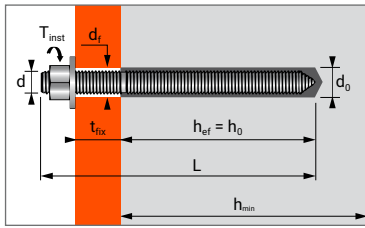


EPCON C8 XTREM



High performance pure epoxy resin
for use in cracked and non-cracked concrete and seismic performance category C1



TECHNICAL DATA

RANGE	Min. anchor depth	Max. thick. of part to be fixed	Min. thick. of base material	Thread diameter	Drilling depth	Drilling diameter	Clearance diameter	Total anchor length	Tighten torque	Code ⁽¹⁾ SPIT stud	
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Nm)	zinc coated steel	stainless steel A4
	h_{ef}	t_{fix}	h_{min}	d	h_o	d_o	d_f	L	T_{inst}		
M8X110	80	15	110	8	80	10	9	110	10	060215	060222
M10X130	90	20	120	10	90	12	12	130	20	060216	060223
M12X160	110	25	140	12	110	14	14	160	30	060217	060224
M16X190	125	35	160	16	125	18	18	190	60	060218	060225
M20X260	170	65	220	20	170	25	22	260	120	060219	060226
M24X300	210	63	265	24	210	28	26	300	200	060220	060227
M30X380	280	70	350	30	280	35	33	380	400	060221	-
EPCON C8 XTREM cartridge 450 ml										055887	

⁽¹⁾These are SPIT Studs, for standard Studs (zinc coated or stainless steel versions) see catalogue.

CHARACTERISTICS



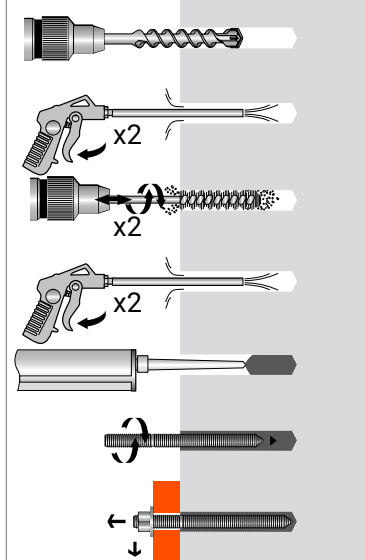
APPLICATION

- Steel profiles
- Fixing machinery (resistant to vibration)
- Storage tanks, pipes
- Electrical insulated fixings
- Signs
- Guard rails
- * ETA - 07/0189: for post-installed rebars applications

FIELD OF USE

- Shelf life : 36 months
- Installation temperature: 0°C / +40°C
- In-Service temperature range:
 - Range 1: -40°C / +40°C
 - Range 2: -40°C / +80°C
- Installation conditions:
 - Category 1: Dry or wet concrete
 - Category 2: Flooded holes

INSTALLATION



ANCHOR MECHANICAL PROPERTIES

SIZE	M8	M10	M12	M16	M20	M24	M30
SPIT Studs							
f_{uk} [N/mm ²]	600	600	600	600	520	520	520
f_{yk} [N/mm ²]	420	420	420	420	420	420	420
$M^{0}_{Rk,s}$ [Nm]	22	45	79	200	301	520	1052
Studs Grade 8.8							
f_{uk} [N/mm ²]	800	800	800	800	800	800	800
f_{yk} [N/mm ²]	640	640	640	640	640	640	640
$M^{0}_{Rk,s}$ [Nm]	30	60	105	266	519	898	1799
Studs Grade A4-70							
f_{uk} [N/mm ²]	700	700	700	700	700	700	-
f_{yk} [N/mm ²]	350	350	350	350	350	350	-
$M^{0}_{Rk,s}$ [Nm]	26	52	92	233	454	786	-

SETTING TIME

TEMPERATURE	MAX. TIME FOR INSTALLATION	WAITING TIME FOR 45 % LOAD	CURING TIME
5°C	26 min.	15 h	26 h
10°C	20 min.	12 h	23 h
20°C	14 min.	6 h	12 h
30°C	8 min.	5 h	8 h
40°C	5 min.	3 h	6 h

CHEMICAL RESISTANCE OF THE SPIT EPCON C8

CHEMICAL SUBSTANCES	CONCENTRATION %	RESISTANCE	CHEMICAL SUBSTANCES	CONCENTRATION %	RESISTANCE
Sulfuric acid	10	(o)	Toluene		(o)
Hydrochloric acid	10	(o)	Ethanol		(o)
Nitric acid	10	(o)	Methyl-ethyl-ketone (MEK)		(-)
Acetic acid	10	(o)	Methanol		(-)
Ammonium hydroxide	10	(o)	Deminerlized water		(+)
Sodium Hypochlorite	5	(o)	Sea water	100	(+)
Sodium hydroxide	50	(o)	Engine Petrol	100	(+)
Acetone		(-)	Motor oil	100	(+)

Resistant (+): the samples in contact with the substances did not show any Screwible damage such as cracks, attacked surfaces, burst corners nor large swelling. Sensitive (o): use with care regarding exposure of the field of usage, precautions to be taken. The samples in contact with the substance slightly attacked the material.





EPCON C8 XTREM

MINIMUM THICKNESS OF CONCRETE, CHARACTERISTIC & MINIMUM DISTANCES FOR SPACING, EDGE

SIZE			M8	M10	M12	M16	M20	M24	M30
Anchorage depth	h_{ef}	[mm]	80	90	110	125	170	210	280
Minimum thickness of base material	h_{min}	[mm]	110	120	140	160	220	265	350
Characteristic edge and spacing distance for full anchor capacity	$C_{cr} \geq$	[mm]	120	135	165	187,5	255	315	420
	$S_{cr} \geq$	[mm]	240	270	330	375	510	630	840
Minimum distances for cracked and non-cracked concrete	C_{min}	[mm]	40	50	60	80	100	120	150
	$S \geq$	[mm]	40	50	60	80	100	120	150
	S_{min}	[mm]	40	50	60	80	100	120	150
	$C \geq$	[mm]	40	50	60	80	100	120	150

CHARACTERISTIC RESISTANCES [kN]

Characteristic resistances are shown as informative, and have to be used by application of safety factors .

In tensile loads, the table below shows bond strength in N/mm². All dimensions can be installed with embedment length between 4d to 20d.

The characteristic tensile load is determined with the formular : $N_{Rk,p}^0 = \pi \cdot d \cdot h_{ef} \cdot \tau_{Rk}$

TENSILE

NON-CRACKED CONCRETE – C20/25

SIZE	M8	M10	M12	M16	M20	M24	M30
$h_{ef min}$ [mm]	40	40	48	64	80	96	120
$h_{ef max}$ [mm]	160	200	240	320	400	480	600
$\tau_{Rk,uncr}$ [N/mm ²]	16	16	16	15	14	13	13

CRACKED CONCRETE – C20/25

SIZE	M8	M10	M12	M16	M20	M24	M30
$h_{ef min}$ [mm]	40	40	48	64	80	96	120
$h_{ef max}$ [mm]	160	200	240	320	400	480	600
$\tau_{Rk,cr}$ [N/mm ²]	9	9	9	8,5	8	7,5	7

SHEAR

CRACKED AND NON-CRACKED CONCRETE – C20/25 to C50/60

SIZE	M8	M10	M12	M16	M20	M24	M30
$h_{ef min}$ [mm]	40	40	48	64	80	96	120
$h_{ef max}$ [mm]	160	200	240	320	400	480	600

SPIT studs

$V_{Rk,s}$ [kN]	<u>9,2</u>	<u>15,0</u>	<u>21,0</u>	<u>39,0</u>	<u>61,0</u>	<u>88,0</u>	<u>140,0</u>
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Studs Grade 8.8

$V_{Rk,s}$ [kN]	<u>15,0</u>	<u>23,0</u>	<u>34,0</u>	<u>63,0</u>	<u>98,0</u>	<u>141,0</u>	<u>224,0</u>
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Studs Grade A4-70

$V_{Rk,s}$ [kN]	<u>13,0</u>	<u>20,0</u>	<u>30,0</u>	<u>55,0</u>	<u>86,0</u>	<u>124,0</u>	<u>140,0</u>
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RECOMMENDED LOADS OF ONE ANCHOR WITHOUT INFLUENCE OF SPACING & CONCRETE EDGE [kN]

Recommended values are determined from performances given in the ETA, and are guaranteed for spacing $\geq S_{cr}$ and edge distance $\geq C_{cr}$.

TENSILE

NON-CRACKED CONCRETE – C20/25

SIZE	M8	M10	M12	M16	M20	M24	M30
h_{ef} [mm]	80	90	110	125	170	210	280

SPIT Studs

N_{Rec} [kN]	<u>8,7</u>	<u>13,8</u>	<u>20,1</u>	27,3	43,3	59,4	91,5
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Studs Grade 8.8

N_{Rec} [kN]	12,8	16,7	22,5	27,3	43,3	59,4	91,5
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Studs Grade A4-70

N_{Rec} [kN]	<u>9,9</u>	<u>15,7</u>	<u>22,5</u>	27,3	43,3	59,4	<u>70,2</u>
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CRACKED CONCRETE – C20/25

SIZE	M8	M10	M12	M16	M20	M24	M30
h_{ef} [mm]	80	90	110	125	170	210	280

SPIT Studs

N_{Rec} [kN]	7,2	10,1	14,8	19,1	30,3	41,6	64,0
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Studs Grade 8.8

N_{Rec} [kN]	7,2	10,1	14,8	19,1	30,3	41,6	64,0
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Studs Grade A4-70

N_{Rec} [kN]	7,2	10,1	14,8	19,1	30,3	41,6	64,0
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$$N_{Rec} = \min [N_{Rd,p}; N_{Rd,c}; N_{Rd,s}] / \gamma_F; \gamma_F = 1,4$$

SHEAR

CRACKED AND NON-CRACKED CONCRETE – C20/25 to C50/60

SIZE	M8	M10	M12	M16	M20	M24	M30
h_{ef} [mm]	80	90	110	125	170	210	280

SPIT studs

V_{Rec} [kN]	<u>5,1</u>	<u>8,6</u>	<u>12,0</u>	<u>22,3</u>	<u>34,9</u>	<u>50,3</u>	<u>80,0</u>
----------------	------------	------------	-------------	-------------	-------------	-------------	-------------

Studs Grade 8.8

V_{Rec} [kN]	<u>8,6</u>	<u>13,1</u>	<u>19,4</u>	<u>36,0</u>	<u>56,0</u>	<u>80,6</u>	<u>128,0</u>
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Studs Grade A4-70

V_{Rec} [kN]	<u>6,0</u>	<u>9,2</u>	<u>13,7</u>	<u>25,2</u>	<u>39,4</u>	<u>56,8</u>	<u>64,1</u>
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$$V_{Rec} = V_{Rd,s} / \gamma_F; \gamma_F = 1,4$$

Nota: The values indicated *in italics and underlined* correspond to steel failure





Design resistances for static and seismic loads are determined from performances given in the ETA, and are guaranteed for spacing $\geq S_{cr}$ and edge distance $\geq C_{cr}$. For project with reduced spacing and edge distance, we recommend to use SPIT i-Expert software to design your project according to EN 1992-4.

DESIGN RESISTANCE FOR STATIC LOADS IN NON CRACKED CONCRETE [kN]

TENSILE								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs	<i>C20/25</i>	<i><u>12,2</u></i>	<i><u>19,3</u></i>	<i><u>28,1</u></i>	38,2	60,6	83,2	128,0
$N_{Rd,uncr}$ [kN]	C40/50	<i><u>12,2</u></i>	<i><u>19,3</u></i>	<i><u>28,1</u></i>	<i><u>52,3</u></i>	<i><u>81,3</u></i>	<i><u>117,3</u></i>	181,1
Studs grade 8.8	C20/25	17,9	23,3	31,5	38,2	60,6	83,2	128,0
$N_{Rd,uncr}$ [kN]	C40/50	<i><u>19,3</u></i>	<i><u>28,1</u></i>	<i><u>42,4</u></i>	<i><u>54,0</u></i>	<i><u>85,7</u></i>	<i><u>117,6</u></i>	181,1
Studs grade A4-70	C20/25	<i><u>13,9</u></i>	<i><u>21,9</u></i>	31,5	38,2	60,6	83,2	<i><u>98,3</u></i>
$N_{Rd,uncr}$ [kN]	C40/50	<i><u>13,9</u></i>	<i><u>21,9</u></i>	<i><u>31,6</u></i>	54,0	85,7	117,6	<i><u>98,3</u></i>

Distances S_{cr} and C_{cr} must be fulfilled

$$N_{Rd,uncr} = \min[N_{Rk,p,uncr} / \gamma_{Mc}; N_{Rk,s} / \gamma_{Ms,N}]$$

$$\gamma_{Mc} = 1,8$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,N} = 1,5$; Studs grade A4-70 : $\gamma_{Ms,N} = 1,87$

SHEAR								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>7,2</u></i>	<i><u>12,0</u></i>	<i><u>16,8</u></i>	<i><u>31,2</u></i>	<i><u>48,8</u></i>	<i><u>70,4</u></i>	<i><u>112,0</u></i>
Studs grade 8.8								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>12,0</u></i>	<i><u>18,4</u></i>	<i><u>27,2</u></i>	<i><u>50,4</u></i>	<i><u>78,4</u></i>	<i><u>112,8</u></i>	<i><u>179,2</u></i>
Studs grade A4-70								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>8,3</u></i>	<i><u>12,8</u></i>	<i><u>19,2</u></i>	<i><u>35,3</u></i>	<i><u>55,1</u></i>	<i><u>79,5</u></i>	<i><u>89,7</u></i>

$$V_{Rd,s} = V_{Rk,s} / \gamma_{Ms,V}$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,V} = 1,25$; Studs grade A4-70 : $\gamma_{Ms,V} = 1,56$

DESIGN RESISTANCE FOR STATIC LOADS IN CRACKED CONCRETE [kN]

TENSILE								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs / Studs grade ≥ 5.8 / Studs grade A4-70								
$N_{Rd,cr}$ [kN]	$\geq C20/25$	<i><u>10,1</u></i>	<i><u>14,1</u></i>	<i><u>20,7</u></i>	26,7	42,4	58,2	89,6

Distances S_{cr} and C_{cr} must be fulfilled

$$N_{Rd,cr} = \min[N_{Rk,p,cr} / \gamma_{Mc}; N_{Rk,s} / \gamma_{Ms,N}]$$

$$\gamma_{Mc} = 1,8$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,N} = 1,5$; Studs grade A4-70 : $\gamma_{Ms,N} = 1,87$

SHEAR								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>7,2</u></i>	<i><u>12,0</u></i>	<i><u>16,8</u></i>	<i><u>31,2</u></i>	<i><u>48,8</u></i>	<i><u>70,4</u></i>	<i><u>112,0</u></i>
Studs grade 8.8								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>12,0</u></i>	<i><u>18,4</u></i>	<i><u>27,2</u></i>	<i><u>50,4</u></i>	<i><u>78,4</u></i>	<i><u>112,8</u></i>	<i><u>179,2</u></i>
Studs grade A4-70								
$V_{Rd,s}$ [kN]	$\geq C20/25$	<i><u>8,3</u></i>	<i><u>12,8</u></i>	<i><u>19,2</u></i>	<i><u>35,3</u></i>	<i><u>55,1</u></i>	<i><u>79,5</u></i>	<i><u>89,7</u></i>

$$V_{Rd,s} = V_{Rk,s} / \gamma_{Ms,V}$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,V} = 1,25$; Studs grade A4-70 : $\gamma_{Ms,V} = 1,56$

DESIGN RESISTANCE FOR SEISMIC LOADS CATEGORY C1 [kN]

TENSILE								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs / Studs grade ≥ 5.8 / Studs grade A4-70								
$N_{Rd,C1}$ [kN]	C20/25	-	<i><u>9,7</u></i>	<i><u>13,1</u></i>	<i><u>22,7</u></i>	-	-	-

Distances S_{cr} and C_{cr} must be fulfilled

$$N_{Rd,C1} = \min[N_{Rk,p,eq,C1} / \gamma_{Mc}; N_{Rk,s,eq,C1} / \gamma_{Ms,N}]$$

$$\gamma_{Mc} = 1,8$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,N} = 1,5$; Studs grade A4-70 : $\gamma_{Ms,N} = 1,87$

SHEAR								
SIZE	M8	M10	M12	M16	M20	M24	M30	
h_{ef} [mm]	80	90	110	125	170	210	280	
SPIT studs								
$V_{Rd,s,C1}$ [kN]	$\geq C20/25$	-	<i><u>8,4</u></i>	<i><u>11,8</u></i>	<i><u>22,0</u></i>	-	-	-
Studs grade 8.8								
$V_{Rd,s,C1}$ [kN]	$\geq C20/25$	-	<i><u>12,9</u></i>	<i><u>18,8</u></i>	<i><u>35,0</u></i>	-	-	-
Studs grade A4-70								
$V_{Rd,s,C1}$ [kN]	$\geq C20/25$	-	<i><u>9,0</u></i>	<i><u>13,2</u></i>	<i><u>24,7</u></i>	-	-	-

$$V_{Rd,s,C1} = V_{Rk,s,eq,C1} / \gamma_{Ms,V}$$

SPIT studs & Studs grade 8.8 : $\gamma_{Ms,V} = 1,25$; Studs grade A4-70 : $\gamma_{Ms,V} = 1,56$

Nota: The values indicated in *italics and underlined* correspond to steel failure