

# STRONGHOLD™

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PURE EPOXY  
HI STRENGTH  
ANCHORING RESIN

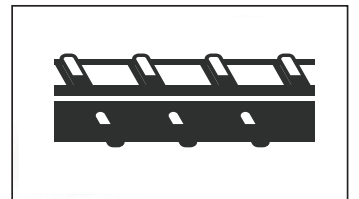
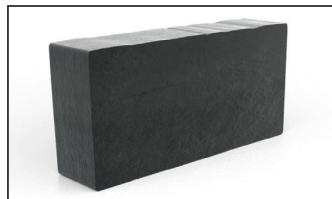
CE 1404
Stronghold Systems (Asia) PTE Ltd
2023
 
DOP: <a href="https://strongholdasia.net/">https://strongholdasia.net/</a>
STRONGHOLD SH-EP3 22/0742
EAD 330087-00-0601 8mm - 20mm Rebar 1404-CPR-3572

 **MADE IN  
BRITAIN**®



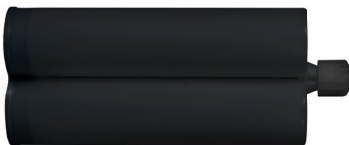
For post-installed rebar connections & steel bonded anchors

**SH-EP3**  
**600ml e**



**FOR UNCRACKED CONCRETE / REBAR**

TWIN CARTRIDGE SYSTEM



2108530



**TECHNICAL BROCHURE**

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## General Information

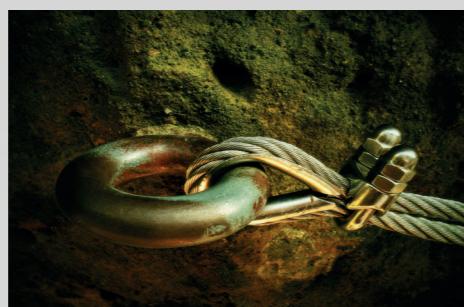
**SH-EP3** is an ETA certified bonded epoxy anchor (injection type) mortar in a dual cartridge (600ML).

**SH-EP3**, with a shelf-life of 24 months minimum, is manufactured in the United Kingdom with adherence to ETA (European Technical Assessment) for post-installed rebar installations in non cracked concrete.

**SH-EP3** is also a LEED certified, fire rated, WRAS certified solvent free 1:1 epoxy resin formulation in a dual cartridge that qualifies healthy environment, water efficiency, sustainable material.



Post-Installed Rebar Connection



Underwater & Corrosive Areas



Ideal for Hardwood Fixings

May be used as a chemical anchor to fix a range of loads in, for example :

- Non cracked Concrete strength class C20/25 (minimum) to C50/60 (maximum)
- Natural Stone
- Hard or Softwood connections & Reinforcement
- Dry or wet concrete
- Flooded holes or Underwater fixings
- Overhead fixing/anchoring
- Hammer drilled holes.



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## Characteristics

- Slow working time, allows for specialist installations in large diameter / deep embedment
- No shrinkage in high diameter fixings
- High chemical resistances for highly corrosive environments, e.g. seawater
- Extremely versatile, allows for use in almost any size hole or substrate, particularly high strength
- Used on diamond drilled holes without the need for roughening
- Particularly suitable for installations at high temperatures due to slow gelling times
- Dry, wet concrete or underwater installations



## Typical Tensile Performance at Standard Embedment Depth

Concrete, C20/25, 5.8 Grade Studding						
Size	Recommended Load		Spacing ( $S_{cr,N}$ ) (mm)	Drill Hole $\varnothing$ (mm)	Fixing Hole $\varnothing$ (mm)	Setting Depth (mm)
	Tension ( $N_{rec}$ )	Shear ( $V_{rec}$ )				
M8	9.07	5.14	160	10	9	80
M10	14.36	8.57	200	12	12	90
M12	20.86	12.00	240	14	14	110
M16	38.86	22.29	320	18	18	125
M20	43.07	34.86	400	24	22	170
M24	59.24	50.29	480	28	26	210
M30	98.74	81.43	600	35	32	280

Concrete, C20/25, Rebar						
Size	Recommended Load		Spacing ( $S_{cr,N}$ ) (mm)	Drill Hole $\varnothing$ (mm)	Fixing Hole $\varnothing$ (mm)	Setting Depth (mm)
	Tension ( $N_{rec}$ )	Shear ( $V_{rec}$ )				
8	10.77	5.14	160	10	9	80
10	15.15	8.57	200	12	12	90
12	22.22	12.00	240	14	14	110
16	32.41	22.29	320	18	18	125
20	43.60	34.86	400	24	22	170
24	59.24	50.29	480	28	26	210
30	98.74	81.43	600	35	32	280

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## Approvals Overview



### ETA Approval

European approval coverage gives a 50 year anchor service life, following rigorous load and durability testing over a sustained period.

These tests are performed independently and covers the specific resin formulation.



### UK Manufacture

Independently verified and wholly manufactured in the UK



### WRAS Approval

Once cured, the resin can safely come into contact with potable drinking water, making it safe for use not only in the home, but also at installations such as reservoirs.



### Indoor Air Comfort - VOC

Independently tested with a rating of A+

The resin does not give off volatile organic content, and does not contain harmful solvents.



### CE Marking

As part of ETA approval, a factory production control audit is undertaken annually, to ensure the manufacturer strictly controls the production of ETA approved products, to the highest quality level.



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## Typical Data - Other Substrates



## Typical Tensile Performance in Hardwoods

### Characteristic Resistances

Mahogany or Oak				
Size	Installation Parameters		Loads	
	d Threaded Bar Ø d <sub>0</sub> Drill Hole Ø (mm)	Min. Embedment Depth h <sub>1</sub> (mm)	Tensile Resistance (kN)	Bond Strength (τ) (MPa)
M8	8 / 12	80	20	10
M10	10 / 14	80	25	10
M12	12 / 16	80	30	10

Teak				
Size	Installation Parameters		Loads	
	d Threaded Bar Ø d <sub>0</sub> Drill Hole Ø (mm)	Min. Embedment Depth h <sub>1</sub> (mm)	Tensile Resistance (kN)	Bond Strength (τ) (MPa)
M8	8 / 12	80	18	9
M10	10 / 14	80	22.5	9
M12	12 / 16	80	27	9

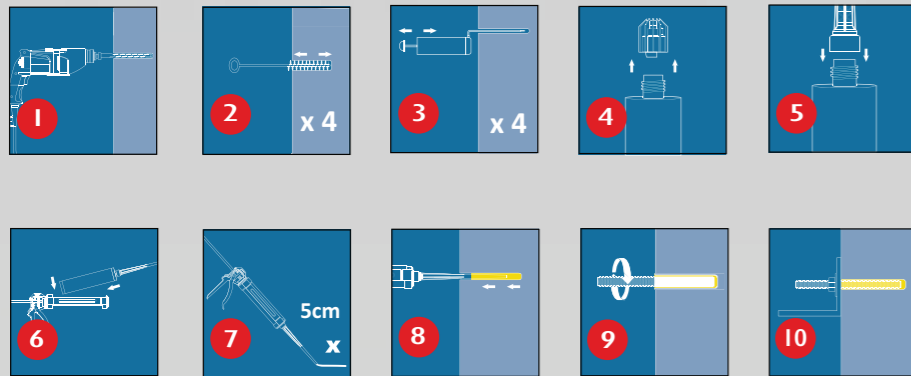
Note: To calculate design loads we recommend applying a safety factor of 1.4. Figures shown in this table are for installation in ambient temperatures +20°C in dry wood.

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## Installation Procedure

Solid substrates



## Typical Gel & Working Times

Base Material Temperature <sup>5</sup>	°C	15°C	25°C	35°C	45°C
Gel Working Time	120'	60'	20'	12'	6'
Curing Time Dry Concrete	24h	18h	7h	5h	4h
Curing Time Wet Concrete	x 2x	2	x 2x	2	x 2

## Resin Consumption Tables

Consumption per cartridge of 600ml - Number of threaded rod / rebar						
Size	M10	M12	M16	M20	M24	M30
Nominal Drilling Hole Diameter; d <sub>0</sub> (mm)	12	14	18	22	26	35
Drilling Depth (mm) h <sub>dr</sub>	90	110	125	170	210	280
Volume of Chemical per drilling depth (%)	67%					
No. of anchors per cartridge @ 2/3rds depth	41	24	13	6	3	1
Size	Ø12	Ø16	Ø20	Ø25	Ø28	Ø32
Nominal Drilling Hole Diameter; d <sub>0</sub> (mm)	16	20	25	32	35	40
Drilling Depth (mm) h <sub>dr</sub>	110	125	170	210	270	300
Volume of Chemical per drilling depth (%)	67%					
No. of anchors per cartridge @ 2/3rds depth	40	22	10	5	3	2

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## Overview

<b>Performance:</b>	
Bond Strength:	●●●●●●●●●●
Versatility:	●●●●●●●●●●
Chemical Resistance:	●●●●●●●●●●
Environment:	Wet / Damp / Dry
Temperature:	
Gel + Cure Time:	Slow Setting
Install temperature:	+5°C to +45°C

<b>Approvals:</b>	
Type:	European Technical
Post Installed Rebar:	8-20mm (+ Fire)
Life of Anchor:	50 Years
Potable Water:	WRAS approved
VOC Test:	A+ Rated
LEED Tested:	Yes
Manufacturing:	ISO 9001/14001
Temp Range:	1 in ETA

<b>Features:</b>	
Resin Colours:	Red
Cartridges:	600ml 1:1
Density:	1.56kg/m <sup>3</sup>
Viscosity:	Low
Shelf Life:	24 Months
Mixer:	T-Flow™



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