Epcon G5 pro

High - Strength Epoxy Adhesive

Ramset™

EPCON™ G5 PRO

CHEMICAL INJECTION - NON-CRACKED & CRACKED CONCRETE

GENERAL INFORMATION

Performance Related	Material Specification	Installation Related

PRODUCT

EPCON™ G5 PRO is a heavy duty pure Epoxy for anchoring threaded studs and reinforcing bar into cracked and uncracked concrete.

COMPLIANCE

European Technical Assessment (option 1) - ETA-18/0675

Design according to:

- EN1992-4 (formerly ETAG001 Annex C, E & TR045)

BENEFITS, ADVANTAGES AND FEATURES

- 100 year working life

Greater productivity:

- Anchors in dry, damp, wet or flooded holes
- Easy dispensing even in cold weather

Greater security:

- Strong bond
- Rated for sustained loading

Versatile:

- Anchors in carbide drilled and diamond drilled holes*
- Cold and temperate climates

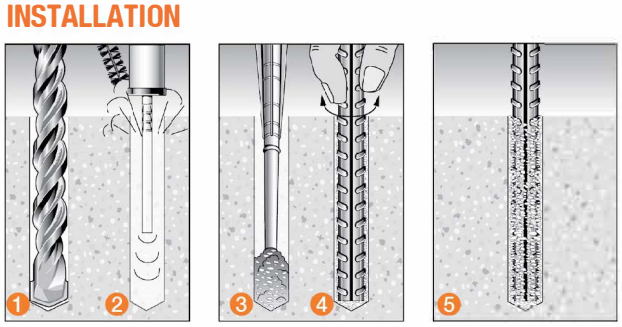
Greater safety:

- Low odour
- VOC Compliant

Principal Applications

- Threaded Studs
- Starter Bars
- Threaded Inserts
- Over-head installation
- Steel Columns
- Hand Rails
- Road Stitching

INSTALLATION



1. Drill recommended diameter and depth hole.
2. **Important:** Use **Ramset™** Dustless Drilling System to ensure holes are clean. Alternatively, clean dust and debris from hole with stiff wire or nylon brush and blower in the following sequence: blow x 2, brush x 2, blow x 2, brush x 2, blow x 2.
3. Dispense adhesive to waste until colour is uniform light grey (2-3 trigger pulls). Insert mixing nozzle to bottom of hole. Fill hole to 3/4 the hole depth slowly, ensuring no air pockets form.
4. Insert **Ramset™** ChemSet™ Anchor Stud/rebar to bottom of hole while turning.
5. Allow EPCON™ G5 PRO to cure as per setting times.

RECOMMENDED INSTALLATION TEMPERATURES

	Minimum	Maximum
Substrate	5°C	40°C
Adhesive	10°C	40°C

SERVICE TEMPERATURE LIMITS

-40°C to 70°C

SETTING TIMES

Base Material Temperature [°C]	Cartridge Temperature [°C]	T Work [mins]	T Load [hrs]
+5	Minimum +10	300	24
+5°C to +10		150	
+10°C to +15	+10°C to +15	40	18
+15°C to +20	+15°C to +20	25	12
+20°C to +25	+20°C to +25	18	8
+25°C to +30	+25°C to +30	12	6
+30°C to +35	+30°C to +35	8	4
+35°C to +40	+35°C to +40	6	2
Ensure cartridge is ≥ 10°C			

T Work is typical gel time at highest base material temperature in the range.
T Load is minimum set time required until load can be applied at the lowest temperature in the range.

EPCON™ G5 PRO

REBAR APPLICATION

Performance data from European Technical Assessment ETA-18/0675

HIGH STRENGTH EPOXY

The data given in the RAMSET CC Method have to be applied (refer to pages 4 to 5)

Rebar Diameter	8	10	12	16	20	25	32
Drilling ø (mm)	12	14	16	20	25	30	40
Drilling depth (mm)	80	100	120	160	200	250	320
Consumption per hole (ml)	5.0	6.6	10.7	21.6	45.9	81.6	193.4
EPCON G5 Pro (600ml)	120.6	82.3	46.7	21.7	11.1	6.2	2.7

CHARACTERISTIC LOADS (N_{Rk}, V_{Rk}) in kN

Characteristic loads are statistically determined from ETA-18/0675 & EN 1992-4 in admissible service conditions

.Tension reisistance based on minimum of rebar tensile resistance, concrete cone resistance, combined pullout & concrete resistance

.Shear resistance based on minimum of rebar shear resistance, concrete pry-out resistance

Input material : + Concrete grade : C20/25 (Uncracked concrete)
+ Rebar grade : CB 300-V
+ No edge distance

TENSILE

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
h_{ef} (mm)	80	100	120	160	200	250	320
N_{Rk} (kN)	22.6	35.3	50.9	68.7	109.1	149.7	225.2

SHEAR

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
V_{Rk} (kN)	13.6	21.2	30.5	54.3	84.8	132.5	217.1

DESIGN LOADS (N_{Rd}, V_{Rd}) FOR ONE ANCHOR WITHOUT EDGE OR SPACING INFLUENCE IN kN

$$N_{Rd} = \frac{N_{Rk}^*}{\gamma_M} \qquad V_{Rd} = \frac{V_{Rk}^*}{\gamma_M}$$

TENSILE

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
h_{ef} (mm)	80	100	120	160	200	250	320
N_{Rd} (kN)	12.6	19.6	28.3	45.8	72.7	99.8	150.1

γ_M refer to tensile safety factor page 4

SHEAR

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
V_{Rd} (kN)	9.0	14.1	20.3	36.2	56.5	88.3	144.7

γ_M refer to safety factor for shear page 4

RECOMMENDED LOADS (N_{Rec}, V_{Rec}) FOR ONE ANCHOR WITHOUT EDGE OR SPACING INFLUENCE IN kN

$$N_{Rec} = \frac{N_{Rk}^*}{\gamma_M \times \gamma_F} \qquad V_{Rec} = \frac{V_{Rk}^*}{\gamma_M \times \gamma_F}$$

TENSILE

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
h_{ef} (mm)	80	100	120	160	200	250	320
N_{Rec} (kN)	9.0	14.0	20.2	32.7	51.9	71.2	107.2

$\gamma_F = 1.4$

SHEAR

Rebar Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
V_{Rec} (kN)	6.4	10.1	14.5	25.9	40.4	63.1	103.4

$\gamma_F = 1.4$

EPCON™ G5 PRO

CHEMICAL INJECTION - NON-CRACKED & CRACKED CONCRETE

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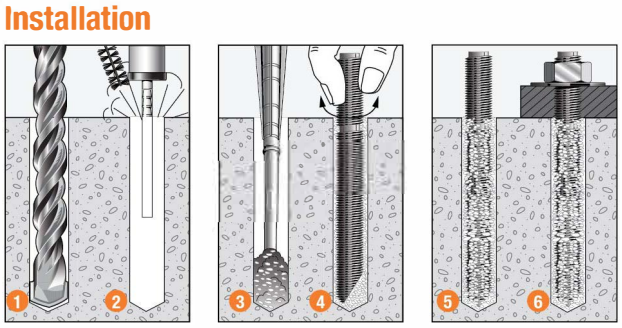
Installation



1. Drill recommended diameter and depth hole.
2. **Important:** Use **Ramset™** Dustless Drilling System to ensure holes are clean. Alternativly clean dust and debris from hole with stiff wire or nylon brush and blower in the following sequence: blow x 2, brush x 2, blow x 2, brush x 2, blow x 2.
3. Dispense adhesive to waste until colour is uniform light grey (2-3 trigger pulls). Insert mixing nozzle to bottom of hole. Fill hole to 3/4 the hole depth slowly, ensuring no air pockets form.
4. Insert **Ramset™** ChemSet™ Anchor Stud/rebar to bottom of hole while turning.
5. Allow EPCON™ G5 PRO to cure as per setting times.
6. Attach fixture.

RECOMMENDED INSTALLATION TEMPERATURES

	Minimum	Maximum
Substrate	5°C	40°C
Adhesive	10°C	40°C

SERVICE TEMPERATURE LIMITS

-40°C to 70°C

SETTING TIMES

Base Material Temperature [°C]	Cartridge Temperature [°C]	T Work [mins]	T Load [hrs]
+5	Minimum +10	300	24
+5°C to +10		150	
+10°C to +15	+10°C to +15	40	18
+15°C to +20	+15°C to +20	25	12
+20°C to +25	+20°C to +25	18	8
+25°C to +30	+25°C to +30	12	6
+30°C to +35	+30°C to +35	8	4
+35°C to +40	+35°C to +40	6	2
Ensure cartridge is ≥ 10°C			

T Work is typical gel time at highest base material temperature in the range.
T Load is minimum set time required until load can be applied at the lowest temperature in the range.

EPCON™ G5 PRO

CHEMSET ANCHOR STUD

HIGH STRENGTH EPOXY

The data given in the RAMSET CC Method have to be applied (refer to pages 4 to 5)

Stud diameter	8	10	12	16	20	24	30
Drilling ø (mm)	10	12	14	18	25	28	35
Drilling depth (mm)	80	90	110	125	170	210	280
Consumption per hole (ml)	3.5	5.6	9.3	17.5	45.9	71.1	148.1
EPCON G5 Pro (600ml)	173.7	107.2	64.5	34.3	13.1	8.4	4.1

CHARACTERISTIC LOADS (N_{Rk}, V_{Rk}) in kN

Characteristic loads are statistically determined from ETA-18/0675 & EN 1992-4 in admissible service conditions

.Tension resistance based on minimum of stud tensile resistance, concrete cone resistance, combined pullout & concrete resistance

.Shear resistance based on minimum of stud shear resistance, concrete pry-out resistance

Input material: + Chemset anchor stud 5.8
+ Concrete grade C20/25 (Uncracked concrete)
+ No edge distance

TENSILE							
Anchor size	M8	M10	M12	M16	M20	M24	M30
h_{ef} (mm)	80	90	110	125	170	210	280
N_{Rk} (kN)	18	29	42	68.7	109.1	149.7	230.6

SHEAR							
Anchor size	M8	M10	M12	M16	M20	M24	M30
V_{Rk} (kN)	9.0	15.0	21.0	39.0	61.0	88.0	140.0

DESIGN LOADS (N_{Rd}, V_{Rd}) FOR ONE ANCHOR WITHOUT EDGE OR SPACING INFLUENCE IN kN

$$N_{Rd} = \frac{N_{Rk}^*}{\gamma_{Mc}} \qquad V_{Rd} = \frac{V_{Rk}^*}{\gamma_{Ms}}$$

TENSILE							
Anchor size	M8	M10	M12	M16	M20	M24	M30
h_{ef} (mm)	80	90	110	125	170	210	280
N_{Rd} (kN)	12.0	19.3	28.0	45.8	72.7	99.8	153.7

SHEAR							
Anchor size	M8	M10	M12	M16	M20	M24	M30
V_{Rd} (kN)	7.2	12.0	16.8	31.2	48.8	70.4	112.0

$\gamma_{Ms} = 1.25$

γ_{Mc} **refer to tensile safety factor page 4**

RECOMMENDED LOADS (N_{Rec}, V_{Rec}) FOR ONE ANCHOR WITHOUT EDGE OR SPACING INFLUENCE IN kN

$$N_{Rec} = \frac{N_{Rk}^*}{\gamma_{Mc} \times \gamma_F} \qquad V_{Rec} = \frac{V_{Rk}^*}{\gamma_{Ms} \times \gamma_F}$$

TENSILE							
Anchor size	M8	M10	M12	M16	M20	M24	M30
h_{ef} (mm)	80	90	110	125	170	210	280
N_{Rec} (kN)	8.6	13.8	20.0	32.7	51.9	71.3	109.8

SHEAR							
Anchor size	M8	M10	M12	M16	M20	M24	M30
V_{Rec} (kN)	5.1	8.6	12.0	22.3	34.9	50.3	80.0

$\gamma_F = 1.4$

$\gamma_F = 1.4$

* Derived from test result assessed in ETA 18/0675