



XCHEM™ PRO

H501

HYBRID

H501 XCHEM™ PRO HYBRID 420 ml

Description

A two-component chemical anchoring injection system. A formulation derived from vinylester resin, possessing very high bond strength and developed principally to anchor threaded studs into concrete. Used widely for high loads in both vertical and horizontal applications.

| Applications | Highlights | |
|--|----------------|--------------------|
| <ul style="list-style-type: none"> Cracked and non-cracked concrete Natural stone* Solid and hollow masonry Aerated concrete Calcium silicate | | |
| | CRACKED | NON-CRACKED |
| | | |
| | MASONRY | |

| Features | |
|---|--|
| <ul style="list-style-type: none"> Fast working times for early loading in time-sensitive applications Styrene-free for indoors and in enclosed spaces Use in wet or flooded holes High durability Chemical resistance | <ul style="list-style-type: none"> Approved for studs, masonry and post-installed rebar Nine helical mixing deflectors inside nozzle† Dustless drilling |

| | |
|-----------------|--------|
| Material | HYBRID |
|-----------------|--------|

| | |
|---------------|-------------------------|
| Finish | HYBRID 420 ML CARTRIDGE |
|---------------|-------------------------|

* Natural stone not included in ETA. Tensile load capabilities may vary in natural stone. Preliminary tests prior to application are recommended.

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▶ †Use with Nozzle MCXND3



High Performance

USE IN CONCRETE STRUCTURAL APPLICATIONS WHERE LOADING, TIME AND PERFORMANCE ARE CRITICAL.

| | | | |
|--|----|---------|---------|
| | CE | OPT 1 | 24/0513 |
| | | OPT 7 | |
| | | REBAR | 24/0510 |
| | | MASONRY | 24/0512 |

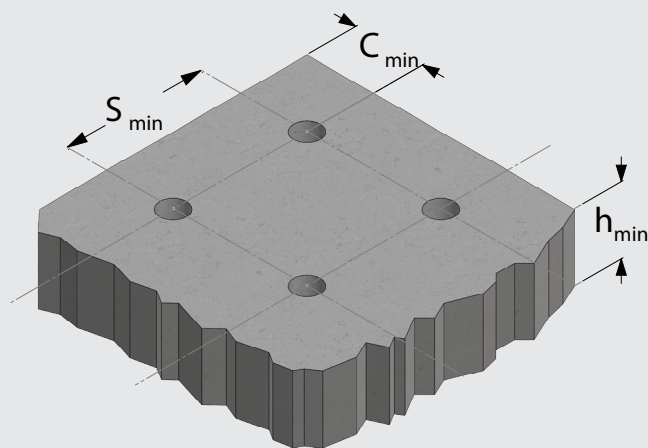
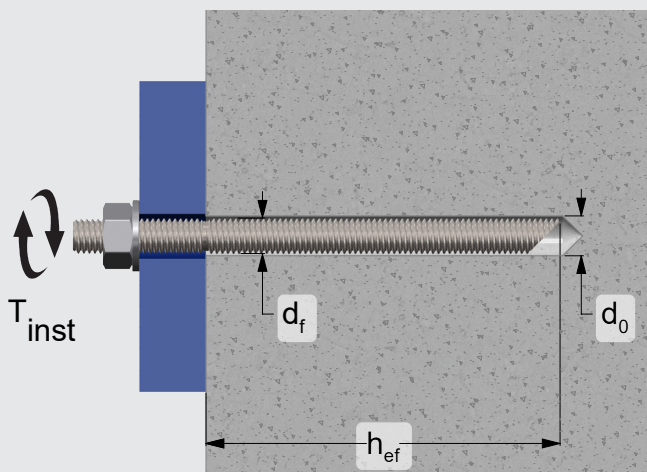
| | | |
|----------------|-------------|---------------|
| | | |
| VOC / A+ GRADE | LEED TESTED | POTABLE WATER |



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Installation Parameters

| | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|------------------------|-----------------|--------|--------|--------|--------|--------|--------|---------|---------|
| Effective Anchor Depth | h_{ef} (mm) | 60–160 | 60–200 | 70–240 | 80–320 | 90–400 | 96–480 | 108–540 | 120–600 |
| Hole Diameter | d_o (mm) | 10 | 12 | 14 | 18 | 24 | 28 | 32 | 35 |
| Fixture Hole | d_f (mm) | 9 | 12 | 14 | 18 | 22 | 26 | 30 | 33 |
| Max. Torque | T_{inst} (Nm) | 10 | 20 | 40 | 80 | 120 | 160 | 180 | 200 |

Member Thickness, Edge Distance and Spacing

| | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|-------------------------|----------------|----------------------------|-----|-----|-----|------------------|-----|-----|-----|
| Min. Concrete Thickness | h_{min} (mm) | $h_{ef} + 30mm \geq 100mm$ | | | | $h_{ef} + 2 d_o$ | | | |
| Min. Edge Distance | C_{min} (mm) | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |
| Min. Spacing | S_{min} (mm) | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |

Chemical Volume Calculator

| | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|---|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| Volume of Chemical per cm of Hole Depth | mL / cm | 0.5 | 0.8 | 1.0 | 1.7 | 2.5 | 4.1 | 5.4 | 6.4 |
| Standard Hole Depth | mm | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| Volume Required for Standard Hole | mL | 4 | 7 | 11 | 21 | 43 | 86 | 134 | 192 |
| Total Holes per 420mL Tube | | 110 | 68 | 41 | 22 | 11 | 5 | 3 | 2 |

*Volume calculation based on 2/3 standard hole depth filled and 5% product waste due to initial and residual mixing.

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24/08/08*1DS

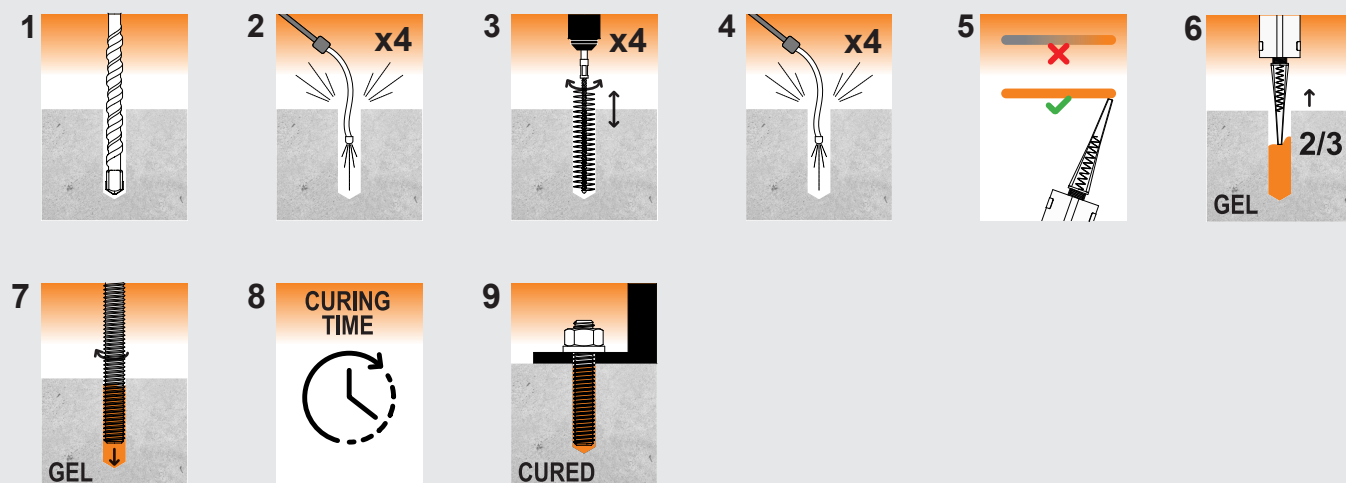


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Installation



Refer to technical assessment (ETA) document for full installation.

Use with **MCXND3** 

Working and curing times

| Base Material Temp. | 0°C–4°C | 5°C–9°C | 10°C–19°C | 20°C–29°C | 30°C–34°C | 35°C–39°C | 40°C + |
|--------------------------|---------|---------|-----------|-----------|-----------|-----------|----------|
| Gel Working Time | 45 mins | 25 mins | 15 mins | 6 mins | 4 mins | 2 mins | 1.5 mins |
| Curing Time Dry Concrete | 7 h | 2 h | 80 mins | 45 mins | 25 mins | 20 mins | 15 mins |
| Curing Time Wet Concrete | 14 h | 4 h | 160 mins | 90 mins | 50 mins | 40 mins | 30 mins |

Note: resin temperature must be at least 20°C.

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- **Design Resistance:** ultimate design loads in kN for single anchor in C20/25. Temperature 24°C average–40°C maximum (short-term temperature)
No influence of edge distances or anchor spacing considered.
- **Shear Loads:** steel strength without lever arm.

Design Resistance Dry/Wet Hammer Drilled and Hollow/Vacuum-Drilled Holes

 Steel Decisive

| Non-cracked Concrete | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|------|------|------|------|------|-------|-------|-------|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rd} [kN] | 8.0 | 11.3 | 16.6 | 25.1 | 42.7 | 58.1 | 70.7 | 84.8 |
| | Shear | V_{Rd} [kN] | 7.2 | 12.0 | 16.8 | 31.2 | 48.8 | 70.4 | 92.0 | 112.0 |
| 8.8 | Tension | N_{Rd} [kN] | 8.0 | 11.3 | 16.6 | 25.1 | 42.7 | 58.1 | 70.7 | 84.8 |
| | Shear | V_{Rd} [kN] | 12.0 | 18.4 | 27.2 | 50.4 | 78.4 | 112.8 | 147.2 | 179.2 |
| A4-70 | Tension | N_{Rd} [kN] | 8.0 | 11.3 | 16.6 | 25.1 | 42.7 | 58.1 | - | - |
| | Shear | V_{Rd} [kN] | 8.3 | 12.8 | 19.2 | 35.3 | 55.1 | 79.5 | - | - |
| A4-80 | Tension | N_{Rd} [kN] | 8.0 | 11.3 | 16.6 | 25.1 | 42.7 | 58.1 | - | - |
| | Shear | V_{Rd} [kN] | 11.3 | 17.3 | 25.6 | 47.4 | 73.7 | 106.0 | - | - |

| Cracked Concrete | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|------|------|------|------|------|-------|-------|-------|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rd} [kN] | 3.2 | 4.7 | 7.6 | 11.5 | 19.6 | 29.0 | 45.9 | 61.3 |
| | Shear | V_{Rd} [kN] | 7.2 | 12.0 | 16.8 | 31.2 | 48.8 | 70.4 | 92.0 | 112.0 |
| 8.8 | Tension | N_{Rd} [kN] | 3.2 | 4.7 | 7.6 | 11.5 | 19.6 | 29.0 | 45.9 | 61.3 |
| | Shear | V_{Rd} [kN] | 12.0 | 18.4 | 27.2 | 50.4 | 78.4 | 112.8 | 147.2 | 179.2 |
| A4-70 | Tension | N_{Rd} [kN] | 3.2 | 4.7 | 7.6 | 11.5 | 19.6 | 29.0 | - | - |
| | Shear | V_{Rd} [kN] | 8.3 | 12.8 | 19.2 | 35.3 | 55.1 | 79.5 | - | - |
| A4-80 | Tension | N_{Rd} [kN] | 3.2 | 4.7 | 7.6 | 11.5 | 19.6 | 29.0 | - | - |
| | Shear | V_{Rd} [kN] | 11.3 | 17.3 | 25.6 | 47.4 | 73.7 | 106.0 | - | - |

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- **Design Resistance:** ultimate design loads in kN for single anchor in C20/25. Temperature 24°C average–40°C maximum (short-term temperature) No influence of edge distances or anchor spacing considered.
- **Shear Loads:** steel strength without lever arm.

Design Resistance Dry/Wet Hammer-Drilled and Hollow/Vacuum-Drilled Holes - Seismic Loads

Steel Decisive

| C1 | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|------|------|------|------|------|-------|-------|-------|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rd} [kN] | 2.0 | 2.9 | 5.1 | 7.7 | 13.2 | 20.1 | 31.8 | 42.4 |
| | Shear | V_{Rd} [kN] | 7.2 | 12.0 | 16.8 | 31.2 | 48.8 | 70.4 | 92.0 | 112.0 |
| 8.8 | Tension | N_{Rd} [kN] | 2.0 | 2.9 | 5.1 | 7.7 | 13.2 | 20.1 | 31.8 | 42.4 |
| | Shear | V_{Rd} [kN] | 12.0 | 18.4 | 27.2 | 50.4 | 78.4 | 112.8 | 147.2 | 179.2 |
| A4-70 | Tension | N_{Rd} [kN] | 2.0 | 2.9 | 5.1 | 7.7 | 13.2 | 20.1 | - | - |
| | Shear | V_{Rd} [kN] | 8.3 | 12.8 | 19.2 | 35.3 | 55.1 | 79.5 | - | - |
| A4-80 | Tension | N_{Rd} [kN] | 2.0 | 2.9 | 5.1 | 7.7 | 13.2 | 20.1 | - | - |
| | Shear | V_{Rd} [kN] | 11.3 | 17.3 | 25.6 | 47.4 | 73.7 | 106.0 | - | - |

| C2 | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|----|-----|------|------|------|-----|-----|-----|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rd} [kN] | - | - | 2.8 | 4.2 | 7.1 | - | - | - |
| | Shear | V_{Rd} [kN] | - | - | 16.8 | 31.2 | 48.8 | - | - | - |
| 8.8 | Tension | N_{Rd} [kN] | - | - | 2.8 | 4.2 | 7.1 | - | - | - |
| | Shear | V_{Rd} [kN] | - | - | 27.2 | 50.4 | 78.4 | - | - | - |
| A4-70 | Tension | N_{Rd} [kN] | - | - | 2.8 | 4.2 | 7.1 | - | - | - |
| | Shear | V_{Rd} [kN] | - | - | 19.2 | 35.3 | 55.1 | - | - | - |
| A4-80 | Tension | N_{Rd} [kN] | - | - | 2.8 | 4.2 | 7.1 | - | - | - |
| | Shear | V_{Rd} [kN] | - | - | 25.6 | 47.4 | 73.7 | - | - | - |

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- **Shear Loads:** steel strength without lever arm.
- **Working Loads:** in kg for single anchor in C20/25.
Temperature 24°C average–40°C maximum (short-term temperature)
No influence of edge distances or anchor spacing considered.
Calculated as Design Resistance/1.4 for both Tension and Shear.

Working Load Dry/Wet Hammer-Drilled and Hollow/Vacuum-Drilled Holes

Steel Decisive

| Non-cracked Concrete | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|-----|------|------|------|------|------|-------|-------|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rw} [kg] | 580 | 820 | 1200 | 1820 | 3110 | 4220 | 5140 | 6170 |
| | Shear | V_{Rw} [kg] | 520 | 870 | 1220 | 2270 | 3550 | 5120 | 6690 | 8150 |
| 8.8 | Tension | N_{Rw} [kg] | 580 | 820 | 1200 | 1820 | 3110 | 4220 | 5140 | 6170 |
| | Shear | V_{Rw} [kg] | 870 | 1330 | 1980 | 3660 | 5700 | 8210 | 10710 | 13040 |
| A4-70 | Tension | N_{Rw} [kg] | 580 | 820 | 1200 | 1820 | 3110 | 4220 | - | - |
| | Shear | V_{Rw} [kg] | 600 | 930 | 1400 | 2560 | 4010 | 5780 | - | - |
| A4-80 | Tension | N_{Rw} [kg] | 580 | 820 | 1200 | 1820 | 3110 | 4220 | - | - |
| | Shear | V_{Rw} [kg] | 820 | 1250 | 1860 | 3440 | 5360 | 7710 | - | - |

| Cracked Concrete | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|----------------------|---------|---------------|-----|------|------|------|------|------|-------|-------|
| Embedment Depth (mm) | | | 80 | 90 | 110 | 125 | 170 | 210 | 250 | 300 |
| 5.8 | Tension | N_{Rw} [kg] | 230 | 340 | 550 | 830 | 1420 | 2110 | 3340 | 4460 |
| | Shear | V_{Rw} [kg] | 520 | 870 | 1220 | 2270 | 3550 | 5120 | 6690 | 8150 |
| 8.8 | Tension | N_{Rw} [kg] | 230 | 340 | 550 | 830 | 1420 | 2110 | 3340 | 4460 |
| | Shear | V_{Rw} [kg] | 870 | 1330 | 1980 | 3660 | 5700 | 8210 | 10710 | 13040 |
| A4-70 | Tension | N_{Rw} [kg] | 230 | 340 | 550 | 830 | 1420 | 2110 | - | - |
| | Shear | V_{Rw} [kg] | 600 | 930 | 1400 | 2560 | 4010 | 5780 | - | - |
| A4-80 | Tension | N_{Rw} [kg] | 230 | 340 | 550 | 830 | 1420 | 2110 | - | - |
| | Shear | V_{Rw} [kg] | 820 | 1250 | 1860 | 3440 | 5360 | 7710 | - | - |

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Characteristic Performance in Aerated Concrete

Compressive Strength of Material ≥ 6 MPa
Temp. Range -40°C to 40°C



| Size | Condition | Dry, internal conditions | Wet conditions | All conditions |
|------|---------------|--------------------------|----------------|----------------|
| | h_{ef} (mm) | Tension (kN) | Tension (kN) | Shear (kN) |
| M8 | 80 | 2.5 | 2.5 | 10 |
| M10 | 90 | 4.0 | 3.5 | |
| M12 | 100 | 5.0 | 4.5 | |
| M16 | | 6.5 | 5.5 | |

Note: the values are valid for steel 5.6 or greater. For steels 4.6 and 4.8, multiply shear by 0.8.

Typical Performance for Solid Masonry

Compressive Strength of Material ≥ 20 MPa
Density $\rho_m \geq 1600 \text{ kg/m}^3$
Temp. Range -40°C to 40°C

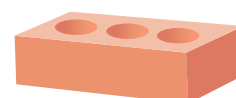


| Size | Installation Parameters | | | | | | Characteristic Resistance | | Service Loads | |
|------|-----------------------------------|-----------------------|--------------------------|----------------------|-----------------------------|-----------------------------------|---------------------------|-------------------|------------------|----------------|
| | Drill Hole \varnothing d_0 | Min Edge C_{min} | Min Spacing S_{min} | Drill Depth h_1 | Embedment Depth h_{ef} | Installation Torque T_{inst} | Tension N_{rk} | Shear V_{rk} | Tension F_N | Shear F_V |
| | (mm) | (mm) | (mm) | (mm) | (mm) | (Nm) | (kN) | (kN) | (kg) | (kg) |
| M8 | 10 | 60 | 120 | 85 | 80 | 2 | 4.5 | 5 | 131 | 146 |
| M10 | 12 | | | 95 | 90 | | 5.5 | | 160 | |
| M12 | 14 | | | 105 | 100 | | 6 | | 175 | |
| M16 | 18 | | | | | | 8 | 175 | 233 | |

Note: safety factor of 3.5 applies for service loads.

Typical Performance for Hollow Masonry

Compressive Strength of Material ≥ 6 MPa
Density $\rho_m \geq 700 \text{ kg/m}^3$
Temp. Range -40°C to 40°C



| Size | Installation Parameters | | | | | | | Characteristic Resistance | | Service Loads | |
|------|-----------------------------------|-------------|-----------------------|--------------------------|----------------------|-----------------------------|-----------------------------------|---------------------------|-------------------|------------------|----------------|
| | Drill Hole \varnothing d_0 | Sleeve Size | Min Edge C_{min} | Min Spacing S_{min} | Drill Depth h_1 | Embedment Depth h_{ef} | Installation Torque T_{inst} | Tension N_{rk} | Shear V_{rk} | Tension F_N | Shear F_V |
| | (mm) | | (mm) | (mm) | (mm) | (mm) | (Nm) | (kN) | (kN) | (kg) | (kg) |
| M8 | 12 | 12 x 80 | 100 | 120 | 85 | 80 | 2 | 0.9 | 2.5 | 26 | 73 |
| M10 | 16 | 16 x 85 | | | 90 | 85 | | | | | |
| M12 | 20 | 20 x 85 | | | 135 | 130 | | | | | |
| M16 | 20 | 20 x 130 | | | | | | | | | |

Note: safety factor of 3.5 applies for service loads. For performance for calcium silicate refer to ETA.

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Packaging

420 mL tube.

Storage

18 months (from 5–25°C) or at lower temperatures for shorter periods of time (e.g. during transport). Higher temperatures shorten storage life. Store the cans in an upright position. Avoid direct sunlight.

Health, safe handling and disposal information

Additional information on safety, safe handling instructions, personal protective equipment and disposal information is in a safety data sheet. Safety data sheets are available at hobson.com.au



Warning



(A,B)

NOTE: Instructions contained in this document are based on Hobson's research and experience.

However, due to specific conditions and working methods, preliminary tests prior to any application of XCHEM™ products are recommended.

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