

SET-XP® Extra-Performance Epoxy Adhesive

SET-XP is an epoxy-based seismic anchoring adhesive for uses in cracked and uncracked concrete.

Features

- Seismic Rated as per ACI 355.4
- High Strength
- Non-shrink, high solids
- Long-term loading (creep) applications
- Non-sag formulation: good for vertical applications
- Suitable for over sized and core-drilled holes

Applications

- Rebar Dowelling
- Tension Zones
- Dry And Wet Concrete
- Threaded Rod Anchoring
- General Purpose Anchoring
- Overhead Anchoring (Tension Zones)
- Structural Steel

Base Material

- Cracked and Uncracked Concrete
- Grout-filled Concrete Block

Approvals

- Complies with AS5216
- Seismic testing per ACI 355.4
- ETA-11/0360 (OPTION 1)
- ICC-ES ESR-2508 (Concrete)
- IAPMO UES ER-265 (Masonry)
- NSF/ANSI Standard 61 (313 cm²/1000 L)
- Transport and Main Roads (QLD) product approval (Threaded rod and Reinforcing bar)

Installation

Refer to page 46 for installation procedures.

Refer to page 49 for cartridge usage estimation guide.

Shelf Life

24 months from date of manufacture in unopened cartridge.

Storage Conditions

For best results, store between 7–32°C. To store partially used cartridges, leave hardened nozzle in place. To re-use, attach new nozzle.

Colour

Resin — white, hardener — black-green. When properly mixed, SET-XP adhesive will be a uniform teal colour.

Chemical Resistance

Refer to page 14 for chemical resistance of adhesive anchors.



SET-XP650-AU (650 ml)
(Includes 2 mixing nozzle EMN22)



ETA approved SET-XP® Extra-Performance Epoxy Adhesive ideal for use in either cracked or uncracked concrete applications, and is seismic rated.

Adhesive Anchors

SET-XP[®] Extra-Performance Epoxy Adhesive

Working and Curing Time Schedule

| Internal Concrete Temperature | Working Time | Curing Time (Dry Concrete) | Curing Time (Wet Concrete) |
|-------------------------------|------------------|----------------------------|----------------------------|
| T _{anchorage base} | t _{gel} | t _{cure,dry} | t _{cure,wet} |
| ≥ +10°C | 60 min | 72 h | 144 h |
| ≥ +21°C | 45 min | 24 h | 48 h |
| ≥ +32°C | 20 min | 24 h | 48 h |
| ≥ +43°C | 12 min | 24 h | 48 h |




*Let anchor fully cure without disturbing.

In-Service Temperature*

| Temperature Range I | | Temperature Range II | |
|--------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|
| Maximum Long Term Temperature | Maximum Short Term Temperature | Maximum Long Term Temperature | Maximum Short Term Temperature |
| +24°C | +43°C | +43°C | +65°C |

*See "Elevated In-Service Temperature" on page 13 for more information

Cartridge Size and Accessories

| Cartridge | Size | Box Qty | Model No. |
|---|--------------------------|------------------|--------------|
|  | 650 ml | 10 | SET-XP650-AU |
| Dispensing Tools | Description | Model No. | |
|  | Manual dispensing tool | EDT22S | |
| Mixing Nozzles | | | |
|  | Mixing nozzle Pack of 5 | EMN22i-RP5 (NZ) | |
| | Mixing nozzle Pack of 10 | EMN22i-RP10 (AU) | |



SET-XP® Extra Performance Anchoring Adhesive — Gr 8.8 Threaded Rod

Installation Data

| Description | Symbol | Units | Threaded Rod Size (mm) | | | | |
|------------------------------------|----------------|-------|------------------------|-----|-----|-----|-----|
| | | | M12 | M16 | M20 | M24 | M27 |
| Nominal Insert Diameter | d | mm | 12 | 16 | 20 | 24 | 27 |
| Drill Hole Diameter | d_o | | 14 | 18 | 24 | 28 | 30 |
| Minimum Embedment Depth | $h_{ef,min}$ | | 70 | 80 | 90 | 100 | 110 |
| Maximum Embedment Depth | $h_{ef,max}$ | | 240 | 320 | 400 | 480 | 540 |
| Clearance Hole Diameter in Fixture | d_f | | 14 | 18 | 22 | 26 | 30 |
| Installation Torque | $T_{inst,max}$ | Nm | 40 | 60 | 80 | 100 | 120 |

Concrete Thickness, Edge Distance and Spacing

| Description | Symbol | Units | M12 | M16 | M20 | M24 | M27 |
|----------------------------|------------|-------|---------------------|-----|-----------------|-----|-----|
| Minimum Concrete Thickness | h_{min} | mm | $h_{ef} + 30mm$ | | $h_{ef} + 2d_o$ | | |
| Minimum Edge Distance | c_{min} | | 80 | 100 | 115 | 135 | 155 |
| Minimum Spacing | s_{min} | | 45 | 60 | 70 | 80 | 90 |
| Critical Edge Distance | $c_{cr,N}$ | | $1.5 \times h_{ef}$ | | | | |
| Critical Spacing | $s_{cr,N}$ | | $3 \times h_{ef}$ | | | | |

Design Resistance — Single Anchor, No Concrete Edge or Spacing Influence

| Description | Symbol | Units | M12 | M16 | M20 | M24 | M27 |
|----------------------------|----------|-------|-------------|-------------|-------------|-------------|-------------|
| Embedment Depth | h_{ef} | mm | 110 | 140 | 180 | 220 | 240 |
| Minimum Concrete Thickness | | | 140 | 176 | 228 | 276 | 300 |
| Uncracked Concrete | | | | | | | |
| TENSION | N_{Rd} | kN | 33.6 | 33.5 | 53.9 | 71.1 | 67.9 |
| SHEAR | V_{Rd} | | 27.2 | 50.4 | 78.4 | 113 | 147 |
| Cracked Concrete | | | | | | | |
| TENSION | N_{Rd} | kN | 11.9 | 15.1 | 16.2 | 23.7 | 29.1 |
| SHEAR | V_{Rd} | | 27.2 | 42.2 | 45.2 | 66.4 | 81.4 |

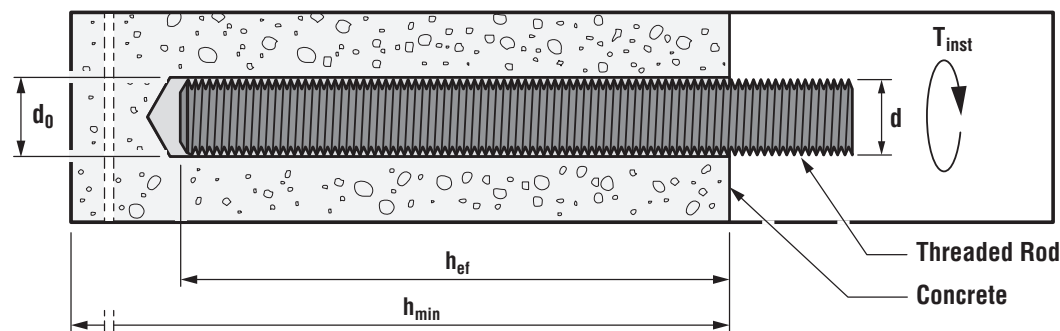
- Concrete strength is 30 MPa (cylinder) unreinforced, hole condition is "dry, damp or wet", and temperature range 24°C long-term/43°C short-term.
- Tabulated loads are valid at critical spacing and critical edge distance only.
For spacing and edge distance influence, use Simpson's Anchor Designer™ Software for analysis.
- N_{Rd} and V_{Rd} is based on use of a Grade 8.8 threaded insert. Verify capacity if using a different steel grade.
- All design resistances are derived from the product's ETA (European Technical Assessment).

Steel Design Resistance (Tension)

| Description | Symbol | Units | M12 | M16 | M20 | M24 | M27 |
|--------------------|------------|-------|------|------|------|-----|------|
| Steel Grade 5.8 | $N_{Rd,s}$ | kN | 28.0 | 52.7 | 82.0 | 118 | 153 |
| Steel Grade 8.8 | | | 44.7 | 84.0 | 131 | 188 | 245 |
| Stainless Steel A4 | | | 31.6 | 58.8 | 92.0 | 132 | 80.4 |

Steel Design Resistance (Shear)

| Description | Symbol | Units | M12 | M16 | M20 | M24 | M27 |
|--------------------|------------|-------|------|------|------|------|------|
| Steel Grade 5.8 | $V_{Rd,s}$ | kN | 16.8 | 31.2 | 48.8 | 70.4 | 92.0 |
| Steel Grade 8.8 | | | 27.2 | 50.4 | 78.4 | 113 | 147 |
| Stainless Steel A4 | | | 19.2 | 35.3 | 55.1 | 79.5 | 48.3 |



SET-XP® Extra Performance Anchoring Adhesive — Rebar Grade B500 (DIN 488-2)

Installation Data

| Description | Symbol | Units | Rebar Size (mm) | | | | |
|-------------------------|--------------|-------|-----------------|-----|-----|-----|-----|
| | | | 12 | 14 | 16 | 20 | 25 |
| Drill Hole Diameter | d_o | mm | 16 | 18 | 20 | 25 | 32 |
| Minimum Embedment Depth | $h_{ef,min}$ | | 70 | 75 | 80 | 90 | 100 |
| Maximum Embedment Depth | $h_{ef,max}$ | | 240 | 280 | 320 | 400 | 500 |

Concrete Thickness, Edge Distance and Spacing

| Description | Symbol | Units | 12 | 14 | 16 | 20 | 25 |
|----------------------------|------------|-------|---------------------|-----------------|-----|-----|-----|
| Minimum Concrete Thickness | h_{min} | mm | $h_{ef} + 30mm$ | $h_{ef} + 2d_o$ | | | |
| Minimum Edge Distance | c_{min} | | 80 | 90 | 100 | 115 | 135 |
| Minimum Spacing | s_{min} | | 45 | 50 | 60 | 70 | 80 |
| Critical Edge Distance | $c_{cr,N}$ | | $1.5 \times h_{ef}$ | | | | |
| Critical Spacing | $s_{cr,N}$ | | $3 \times h_{ef}$ | | | | |

Design Resistance — Single Rebar, No Concrete Edge or Spacing Influence

| Description | Symbol | Units | 12 | 14 | 16 | 20 | 25 |
|----------------------------|----------|-------|-------------|-------------|-------------|-------------|-------------|
| Embedment Depth | h_{ef} | mm | 110 | 130 | 140 | 180 | 220 |
| Minimum Concrete Thickness | | | 140 | 166 | 180 | 230 | 284 |
| Uncracked Concrete | | | | | | | |
| TENSION | N_{Rd} | kN | 31.1 | 25.4 | 31.3 | 44.0 | 52.8 |
| SHEAR | V_{Rd} | | 20.7 | 28.0 | 36.7 | 57.3 | 90.0 |
| Cracked Concrete | | | | | | | |
| TENSION | N_{Rd} | kN | 11.5 | 11.1 | 9.8 | 15.7 | 24.0 |
| SHEAR | V_{Rd} | | 20.7 | 26.7 | 23.5 | 37.7 | 57.6 |

Rebar Strength Tension

| Description | Symbol | Units | 12 | 14 | 16 | 20 | 25 |
|--------------------------|------------|-------|------|------|------|-----|-----|
| Design Resistance | $N_{Rd,s}$ | kN | 44.3 | 60.7 | 79.3 | 124 | 193 |
| Nominal Yield Strength | f_{yk} | | 56.5 | 77.0 | 101 | 157 | 243 |
| Nominal Tensile Strength | f_{uk} | | 62.2 | 84.7 | 111 | 173 | 270 |

Rebar Strength Shear

| Description | Symbol | Units | 12 | 14 | 16 | 20 | 25 |
|-------------------|------------|-------|------|------|------|----|------|
| Design Resistance | $V_{Rd,s}$ | kN | 20.7 | 28.0 | 36.7 | 57 | 90.0 |

- Concrete strength is 30 MPa (cylinder) unreinforced, hole condition is "dry, damp or wet", and temperature range 24°C long-term/43°C short-term.
- Tabulated loads are valid at critical spacing and critical edge distance only.
- For spacing and edge distance influence, use Simpson's Anchor Designer™ Software for analysis.**
- All design resistances are derived from the product's ETA (European Technical Assessment).
- Nominal yield strength (f_{yk}) for Gr 500B Rebar is determined by the equation: $f_{yk} = 500 \text{ MPa} \times A_{nom}$
Nominal tensile strength (f_{uk}) for Gr 500B Rebar is determined by the equation: $f_{uk} = 550 \text{ MPa} \times A_{nom}$

