

BBB

testing

LDM 1204

LABORATORY DEVELOPED METHOD 1204

TESTING OF ANCHOR BONDING PADS IN GLASSFIBRE
REINFORCED CONCRETE

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SECTION 1: SCOPE

This laboratory developed method prescribes a process for determining the ability of an anchor bonding pad to withstand typical in-service loads (combination of axial and tensile) when formed homogeneously with Spray Process Glassfibre Reinforced Concrete (GRC) material as defined in BS EN 15191.

It can be used to determine the bond strength of such pads when used either to attach a separate stud frame or provide fixing points for embedded anchors.

Please note that it does not provide for testing of any embedded anchors which should be separately tested in accordance with BBf testing LDM 1201 (axial) and LDM 1202 (shear).

This test is not suitable for Premix GRC.

SECTION 2: APPARATUS

2.1.: A suitable mechanical or hydraulic ram which is capable of progressively applying a pull-out force to the pad.

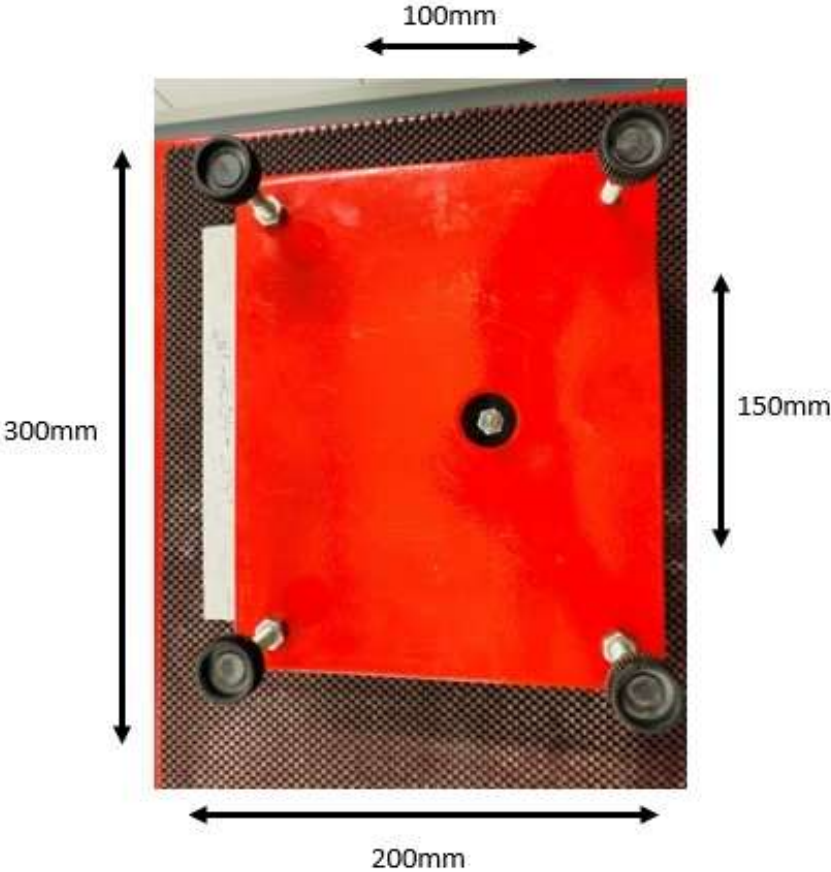
2.2.: An attached electronic or analogue hydraulic gauge capable of measuring an applied force up to 25kN.

The gauge is to be accurate to within 0.5% of the applied load and have been calibrated within the previous twelve months with full metrological traceability to ISO 17025: 2017.

2.3.: Calibrated steel rule to measure first movement of the anchor bonding pad.

2.4.: A load spreader plate fabricated from 10 mm thick mild or stainless steel and fitted with 4 nr adjustable reaction pads positioned in each corner. Dimensions as Figure 1.

FIGURE 1 – LOAD SPREADER PLATE



SECTION 3: TEST SPECIMEN

The test specimen shall be manufactured to be representative of the quality and characteristic properties of the finished product.

- 3.1.: The length and width of the specimen shall normally be 300 mm x 300 mm x 12-15 mm and manufactured using Spray Process GRC.
- 3.2.: After spraying the GRC a 200 mm threaded rod bent to 90° at the midpoint should be placed onto the GRC allowing an anchor bonding pad to be formed directly over.
The diameter of the threaded rod and the size of the bonding pad are to be determined by the client.
These may be formed using either Spray or Premix GRC as deemed suitable by the manufacturer or designer and be positioned centrally on the specimen.
- 3.3.: Once complete the vertical section of the threaded bar should be approximately 100 mm from the edge of the GRC specimen.

SECTION 4: NUMBER OF TEST SPECIMENS

A minimum of 4 specimens shall be tested.

SECTION 5: PROCEDURE

- 5.1.: The specimen is to be placed horizontally on a suitable flat surface such as a steel engineer's bench or similar.
- 5.2.: The spreader plate is to be positioned with the hole directly over the vertical threaded rod and with each reaction leg directly in contact with the specimen. The stainless-steel threaded rod will then protrude allowing attachment to the puller.
- 5.3.: The reaction pads are to be adjusted so the plate is level using a suitable spirit level.
- 5.4.: The mechanical puller is to be placed directly over the threaded rod and attached according to the manufacturer's instructions to the bolt.

The fully assembled test is shown in figures 2 and 3.

- 5.5.: The hydraulic gauge is to be attached to the puller and if necessary, set to zero.
- 5.6.: Load is to be progressively applied incrementally with the applied load being recorded at each increment.
- 5.7.: Continue applying load incrementally until the gauge records first movement of the fixing.
- 5.8.: Record the applied load at first movement.
- 5.9.: Remove the puller and spreader plate.
- 5.10.: Measure the displacement of the fixing.
- 5.11.: Re-attached the puller and apply load until pad is detached from the GRC skin.

FIGURE 2 – TEST SET UP, END VIEW:



FIGURE 3 – TEST SET UP, SIDE VIEW:



SECTION 6: VALIDITY OF TEST

The test can only be considered valid if the bonding pad has become displaced from the GRC skin.

In the event there is no failure at maximum load this should be noted in notes section.

In the event of a concrete failure this is to be recorded in notes section but NOT to be included in table of results.

SECTION 7: TEST REPORT

The test report should detail the following:

- 7.1.: Name of manufacturer.
- 7.2.: Manufacturing process used for bonding pad (Spray or Premix).
- 7.3.: Age of specimen.
- 7.4.: Applied load at each increment.
- 7.5.: Failure load of each specimen at first movement.
- 7.6.: Displacement of bonding pad at first movement.
- 7.7.: Arithmetical mean of failure load.