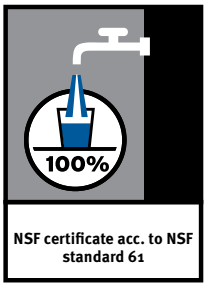
OCTOPLATINUM®

HYBRID ADHESIVE ANCHORING SYSTEM
SYSTÈME D'ANCRAGE ADHÉSIF HYBRIDE

TECHNICAL DATA SHEET

825 ML / 28 fl. oz. / 50 in^3

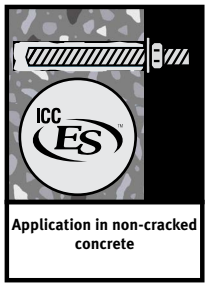
280 ML / 9.5 fl. oz. / 17 in^3



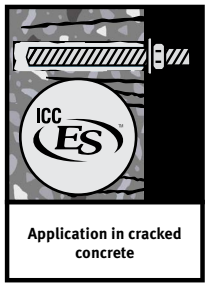
NSF certificate acc. to NSF standard 61

Fire test report

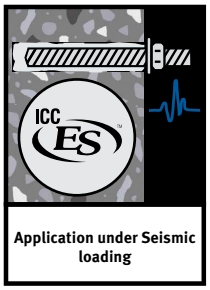
Post-installed rebar



Application in non-cracked concrete



Application in cracked concrete



Application under Seismic loading

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sales@IHLCanada.com
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R120
FIRE RESISTANCE
RÉSISTANCE AU FEU

NSF
Certified to / Certifié NSF/ANSI 61

ICC ES
ESR-4931

LEED TESTED/ TESTÉ

INDOOR EMISSIONS ÉMISSIONS INTÉRIEURES A+ A+ A B C

Product description

The OCTOPLATINUM is a 2-component reaction resin mortar based on a URETHAN HYBRID resin styrene-free and will be delivered in a 2-c cartridge (ST - standard cartridge) system. This high performance product may be used in combination with a hand-, battery- or pneumatic tool and a static mixer. It was designed especially for the anchoring of threaded rods, reinforcing bars or internal threaded rod sleeves into concrete (also porous and light). Based on the excellent standing behaviour the usability for overhead application is given. The OCTOPLATINUM product is characterised, by a huge range of applications with an installation temperature from -5°C and an application temperature up to 160°C as well as by high chemical resistance for applications in extreme ambiences e.g. in swimming pools (chlorine) or in closeness to the sea (salt). The wide range of certificates, national and international approvals, allows nearly every application.

Properties and benefits

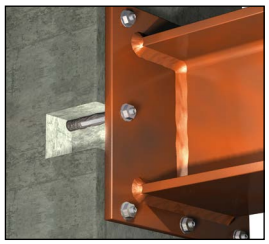
- Evaulated for indoor and outdoor applications; including overhead
- For heavy anchoring - doweling and post-installed rebar connection
- Suitable for attachment points with small edge and axial distances due to an anchoring free of expansion forces
- Suitable for the fixation of facades, roofs, wood constructions, metal constructions; metal profiles, columns, beams, consoles, railings, sanitary devices, cable trays, piping, and post-installed rebar connections
- Overhead application
- High chemical resistance
- Low odour formulation
- High bending and compressive strength
- Cartridge can be reused up to the end of the shelf life by replacing the static mixer or resealing cartridge with the sealing cap

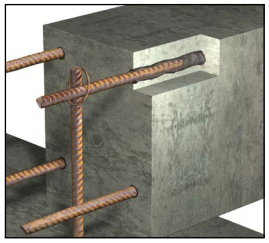
Approvals and Listings

- Fire resistance test report: up to 120 min
- US-approval acc. to AC 308 in concrete
- Certificated for drinking water applications acc. to NSF Standard 61
- ICC-ES 4931
- Road Authority Listing

Handling and storage

- **Storage:**
  store in a cold and dark place, storage temperature: from 5°C up to 25°C
- **Shelf life:**
  18 months





Applications and intended use

- Underground:
  cracked and non-cracked concrete, light-concrete, porous-concrete, natural stone (Attention! natural stone, can discolour; shall be checked in advance)
- Anchor elements:
  Threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistance steel), reinforcing bars, internal threaded rods, profiled rod, steel section with undercuts (e.g. perforated section)
- Temperature range:
  -10°C up to 40°C installation temperature
  cartridge temperature min. 5°C; optimal 21°C
  -40°C to 160°C base material temperature after full curing

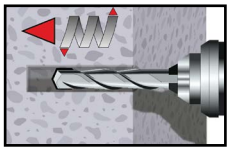
Mortar properties

Properties	Test Method	Result
UV resistance		Pass
Watertightness	DIN EN 12390-8	0 mm
Temperature stability		≤ 160°C
Density		1.78 kg / dm³
Compressive strength	DIN EN 196-1	122 N / mm²
Tensile strength	DIN EN ISO 527-2	14.9 N / mm²
Flexural strength	DIN EN 196-1	22.2 N / mm²
E modulus	DIN EN ISO 527-2	8300 N / mm²
Shrinkage	DIN 52450	< 0.2 %
Hardness Shore A	DIN EN ISO 868	97.6
Electrical resistance	DIN IEC 93	7.2 x 10^{13} Ω m
Thermal conductivity	DIN EN 993-15	1.06 W/m·K
Thermal heat capacity	DIN EN 993-15	1,090 J/kg·K

Reactivity

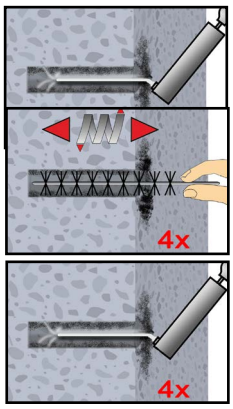
Temperature of base material	Gelling- and working time	Full curing time in dry base material	Full curing time in wet base material
-5°C	50 min	5 h	10 h
0°C	25 min	3.5 h	7 h
5°C	15 min	2 h	4 h
10°C	10 min	1 h	2 h
20°C	6 min	40 min	80 min
30°C	3 min	30 min	60 min
35°C	2 min	30 min	60 min
40°C	2 min	30 min	60 min

Usage instructions - concrete



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

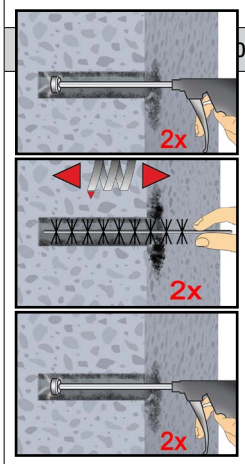
MAC: Cleaning for borehole diameter $d_0 \leq 3/4$“ and bore hole depth $h_0 \leq 10d_s$ (uncracked concrete only!)



2a. Starting from the bottom or the back of the bore hole, blow the hole clean by a hand pump (see page 6) a minimum of four times

2b. Check the brush diameter (page 6). Brush the hole with an appropriate sized wire brush > $d_{b,min}$ (see page 6) a minimum of four times in a twisting motion. If the borehole ground is not reached with the brush, a brush extension must be used.

2c. Finally blow the hole clean again with a hand pump a minimum of four times.



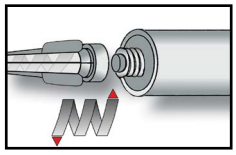
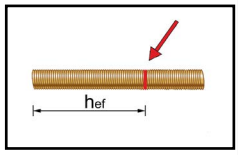
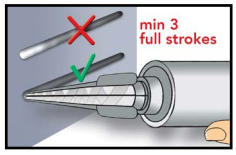
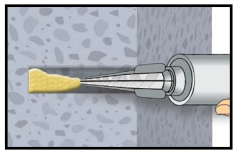
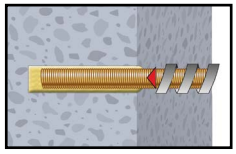
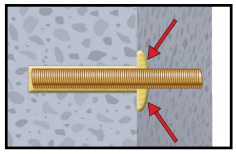
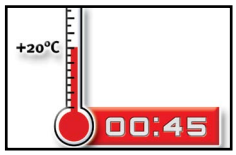
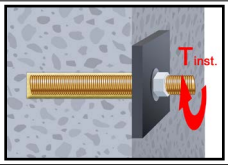
orehole diameter in uncracked and cracked concrete

2a. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticable dust. If the bore hole ground is not reached an extension must be used.

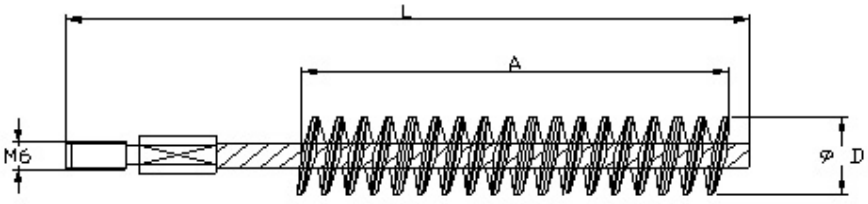
2b. Check the brush diameter (page 6). Brush the hole with an appropriate sized wire brush > $d_{b,min}$ (see page 6) a minimum of two times in a twisting motion. If the borehole ground is not reached with the brush, a brush extension must be used.

2c. Finally blow the hole clean again with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticable dust. If the bore hole ground is not reached an extension must be used.

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

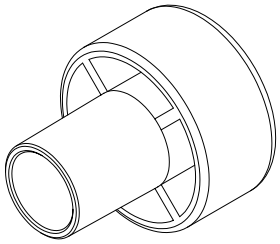
	3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. After every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.
	4. Prior to inserting the anchor rod into the 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.
	6. Starting from the bottom resp. back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw of the static mixing nozzle as the hole is filled avoids creating air pockets. For embedments larger than 7-1/2“ an extension nozzle shall be used. For overhead and horizontal installation in bore holes bigger than 11/16“ resp. deeper than 10“ a piston plug shall be used. Observe the gel-/ working times given.
	7. Push the threaded rod or reinforcing bar 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.
	10. After full curing, the add-on part can be installed with the max. torque by using a calibrated torque wrench. Be careful not to exceed the maximum torque for the selected anchor.

Cleaning of the drill hole - concrete



Brush:
Brush length: 3.15 in
M8 thread for wood handle connection

Blower



Piston plug

Threaded rod	Rebar	Bore hole-∅	Brush-∅	Min. brush-∅	Piston plug
(Inch)	(Inch)	(Inch)	d_b (Inch)	$d_{b,min}$ (Inch)	(Nr.)
3/8		7/16	0.528	0.458	-
	#3	1/2	0.591	0.520	-
1/2		9/16	0.654	0.582	-
	#4	5/8	0.720	0.650	-
5/8		11/16	0.787	0.709	11/16
	#5	3/4	0.846	0.775	3/4
3/4	#6	7/8	0.976	0.905	7/8
7/8	#7	1	1.122	1.030	1
1	#8	1-1/8	1.252	1.160	1 1/8
1-1/4	#9	1-3/8	1.504	1.410	1 3/8
	#10	1-1/2	1.630	1.535	1 1/2

Setting parameter - concrete

Anchor size			3/8	1/2	5/8	3/4	7/8	1	1- 1/4
Effectness factor (cracked concrete)	$k_{c,cr}$	[-]	17						
Effectness factor (uncracked concrete)	$k_{c,uncr}$	[-]	24						
Min. edge distance	C_{min}	[inch]	1.88	2.50	3.13	3.75	4.38	5.00	6.25
Min. axial distance	S_{min}	[inch]	1.88	2.50	3.13	3.75	4.38	5.00	6.25
Embedment depth (hammer drilled)	$h_{ef,min}$	[inch]	2-3/8	2-3/4	3-1/8	3-1/2	3-1/2	4	5
	$h_{ef,max}$	[inch]	7-1/2	10	12-1/2	15	17-1/2	20	25
Min. part thickness	h_{min}	[inch]	h_{ef} + 1-1/4“			h_{ef} + $2d_0$			
Anchor diameter	d_a	[inch]	3/8	1/2	5/8	3/4	7/8	1	1-1/4
Drill diameter	d_0	[mm]	7/16	9/16	11/16	7/8	1	1 -1/8	1 -3/8
Installation torque	$T_{inst.}$	[ft-lb]	15	33	60	105	125	165	280

Anchor size			#3	#4	#5	#6	#7	#8	#9	#10
Effectness factor (cracked concrete)	$k_{c,cr}$	[-]	17							
Effectness factor (uncracked concrete)	$k_{c,uncr}$	[-]	24							
Min. edge distance	C_{min}	[inch]	1.88	2.50	3.13	3.75	4.38	5.00	5.63	6.25
Min. axial distance	S_{min}	[inch]	1.88	2.50	3.13	3.75	4.38	5.00	5.63	6.25
Embedment depth	$h_{ef,min}$	[inch]	2-3/8	2-3/4	3-1/8	3-1/2	3-1/2	4	4-1/2	5
	$h_{ef,max}$	[inch]	7-1/2	10	12-1/2	15	17-1/2	20	22-1/2	25
Min. part thickness	h_{min}	[inch]	h_{ef} + 1-1/4“		h_{ef} + $2d_0$					
Anchor diameter	d_a	[inch]	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4
Drill diameter	d_0	[mm]	1/2	5/8	3/4	7/8	1	1 -1/8	1 -3/8	1-1/2
Installation torque	$T_{inst.}$	[ft-lb]	15	33	60	105	125	165	220	280

Performance data - concrete (Threaded rod) [1)]

TENSION LOADS - Design acc. to ACI 318-11 Appendix D

Anchor size				3/8	1/2	5/8	3/4	7/8	1	1-1/4
Steel failure										
Nominal strength tension as governed by steel strength, ASTM A36		N_{sa}	[lb]	4,495	8,230	13,110	19,400	26,780	35,130	56,210
Nominal strength tension as governed by steel strength, ASTM A193 Grade B7		N_{sa}	[lb]	9,685	17,735	28,250	41,810	57,710	75,710	•
Reduction factor		ϕ		0.75						
Nominal strength tension as governed by steel strength, ASTM F593 CW Stainless		N_{sa}	[lb]	7,750	14,190	22,600	28,430	39,245	51,485	82,370
Reduction factor		ϕ		0.65						
Pullout and concrete cone failure										
Characteristic bond strength[3)] in concrete 2500psi										
Temperature Range: 50°C/80°C [1)]	uncracked concrete	$\tau_{k,uncr}$	[psi]	2,600	2,415	2,260	2,140	2,055	2,000	1,990
	cracked concrete	$\tau_{k,cr}$		1,040	1,040	1,110	1,220	1,210	1,205	1,145
Temperature Range: 72°C/120°C [1)]	uncracked concrete	$\tau_{k,uncr}$		2,265	2,100	1,970	1,865	1,785	1,740	1,730
	cracked concrete	$\tau_{k,cr}$		905	905	965	1,060	1,055	1,050	995
Temperature Range: 100°C/160°C [1)]	uncracked concrete	$\tau_{k,uncr}$		1,630	1,515	1,420	1,345	1,290	1,255	1,250
	cracked concrete	$\tau_{k,cr}$		650	655	695	760	760	755	720
Strength reduction factor for permissible installation condition	dry	ϕ_d		0.65						
	wet	ϕ_{ws}		0.55						
Embedment depth		$h_{ef,min}$	[inch]	2-3/8	2-3/4	3-1/8	3-1/2	3-1/2	4	5
		$h_{ef,max}$	[inch]	7-1/2	10	12-1/2	15	17-1/2	20	25
Increasing factor				$(f'_c/2500)^{0,10}$						
Concrete breakout										
Effectness factor (cracked concrete)		$k_{c,cr}$	[-]	17						
Effectness factor (uncracked concrete)		$k_{c,uncr}$	[-]	24						
Reduction factor Condition B[2)]		ϕ		0.65						
Seismic										
Reduction factor for seismic tension		$\alpha_{N,seis}$	[-]	0.95		1.00				

The data in this table are evaluated according AC308-11 and ACI 355.4.

1) Long term temperature/ Short term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Room temperature range is not recognized by ACI 318-14 or ACI 318-11 and does not meet the minimum temperature requirement of ACI 355.4, Table 8.1 and consequently is not applicable to design under ACI 318-14, ACI 318-11 or current and past editions of the International Building Code (IBC). The tabulated values
are provided for analysis and evaluation of existing conditions only.

2) Condition A requires supplemental reinforcement, while Condition B applies where supplemental reinforcement is not provided or where pullout or pryout governs, as set forth in ACI 318-11 D.4.3. The tabulated value of f applies when the load combinations of Section 1605.2 of the IBC, or ACI 318-11 9.2 are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of f must be determined in accordance with ACI 318-11 D.4.4.

3) Characteristic bond strengths are for sustained loads including dead and live loads.

Performance data - concrete (Threaded rod)

SHEAR LOADS - Design acc. to ACI 318-11 Appendix D

Anchor size			**3/8**	**1/2**	**5/8**	**3/8**	**7/8**	**1**	**1-1/4**
Steel failure									
Nominal shear strength as governed by steel strength, ASTM A36	V_{sa}	[lb]	2,695	4,940	7,860	11,640	16,065	21,080	33,725
Nominal shar strength as governed by steel strength, ASTM A193 Grade B7	V_{sa}	[lb]	4,845	10,640	16,950	25,085	34,625	45,425	72,680
Reduction factor	ϕ		0.65						
Reduction factor for seismic shear	ϕ		0.85	0.85	0.85	0.85	0.85	0.80	0.80
Nominal shear strength as governed by steel strength, ASTM F593 CW Stainless	V_{sa}	[lb]	4,650	8,515	13,560	17,055	23,545	30,890	49,420
Reduction factor	ϕ		0.60						
Reduction factor for seismic shear	ϕ		0.85	0.85	0.85	0.85	0.85	0.80	0.80
Concrete edge failure									
Effective length of anchor in shear loading	l_e	[Inch]	min (h_{ef}; $8d_a$)						
Outside diameter of anchor	d_a	[Inch]	3/8	1/2	5/8	3/8	7/8	1	1-1/4
Reduction factor Condition B[1)]	ϕ		0.65						

The data in this table are evaluated according AC308-11 and ACI 355.4.

1) Condition A requires supplemental reinforcement, while Condition B applies where supplemental reinforcement is not provided or where pullout or pryout governs, as set forth in ACI 318-11 D.4.3. The tabulated value of ϕ applies when the load combinations of Section 1605.2 of the IBC, or ACI 318-11 9.2 are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4.

Performance data - concrete (Rebar)

TENSION LOADS - Design acc. to ACI 318-11 Appendix D

Anchor size				#3	#4	#5	#6	#7	#8	#9	#10
Steel failure											
Nominal tension strength as governed by steel strength, ASTM A615 Grade 60		N_{sa}	[lb]	9,900	18,000	27,900	39,600	54,000	71,100	90,000	114,300
Reduction factor		ϕ		0.65							
Nominal tension strength as governed by steel strength, ASTM A706, Grade 60		N_{sa}	[lb]	8,800	16,000	24,800	35,200	48,000	63,200	80,000	101,600
Reduction factor		ϕ		0.75							
Pullout and concrete cone failure											
Characteristic bond strength[3] in concrete 2500psi											
Temperature Range: 50°C/80°C [1]	uncracked conc.	$\tau_{k,uncr}$	[psi]	2,200	2,100	2,030	1,970	1,920	1,880	1,845	1,815
	cracked conc.	$\tau_{k,cr}$		1,090	1,055	1,130	1,170	1,175	1,155	1,140	1,165
Temperature Range: 72°C/120°C [1]	uncracked conc.	$\tau_{k,uncr}$		1,915	1,830	1,765	1,715	1,670	1,635	1,615	1,580
	cracked conc.	$\tau_{k,cr}$		945	915	980	1,015	1,020	1,005	995	1,010
Temperature Range: 100°C/160°C [1]	uncracked conc.	$\tau_{k,uncr}$		1,380	1,315	1,270	1,235	1,205	1,180	1,155	1,140
	cracked conc.	$\tau_{k,cr}$		680	660	705	735	735	725	715	730
Strength reduction factor for permissible istallation condition	dry	ϕ_d		0.65							
	wet	ϕ_{ws}		0.55							
Embedment depth		$h_{ef,min}$	[inch]	2-3/8	2-3/4	3-1/8	3-1/2	3-1/2	4	4-1/2	5
		$h_{ef,max}$	[inch]	7-1/2	10	12-1/2	15	17-1/2	20	22-1/2	25
Increasing factor				$(f'_c/2500)^{0,10}$							
Concrete breakout											
Effectness factor (cracked concrete)		$k_{c,uncr}$	[-]	17							
Effectness factor (uncracked concrete)		$k_{c,uncr}$	[-]	24							
Reduction factor Condition B[2]		ϕ		0.65							
Concrete breakout											
Reduction factor for seismic tension		$\alpha_{N,seis}$	[-]	0.95		1.00					

The data in this table are evaluated according AC308-11 and ACI 355.4.

1) Long term temperature/ Short term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Room temperature range is not recognized by ACI 318-14 or ACI 318-11 and does not meet the minimum temperature requirement of ACI 355.4, Table 8.1 and consequently is not applicable to design under ACI 318-14, ACI 318-11 or current and past editions of the International Building Code (IBC). The tabulated values are provided for analysis and evaluation of existing conditions only.

2) Condition A requires supplemental reinforcement, while Condition B applies where supplemental reinforcement is not provided or where pullout or pryout governs, as set forth in ACI 318-11 D.4.3. The tabulated value of ϕ applies when the load combinations of Section 1605.2 of the IBC, or ACI 318-11 9.2 are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4.

3) Characteristic bond strengths are for sustained loads including dead and live loads.

Performance data - concrete (Rebar)

SHEAR LOADS - Design acc. to ACI 318-11 Appendix D, hammer and diamond drilled bore holes

Anchor size			**#3**	**#4**	**#5**	**#6**	**#7**	**#8**	**#9**	**#10**
Steel failure										
Nominal shear strength as governed by steel strength, ASTM A615 Grade 60	V_{sa}	[lb]	5,940	10,800	16,740	23,760	32,400	42,660	54,000	68,580
Reduction factor	ϕ		0.60							
Reduction factor for seismic shear	ϕ		0.70							
Nominal shear strength as governed by steel strength, ASTM A706, Grade 60	V_{sa}	[lb]	5,280	9,600	14,880	21,120	28,800	37,920	48,000	60,960
Reduction factor	ϕ		0.65							
Reduction factor for seismic shear	ϕ		0.70							
Concrete edge failure										
Effective length of anchor in shear loading	l_e	[Inch]	min (h_{ef}; $8d_a$)							
Outside diameter of anchor	d_a	[Inch]	3/8	1/2	5/8	3/8	7/8	1	1-1/8	1-1/4
Reduction factor Condition B[1)]	ϕ		0.65							

The data in this table are evaluated according AC308-11 and ACI 355.4.

1) Condition A requires supplemental reinforcement, while Condition B applies where supplemental reinforcement is not provided or where pullout or pryout governs, as set forth in ACI 318-11 D.4.3. The tabulated value of ϕ applies when the load combinations of Section 1605.2 of the IBC, or ACI 318-11 9.2 are used. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4.

Allowable loads - concrete (Threaded rod)

The allowable loads are only valid for single anchor for a roughly design, if the following conditions are valid:
min edge distance $c_a \geqq c_{ac}$ min spacing $S \geqq 2 \times C_{Na}$
min thickness concrete $h \geqq 2 \times h_{ef}$ concrete compressive strength $f'c \geqq$ 2500 psi
Static loads only. Allowable stress design conversion α=1.2D+1.6L=1,4
If the conditions are not fulfilled the loads must be calculated acc. to ACI 318-11 Appendix D.
The safety factors are already included in the allowable loads.

Anchor size			**3/8**	**1/2**	**5/8**	**3/4**	**7/8**	**1**	**1-1/4**
Allowable tension load for all Steel strength									
Temperature Range: 50°C/80°C [1]	$N_{allowable,ucr}$	[lb]	2,087	3,821	6,087	9,007	12,434	16,310	20,326
	$N_{allowable,cr}$	[lb]	1,991	3,413	4,412	6,540	8,930	12,840	14,398
Temperature Range: 72°C/120°C [1]	$N_{allowable,ucr}$	[lb]	2,087	3,821	6,087	9,007	12,434	16,310	20,326
	$N_{allowable,cr}$	[lb]	1,733	2,970	4,399	6,540	8,930	12,840	14,398
Temperature Range: 100°C/160°C [1]	$N_{allowable,ucr}$	[lb]	2,087	3,821	6,087	9,007	12,434	16,310	20,326
	$N_{allowable,cr}$	[lb]	1,244	2,150	3,168	5,440	7,760	11,012	14,398
Allowable shear load for steel strength, ASTM A36									
Temperature Range: 50°C/80°C [1]	$V_{allowable,ucr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
	$V_{allowable,cr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
Temperature Range: 72°C/120°C°F [1]	$V_{allowable,ucr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
	$V_{allowable,cr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
Temperature Range: 100°C/160°C [1]	$V_{allowable,ucr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
	$V_{allowable,cr}$	[lb]	1,251	2,294	3,649	5,404	7,459	9,787	15,658
Allowable shear load for steel strength, ASTM A193 Grade B7									
Temperature Range: 50°C/80°C [1]	$V_{allowable,ucr}$	[lb]	2,249	4,940	7,870	11,647	16,076	21,090	27,995
	$V_{allowable,cr}$	[lb]	2,249	4,713	6,009	9,351	12,563	17,367	19,996
Temperature Range: 72°C/120°C [1]	$V_{allowable,ucr}$	[lb]	2,249	4,940	7,870	11,647	16,076	21,090	26,470
	$V_{allowable,cr}$	[lb]	2,249	4,456	5,688	8,850	11,874	16,426	18,907
Temperature Range: 100°C/160°C [1]	$V_{allowable,ucr}$	[lb]	2,249	4,940	6,986	10,872	14,599	20,179	23,243
	$V_{allowable,cr}$	[lb]	2,249	3,911	4,990	7,766	10,428	14,414	16,602
Allowable shear load for steel strength, ASTM F593 CW Stainless									
Temperature Range: 50°C/80°C [1]	$V_{allowable,ucr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	21,180
	$V_{allowable,cr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	19,996
Temperature Range: 72°C/120°C [1]	$V_{allowable,ucr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	21,180
	$V_{allowable,cr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	18,907
Temperature Range: 100°C/160°C [1]	$V_{allowable,ucr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	21,180
	$V_{allowable,cr}$	[lb]	1,993	3,649	5,811	7,309	10,091	13,239	16,602
Embedment depth	h_{ef}	[Inch]	3-1/2	4-1/2	5	6-1/2	8	10	11
Edge distance	c_{ca}	[Inch]	8.22	10.26	11.10	14.12	17.10	21.14	23.21
Axial distance	C_{Na}	[Inch]	5.77	7.41	8.96	10.46	11.96	13.48	16.81

1) Long term temperature/ Short term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Room temperature range is not recognized by ACI 318-14 or ACI 318-11 and does not meet the minimum temperature requirement of ACI 355.4, Table 8.1 and consequently is not applicable to design under ACI 318-14, ACI 318-11 or current and past editions of the International Building Code (IBC). The tabulated values are provided for analysis and evaluation of existing conditions only.

Allowable loads - concrete (Rebar)

The allowable loads are only valid for single anchor for a roughly design, if the following conditions are valid:
min edge distance $c_a \geqq c_{ac}$ min spacing $S \geqq 2 \times C_{Na}$
min thickness concrete $h \geqq 2 \times h_{ef}$ concrete compressive strength $f'c \geqq$ 2500 psi
Static loads only. Allowable stress design conversion α=1.2D+1.6L=1,4
If the conditions are not fulfilled the loads must be calculated acc. to ACI 318-11 Appendix D.
The safety factors are already included in the allowable loads.

Anchor size			#3	#4	#5	#6	#7	#8	#9	#10
Allowable tension load for all steel strength										
Temperature Range: 50°C/80°C [1]	$N_{allowable,ucr}$	[lb]	3,648	5,318	6,229	9,233	12,607	17,618	18,956	20,326
	$N_{allowable,cr}$	[lb]	2,087	3,462	4,412	6,540	8,930	12,480	13,427	14,398
Temperature Range: 72°C/120°C [1]	$N_{allowable,ucr}$	[lb]	3,648	5,318	6,229	9,233	12,607	17,618	18,956	20,326
	$N_{allowable,cr}$	[lb]	1,809	3,003	4,412	6,540	8,930	12,480	13,427	14,398
Temperature Range: 100°C/160°C [1]	$N_{allowable,ucr}$	[lb]	2,642	4,316	5,789	8,782	12,303	17,211	18,956	20,326
	$N_{allowable,cr}$	[lb]	1,302	2,166	3,213	5,226	7,504	10,575	12,319	14,398
Allowable shear load for all steel strength										
Temperature Range: 50°C/80°C [1]	$V_{allowable,ucr}$	[lb]	2,451	4,457	6,909	9,806	13,371	17,606	22,286	26,983
	$V_{allowable,cr}$	[lb]	2,451	4,456	5,757	9,046	12,226	16,943	18,093	19,273
Temperature Range: 72°C/120°C [1]	$V_{allowable,ucr}$	[lb]	2,451	4,457	6,909	9,806	13,371	17,606	22,286	25,527
	$V_{allowable,cr}$	[lb]	2,451	4,218	5,444	8,558	11,562	16,022	17,154	18,233
Temperature Range: 100°C/160°C [1]	$V_{allowable,ucr}$	[lb]	2,451	4,457	6,681	9,806	13,371	17,606	21,002	22,403
	$V_{allowable,cr}$	[lb]	2,238	3,695	4,772	7,505	10,147	14,063	15,001	16,002
Embedment depth	h_{ef}	[Inch]	3-1/2	4-1/2	5	6-1/2	8	10	11	11
Edge distance	c_{ca}	[Inch]	7.69	9.70	10.63	13.66	16.64	20.62	21.49	22.37
Axial distance	C_{Na}	[Inch]	5.30	6.91	8.49	10.04	11.56	13.07	14.57	16.06

1) Long term temperature/ Short term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Room temperature range is not recognized by ACI 318-14 or ACI 318-11 and does not meet the minimum temperature requirement of ACI 355.4, Table 8.1 and consequently is not applicable to design under ACI 318-14, ACI 318-11 or current and past editions of the International Building Code (IBC). The tabulated values are provided for analysis and evaluation of existing conditions only.

Fire resistance

Fire resistance times in combination with threaded rods (3/8“ to 1-1/4“) made of zinc plated steel, property class ASTM A36 or higher.

	Fire resistance time in minutes			
Anchor size	30 max F [lbf]	60 max F [lbf]	90 max F [lbf]	120 max F [lbf]
3/8"	-	≦ 125	≦ 73	≦ 59
1/2"	-	≦ 430	≦ 277	≦ 231
5/8"	-	≦ 537	≦ 492	≦ 414
3/4"	-	≦ 1,288	≦ 638	≦ 526
7/8"	≦ 1,999	≦ 1,297	≦ 1,079	≦ 663
1"	-	≦ 2,298	≦ 1,168	≦ 1,196
1-1/4"	≦ 4,950	≦ 3,409	≦ 2,605	≦ 1,339

The special details acc. to the Assessment Report 21825_1 – condensed version must be observed.

Chemical resistance

Chemical Agent	Concentration	Resistant	Not Resistant
Acetic acid	10	●	
Acetone	100		●
Ammonia, aqueous solution	5	●	
Benzyl Alcohol	100		●
Chlorinated lime	10	●	
Citric acid	10	●	
Chlorine water, swimming pool	all	●	
Demineralized Water	100	●	
Diesel oil	100	●	
Ethanol	100		●
Ethyl Acetate	100		●
Formic acid	100		●
Fuel Oil	100	●	
Gasoline (premium grade)	100	●	
Glycol (Ethylene glycol)	100		●
Hydraulic fluid	100	●	
Hydrogen peroxide	10		●
Isopropyl alcohol	100		●
Lactic acid	10	●	
Linseed oil	100	●	
Lubricating oil	100	●	
Nitric acid	10		●
Methanol	100		●
Phosphoric acid	10	●	
Potassium Hydroxide ph 13.2	100	●	
Salt (Calcium Chloride)	100	●	
Sea water, salty	100	●	
Sodium carbonate	10	●	
Sulfuric acid	10	●	

Results shown in the table are applicable to brief periods of chemical contact with full cured adhesive (e.g. temporary contact with adhesive during a spill).