



1. Unique identification code of the product-type:

2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4):

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Generic type and use		Bonded anchor for anchorage of threaded rod.							
Size covered		M8	M10	M12	M16	M20	M24	M27	M30
hef [mm]	min	60	60	70	80	90	96	110	120
	max	160	200	240	320	400	480	540	600
		Intermediate depths are included.							
Base material and strength class		Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1.							
Base material condition		Cracked (from M12 to M24) and non-cracked concrete (from M8 to M30).							
Anchor metal material and corresponding environmental exposure		Threaded rods: a) Carbon galvanized steel class 5.8 and 8.8 according to EN ISO 898-1 for dry internal conditions. b) Stainless steel A4-70 and A4-80 according to EN ISO 3506 for dry internal conditions, external atmospheric exposure (including industrial and marine environment) or exposure in permanently damp internal conditions if no particular aggressive conditions exist. c) High resistant corrosion stainless steel class 70 according to EN ISO 3506 for all conditions. Nuts and washers: Corresponding to anchor rod material above mentioned for the different environmental exposures.							
Type of loading		Static or quasi-static loading.							
Service temperature range		a) -40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C), b) -40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C).							
Use category		Category 1 and 2: dry and wet concrete and flooded hole. Overhead installation is allowed. Perforation with hammer drilling machine.							

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

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5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2):

Not applicable

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

System 1

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:

Not applicable

8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:

Technical and Test Institute for Construction Prague, SOE issued ETA-13/0267 on the basis of ETAG 001 part 5.

ZUS (n°102) performed:

the determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; the initial inspection of the factory and of the factory production control; the continuous surveillance; assessment and approval of the factory production control; under system 1 and issue the certificate of conformity

n° 1020 – CPR – 090-044110.

9. Declared performance:

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 PART 5									
ESSENTIAL CHARACTERISTICS		PERFORMANCE ACCORDING TO 13/0267 Design according to paragraph. 4.2.1 ETA-13/0267							
Installation parameters		M8	M10	M12	M16	M20	M24	M27	M30
d [mm]		8	10	12	16	20	24	27	30
d ₀ [mm]		10	12	14	18	24	28	30	35
d _{fix} [mm]		9	12	14	18	22	26	29	33
h ₁ [mm]		h _{ef} + 5 mm							
h _{min} [mm]		h _{ef} + 30 mm; ≥ 100 mm			h _{ef} + 2d ₀				
T _{inst} [Nm]		10	20	40	80	130	200	270	300
t _{fix} [mm]	Min	> 0							
	Max	≤ 1500 mm							
S _{min} [mm]		40	50	60	80	100	120	135	150
C _{min} [mm]		40	50	60	80	100	120	135	150
γ ₂ [-] Category 1		1,00							
γ ₂ [-] Category 2		1,20							
Resistance for tensile load Resistance for combined pullout and concrete cone failure		M8	M10	M12	M16	M20	M24	M27	M30
τ _{Rk,ucr} [N/mm ²] concrete C20/25 Temperature range -40°C/+40°C (T _{mlp} = 24°C)		12,0	11,0	11,0	11,0	10,0	10,0	10,0	10,0
τ _{Rk,ucr} [N/mm ²] concrete C20/25 Temperature range -40°C/+80°C (T _{mlp} = 50°C)		9,0	8,5	8,5	8,5	7,0	7,0	7,0	7,0
ψ _{c,ucr} C30/37 [-]		1,08							
ψ _{c,ucr} C40/50 [-]		1,15							
ψ _{c,ucr} C50/60 [-]		1,19							
τ _{Rk,cr} [N/mm ²] concrete C20/25 Temperature range -40°C/+40°C (T _{mlp} = 24°C)		-	-	7,0	7,0	7,0	7,0	-	-
τ _{Rk,cr} [N/mm ²] concrete C20/25 Temperature range -40°C/+80°C (T _{mlp} = 50°C)		-	-	5,5	5,5	5,5	5,5	-	-
ψ _{c,cr} C30/37 [-]		1,00							
ψ _{c,cr} C40/50 [-]		1,00							
ψ _{c,cr} C50/60 [-]		1,00							

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 PART 5								
ESSENTIAL CHARACTERISTICS	PERFORMANCE ACCORDING TO ETA-13/0267 Design according to paragraph. 4.2.1 ETA-13/0267							
Resistance for tensile load Resistance for splitting failure	M8	M10	M12	M16	M20	M24	M27	M30
$S_{cr,sp}$ [mm]	se $h = h_{min}$ - $S_{cr,sp} = 4 h_{ef}$ se $h_{min} \leq h < 2 h_{ef}$ - $S_{cr,sp}$ = interpolate value se $h \geq 2 h_{ef}$ - $S_{cr,sp} = 2 h_{ef}$							
$C_{cr,sp}$ [mm]	$0,50 S_{cr,sp}$							
Resistance for shear load Resistance for concrete pry-out failure	M8	M10	M12	M16	M20	M24	M27	M30
k [-]	2,0							
Displacement under service load Tensile and Shear load	M8	M10	M12	M16	M20	M24	M27	M30
F_{unc} [kN] for concrete from C20/25 to C50/60	7,6	9,5	14,3	19,0	23,8	35,7	45,2	54,8
$\delta_{0,unc}$ [mm]	0,29	0,31	0,36	0,37	0,38	0,54	0,67	0,80
$\delta_{\infty,unc}$ [mm]	0,80							
F_{cr} [kN] for concrete from C20/25 to C50/60	-	-	9,5	14,3	19,0	23,8	-	-
$\delta_{0,cr}$ [mm]	-	-	0,36	0,36	0,36	0,36	-	-
$\delta_{\infty,cr}$ [mm]	-	-	1,85				-	-

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 PART 1 PARAGRAPH 5.2.1	
ESSENTIAL CHARACTERISTICS	PERFORMANCE
Reaction to fire	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.

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 PART 1 PARAGRAPH 5.2.2 AND TECHNICAL REPORT TR020	
ESSENTIAL CHARACTERISTICS	PERFORMANCE
Resistance to fire	NPD

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 PART 1 ANNEX E	
ESSENTIAL CHARACTERISTICS	PERFORMANCE
Qualification for seismic load	NPD

HARMONIZED TECHNICAL SPECIFICATION: ETAG 001 - ANNEX E QUALIFICATION FOR SEISMIC LOAD			
ESSENTIAL CHARACTERISTICS	PERFORMANCE ACCORDING TO ETA-13/0267		
Resistance for tensile load Resistance for steel failure (standard threaded rod class 8.8 with $A \geq 12\%$)	M16	M20	M24
$N_{Rk,seis}$ [kN]	126	196	282
$\gamma_{M,seis}$ [-]	1,50		
Resistance for tensile load Resistance for combined pullout and concrete cone failure	M16	M20	M24
$\tau_{Rk,seis}$ [N/mm ²] concrete C20/25 Temperature range -40°C/+40°C ($T_{mlp} = 24^\circ\text{C}$)	2,9	2,8	2,6
$\tau_{Rk,seis}$ [N/mm ²] concrete C20/25 Temperature range -40°C/+80°C ($T_{mlp} = 50^\circ\text{C}$)	2,2	2,1	2,0
$\psi_{c,cr}$ C30/37 [-]	1,00		
$\psi_{c,cr}$ C40/50 [-]	1,00		
$\psi_{c,cr}$ C50/60 [-]	1,00		
Resistance for shear load Resistance for steel failure without lever-arm (standard threaded rod class 8.8 with $A \geq 12\%$)	M16	M20	M24
$V_{Rk,seis}$ [kN]	25	39	56
$\gamma_{M,seis}$ [-]	1,25		

Displacement under tension and shear load in case of performance category C2

Size			M16	M20	M24
Displacement DLS	$\delta_{N,seis}(DLS)$	[mm]	0,26	0,25	0,24
Displacement ULS	$\delta_{N,seis}(ULS)$	[mm]	0,37	0,45	0,56

Size			M16	M20	M24
Displacement DLS	$\delta_{V,seis}(DLS)$	[mm]	2,41	2,39	2,21
Displacement ULS	$\delta_{V,seis}(ULS)$	[mm]	8,30	7,29	7,42

TERMINOLOGY AND SYMBOLS	
d	Diameter of anchor bolt or thread diameter
d ₀	Drill hole diameter
d _{fix}	Diameter of clearance hole in the fixture
h _{ef}	Effective anchorage depth
h ₁	Depth of the drilling hole
h _{min}	Minimum thickness of concrete member
T _{inst}	Torque moment to installation
t _{fix}	Thickness to be fixed
S _{min}	Minimum allowable spacing
C _{min}	Minimum allowable edge distance
S _{cr,sp}	Spacing 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}	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
τ _{Rk,ucr}	Characteristic bond resistance in un-cracked concrete class C20/25
τ _{Rk,cr}	Characteristic bond resistance in cracked concrete class C20/25
γ ₂	Partial safety factors for installation
ψ _{c,ucr}	Increasing factor for un-cracked concrete
ψ _{c,cr}	Increasing factor for cracked concrete
k	Factor for concrete edge failure
F	Service load in un-cracked (ucr) or cracked concrete (cr)
δ ₀	Short term displacement under service load in un-cracked (ucr) or cracked concrete (cr)
δ _∞	Long term displacement under service load in un-cracked (ucr) or cracked concrete (cr)
NPD	Not determined performance

Regolamento REACH n°1907/2006

Estimate customer,

We inform you that in the REACH supply chain our company is classified as DU: Downstream-user.

About the product detailed in the point 1 we confirm you that we don't use in our production substances classified as SVHC according to the Candidate List published on ECHA site web:

http://echa.europa.eu/chem_data/candidate_list_table_en.asp.

You can require the safety data sheet of the product to our technical department: tecnico@halfen.it or you can download the document from our web site www.halfen.it.

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Ing. Stefano Terletti (Technical Manager)	Bergamo, 21/06/2019	

Note: this DoP replace the previous version dated 11/11/2014.