

Declaration of Performance No 1109-CPR-0085-5

According to the Regulation EU No 305/2011

DGE01 Sinto ST-PE

Manufacturer: Tecfi S.p.A. - S.S. Appia, km 193 - 81050 Pastorano (CE), Italia



1 - Intended use	
Product type:	Metal anchor for use in concrete
Anchor type:	Bonded anchor with anchor rod for use in non-cracked concrete
Technical description of the product:	The Sinto ST-PE Tecfi Polyester Resin styrene free - DGE01 bonded anchor is a bonded anchors (injection type) consisting of an injection mortar cartridge equipped with a special mixing nozzle and threaded anchor rod of the sizes M8 to M16.
Intended use:	The performances given in this DoP are only valid if the anchor is used in compliance with the specifications and conditions given in this document. The provisions made in this DoP are based on an assumed intended 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 or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.
Base material:	Reinforced or unreinforced, non cracked, normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1.
Installation:	Dry or wet concrete.
Materials:	<p>Threaded rods:</p> <p>a) Galvanized Carbon steel grade 4.8 to 8.8 according to EN ISO 898-1</p> <p>b) Stainless steel A4-50, A4-70 and A4-80 according to EN ISO 3506</p> <p>c) High corrosion resistant stainless steel, grade 50, 70 and 80</p> <p>Nuts and washers:</p> <p>Corresponding to anchor rod material above mentioned for the different environmental exposures.</p>
Loading:	Static and quasi-static loads.
Durability:	Elements made of galvanized steel may be used in structures subject to dry internal conditions only. Elements made of stainless steel may be used in structures subject to dry internal conditions and also in concrete subject to external atmospheric exposure (including industrial and marine environment) or exposure in permanently damp internal conditions if no particular aggressive conditions exist. Such 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). Elements made of high corrosion resistant steel may be used in structures subject to dry internal conditions and also in concrete subject to external atmospheric exposure or exposure in permanently damp internal conditions or in other particular aggressive conditions. Such 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 chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).
Service temperature:	-40°C a +50°C (max. short term temperature +50°C and max. long term temperature +40°C).
Fire Resistance	NPD
Fire Reaction	In the final application the thickness of the mortar layer is about 1 to 2 mm and most of the mortar is material classified class A1 according to EC Decision 96/603/EC. Therefore it may be assumed that the bonding material (synthetic mortar or a mixture of synthetic mortar and cementitious mortar) in connection with the metal anchor in the end use application do not make any contribution to fire growth or to the fully developed fire and they have no influence to the smoke hazard.
ETA:	ETA 16/0939, issued by ETA-Denmark
On the basis of:	Etag 001 Part 5 used as EAD
Attestation of Conformity:	EC number B 1109-CPR-0081-03, issued by IFBT
Under system:	1

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2 - Anchor's components

Part	Designation		
	Steel, zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042 hot dipped galvanized $\geq 45 \mu\text{m}$ EN ISO 10684	Stainless steel A4	Stainless steel with high corrosion resistance (HRC)
Threaded rod	Steel property class from 4.8 to 8.8, acc. to EN ISO 898-1	Material 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 acc. to EN 10088-1; property class 50, 70 or 80 acc. to EN ISO 3506-1	Material 1.4529 / 1.4565, acc. to EN 10088-1; property class 50, 70 or 80 acc. to EN ISO 3506-1
Washer EN ISO 7089	Steel acc. to corresponding to threaded rod material	Material 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 acc. to EN 10088-1; corresponding to threaded rod material	Material 1.4529 / 1.4565, acc. to EN 10088-1; corresponding to threaded rod material
Hexagon nut	Steel, property class from 4 to 8 acc. to EN 898-2; corresponding to threaded rod material	Material 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 acc. to EN 10088-1; property class 50, 70 or 80 acc. to EN ISO 3506-1	Material 1.4529 / 1.4565, acc. to EN 10088-1; property class 50, 70 or 80 acc. to EN ISO 3506-1

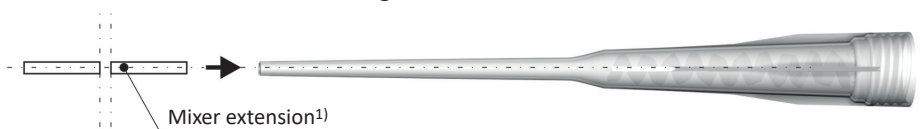
Commercial standard threaded rods with:

- material and mechanical properties according to the previous table
- confirmation of material and mechanical properties by inspection certificate 3.1 according to EN-10204:2004
- marking of the threaded rod with the embedment depth

Product	Composition
DGE01 Sinto ST-PE – two components injection mortar	Mortar resin styrene-free, hardener, filler



Mixer – suitable of all the cartridges



¹)Length variables from 380 [mm] to 1000 [mm]

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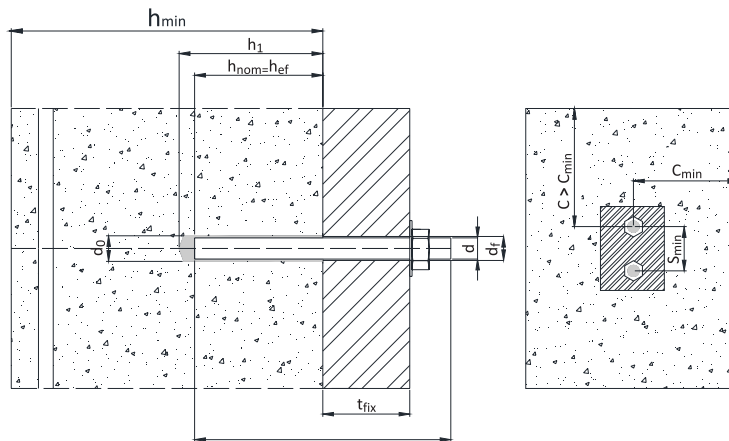
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3 - Installation

3.1: Anchor application and installation parameter



Installation parameters

Size		M8	M10	M12	M16
Nominal anchor diameter	d_{nom} [mm]	8	10	12	16
Nominal drill hole diameter	d_0 [mm]	10	12	14	18
Diameter of the clearance hole in the fixture	d_f [mm]	9	12	14	18
Depth of the drill hole	h_1 [mm]	$h_{ef} + 5$ mm			
Minimum thickness of concrete member	h_{min} [mm]	$h_{ef} + 30 \geq 100$			$h_{ef} + 2 d_0$
Minimum embedment depth	$h_{ef,min}$ [mm]	60	70	80	100
Maximum embedment depth	$h_{ef,max}$ [mm]	160	200	240	320
Required torque moment	T_{inst} [Nm]	10	20	40	80
Minimum allowable spacing	S_{min} [mm]	40	40	40	50
Minimum allowable edge distance	C_{min} [mm]	40	40	40	50
Brush size (standard or special)	d_b [mm]	12	14	16	20

Processing and curing time¹⁾

Concrete temperature	Processing time	Minimum curing time for dry and wet conditions
0°C ²⁾	25 min	180 min
5°C ²⁾	15 min	120 min
10°C	12 min	90 min
15°C	8 min	60 min
20°C	6 min	45 min
25°C	4 min	30 min
30°C	3 min	20 min

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3 - Installation

3.2: Overhead application

<p>1</p>	<p>Start injection: Inject from the bottom of the hole using the proper pneumatic-pump. Hold this position during the injection phase.</p>
<p>2</p>	<p>Injection phase: inject the product about 2/3 of the hole depth. During the injection hold this position to assure the correct installation.</p>
<p>3</p>	<p>End injection: remove the injection plug. Insert immediately the rod (turn the rod during the insertion).</p>
<p>4</p>	<p>End installation: to avoid the slipping of the rod during the open time of the product (due to the rod own weight) use a temporary interlocking element (e.g. wedge of wood)</p>

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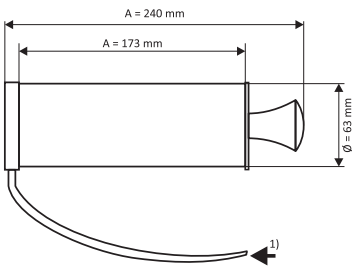
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3 - Installation

3.3: Cleaning tools



Manual blower pump

(To extend the length of blowing nozzle is it possible to use the mixer extension with the manual blowing pump)



Mechanical air system (compressed air)

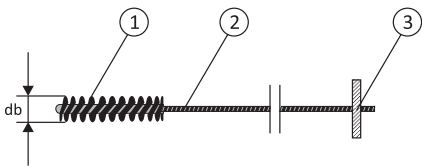
The use of the mixer extension is also allowed if using the compressor (compressed air)

- Minimum suitable pressure 6 [bar] at 6 [m3/h].

- Oil free compressed air.

- Recommended air gun with an orifice opening minimum 3,5 [mm] in diameter.

Standard brush



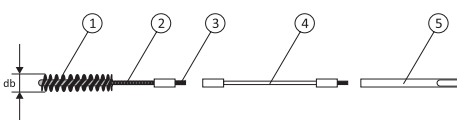
1 - Steel bristles

2 - Steel stem

3 - Wood handle

Threaded rod diameter \varnothing		$\varnothing 8$		$\varnothing 10$		$\varnothing 12$		$\varnothing 14$		$\varnothing 16$	
d_0	Nominal drill hole [mm]	10 ¹⁾	12 ¹⁾	12 ¹⁾	14 ¹⁾	14 ¹⁾	16 ¹⁾	18	20		
d_b	Brush diameter [mm]	12	14	14	16	16	18	20	22		

Special brush



1 - Steel bristles

2 - Steel stem

3 - Threaded connection for drilling tool extension

4 - Special brush extension

5 - Drilling tool connection (SDS connection)

Threaded rod diameter \varnothing		$\varnothing 8$		$\varnothing 10$		$\varnothing 12$		$\varnothing 14$		$\varnothing 16$		$\varnothing 20$		$\varnothing 22$		$\varnothing 25$		$\varnothing 28$		$\varnothing 30$		$\varnothing 32$	
d_0	Nominal drill hole [mm]	10 ¹⁾	12 ¹⁾	12 ¹⁾	14 ¹⁾	14 ¹⁾	16 ¹⁾	18	20	25	26	30	35	35	40								
d_b	Brush diameter [mm]	12	14	14	16	16	18	20	22	27	27	32	37	37	42								

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4 - Declared performance according to ETAG 001

Combined pull-out and concrete cone failure to tension load in non-cracked concrete

Size		M8	M10	M12	M16
Characteristic bond resistance in non cracked concrete C20/25, Temperature range -40°C/+50°C (T _{mlp} = +40°C)	τ_{ucr} [N/mm ²]	12	12	11	9
Increasing factor for non cracked concrete C30/37	$\Psi_{c,ucr, C30/37}$	1,04			
Increasing factor for non cracked concrete C40/50	$\Psi_{c,ucr, C40/50}$	1,07			
Increasing factor for non cracked concrete C50/60	$\Psi_{c,ucr, C50/60}$	1,09			

Splitting failure

Spacing for ensuring the transmission of the characteristic tensile resistance of a single anchor without spacing and edge effects in case of splitting failure.	$h = h_{min}$ $h_{min} \leq h \leq 2 h_{ef}$ $h \geq 2 h_{ef}$	$S_{cr,sp}$ [mm]	4 h _{ef} interpolated value $20 d (\tau_{Rk,ucr}/7,5)^{0,5} \leq 3 h_{ef}$		
Edge distance for ensuring the transmission of the characteristic tensile resistance of a single anchor without spacing and edge effects in case of splitting failure		$C_{cr,sp}$ [mm]	0,5 S _{cr,sp}		

Concrete pry-out failure

Factor for concrete pry-out failure	$k = k_3$ [-]	2			
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Displacement under service load

Tensile service Load in non cracked concrete C20/25 to C50/60	N_s [kN]	9,5	13,8	16,9	23,6
Short term displacement under tensile service load	δ_{N0} [mm]	0,30		0,35	
Long term displacement under tensile service load	$\delta_{N\infty}$ [mm]	0,73			
Shear service Load in non cracked concrete C20/25 to C50/60	V_s [kN]	10,5	16,6	24,1	44,8
Short term displacement under shear service load	δ_{V0} [mm]	2,00			
Long term displacement under shear service load	$\delta_{V\infty}$ [mm]	3,00			

5 - Format of DGE01

Cartridge capacity	Type of cartridge	Item code
300 ml	Coaxial special	DGE 01 00 300
400 ml	Coaxial special	DGE 01 00 400

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6 - Label example

Tecfi certezze per lavorare facile
Sistemi di Fissaggio

DGE 01 SINTO-ST

RESINA POLIESTERE SENZA STIRENE

Polyster Resin styren free
Résine Polyester sans styrène
Polyesterharz styrolfrei
Resina Polièster sin estireno

ETA 1020 Tecfi S.p.A. DGE01 - Sinto ST-PE ETA0001 part 1, part 2 DoP No. 1020-CPR-999-944210

ETA 110533 Tecfi S.p.A. DGE01 - Sinto ST-PE ETA0029 part 1, part 2 DoP No. 1020-CPR-999-944212

TECFI S.p.A. - Strada Stabile Appia, Km. 193, 00
81050 Pastorano (CE) - Italia - Tel. +39 0823.88.33.38 www.tecfi.it

300 ml Made in Italy

- | | |
|---------------------------|---|
| 1 Item Code | 9 Danger symbols |
| 2 Descriptions | 10 Identification number of the Notified Body |
| 3 Cartridge capacity (ml) | 11 Last two digits of the year in which the marking was first affixed |
| 4 EAN 13 code | 12 European standard applied and intended use |
| 5 Installation sequence | 13 DoP number |
| 6 Expiring date | 14 Link to DoP |
| 7 Lot Number | 15 European Assessment Document's number |
| 8 Warnings | |

The performances of the product identified by the above identification code are in conformity with the declared performance. This declaration of performance is issued under the sole responsibility of Tecfi S.p.A.

Signed for and behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
President Antonio Guarino	Pastorano, December 14 th 2016	