



REPORT ON LOAD TESTS ON LIGHTWEIGHT CONCRETE AT UPAT

LOCATION:

Upat Head Office, Johannesburg

DATE:

28 May 2021

PRESENT:

K.Owen (Upat)

TEST MATERIALS:

Tests were done on Fischer Duopower plugs using two lightweight concrete blocks supplied by Envirolite. The densities of the two blocks were given as 600 and 850kg/m³ respectively.

OBJECTIVES:

The purpose of the test was to determine the load capacities of the plugs in the two blocks using different drill hole diameters. M8 Duopower plugs were tested in both blocks, and were inserted into 6mm diameter holes and 8mm diameter holes.

The objective of the test was to determine the load capacities of the plugs when inserted into different size holes.

TEST RESULTS:

The results are summarised as follows:

1. Tests in 600kg/m³ block:

Hole diameter(mm)	Description plug	Test 1 pullout(kg)	Test 2 pullout(kg)
6	Duopower 8 x 40	100	60
8	Duopower 8 x 40	40	40
6	Duopower 8 x 65	110	200
8	Duopower 8 x 65	90	60

2. Tests in 850kg/m³ block:

Hole diameter(mm)	Description plug	Test 1 pullout(kg)	Test 2 pullout(kg)
6	Duopower 8 x 40	90	90
8	Duopower 8 x 40	60	50
6	Duopower 8 x 65	150	150
8	Duopower 8 x 65	100	90

ILLUSTRATIONS:

Please refer to the photographs below which show details of the tests conducted:



Figure 1 – The two blocks tested

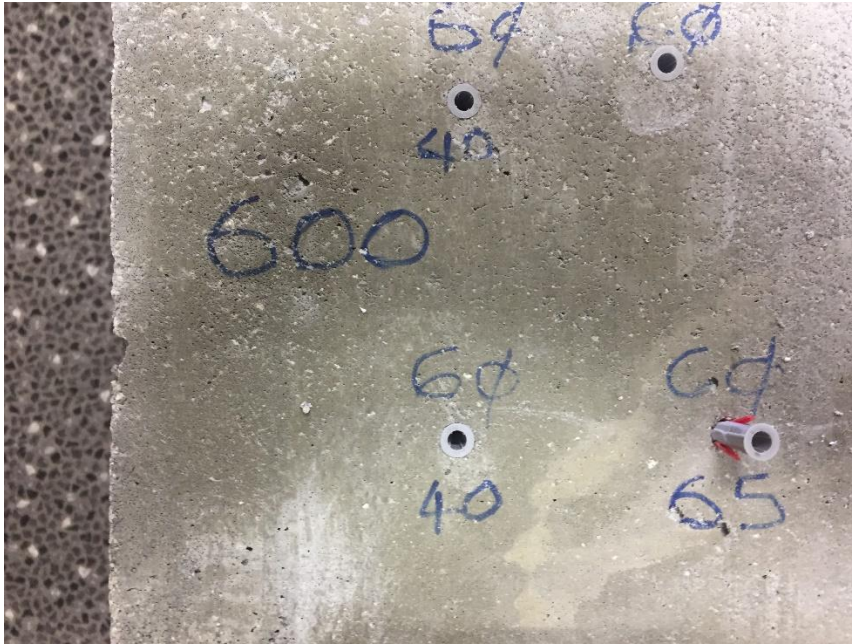


Figure 2 – The 600kg/m³ block with 40 and 65 plugs in 6mm diameter holes

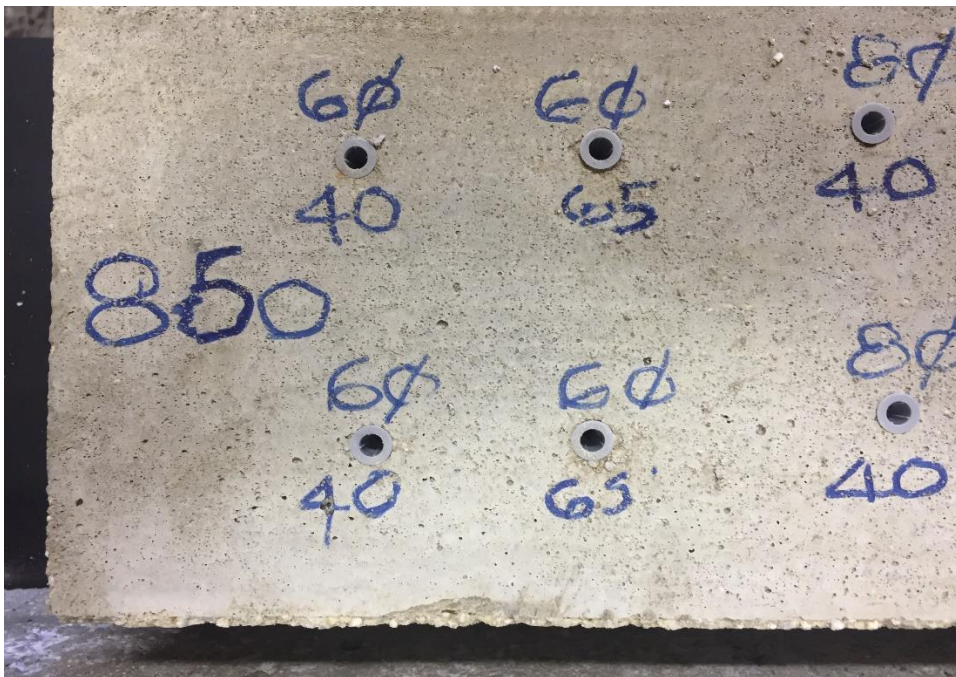


Figure 3 – The 850kg/m³ block with respective marking



Figure 4 – A good illustration of the mechanics of the Duopower plug

CONCLUSIONS

It is standard practise to use 8mm diameter holes for 8mm diameter plugs in conventional substrates such as brickwork and normal concrete. However these tests have conclusively shown that greater load capacities can be achieved in lightweight concrete using smaller diameter holes.

Further tests on 10mm and 12mm diameter plugs will follow.

REPORT BY

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