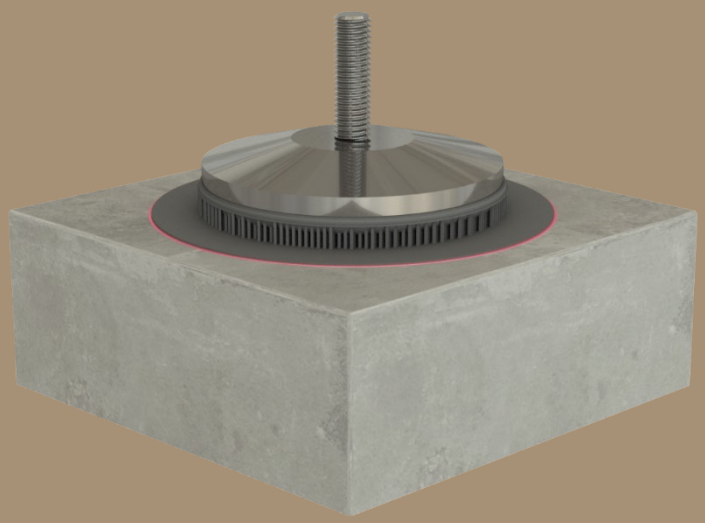
Coldpad SEAL BONDED

TECHNICAL DATASHEET

C-BLOCK™

The Anti-Seismic Bonded Plate for Concrete Support



THE BONDED ANTISISMIC FASTENER FOR CONCRETE

C-BLOCK™ is a mechanically strong fixing point that is bonded directly to the concrete. The advantage of this anchor is its non-intrusive nature in the concrete (no drilling).

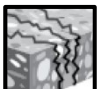
C-BLOCK™ is a bonded assembly. It consists of the following items:

- a circular steel plate with a threaded rod,
- an intermediate deformation layer of polymer,
- a nut and a washer.

VERSIONS:

- C-BLOCK™ T: Temporary applications (<6 months)
- C-BLOCK™ L: Permanent applications (up to 60 years)

Non-cracked concrete



Cracked concrete

Non-intrusive

Removable

STANDARDS

EAD 330499-00-0601, 2017 | EAD 330232-00-0601, 2016
EN1992-4, 2018 | EN1992-1-1, 2005

AVAILABLE RANGES

Designation	C-BLOCK™ T	C-BLOCK™ L
M8 & M10	On request	On request
M12	Available	Available

STANDARD SERVICE CONDITIONS (1)

Features	C-BLOCK™ T	C-BLOCK™ L
Expected service life	6 months	Up to 60 years
Environment	Indoor locations	Indoor locations [1]
Humidity	≤ 80%	≤ 60%
Service temperature	5°C ≤ T ≤ 35°C	5°C ≤ T ≤ 25°C
Accidental temperature	40°C	40°C
Radiation exposure	"worker zone" (ie. <2 mSv/h)	"worker zone" (ie. <2 mSv/h)
Min. thickness of concrete substrate	100 mm	100 mm
Min. distance to the edge	100 mm	100 mm
Min. distance between 2 C-BLOCKs	160 mm	160 mm
Seismic resistance	No	Qualification on-going

[1] For any deviation from the standard service conditions presented in this Technical datasheet, please contact COLD PAD for a case by case study.

PRECALCULATED VALUES / STATIC LOADS

Non-cracked C25/30 concrete - C-BLOCK™ T (temporary version) and C-BLOCK™ L (permanent version)

C-BLOCK™	Tensile strength (kN)		Shear (kN)	
	Design resistance $N_{rd,\ ucr}$		Design resistance $V_{rd,\ ucr}$	
	C-BLOCK™ T	C-BLOCK™ L	C-BLOCK™ T	C-BLOCK™ L
M12	5.7	Qualification on-going	4.6	Qualification on-going

The design value is obtained by statistical analysis of the results of the C-BLOCK™ qualification campaign according to the formula :

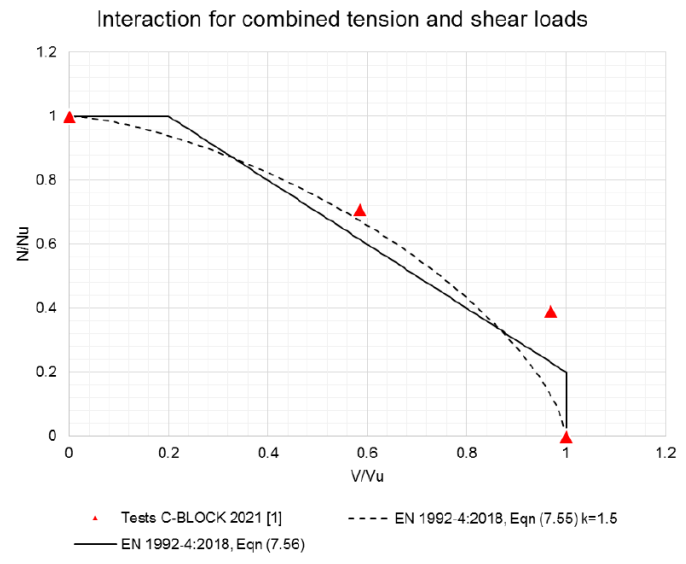
$$X_{Rd,ucr} = \frac{X_{Rk,25,ucr}}{\gamma_c * \gamma_{inst}}$$

- $X_{Rk,25,ucr}$*: Characteristic mechanical capacity (8.6 kN in tensile strength; 7 kN in shear)*
- $\gamma_c = 1.5$ *safety factor for permanent and transient design cases (see Eurocode 2 part 4)*
- $\gamma_{inst} = 1$ *: safety coefficient taking into account the proof load test*

For higher grade concrete, the characteristic tensile and shear strengths are considered the same as for C25/30 concrete (conservative approach).

The pre-calculated values are obtained according to EN1992-4, EN1992-1-1, EN1990. Depending on the structure, system or components to be fixed with C-BLOCK™, additional safety factors could be applied.

The mechanical capacities for combined tensile-shear loads are presented below:

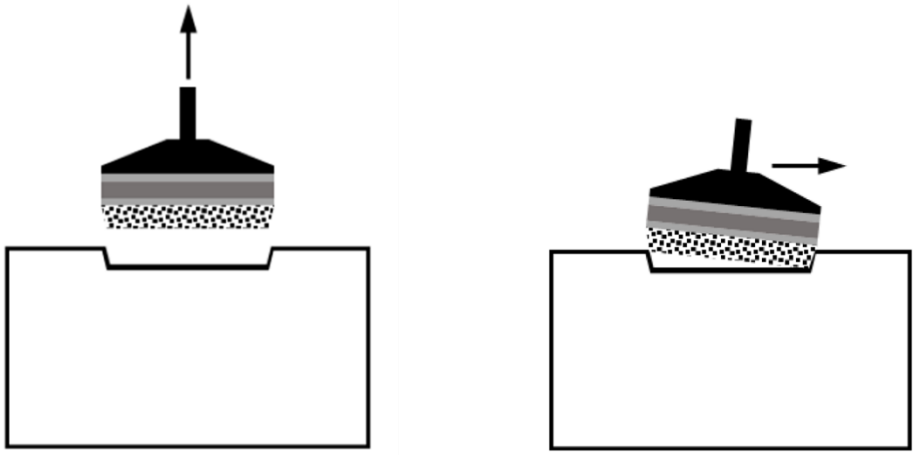


- *N : tensile load*
- *V : shear load*
- *Nu : Ultimate tensile load (12.4 kN)*
- *Vu : Ultimate shear load (8.7 kN)*

Cracked concrete - Permanent version (C-BLOCK™ L) - under qualification

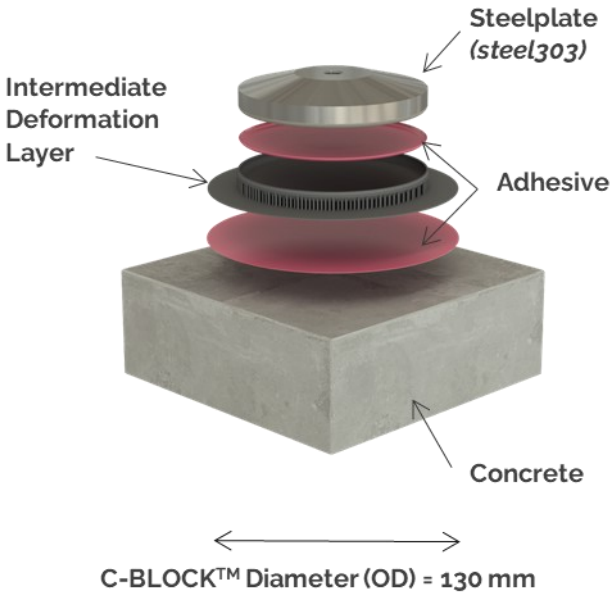
FAILURE MODE:

- The expected mode of failure in tensile strength and shear is predominantly failure in concrete C25/30.



C-BLOCK™ MATERIALS

C-BLOCK™	C-BLOCK™ T	C-BLOCK™ L
Dish	SS 303	SS 303
Threaded rod	A4-70	A4-70
Washer	A4	A4
Hexagonal nut	A4-70	A4-70
Adhesive	HIT-RE 500 V3	HIT-RE 500 V3
Intermediate deformation layer (IDL)	Polymer	Polymer



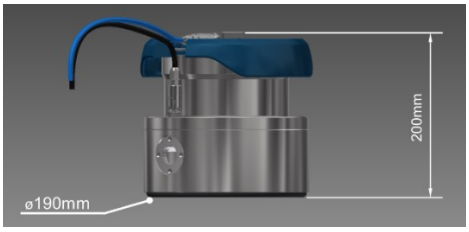
C-BLOCK™ DIMENSIONS

Properties	Value
Outside diameter	130 mm
Distance between the concrete surface and the bottom of the threaded rod	24 mm
Thread diameter / Height of the threaded rod	M12 / 40 mm
Weight (per unit)	1 kg

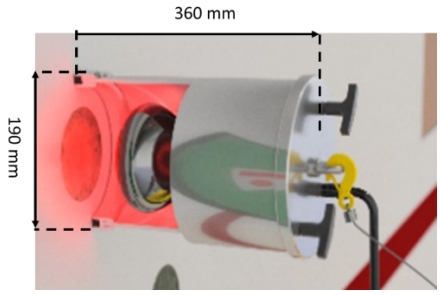
INSTALLATION

INSTALLATION TOOLING

Designation	Product details
Bonding tool - C-Hawk	Control box and installation bell
Temperature setting tool – C-Heat	Infrared lamp 250W
Concrete resurfacer with diamond disc	Makita PC5010C 1400 W
Adhesive kit • Adhesive Cartridge • Application gun • Static mixer	HIT RE 500 V3
Proof load kit	Hydrajaws



Installation Bell



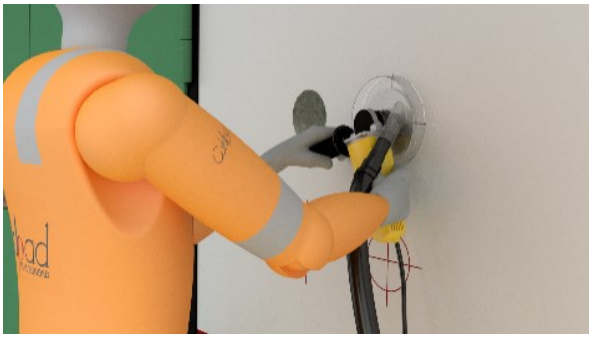
Pre Heating Bell

PROOFLOAD TEST

The proof load test is to be carried out on each C-BLOCK™ using the dedicated proof load test kit. The specifications of the test are as follows:

- Minimum time between the end of the bonding process and the execution of the proof load test: 16 hours (at ambient temperature)
- Test value: 5.2 kN
- Test duration: 30 seconds

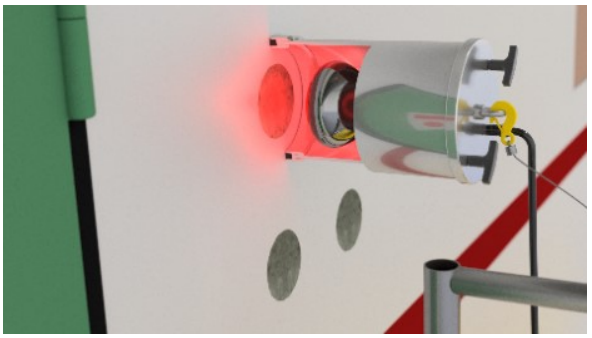
INSTALLATION SEQUENCE



Localized surface preparation

approx. 1 mm thickness
Use of anti-dust system

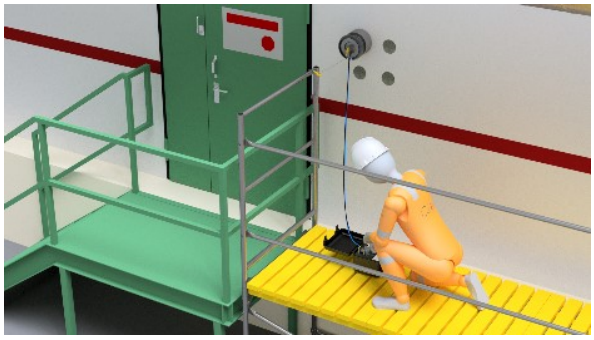
1



Temperature control of concrete

2

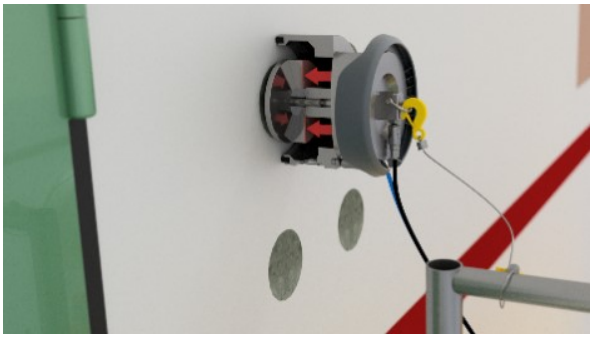
Self-supporting tool and
temperature below 100°C



Bonding

3

Self-supporting tool
Automated installation process



C-HAWK

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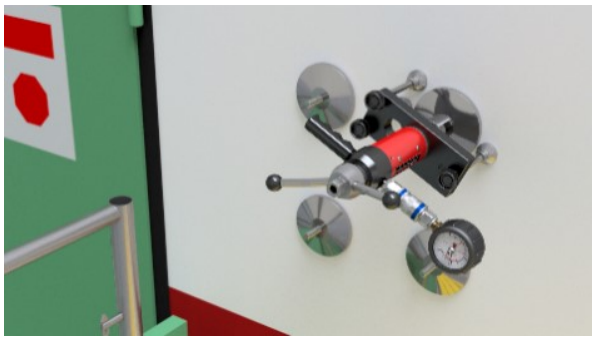
Total autonomy &.
Full traceability



Proof load test

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Proof load test

Installation of the outfitting

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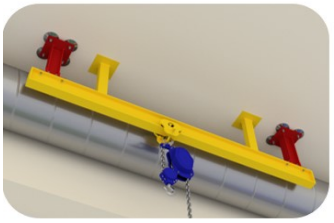
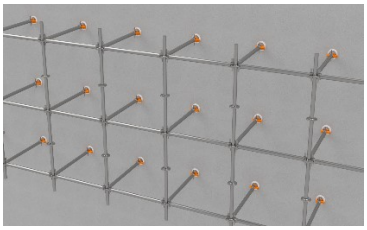
Fixing the outfitting

EXAMPLES OF APPLICATIONS:

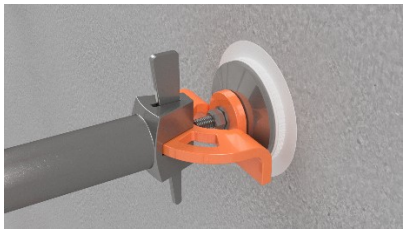
TEMPORARY APPLICATIONS:



Lifting



Scaffolding - general view

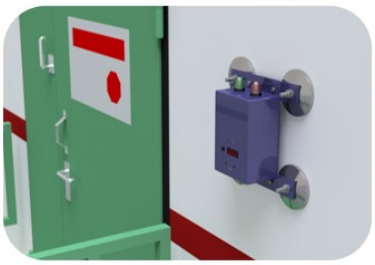


Scaffolding - zoomed view

PERMANENT APPLICATIONS:

Pipe support

Cable trays



Electrical tooling

PRODUCT ROADMAP

The C-BLOCK™ is made available on the market in three stages:

- Temporary applications for non-safety rated equipment: already available **since April 2021**.
- Permanent applications for non-safety rated equipment: availability expected during Q3 – 2022.
- Permanent applications for safety rated equipment: availability expected during Q4 – 2022.