @ 760 mm Hg
Point d'éclair	>100°C Coupelle fermée.
Taux d'évaporation	Pas d'information disponible.
Facteur d'évaporation	Non applicable.
Inflammabilité (solide, gaz)	Non applicable.
Limites supérieures/inférieures d'inflammabilité ou limites d'explosivité	Non applicable.
Autre inflammabilité	Non disponible.
Pression de vapeur	<500 Pa @ °C
Densité de vapeur	Pas d'information disponible.
Densité relative	1.5 - 1.6
Densité apparente	Non applicable.
Solubilité(s)	Insoluble dans l'eau.

GEBOFIX EPO PLUS RE comp A

Coefficient de partage	Indéterminé.
Température d'auto-inflammabilité	Indéterminé.
Température de décomposition	Indéterminé.
Viscosité	> 60 S ISO2431
Propriétés explosives	Pas d'information disponible.
Explosif sous l'influence d'une flamme	Non
Propriétés comburantes	Ne répond pas aux critères de classification des comburants.

9.2. Autres informations

RUBRIQUE 10: Stabilité et réactivité

10.1. Réactivité

Réactivité Les produits suivants peuvent réagir avec le produit: Acides. Amides. Amines. Phénols, crésols.

10.2. Stabilité chimique

Stabilité chimique Stable à température ambiante normale et utilisé comme recommandé.

10.3. Possibilité de réactions dangereuses

Possibilité de réactions dangereuses Les produits suivants peuvent réagir avec le produit: Acides. Amides. Amines. Phénols, crésols.

10.4. Conditions à éviter

Conditions à éviter Eviter le contact avec les acides et les bases.

10.5. Matières incompatibles

Matières incompatibles Acides. Amines. Amides.

10.6. Produits de décomposition dangereux

Produits de décomposition dangereux Oxydes de carbone. Oxydes d'azote.

RUBRIQUE 11: Informations toxicologiques

11.1. Informations sur les effets toxicologiques

Sensibilisation cutanée

Sensibilisation cutanée Sensibilisant.

Information générale	Contient des composés époxydiques. Peut produire une réaction allergique.
Inhalation	Pas de danger spécifique pour la santé connu.
Ingestion	Pas d'effets nocifs potentiels de part les quantités susceptibles d'être ingérées par accident.
Contact cutané	Irritant pour la peau. Peut entraîner une sensibilisation par contact avec la peau.
Contact oculaire	Peut provoquer une irritation oculaire sévère.
Dangers chroniques et aigus pour la santé	Irritant pour la peau. Irritant pour les yeux.

GEBOFIX EPO PLUS RE comp A

Voie d'exposition Contact cutané et/ou oculaire.

Symptômes Irritation cutanée.

Considérations médicales Affections cutanées et allergies.

Informations toxicologiques sur les composants

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Toxicité aiguë - orale

Toxicité aiguë orale (DL_{50} mg/kg) 3 010,0

Espèces Rat

RUBRIQUE 12: Informations écologiques

12.1. Toxicité

Informations écologiques sur les composants

EPOXY RESIN (Number average MW <= 700)

toxicité aquatique aiguë

Toxicité aiguë - poisson LC50, 96 heures: 2 mg/l, Oncorhynchus mykiss (truite arc-en-ciel)

Toxicité aiguë - invertébrés aquatiques CE_{50}, 48 heures: 1.8 mg/l, Daphnia magna

Toxicité aiguë - plantes aquatiques CE_{50}, 72 heures: 11 mg/l, Algues d'eau douce
CE_{50}, 96 heures: 220 mg/l, Scenedesmus subspicatus

toxicité aquatique chronique

Toxicité chronique - invertébrés aquatiques NOEC, 21 jours: 0.3 mg/l, Daphnia magna

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

toxicité aquatique aiguë

Toxicité aiguë - poisson LC50, 96 heures: 30 mg/l, Oncorhynchus mykiss (truite arc-en-ciel)

12.2. Persistance et dégradabilité

Persistance et dégradabilité Le produit n'est pas biodégradable.

Informations écologiques sur les composants

EPOXY RESIN (Number average MW <= 700)

Biodégradation - 12% Degradation (%): 28 jours

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Biodégradation - 47% Degradation (%): 28 jours
OECD 301D

12.3. Potentiel de bioaccumulation

Potentiel de bioaccumulation Pas de données disponibles sur la bioaccumulation.

Coefficient de partage Indéterminé.

GEBOFIX EPO PLUS RE comp A

Informations écologiques sur les composants

EPOXY RESIN (Number average MW <= 700)

Potentiel de bioaccumulation	Peut s'accumuler dans le sol et les hydrosystèmes. BCF: 100 - 3000,
Coefficient de partage	log Pow: 3.242 Valeur estimée

REACTION PRODUCTS OF HEXANE-1,6-DIOL WITH 2-CHLOROMETHYL)OXIRANE(1:2)

Potentiel de bioaccumulation	BCF: < 100, Valeur estimée
Coefficient de partage	log Pow: -0.272 Valeur estimée

12.4. Mobilité dans le sol

Mobilité Le produit est insoluble dans l'eau et se répandra à la surface de l'eau. Le produit n'est pas volatile. Semi-mobile.

Informations écologiques sur les composants

EPOXY RESIN (Number average MW <= 700)

Mobilité	Semi-mobile.
Coefficient d'adsorption/désorption	Eau - Koc: 1800 - 4400 @ 25°C Valeur estimée
Constante de Henry	4.93E-05 Pa m3/mol @ 25°C

12.5. Résultats des évaluations PBT et vPvB

Résultats des évaluations PBT et vPvB Ce produit ne contient aucune substance classée PBT ou vPvB.

Informations écologiques sur les composants

EPOXY RESIN (Number average MW <= 700)

Résultats des évaluations PBT et vPvB Cette substance n'est pas classée PBT ou vPvB selon les critères UE en vigueur.

12.6. Autres effets néfastes

RUBRIQUE 13: Considérations relatives à l'élimination

13.1. Méthodes de traitement des déchets

Méthodes de traitement des déchets Les résidus et conteneurs vides doivent être considérés comme des déchets dangereux selon les dispositions locales et nationales. Evacuer les déchets via un prestataire agréé pour l'élimination des déchets.

Classe déchet Le classement du code de déchet doit être réalisé selon le catalogue européen des déchets (CED).

RUBRIQUE 14: Informations relatives au transport

14.1. Numéro ONU

N° ONU (ADR/RID) 3082

N° ONU (IMDG) 3082

GEBOFIX EPO PLUS RE comp A

N° ONU (ICAO)	3082
N° ONU (ADN)	3082

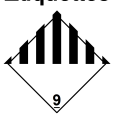
14.2. Désignation officielle de transport de l'ONU

Nom d'expédition (ADR/RID)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nom d'expédition (IMDG)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nom d'expédition (ICAO)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)
Nom d'expédition (ADN)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS EPOXY RESIN (Number average MW <= 700), EPOXY PHENOL FORMALDEHYDE RESIN)

14.3. Classe(s) de danger pour le transport

Classe ADR/RID	9
Code de classement ADR/RID	M6
Etiquette ADR/RID	9
Classe IMDG	9
Classe/division ICAO	9
Classe ADN	9

Etiquettes de transport



14.4. Groupe d'emballage

Groupe d'emballage (ADR/RID)	III
Groupe d'emballage (IMDG)	III
Groupe d'emballage (ICAO)	III
Groupe d'emballage (ADN)	III

14.5. Dangers pour l'environnement

Substance dangereuse pour l'environnement/polluant marin

14.6. Précautions particulières à prendre par l'utilisateur

EmS	F-A, S-F
Catégorie de transport ADR	3
Code de consignes d'intervention d'urgence	•3Z
Numéro d'identification du danger (ADR/RID)	90

GEBOFIX EPO PLUS RE comp A

Code de restriction en tunnels (-)

14.7. Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC

Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC Non applicable.

RUBRIQUE 15: Informations relatives à la réglementation

15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement

Législation UE (EU) No 2015/830

Document d'orientation Workplace Exposure Limits EH40.

15.2. Évaluation de la sécurité chimique

Aucune évaluation de la sécurité chimique n'a été effectuée.

RUBRIQUE 16: Autres informations

Commentaires sur la révision NOTE: Les lignes dans la marge indiquent des modifications significatives par rapport à la version précédente.

Date de révision 09/01/2020

Numéro de version 2.002

Remplace la date 27/07/2018

Numéro de FDS 20841

Mentions de danger dans leur intégralité
H315 Provoque une irritation cutanée.
H317 Peut provoquer une allergie cutanée.
H319 Provoque une sévère irritation des yeux.
H411 Toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.
H412 Nocif pour les organismes aquatiques, entraîne des effets néfastes à long terme.

FICHE DE DONNÉES DE SÉCURITÉ
GEBOFIX EPO PLUS RE comp B

Conforme au règlement (CE) n° 1907/2006, Annexe II, modifié.

RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1. Identificateur de produit

Nom du produit GEBOFIX EPO PLUS RE comp B

1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

Utilisations identifiées Colle époxyde à deux composants. Durcisseur.

1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

Fournisseur
G&B Fissaggi Srl
Corso Savona 22
10029, Villastellone (TO)
Italy
+39 011 96 19 433
+39 011 96 19 382/ 639

Web www.gebfissaggi.com

Personne à contacter info@gebfissaggi.com

1.4. Numéro d'appel d'urgence

Numéro d'appel d'urgence +39 011 96 19 433 (8.30 - 12.30 /13.30 - 17.30)

RUBRIQUE 2: Identification des dangers

2.1. Classification de la substance ou du mélange

Classification (CE N° 1272/2008)

Dangers physiques Non Classé

Dangers pour la santé humaine Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

Dangers pour l'environnement Aquatic Chronic 3 - H412

Santé humaine Corrosif. Le contact prolongé provoque des lésions graves des yeux et des tissus.

Environnement Le produit contient une substance qui peut avoir des effets néfastes sur l'environnement.

2.2. Éléments d'étiquetage

Pictogrammes de danger

Mention d'avertissement Danger

GEBOFIX EPO PLUS RE comp B

Mentions de danger

H302 Nocif en cas d'ingestion.
H314 Provoque des brûlures de la peau et de graves lésions des yeux.
H317 Peut provoquer une allergie cutanée.
H412 Nocif pour les organismes aquatiques, entraîne des effets néfastes à long terme.

Mentions de mise en garde

P273 Éviter le rejet dans l'environnement.
P280 Porter des gants de protection/ des vêtements de protection/ un équipement de protection des yeux/ du visage.
P303+P361+P353 EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux): Enlever immédiatement tous les vêtements contaminés. Rincer la peau à l'eau ou se doucher.
P305+P351+P338 EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
P501 Éliminer le contenu/ récipient selon les réglementations nationales.

Contient

1,3-CYCLOHEXANEBIS(METHYLAMINE), STYRENATED PHENOL, SALICYLIC ACID, 1,3-BENZENEDIMETHANAMINE

Mentions de mise en garde supplémentaires

P264 Se laver la peau contaminée soigneusement après manipulation.
P260 Ne pas respirer les vapeurs.
P301+P330+P331 EN CAS D'INGESTION: Rincer la bouche. NE PAS faire vomir.
P304+P340 EN CAS D'INHALATION: Transporter la personne à l'extérieur et la maintenir dans une position où elle peut confortablement respirer.
P333+P313 En cas d'irritation ou d'éruption cutanée: consulter un médecin.
P362+P364 Enlever les vêtements contaminés et les laver avant réutilisation.
P405 Garder sous clef.

2.3. Autres dangers

RUBRIQUE 3: Composition/informations sur les composants

3.2. Mélanges

1,3-CYCLOHEXANEBIS(METHYLAMINE) **20-50%**

Numéro CAS: 2579-20-6 | Numéro CE: 219-941-5 | Numéro d'enregistrement REACH: 01-2119543741-41

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H312
Skin Corr. 1A - H314
Aquatic Chronic 3 - H412

STYRENATED PHENOL **5-10%**

Numéro CAS: 61788-44-1 | Numéro CE: 262-975-0 | Numéro d'enregistrement REACH: 01-2119979575-18

Classification
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Skin Sens. 1A - H317
Aquatic Chronic 2 - H411

GEBOFIX EPO PLUS RE comp B

SALICYLIC ACID		**5-10%**
Numéro CAS: 69-72-7	Numéro CE: 200-712-3	Numéro d'enregistrement REACH: 01-2119486984-17

Classification
Acute Tox. 4 - H302
Eye Dam. 1 - H318

1,3-BENZENEDIMETHANAMINE		**1-5%**
Numéro CAS: 1477-55-0	Numéro CE: 216-032-5	

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Corr. 1B - H314
Skin Sens. 1B - H317
Aquatic Chronic 3 - H412

L'intégralité du texte des phrases de risque et des mentions de danger figure à la Section 16.

RUBRIQUE 4: Premiers secours

4.1. Description des premiers secours

Inhalation Eloigner la personne touchée de la source de contamination. Consulter un médecin si une gêne persiste.

Ingestion Ne pas faire vomir. Consulter un médecin immédiatement.

Contact cutané Enlever immédiatement les vêtements contaminés et laver la peau à l'eau et au savon. Consulter un médecin si une gêne persiste.

Contact oculaire Rincer immédiatement avec beaucoup d'eau. Enlever les lentilles de contact et ouvrir largement les paupières. Continuer de rincer pendant au moins 15 minutes. Consulter un médecin si l'irritation persiste après le lavage. Montrer cette Fiche de Données Sécurité au personnel médical.

4.2. Principaux symptômes et effets, aigus et différés

Inhalation Irritation du nez, de la gorge et des voies respiratoires.

Ingestion Peut provoquer des maux d'estomac ou vomissements.

Contact cutané Sensation de brûlure et lésions cutanées chimiques sévères. Des ampoules peuvent se former. Brûlures chimiques.

Contact oculaire Peut provoquer une vision floue et des lésions oculaires graves.

4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Indications pour le médecin Aucune recommandation particulière. En cas de doute, consulter un médecin rapidement.

RUBRIQUE 5: Mesures de lutte contre l'incendie

5.1. Moyens d'extinction

Moyens d'extinction appropriés Eteindre l'incendie avec de la mousse résistant aux alcools, du dioxyde de carbone ou de la poudre sèche.

Moyens d'extinction inappropriés Ne pas utiliser d'eau, si vous pouvez l'éviter.

GEBOFIX EPO PLUS RE comp B

5.2. Dangers particuliers résultant de la substance ou du mélange

Dangers particuliers Aucune précaution de lutte contre l'incendie particulière applicable lorsque des petites quantités sont impliquées dans l'incendie.

Produits de combustion dangereux Oxydes de carbone. Oxydes d'azote.

5.3. Conseils aux pompiers

Mesures de protection à prendre lors de la lutte contre un incendie Aucune précaution particulière de lutte contre l'incendie connue.

Equipements de protection particuliers pour les pompiers Porter un appareil respiratoire isolant à pression positive (ARI) et des vêtements de protection appropriés.

RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

6.1. Précautions individuelles, équipement de protection et procédures d'urgence

Précautions individuelles Porter un vêtement de protection comme décrit à la Section 8 de cette fiche de données de sécurité.

6.2. Précautions pour la protection de l'environnement

Précautions pour la protection de l'environnement Collecter et éliminer le déversement comme indiqué en Section 13. Retenir le déversement avec du sable, de la terre ou d'autre matière incombustible appropriée. Eviter tout rejet dans les égouts, les cours d'eau ou sur le sol.

6.3. Méthodes et matériel de confinement et de nettoyage

Méthodes de nettoyage Collecter et mettre dans des conteneurs à déchets appropriés et sceller fermement. Pour l'élimination des déchets, voir Section 13.

6.4. Référence à d'autres rubriques

Référence à d'autres sections Pour les équipements de protection individuelle, voir la Section 8. Collecter et éliminer le déversement comme indiqué en Section 13.

RUBRIQUE 7: Manipulation et stockage

7.1. Précautions à prendre pour une manipulation sans danger

Précautions d'utilisations Éviter le contact avec la peau. Éviter le contact avec les yeux. Ne pas jeter les résidus à l'égout.

Conseils d'ordre général en matière d'hygiène du travail Ne pas manger, boire ou fumer en manipulant le produit. Aucune procédure d'hygiène particulière recommandée mais de bonnes pratiques d'hygiène personnelle doivent toujours être observées lorsque l'on travaille avec des produits chimiques.

7.2. Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Précautions de stockage Tenir éloigné des aliments et boissons. Garder le conteneur fermement scellé quand il n'est pas utilisé.

7.3. Utilisation(s) finale(s) particulière(s)

Utilisation(s) finale(s) particulière(s) Les utilisations identifiées pour ce produit sont détaillées en Section 1.2.

RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

8.1. Paramètres de contrôle

Valeurs limites d'exposition professionnelle

1,3-BENZENEDIMETHANAMINE

GEBOFIX EPO PLUS RE comp B

Valeur limite court terme (15 minutes): VLEP 0,1 mg/m³
VLEP = Valeurs limites d'exposition professionnelle.

1,3-CYCLOHEXANEBIS(METHYLAMINE) (CAS: 2579-20-6)

DNEL

REACH dossier d'information
Industrie - Inhalatoire; Court terme Effets systémiques: 21.2 mg/m³
Industrie - Contact avec la peau; Long terme Effets systémiques: 0.2 mg/kg/jour
Industrie - Inhalatoire; Long terme Effets systémiques: 0.71 mg/m³
Industrie - Contact avec la peau; Court terme Effets systémiques: 6 mg/kg/jour

PNEC

REACH dossier d'information
- rejet intermittent; 0.331 mg/l
- eau de mer; 0.00331 mg/l
- eau douce; 0.0331 mg/l
- STP; 10 mg/l

STYRENATED PHENOL (CAS: 61788-44-1)

DNEL

REACH dossier d'information
Industrie - Contact avec la peau; Long terme Effets systémiques: 0.416666667 mg/kg/jour
Industrie - Inhalatoire; Long terme Effets systémiques: 0.734649123 mg/m³

PNEC

REACH dossier d'information
- Sédiments (eau de mer); 43.65269484 mg/kg
- rejet intermittent; 0.01371 mg/l
- STP; 1.0638 mg/l
- eau de mer; 0.0001371 mg/l
- Sédiments (eau douce); 43.65269484 mg/kg
- Sol; 20.64517608 mg/kg
- eau douce; 0.001371 mg/l

SALICYLIC ACID (CAS: 69-72-7)

DNEL

REACH dossier d'information
Industrie - Inhalatoire; Long terme Effets systémiques: 16 mg/m³
Industrie - Contact avec la peau; Long terme Effets systémiques: 2 mg/kg/jour

PNEC

REACH dossier d'information
- Sédiments (eau douce); 1.42 mg/kg
- Sol; 0.166 mg/kg
- Sédiments (eau de mer); 0.142 mg/kg
- rejet intermittent; 1 mg/l
- eau douce; 0.2 mg/l
- STP; 162 mg/l
- eau de mer; 0.02 mg/l

1,3-BENZENEDIMETHANAMINE (CAS: 1477-55-0)

GEBOFIX EPO PLUS RE comp B

PNEC	- Sédiments (eau douce); 0.43 mg/kg - eau douce; 0.094 mg/l - Sol; 0.045 mg/kg - eau de mer; 0.0094 mg/l - Sédiments (eau de mer); 0.043 mg/kg - STP; 10 mg/l - rejet intermittent; 0.152 mg/l

8.2. Contrôles de l'exposition

Equipements de protection

Contrôles techniques appropriés	Prévoir une aspiration générale et locale suffisante. Respecter toute valeur limite d'exposition professionnelle du produit ou des composants.
Protection des yeux/du visage	Les protections suivantes devraient être portées: Lunettes de sécurité bien ajustées. Ne pas porter de lentilles de contact en travaillant avec ce produit chimique.
Protection des mains	Porter des gants de protection faits des matériaux suivants: Caoutchouc nitrile.
Autre protection de la peau et du corps	Éviter le contact avec la peau. Porter les vêtements appropriés pour prévenir tout contact cutané prolongé ou répété.
Mesures d'hygiène	Ne pas manger, boire ou fumer en manipulant le produit. Se laver à la fin de chaque période de travail et avant de manger, fumer et utiliser les toilettes. Utiliser la sécurité intégrée pour réduire la contamination de l'air à des niveaux d'exposition admissibles.
Protection respiratoire	Porter une protection respiratoire appropriée si la ventilation est pas insuffisante.
Contrôles d'exposition liés à la protection de l'environnement	Garder le conteneur fermement scellé quand il n'est pas utilisé. Les résidus et conteneurs vides doivent être considérés comme des déchets dangereux selon les dispositions locales et nationales.

RUBRIQUE 9: Propriétés physiques et chimiques

9.1. Informations sur les propriétés physiques et chimiques essentielles

Aspect	Liquide.
Couleur	Chamois.
Odeur	Caractéristique. Ammoniacale.
Seuil olfactif	Indéterminé.
pH	Non applicable.
Point de fusion	Indéterminé.
Point initial d'ébullition et intervalle d'ébullition	Indéterminé.
Point d'éclair	>100°C Coupelle fermée.
Taux d'évaporation	Indéterminé.
Facteur d'évaporation	Indéterminé.
Inflammabilité (solide, gaz)	Indéterminé.

GEBOFIX EPO PLUS RE comp B

Limites supérieures/inférieures d'inflammabilité ou limites d'explosivité	Indéterminé.
Autre inflammabilité	Non applicable.
Pression de vapeur	Indéterminé.
Densité de vapeur	Indéterminé.
Densité relative	1.4 - 1.5
Densité apparente	Non disponible.
Solubilité(s)	Indéterminé.
Coefficient de partage	Indéterminé.
Température d'auto-inflammabilité	Indéterminé.
Température de décomposition	Indéterminé.
Viscosité	Indéterminé.
Propriétés explosives	Pas d'information disponible.
Explosif sous l'influence d'une flamme	N'est pas considéré comme explosif.
Propriétés comburantes	Ne répond pas aux critères de classification des comburants.

9.2. Autres informations

RUBRIQUE 10: Stabilité et réactivité

10.1. Réactivité

Réactivité Les produits suivants peuvent réagir avec le produit: Acides. Epoxydes. Oxydants. Peroxydes.

10.2. Stabilité chimique

Stabilité chimique Stable à température ambiante normale et utilisé comme recommandé.

10.3. Possibilité de réactions dangereuses

Possibilité de réactions dangereuses Les produits suivants peuvent réagir avec le produit: Acides. Epoxydes. Oxydants. Peroxydes.

10.4. Conditions à éviter

Conditions à éviter Aucune exigence spécifique n'est présumée dans des conditions normales d'utilisation.

10.5. Matières incompatibles

Matières incompatibles Acides. Epoxydes. Oxydants. Peroxydes.

10.6. Produits de décomposition dangereux

Produits de décomposition dangereux Oxydes de carbone. Oxydes d'azote.

RUBRIQUE 11: Informations toxicologiques

11.1. Informations sur les effets toxicologiques

GEBOFIX EPO PLUS RE comp B

Toxicité aiguë - orale

ETA orale (mg/kg)	1 244,54

Toxicité aiguë - cutanée

ETA cutanée (mg/kg)	3 234,71

Toxicité aiguë - inhalation

ETA inhalation (poussières/brouillards mg/l)	58,23

Sensibilisation cutanée

Sensibilisation cutanée	Sensibilisant.

Inhalation	Les vapeurs peuvent irriter le système respiratoire/les poumons.
Ingestion	Peut provoquer des maux d'estomac ou vomissements.
Contact cutané	Peut entraîner une sensibilisation par contact avec la peau. Peut provoquer des brûlures chimiques graves de la peau.
Contact oculaire	Risque de lésions oculaires graves. Peut provoquer des brûlures chimiques aux yeux.
Dangers chroniques et aigus pour la santé	Peut entraîner une sensibilisation par contact avec la peau. Provoque de graves brûlures.
Voie d'exposition	Contact cutané et/ou oculaire. Inhalatoire
Organes cibles	Pas de toxicité spécifique pour certains organes cibles connue.
Symptômes	A la suite d'une surexposition, les symptômes sont notamment les suivants: Brûlures chimiques.

Informations toxicologiques sur les composants

1,3-CYCLOHEXANEBIS(METHYLAMINE)

Toxicité aiguë - orale

Toxicité aiguë orale (DL_{50} mg/kg)	700,0
Espèces	Rat

Toxicité aiguë - cutanée

Toxicité aiguë cutanée (DL_{50} mg/kg)	1 700,0
Espèces	Lapin

STYRENATED PHENOL

Toxicité aiguë - orale

Toxicité aiguë orale (DL_{50} mg/kg)	2 000,0
Espèces	Rat

Toxicité aiguë - cutanée

Toxicité aiguë cutanée (DL_{50} mg/kg)	2 000,0

GEBOFIX EPO PLUS RE comp B

Espèces	Rat

SALICYLIC ACID

Toxicité aiguë - orale

Toxicité aiguë orale (DL_{50} mg/kg)	891,0
Espèces	Rat

Toxicité aiguë - cutanée

Toxicité aiguë cutanée (DL_{50} mg/kg)	2 000,0
Espèces	Rat

1,3-BENZENEDIMETHANAMINE

Toxicité aiguë - orale

Toxicité aiguë orale (DL_{50} mg/kg)	1 090,0
Espèces	Rat
ETA orale (mg/kg)	1 090,0

Toxicité aiguë - cutanée

Toxicité aiguë cutanée (DL_{50} mg/kg)	2 000,0
Espèces	Rat

Toxicité aiguë - inhalation

Toxicité aiguë inhalation (CL_{50} poussières/brouillards mg/l)	1,34
Espèces	Rat
ETA inhalation (poussières/brouillards mg/l)	1,34

RUBRIQUE 12: Informations écologiques

12.1. Toxicité

Informations écologiques sur les composants

1,3-CYCLOHEXANEBIS(METHYLAMINE)

toxicité aquatique aiguë

Toxicité aiguë - poisson	LC50, > 96 heures: 100 mg/l, Leuciscus idus (ide mélanote)
Toxicité aiguë - invertébrés aquatiques	CE_{50}, 48 heures: 29 mg/l, Daphnia magna
Toxicité aiguë - plantes aquatiques	CE_{50}, > 96 heures: 100 mg/l, Scenedesmus subspicatus

GEBOFIX EPO PLUS RE comp B

Toxicité aiguë - terrestre	CE_{50}, > 14 jours: 1000 mg/kg, Eisenia Fetida (Earthworm)

STYRENATED PHENOL

toxicité aquatique aiguë

Toxicité aiguë - poisson	LC50, 96 heures: 14.8 mg/l,
Toxicité aiguë - invertébrés aquatiques	CE_{50}, 48 heures: 1-10 mg/l, Daphnia magna
Toxicité aiguë - plantes aquatiques	CE_{50}, 72 heures: 3.14 mg/l, Scenedesmus subspicatus

toxicité aquatique chronique

NOEC	0.01 < NOEC ≤ 0.1

SALICYLIC ACID

toxicité aquatique aiguë

Toxicité aiguë - poisson	LC50, 48 heures: 90 mg/l, Leuciscus idus (ide mélanote)
Toxicité aiguë - microorganismes	CE_{50}, > 3 heures: 3200 mg/l, Boues activées

1,3-BENZENEDIMETHANAMINE

toxicité aquatique aiguë

Toxicité aiguë - poisson	LC50, 96 heures: 75 mg/l, Leuciscus idus (ide mélanote)
Toxicité aiguë - invertébrés aquatiques	CE_{50}, 48 heures: 15.2 mg/l, Daphnia magna
Toxicité aiguë - plantes aquatiques	CE_{50}, 72 heures: 12 mg/l, Scenedesmus subspicatus

12.2. Persistance et dégradabilité

Persistance et dégradabilité Pas de données disponibles sur la dégradabilité de ce produit.

12.3. Potentiel de bioaccumulation

Potentiel de bioaccumulation Pas de données disponibles sur la bioaccumulation.

Coefficient de partage Indéterminé.

12.4. Mobilité dans le sol

Mobilité Mobile. Le produit est miscible dans l'eau et peut se répandre dans les hydrosystèmes.

12.5. Résultats des évaluations PBT et vPvB

Résultats des évaluations PBT et vPvB Ce produit ne contient aucune substance classée PBT ou vPvB.

12.6. Autres effets néfastes

RUBRIQUE 13: Considérations relatives à l'élimination

13.1. Méthodes de traitement des déchets

Information générale Les résidus et conteneurs vides doivent être considérés comme des déchets dangereux selon les dispositions locales et nationales.

GEBOFIX EPO PLUS RE comp B

Méthodes de traitement des déchets	Evacuer les déchets via un prestataire agréé pour l'élimination des déchets.
Classe déchet	Le classement du code de déchet doit être réalisé selon le catalogue européen des déchets (CED).

RUBRIQUE 14: Informations relatives au transport

14.1. Numéro ONU

N° ONU (ADR/RID)	2735
N° ONU (IMDG)	2735
N° ONU (ICAO)	2735
N° ONU (ADN)	2735

14.2. Désignation officielle de transport de l'ONU

Nom d'expédition (ADR/RID)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nom d'expédition (IMDG)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nom d'expédition (ICAO)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)
Nom d'expédition (ADN)	AMINES, LIQUID, CORROSIVE, N.O.S. (CONTAINS 1,3-CYCLOHEXANEBIS(METHYLAMINE), 1,3-BENZENEDIMETHANAMINE)

14.3. Classe(s) de danger pour le transport

Classe ADR/RID	8
Code de classement ADR/RID	C7
Etiquette ADR/RID	8
Classe IMDG	8
Classe/division ICAO	8
Classe ADN	8

Etiquettes de transport

14.4. Groupe d'emballage

Groupe d'emballage (ADR/RID)	II
Groupe d'emballage (IMDG)	II
Groupe d'emballage (ICAO)	II
Groupe d'emballage (ADN)	II

14.5. Dangers pour l'environnement

Substance dangereuse pour l'environnement/polluant marin

Non.

GEBOFIX EPO PLUS RE comp B

14.6. Précautions particulières à prendre par l'utilisateur

Groupe de séparation des matières du code IMDG	18. Alcalis
EmS	F-A, S-B
Catégorie de transport ADR	2
Code de consignes d'intervention d'urgence	2X
Numéro d'identification du danger (ADR/RID)	80
Code de restriction en tunnels	(E)

14.7. Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC

Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC	Non applicable.

RUBRIQUE 15: Informations relatives à la réglementation

15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement

Législation UE	(EU) No 2015/830
Document d'orientation	Workplace Exposure Limits EH40.

15.2. Évaluation de la sécurité chimique

Aucune évaluation de la sécurité chimique n'a été effectuée.

RUBRIQUE 16: Autres informations

Commentaires sur la révision	NOTE: Les lignes dans la marge indiquent des modifications significatives par rapport à la version précédente.
Date de révision	09/01/2020
Numéro de version	3.001
Remplace la date	27/07/2018
Numéro de FDS	20842
Mentions de danger dans leur intégralité	H302 Nocif en cas d'ingestion. H312 Nocif par contact cutané. H314 Provoque des brûlures de la peau et de graves lésions des yeux. H315 Provoque une irritation cutanée. H317 Peut provoquer une allergie cutanée. H318 Provoque de graves lésions des yeux. H319 Provoque une sévère irritation des yeux. H332 Nocif par inhalation. H411 Toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme. H412 Nocif pour les organismes aquatiques, entraîne des effets néfastes à long terme.

Ces informations concernent uniquement le produit spécifique désigné et peuvent ne pas être valides pour ce produit utilisé avec tout autre produit ou dans tout autre procédé. Ces informations sont, à notre connaissance et en toute bonne foi, exactes et fiables à la date indiquée. Néanmoins, aucune garantie, caution ou déclaration n'est faite de son exactitude, de sa fiabilité ou de son exhaustivité. Il est de la responsabilité de l'utilisateur de s'assurer de la pertinence de telles informations dans le cadre particulier de son propre usage.