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Concrete Structures
Laboratory.

ramsetreid™ Concrete Structures Laboratory
Testing supervised by
SIGGMA - Report Number: 213-2018-R01

Fastener Technical Assessment

**FTA-19/0003
of 08/02/2019**

**This Technical Assessment meets the testing requirements stipulated
in ETAG 001 Annex E as required by NZS3101:2006 A3**

Trade name of the construction product

Injection system EPCON™ C8 Xtrem™
for cracked concrete

**Product family to which the construction
product belongs**

Bonded injection type anchor for use in
cracked concrete and non-cracked concrete.
Threaded rods M16 to M24

Manufacturer

Société SPIT
Route de Lyon
F-26501 BOURG-LES-VALENCE
France

Manufacturing plant

Société SPIT

This Technical Assessment contains

2 pages & compliments European
Technical Assessment ETA-10/309 which
forms an integral part of this assessment.

**This Technical Assessment for C2 seismic
is in accordance with EAD 330499-00-
601 and TR049**

Test regime and Assessment supervised
By SIGGMA – Report no. 213-2018-R01.

**EPOXY RESIN
ADDITIONAL ASSESSMENT *
FOR USE IN C2 SEISMIC CATEGORY**



*:Test regime and Assessment for C2 seismic according to EAD 330499-00-0601 and TR049 supervised by SIGGMA report no.213-2018-R01

Characteristic values for seismic performance category C2 according to EN 1992-4 for threaded rods M16/M20/M24

Characteristic tension resistance under seismic loading, performance category C2, for threaded rods

Threaded rods			M16	M20	M24
Steel failure					
Characteristic resistance "Grade 5.8"	$N_{Rk,s,eq}$	[kN]	79	123	177
Partial safety factor "Grade 5.8"	$\gamma_{Ms,N}$	[-]	1.5		
Characteristic resistance "Grade 8.8"	$N_{Rk,s,eq}$	[kN]	126	196	282
Partial safety factor "Grade 8.8"	$\gamma_{Ms,N}$	[-]	1.5		
Characteristic resistance "Stainless steel A4"	$N_{Rk,s,eq}$	[kN]	110	172	247
Partial safety factor "Stainless steel A4"	$\gamma_{Ms,N}$	[-]	1.87		
Combined Pull-out and Concrete cone failure					
Characteristic bond resistance under seismic C2 (used category 1 : dry/wet holes)					
Temperature range I : 40°C / 24°C	$\tau_{Rk,eq}$	[N/mm ²]	4.6	3.4	3.1
Temperature range II : 80°C / 50°C	$\tau_{Rk,eq}$	[N/mm ²]	2.6	1.9	1.7
Partial safety factor for category 1	γ_{inst}	[-]	1.2		
Characteristic bond resistance under seismic C2 (used category 2 : flooded holes)					
Temperature range I : 40°C / 24°C	$\tau_{Rk,eq}$	[N/mm ²]	4.2	3.0	2.8
Temperature range II : 80°C / 50°C	$\tau_{Rk,eq}$	[N/mm ²]	2.3	1.7	1.5
Partial safety factor for category 2	γ_{inst}	[-]	1.4		
Increasing factor for $\tau_{Rk,eq}$					
Increasing concrete factor for $\tau_{Rk,eq}$	Ψ_c	C25/30	1.03	1.03	1.04
		C30/37	1.06	1.07	1.09
		C35/40	1.10	1.11	1.13
		C40/50	1.11	1.14	1.16
		C45/55	1.13	1.16	1.18
		C50/60	1.15	1.17	1.20

Characteristic shear resistance under seismic loading, performance category C2, for threaded rods

Threaded rods			M16	M20	M24
Steel failure					
Characteristic resistance "Grade 5.8"	$V_{Rk,s,eq}$	[kN]	20.7	36.0	58.1
Partial safety factor "Grade 5.8"	$\gamma_{Ms,V}$	[-]	1.25		
Characteristic resistance "Grade 8.8"	$V_{Rk,s,eq}$	[kN]	33.4	57.8	93.1
Partial safety factor "Grade 8.8"	$\gamma_{Ms,V}$	[-]	1.25		
Characteristic resistance "Stainless steel A4"	$V_{Rk,s,eq}$	[kN]	29.2	50.7	81.8
Partial safety factor "Stainless steel A4"	$\gamma_{Ms,V}$	[-]	1.56		

Displacement under seismic tension loading, performance category C2, for threaded rods

Threaded rods			M16	M20	M24
Displacement DLS	$\delta_{N,seis}$ (DLS)	[mm]	0.31	0.61	0.54
Displacement ULS	$\delta_{N,seis}$ (ULS)	[mm]	0.75	0.85	1.36

Design according to EOTA TR045 – Characteristic resistance under seismic action (C2) for threaded rods