XCHEM® PRO

H501 **HYBRID**

Complies with **AS 5216** and **NCC** (National Construction Code)

H501 XCHEM® PRO HYBRID 300 | 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	
• Cracked and non-cracked concrete • Natural stone* • Solid and hollow masonry • Aerated concrete • Calcium silicate	CRACKED	NON-CRACKED
	MASONRY	

Features	
• 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	• Approved for studs, masonry and post-installed rebar • Nine helical mixing deflectors inside nozzle† • Dustless drilling

Material	HYB HYBRID
Finish	HYB HYBRID 300 / 420 ML CARTRIDGE

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

▶ †Use with Nozzle MCXND3

High Performance

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

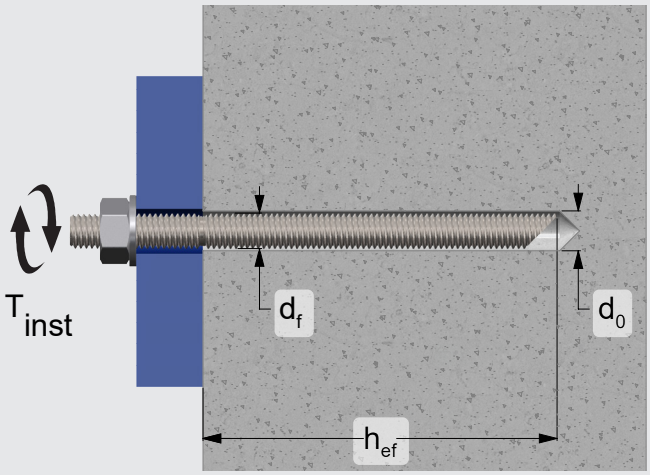
ETA	CE	OPT 1	24/0513
		OPT 7	
		REBAR	24/0510
		MASONRY	24/0512

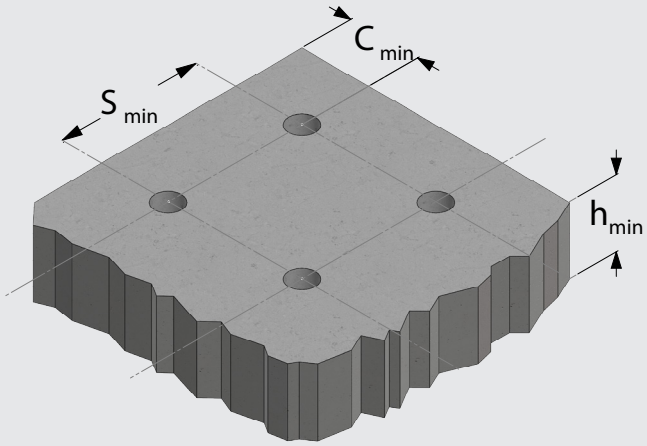
A+	LEED	WRAS APPROVED MATERIAL
VOC / A+ GRADE	LEED TESTED	POTABLE WATER

250227DS

XCHEM® PRO

H501 HYBRID





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_0 (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 ≥100mm				h_{ef} + 2 d_0			
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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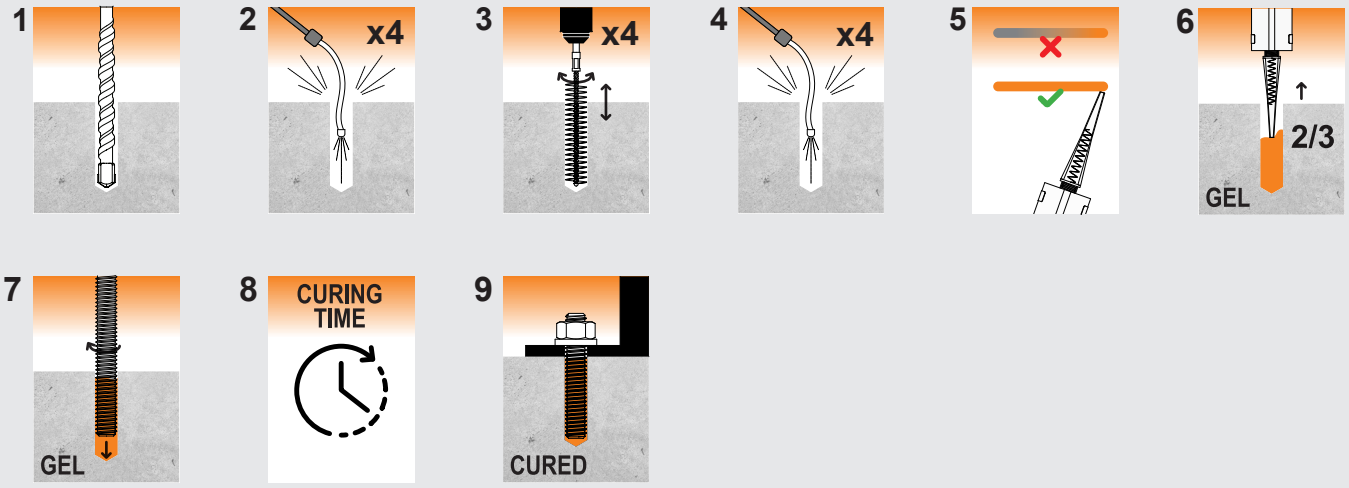
Installation



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.

- **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	-	-

- **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	-	-	-

- **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	-	-

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	6
M10	90	4.0	3.5	10
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

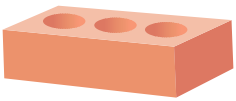
Compressive Strength of Material ≥ 20 MPa
Density ρm ≥ 1600 kg/m³
Temp. Range -40°C to 40°C

Size	Installation Parameters						Characteristic Resistance		Service Loads	
	Drill Hole Ø 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 ρm ≥ 700 kg/m³
Temp. Range -40°C to 40°C



Size	Installation Parameters							Characteristic Resistance		Service Loads	
	Drill Hole Ø 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							3		87
M16	20	20 x 130			135	130		1.2		35	

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

Packaging

300 / 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 recomended.

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