

Cem-fix Masonry stabilising system is a combination of our special Cemspand cementitious grout with controllable expanding agent and our Cem-fix reinforcement rods brought together to give a fast and cost effective set of masonry repair strategies to re-stabilising multi brick arches and brick tunnels, rubble filled walls, and separated party walls.

Installation Procedures



1) Drill clearance hole to recommended depth.



2) Fill mortar gun with Cemspand then insert special nozzle to back of hole.



3) Fill hole and voids with Cemspand while slowly removing nozzle.



4) Drive in Cem-fix tie using are fast-fix support tool.

Re-stabilizing brick Arches





Cem-fix Repair Strategy's

CF-01 Repairing Separating walls using Cem-Fix

CF-02 Repairing Cracks in Solid Walls using Cem-Fix

CF-03 Repairing Cracks in Cavity Walls using Cem-Fix

CF-04 Repairing Cracks in Solid walls using Cem-Fix Cross Stitching

CF-05 Repairing Failed Soldier Course Lintels in Cavity Walls

CF-06 Repairing Near Corner Cracks in Solid Walls using Cem-Fix

CF-07 Repairing Near Corner Cracks in Cavity Walls using Cem-Fix

CF-08 Repairing Failed Arch Lintels in Solid Walls

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CF-10 Repairing Solid Parapet Walls

CF-11 Repairing Cavity Parapet Walls

- CF-12 Repairing cracks in Bay Windows main wall junctions
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- **CF-14** Repairing Brick Arches with Angled Cem-fix
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- **CF-17** Repairing Separating Archesl using Cem-Fix



Repairing Separating walls using Cem-Fix





<u>Rubble Fill Wall</u>

Solid Wall

(1) Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix to be installed at the same density as remedial wall ties 2.47 per square metre using horizontal centres of 900mm and vertical centres of 450mm with additional Cem-fix installed either side of openings at 300mm vertical centres.



Repairing Cracks in Solid Walls using Cem-Fix



(1) After locating and marking positions of holes on the outer side of wall. Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) through outer wall to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix to extend at least 100mm past crack..

- b) Normal vertical spacing of Cem-fix is 450mm(6 brick courses).
- c) Cem-fix to be installed in the centre of the wall.



Repairing Cracks in Cavity Walls using Cem-Fix



(1) After locating and marking positions of holes on the outer side of wall. Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) through outer wall then on into inner wall to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix to extend at least 100mm past crack..

- b) Normal vertical spacing of Cem-fix is 450mm(6 brick courses).
- c) Cem-fix to be installed in the centre of the wall.
- d) Make sure Cem-fix is fully inbeded in inner hole and not bridging cavity with grout.
- E) install remedial walls either side of Cem-fix at vertical 225mm staggered centres.



<u>Repairing Cracks in Solid walls using</u> <u>Cem-Fix Cross Stitching</u>



(1) Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth and at required angle vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

<u>Installation Notes</u>: Unless specified otherwise the following criteria are to be used. Cem-fix can used to restabilise horizontal cracks as well as vertical cracks.

a) Cem-fix to be installed at angles, the angle and distance from crack of the start position of the clearance hole will depend on the thickness of the wall being repaired.

b) Cem-fix start position, angle and depth, should make sure that the middle of cem-fix meets the crack at the middle of the wall being repaired.



Repairing Failed Soldier Course Lintels in Cavity Walls



(1) Cut out slots into horizontal mortar joints to specified depth and at required vertical spacings. Blow out slots and thoroughly flush with water.

(2) With the aid of a grout gun insert a 10mm bead of Cemspand cementitious grout into the back of the top slot only. Push the Tri-bar rod into the grout until a good coverage is achieved. Insert a second 10mm bead of Cemspand cementitious grout over the exposed rod. Push second Tri-bar rod into the grout until a good coverage is achieved. Insert a final 10mm bead of Cemspand cementitious grout over the exposed rod and iron into slot using a finger trowel.

(3) After locating and marking positions of holes on the under side of Soldier course. Drill clearance holes (13mm-14mm diameter depending upon material) at required angle and depth. Angle of drill should just miss the back of lower Tri-bar beam and continue up at least 50mm into the above brick course.

(4) Blow out holes and thoroughly flush with water.

(5) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout. Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

(6) Install lower Tri-bar beams as per (2). When Cemspand has set repoint joint to match existing mortar joint.

Installation Notes: Unless specified otherwise the following criteria are to be used

a) The depth of slot to be 40 to 55mm

b) Tri-bars are to extend a minimum of 500 mm each side of opening.

C)Top and bottom Tri-bar beams to be vertically spaced as far a part as possible to maximum distance of 900mm.

D) Cem-fix spacings no more then 400mm.



<u>Repairing Near Corner Cracks in Solid Walls</u> <u>using Cem-Fix</u>



(1) After locating and marking positions of holes on the outer side of wall. Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix to extend at least 100mm past crack..

b) Normal vertical spacing of Cem-fix is 450mm(6 brick courses).

C) Cem-fix to be installed in the centre of the wall.



<u>Repairing Near Corner Cracks in Cavity Walls</u> using Cem-Fix



(1) Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

A) Cem-fix to extend at least 100mm past crack..

b) Normal vertical spacing of Cem-fix is 450mm(6 brick courses).

- c) Cem-fix to be installed 50mm from corner.
- d) If cracking occurs on both elevation of the same corner then stagger Cem-fix.

Repairing Failed Arch Lintels in Solid Walls



(1) Cut out slots into horizontal mortar joints to specified depth and at required vertical spacings. Blow out slots and thoroughly flush with water.

(2) With the aid of a grout gun insert a 10mm bead of Cemspand cementitious grout into the back of the top slot only. Push the Tri-bar rod into the grout until a good coverage is achieved. Insert a second 10mm bead of Cemspand cementitious grout over the exposed rod. Push second Tri-bar rod into the grout until a good coverage is achieved. Insert a final 10mm bead of Cemspand cementitious grout over the exposed rod and iron into slot using a finger trowel.

(3) After locating and marking positions of holes on the under side of arch. Drill clearance holes (13mm-14mm diameter depending upon material) at required angle and depth. Angle of drill should just miss the back of lower Tri-bar beam and continue up at least 50mm into the above brick course.

(4) Blow out holes and thoroughly flush with water.

(5) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout. Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

(6) Install lower Tri-bar beams as per (2). When Cemspand has set repoint joint to match existing mortar joint.

Installation Notes: Unless specified otherwise the following criteria are to be used

a) The depth of slot to be 55 to 70mm

b) Tri-bars are to extend a minimum of 500 mm each side of opening.

C)Top and bottom Tri-bar beams to be vertically spaced as far a part as possible to maximum distance of 900mm.

D) Cem-fix spacings no more then 400mm.

Repairing Failed Arch Lintels in Cavity Walls



(1) Cut out slots into horizontal mortar joints to specified depth and at required vertical spacings. Blow out slots and thoroughly flush with water.

(2) With the aid of a grout gun insert a 10mm bead of Cemspand cementitious grout into the back of the top slot only. Push the Tri-bar rod into the grout until a good coverage is achieved. Insert a second 10mm bead of Cemspand cementitious grout over the exposed rod. Push second Tri-bar rod into the grout until a good coverage is achieved. Insert a final 10mm bead of Cemspand cementitious distributed of Cemspand cementitions grout over the tributed of Cemspand cementities.

(3) After locating and marking positions of holes on the under side of arch. Drill clearance holes (13mm-14mm diameter depending upon material) at required angle and depth. Angle of drill should just miss the back of lower Tri-bar beam and continue up at least 50mm into the above brick course.

(4) Blow out holes and thoroughly flush with water.

(5) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout. Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

(6) Install lower Tri-bar beams as per (2). When Cemspand has set repoint joint to match existing mortar joint.

Installation Notes: Unless specified otherwise the following criteria are to be used

a) The depth of slot to be 40 to 55mm

b) Tri-bars are to extend a minimum of 500 mm each side of opening.

C)Top and bottom Tri-bar beams to be vertically spaced as far a part as possible to maximum distance of 900mm.

D) Cem-fix spacings no more then 400mm.



Repairing Solid Parapet Walls



(1) After locating and marking positions of holes on top of wall. Drill a clearance holes (13mm-16mm diameter depending upon material and the length of tie to be used) to required depth.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used

- a) Cem-fix to be installed at a horizontal spacing 600 mm.
- b) Cem-fix to extend at least 225 mm into sound parts of the the main .
- C) Cem-fix to be installed in the middle third of the parapet wall.
- D) Cem-fix to be installed in or abutting or cross walls where possible.



Repairing Cavity Parapet Walls



(1) After locating and marking positions of holes on top of wall. Drill a clearance holes (13mm-16mm diameter depending upon material and the length of tie to be used) to required depth.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used

- a) Cem-fix to be installed in both leaves at 600mm stagged centres .
- b) Cem-fix to extend at least 225 mm into sound parts of parapet wall.
- c) Cem-fix to be installed in the middle third of the parapet wall.
- D) Install new ties at 900mm vertical centres and 450 mm horizontal centres into parapet wall.



Repairing cracks in Bay Windows main wall junctions



(1) After locating and marking positions of holes on the outer side of wall. Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) through outer wall to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

<u>Installation Notes:</u> Unless specified otherwise the following criteria are to be used.

a) Cem-fix to extend at least 100mm past crack..

b) Normal vertical spacing of Cem-fix is 300mm(4 brick courses).



<u>Repairing Cracks in Solid Bay Windows in</u> main wall junctions and Bay Corners



(1) After locating and marking positions of holes on the outer side of wall. Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) through outer wall to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

<u>Installation Notes:</u> Unless specified otherwise the following criteria are to be used.

a) Cem-fix to extend at least 100mm past crack..

b) Normal vertical spacing of Cem-fixs is 300mm(4 brick courses).

c) The bay may need Tri-Bars and Bow-ties to properly stabilise see TB-14 to TB-16 and BF-03.



Repairing Brick Arches with Angled Cem-fix



(1) Mark positions of lines and holes on the under side of arch to required spacing.

(2) Drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth. Alternating 60 deg angled holes left to right along marked line.

(3) Blow out holes and thoroughly flush with water.

(4) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(5) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

<u>Installation Notes:</u> Unless specified otherwise the following criteria are to be used.

A) Normal spacing of lines is 450mm.

b) Normal spacing of Cem-fix is 450mm(6 brick courses).



(1) Mark positions of loose bricks which require Cem-fixing.

(2) Drill clearance holes (13mm-14mm diameter depending upon material and length of tie to be used) in centre of brick to specified depth.

(3) Blow out holes and thoroughly flush with water.

(4) With the aid of a grout gun fitted with correct size of nozzle, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(5) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

(6) After 24 hours rake out and repoint around bricks that have been Cem-fixed. Using Cemspand and grout gun

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix depth to penetrate 70 mm into sound brickwork .

<u>Replacing Loose Bricks & Re-pointing on</u> <u>Under Side of Brick Arches</u>



(1) Mark positions of loose bricks and bricks which require Cem-fixing.

(2) Cem-fix into sound bricks around the area of brickwork that needs replacing using repair strategy CF-15.

(3) After 24 hours remove bricks that need replacing.

(4) Drill 5 mm to 6 mm pilot hole 75mm deep into middle of new brick. Drive 8mm Tri-fix tie in to each new brick.

(5) Mark position of clearance holes using protruding tie end, then drill a 10mm hole 70 mm deep then blow out dust and fill with Tri-set resin.

(6) Trowel some Cemspand onto the back of new brick then insert tie and brick into position and secure with wedges until resin set (Approx 30 minutes)

(7) After all new bricks have set rake out and repoint around bricks that have been Cem-fixed. Using Cemspand and grout gun

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix depth to penetrate 70 mm into sound brickwork .



Repairing Separating Archesl using Cem-Fix



(1) Mark positions and drill clearance holes (13mm-16mm diameter depending upon material and length of tie to be used) to specified depth and at required vertical spacing.

(2) Blow out holes and thoroughly flush with water.

(3) With the aid of a grout gun, pump Cemspand cementitious grout to outlet of nozzle. Insert nozzle to full depth of drilled hole and pump grout to fill hole. Maintain pressure on gun while retrieving nozzle to ensure that all voids are filled with grout.

(4) Wind correct length Cem-fix into hole using Fast-fix support tool. Make good all holes at surface with colour matching dyed mortar.

Installation Notes: Unless specified otherwise the following criteria are to be used.

a) Cem-fix to be installed at horizontal and vertical centres of 450mm.

B) Cem-fix to extend 200mm past crack.

Cemspand Cementitous Grout

Compression strength with different amounts of expanding agents per 5 Kgs

	Day 1	Days 7	Days 28
Standard	2	·	•
3 GMS of Expanding Agent			
Compression strength	9.9 N/mm2	44.0 N/mm2	52.0 N/mm2
Expansion	1%	1%	1%
Cube Size	100mm	100mm	100mm
Cube mass	1940g	1876g	1899g
Density	1940 kg/m3	1880 kg/m	1900 kg/m
Failure Load	99.1 kN	442 kN	522 kN
* Supplied on request			
* 12 GMS of Expanding Agent			
Compression strength	11.0 N/mm2	27.5 N/mm2	30.5 N/mm2
Expansion	4%	4%	4%
Cube Size	100mm	100mm	100mm
Cube mass	1787g	1775g	1736g
Density	1790 kg/m3	1780 kg/m3	1740 kg/m3
Failure Load	110 kN	274 kN	304 kN
* 25 GMS of Expanding Agent			
Compression strength	7.7 N/mm2	15.0 N/mm2	18.5 N/mm2
Expansion	16%	16%	16%
Cube Size	100mm	100mm	100mm
Cube mass	1558g	1580g	1560g
Density	1560 kg/m3	1580 kg/m3	1560 kg/m3
Failure Load	76.7 kN	152 kN	165 kN
* 50 GMS of Expanding Agent			
Compression strength	7.2 N/mm2	12.0 N/mm2	13.5 N/mm2
Expansion	20%	20%	20%
Cube Size	100mm	100mm	100mm
Cube mass	1579g	1520g	1580g
Density	1580 kg/m3	1520 kg/m3	1580kg/m3
Failure Load	71.9 kN	119 kN	133 kN
* 100 GMS of Expanding Agent			
Compression strength	0.7 N/mm2	3.7 N/mm2	4.9 N/mm2
Expansion	40%	40%	40%
Cube Size	100mm	100mm	100mm
Cube mass	1248g	1258g	1283g
Density	1250 kg/m3	1260 kg/m3	1280kg/m3
Failure Load	7.4 kN	37.0 kN	48.7 kN

Cem-Spand

Cem-spand is a specially formulated High performance injectable cementitious grout for bonding metal to all types of common masonry substrates. Cem-spand has the added benefit of being able to control its properties to suit the required applications when carrying out structural works and repairs. Cem-spand is supplied in a bucket container with a controlled amounts of clean aggregates, liquid milk and additional expanding agent.



Cem-spand with injection gun



Testing Compression strength

Benefits

/ Controlled expansion.

Controlled compression strength.



['] Rapidly cures and develops high compressive strength.





Monitoring expansion



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TRISET PRODUCT DATA SHEET

DESCRIPTION

Triset is a rapid curing 'one shot' two part chemical anchoring cartridge system based on a polyester resin. Applied in one single action to produce a cost effective, tough, chemical resistant fixing. Triset is ideal for close-to edge applications (unlike expansion anchors) as no stress is placed on the surrounding substrate. Versatile in use, Triset is suitable for fixing wall ties, starter bars, studs, bolts or large screws in a wide range of substrates including brickwork, concrete, masonry, stone and PF A blocks. Hollow base materials can be securely fastened into by using Triset in conjunction with a sleeve or sieve.

PREPARATION

- 1. Drill hole to the correct diameter and depth (see chart for guide), ideally using a rotary percussion machine. For optimum results the hole must be coarse sided. If the holes are produced by diamond drilling the surfaces should be thoroughly roughened.
- 2. Remove all dust and debris from the hole using a hand air pump or a stiff rotary brush.
- 3. All bars should be clean and free from oil or grease and all flaking rust should be removed. Threaded rod or struts should be chisel-ended to prevent them being unscrewed from the cured resin.

APPLICATION

- 1. Attach the mixing nozzle tot he cartridge (screw down hand tight).
- 2. Mount the cartridge into the dispensing gun.
- 3. Squeeze out material through the nozzle until an even colour is achieved (approximately 5-6 inches of extruded material should be adequate).
- 4. Apply to the hole working from the base out. Once the required fill is obtained release the pressure and wipe away excess material. Place the bolt or screw into the hole with a rotary action. Wipe away excess material. Attach fixture once resin has cured.
- NB Once material has started to extrude through the nozzle over pressuring the system will not



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increase flow rate. And can cause leakage from the rear of the cartridge.

TECHNICAL DATA

MIXING RATIO 10: 1 by volume

Supplied in 380ml cartridges

TEMPERA	ATURE	GEL TIME	CURE TIME
(C)	(F)	(Minutes)	(Minutes)
5	41	12	240
10	50	9	180
15	59	6	150
20	68	5	120
25	77	3	60

ULTIMATE PHYSICAL PROPERTIES

Tensile Strength	(ASTM 638)	-> 10N/mm sq.
Compressive Strength	(ASTM 695)	-> 78N/mm sq.
Flexural Strength	(ASTM 790	- 21N/mm sq.
Elastic Modulus		- 4570N/mm sq.
Mixed Density		- 1.65g/cm sq.

The above physical properties were arrived at independently by Birmingham City Laboratories.

ANCHOR SIZE	HOLE DIAMETER	HOLE DEPTH	TENSION	FIXINGS PER UNIT
(mm)	(mm)	(mm)	(kN)	(Holes Filled 2 Quarters Full)
			(Ultimate pull out)	380ml
8	10	80	23.7	90
10	12	90	25.7	56
12	14	110	43.3	34
16	18	125	53.7	18
20	22	150	58.3	10



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Tension figures quoted are tested in accordance with BS5080 part 1 in 63 N/mm sq concrete blocks ($12 \times 12 \times 12$ inches). In all cases for 16mm and 20mm anchors failure of the concrete block was observed before the anchor was dislodged.

The ultimate pull out strength is varied by:

- 1. The strength of both the substrate and bar/stud
- 2. The length of the resin bond to bar
- 3. Hole preparation
- 4. Anchor separation

Safety factors of between 2:1 and 4:1 should be considered depending on the strength and nature of the substrate. Due to the inconsistent nature of hollow blocks and bricks tension figures may vary. Site testing should be carried out where necessary to establish particular suitability. In order to achieve maximum performance the distance between the centres of the anchors should be a minimum of 2.5 x the embedment depth, and 1.25 x the embedment depth for the minimum distance from edges.

STORAGE

Store in a dry area between 5 C and 25 C. Do not expose to direct sunlight. Storage at higher temperatures will reduce the shelf life.

HEALTH AND SAFETY DATA

Triset contains styrene and is flammable. Do not smoke and do not allow naked flames to come into contact with this material. Avoid breathing vapour and wear suitable protective clothing such as gloves and overalls. On contact with skin wash off immediately with plenty of soap and water.

IMPORTANT

The information and data given is based on our own experience, research and testing and is believed to be reliable and accurate. However, as Wallfast Ltd. cannot know the varied uses to which its products may be applied, or the methods of application used, no warranty as to the fitness or suitability of its products is given or implied. It is the users responsibility to determine suitability of use. For further information, please contact our Technical Department.