



BURSA TECHNICAL UNIVERSITY
Faculty of Engineering and Natural Sciences
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YILDIRIM/BURSA

TECHNICAL REPORT

META ENDÜSTİ YAPI A.Ş.
FLEXURAL STRENGTH TEST OF FIBER CEMENT BOARD
PRODUCTS

Preparer:

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SUBJECT: FLEXURAL STRENGTH TEST OF FIBER CEMENT BOARD PRODUCTS

THE INSTITUTION CONDUCTING THE TEST: BURSA TECHNICAL UNIVERSITY-
CONSTRUCTION MATERIAL LABORATORY

TEST DATE: 14/OCTOBER/2024

MANUFACTURER: META ENDÜSTRİ YAPI SANAYİ VE TİCARET A.Ş.

PRODUCTION PLACE: PAZARYERİ ORGANİZE SANAYİ BÖLGESİ/BİLECİK/TÜRKİYE

PRODUCTION DATE: SEPTEMBER 2024

BRAND: BAUNORM

PURPOSE: The use of fiber reinforced plate panels in the construction sector is quite common due to the high strength and durability properties of these materials. This study was carried out to determine the flexural strength of fiber reinforced plate panels of different thicknesses.

METHOD: The test was carried out in accordance with TS EN 12467+A2 standard at two different support spans (417-625 mm) using the 3-point flexural method. In each test, the thickness of the plate was changed to 12, 14, 16, 18 and 20 mm.

TEST SAMPLES: The plate used in the tests have dimensions of 60x70 cm and thicknesses ranging from 12 mm to 20 mm. The plates were tested with three-point flexural loading at two different support spans. The loading rate was selected as 0.05 MPa/s in accordance with the standard. During the test, load was applied to each plate and the maximum stress values at the fracture of the plates were recorded. The flexural test setup is shown in Figure 1.



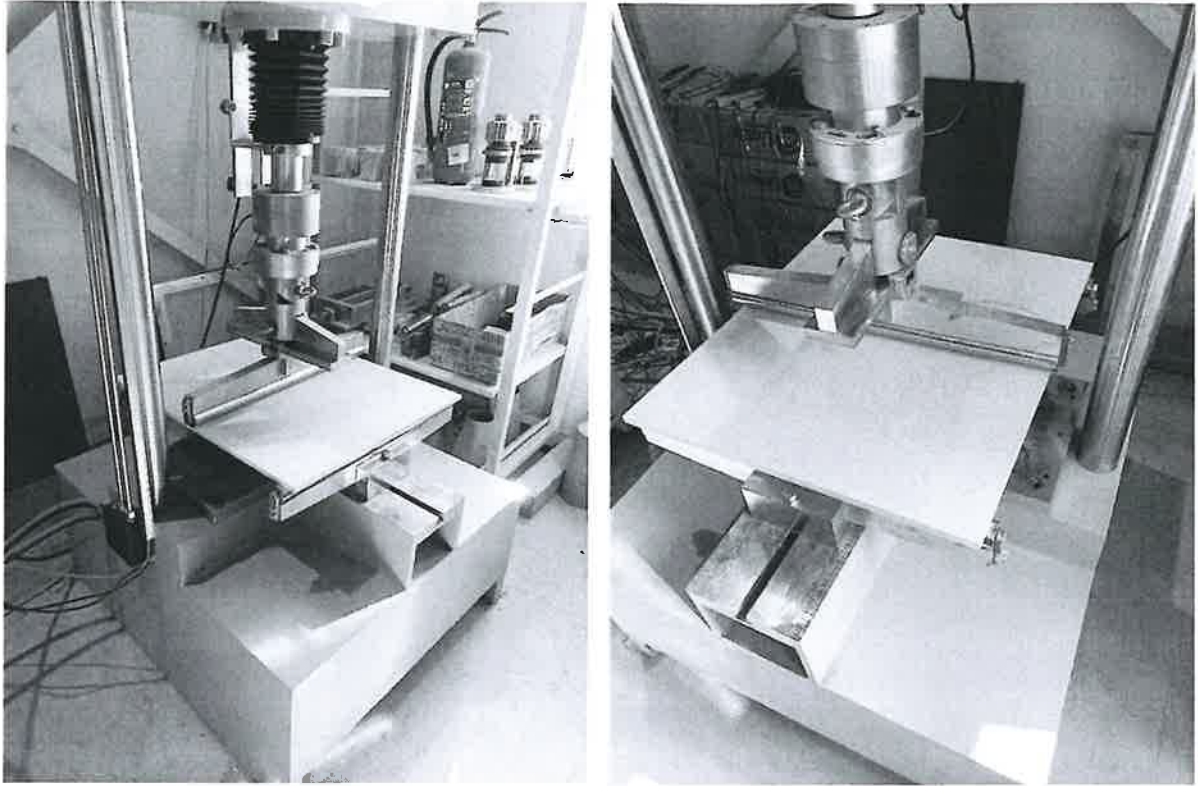


Figure 1. 3-point plate flexural test

The flexural strength results of the samples obtained from the flexural test are presented in Table 1 and Table 2.

Table 1. Flexural strengths (625 mm support span)

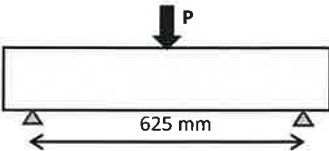
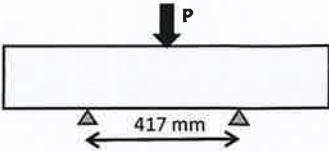
				
Thickness (mm)	Load (kN)	Flexural Strength (MPa)	Flexural Strength (kg/cm ²)	Support Span (mm)
12	1.05	11.38	113.8	625
14	2.09	16.66	166.6	
16	2.56	15.62	156.2	
18	3.42	16.49	164.9	
20	3.27	15.76	157.6	



Table 2. Flexural strengths (417 mm support span)

				
Thickness (mm)	Load (kN)	Flexural Strength (MPa)	Flexural Strength (kg/cm ²)	Support Span (mm)
12	1.89	13.68	136.8	417
14	3.58	19.04	190.4	
16	3.68	14.98	149.8	
18	5.28	16.98	169.8	
20	5.44	14.17	141.7	

The experimentally determined flexural strength values of the plates with 625 mm support span showed a significant change according to the plate thickness. According to the test results, the 12 mm thick plate exhibited the lowest flexural strength value (113.8 kg/cm²), while the 14 mm thick plate reached the highest flexural strength (166.6 kg/cm²).

According to the test results carried out on the plates with 417 mm support span, the 12 mm thick plate exhibited the lowest (124.5 kg/cm²) flexural strength value, while the 14 mm thick plate reached the highest (190.4 kg/cm²) flexural strength.