



TÜRK STANDARDLARI ENSTİTÜSÜ
DENEY ve KALİBRASYON
MERKEZİ BAŞKANLIĞI
Yapı Malzemeleri Yangın ve Akustik
Laboratuvarı Müdürlüğü



TURKISH STANDARDS INSTITUTION
HEADSHIP OF TEST and CALIBRATION CENTER
Construction Materials Fire and Acoustics Laboratory Directorate
Aydınlı Mahallesi Ulus Sokak No:7/1 34953 Tuzla / İSTANBUL
Tel: +90 (216) 560 05 27-28 Fax: +90 (216) 560 05 65 E-posta: yalitim@tse.org.tr
www.tse.org.tr

AB-0001-T

565242

11-20

MUAYENE VE DENEY RAPORU
TEST REPORT

Deneyi Talep Eden/Firma (Adı,Adresi,Şehir vb.) <i>Requesting/Customer</i> (Name,Address,City etc.)	: EPSBLOCK YAPI A.Ş. (EPSBLOCK YAPI A.Ş: ZEYTİNLİ MAH. 94030 SK. NO:9/A Seyhan-ADANA)
Deney Talep Tarihi/No <i>Order Date / No</i>	: 30.10.2020 / 500344
Numunenin Tanımı (No,Cins, Marka, Tip, Tür, Model vb.) <i>Sample Description</i> (No,Type,Model etc.)	: 665088,LIFEPAN LP-150 DUVAR PANELİ İLE OLUŞTURULAN DUVAR, LIFEPAN LP150, , - , - , 12.40 metrekare 665088,WALL WHICH IS CONSTITUTED BY LIFEPAN LP-150 WALL PANEL,LIFEPAN LP150,,,12,40 square meter
Numune Kabul Tarihi <i>Test Item Receipt Date</i>	: 30.10.2020
Deneylerin Yapıldığı Tarih <i>Date of Test</i>	: 02.11.2020 - 11.11.2020
Uygulanan Standard / Metod <i>Applied Standard/Method</i>	: TS EN ISO 10140-2: 2013-06 , TS EN ISO 717-1: 2013-06 TS EN ISO 10140-2: 2013-06 , TS EN ISO 717-1: 2013-06
Raporun Sayfa Sayısı <i>Number of pages of the report</i>	: 10
Açıklamalar <i>Remarks</i>	: Deney laboratuvarları olarak faaliyet gösteren TSE Deney ve Kalibrasyon Merkezi Başkanlığı Deney Laboratuvarları TÜRKAK'tan AB-0001-T ile TS EN ISO/IEC 17025:2012 standardına göre akredite edilmiştir. TSE Headship of Test and Calibration Center Testing Laboratories accredited by TÜRKAK under registration number AB-0001-T for TS EN ISO/IEC 17025:2012 as test laboratory. TÜRKAK deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşması imzalamıştır. TURKAK is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.

Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Numune müşteri tarafından alınmıştır, bu rapordaki sonuçlar numunenin teslim alındığı hali için geçerlidir. Bu rapor özel deney talebine istinaden düzenlenmiş olup, Standartlara Uygunluk Belgesi niteliğinde değildir. Partiyi temsil etmez, Piyasa Gözetim ve Denetim Faaliyetlerine esas oluşturamaz, ilan, reklam ve ihalelerde 6102 sayılı Türk Ticaret Kanunu'nun 54. ve 55. Maddelerinde yer alan haksız rekabet hükümlerine aykırılık teşkil edecek şekilde kullanılamaz. Söz konusu hususlara aykırı hareket edilmesi halinde hukuki ve cezai açıdan TSE sorumlu tutulamaz.

The sample was taken by the customer and the results in this report are valid for the status of the sample being received. This report has been prepared in accordance with the request for special tests and is not qualified as a Certificate of Conformity to Standards. It does not represent the party, does not constitute a basis for Market Surveillance and Audit Activities, and cannot be used in announcement, advertisements and tenders in contradiction with the provisions of unfair competition in Articles 54 and 55 of the Turkish Commercial Law No. 6102. TSE cannot be held responsible in case of violation of these issues in legal and criminal terms.

Mühür
Seal

Tarih
Date

Deney Sorumlusu
Person in charge of tests

Onaylayan
Approved by

Mehmet Hüdaî BAŞTÜRK
Deney Personeli
Testing Expert

Sencer GÜVEN
Laboratuvar Müdürü V.
Laboratory Manager Dep.

Bu rapor, hazırlayan laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir. Bu rapor, sadece deneyi yapılan numune için geçerlidir ve "Ürün Belgesi" yerine geçmez.

This test report shall not be reproduced other than in full except with the written permission of the laboratory. Test reports without signature and seal are not valid. This test report represents only tested sample(s), and shall not be used as Product Certificate



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

Test Laboratory	TSE Construction Materials Fire and Acoustic Laboratory Aydınlı Mah. Ulus Sokak No:7/1 Tuzla/İSTANBUL
Requested by	EPSBLOCK YAPI A.Ş. Zeytinli Mah. 94030 Sok. No:9/A Seyhan ADANA
Manufacturer	EPSBLOCK YAPI A.Ş.
Test Sample	WALL WHICH IS CONSTITUTED BY LIFEPAN LP-150 WALL PANEL

1. Introduction

At the request of **EPSBLOCK YAPI A.Ş.**, airborne sound insulation measurements were carried out for "**WALL WHICH IS CONSTITUTED BY LIFEPAN LP-150 WALL PANEL**" at the acoustic department of TSE Construction Materials Fire and Acoustic Laboratory according to TS EN ISO 10140-2: 2013 on 04.11.2020.

2. Test Facility

Test facility complies with all requirements of TS EN ISO 10140-2 and TS EN ISO 10140-5 standards. Dimensions, shape and mounting conditions were presented at the end of the report.

Volume of source room	114,9m ³
Volume of receiving room	174,4m ³
Test opening	12,4m ²

ROOM	Temperature °C	Pressure kPa	Humidity %
Source	22,8±0,8	101,1±1	51,6±5
Receiving	22,5±0,8	101,1±1	51,7±5

3. Test specimen

The specimen was chosen and delivered by the client.

Date of production: 2020

Specimen arrival date:03/ 11/2020





MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

3.1 Description of the test specimen

Description of the product: Wall panel is constituted by EPS filled concrete and fibercement.

Fibercement: 6mm thick fibercement board-outer faces

Inter Layer: Eps filled concrete

Masonry mortar: FIXEPS Flex 1013 mortar

Joint filler: FIXEPS Flex 1013 mortar

Sample Size (1 piece nominal)= 3000*610*150mm

Surface area: 12,4m²

Mass per unit area: ≈63,7 kg/m²

3.2 Installation of test specimen

- Test frame was chosen according to TS EN ISO 10140-5. Test frame has dimensions of 4060mm width and 3060mm height.
- Test specimen was installed in to the frame by client in a similar manner to the actual construction practice.
- Sample was placed side by side in to the frame in such a manner that without any gap between two parts.
- Approximately 5 cm height parts made of main panel were used at upper side of the wall in order to fill gap between test frame and 3000mm height panel.
- The ratio of the niche depths on either side of the test element is approximately 2:1.
- Installation of the frame between the test rooms was carried out by the laboratory.

4. Method

Test laboratory complies with all requirements of TS EN ISO 10140-5 and TS EN ISO 10140-2 standards.

- Two horizontally adjacent rooms, one of which is the source and the other is receiving, were used for tests.
- Test specimen was installed into the test opening as defined in clause 3.2 of this report.
- Loud speakers and microphones were placed at locations, which were determined previously.
- Microphone verifications were made before and after measurements.
- Sound pressure level measurements were carried out with mechanized microphone, during 60s. During the measurements, the time of rotating boom whole movement period is equal to 60 s.
- At the receiving room, 12 measurements were conducted for each 1/3 octave band frequencies to obtain reverberation time according to TS EN ISO 3382.
- Background noise measurements were conducted at receiving room for making correction on the sound pressure levels if necessary.

Results were calculated from the formula below which is indicated in TS EN ISO 10140-2 and TS EN ISO 10140-1 standards;

$$R=L_1-L_2+10\log (S/A)$$

$$A=0,16V/T$$

3/10





MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

Where;

L₁: is the energy average sound pressure level in the source room, in decibels;

L₂: is the energy average sound pressure level in the receiving room, in decibels;

S: is the area of the free test opening in which the test element is installed, in square meters;

A: is the equivalent sound absorption area in the receiving room, in square meters;

V: receiving room volume, cubic meters;

T: reverberation time in receiving room, s.

- Single number rating was obtained according to TS EN ISO 717-1.

5. Results

Results were given in 1/3 octave bands in tabular and graphic forms below.

Single number rating according to TS EN ISO 717-1 was found;

R_w (C;Ctr) = 36,4 (-1; -5) dB





MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

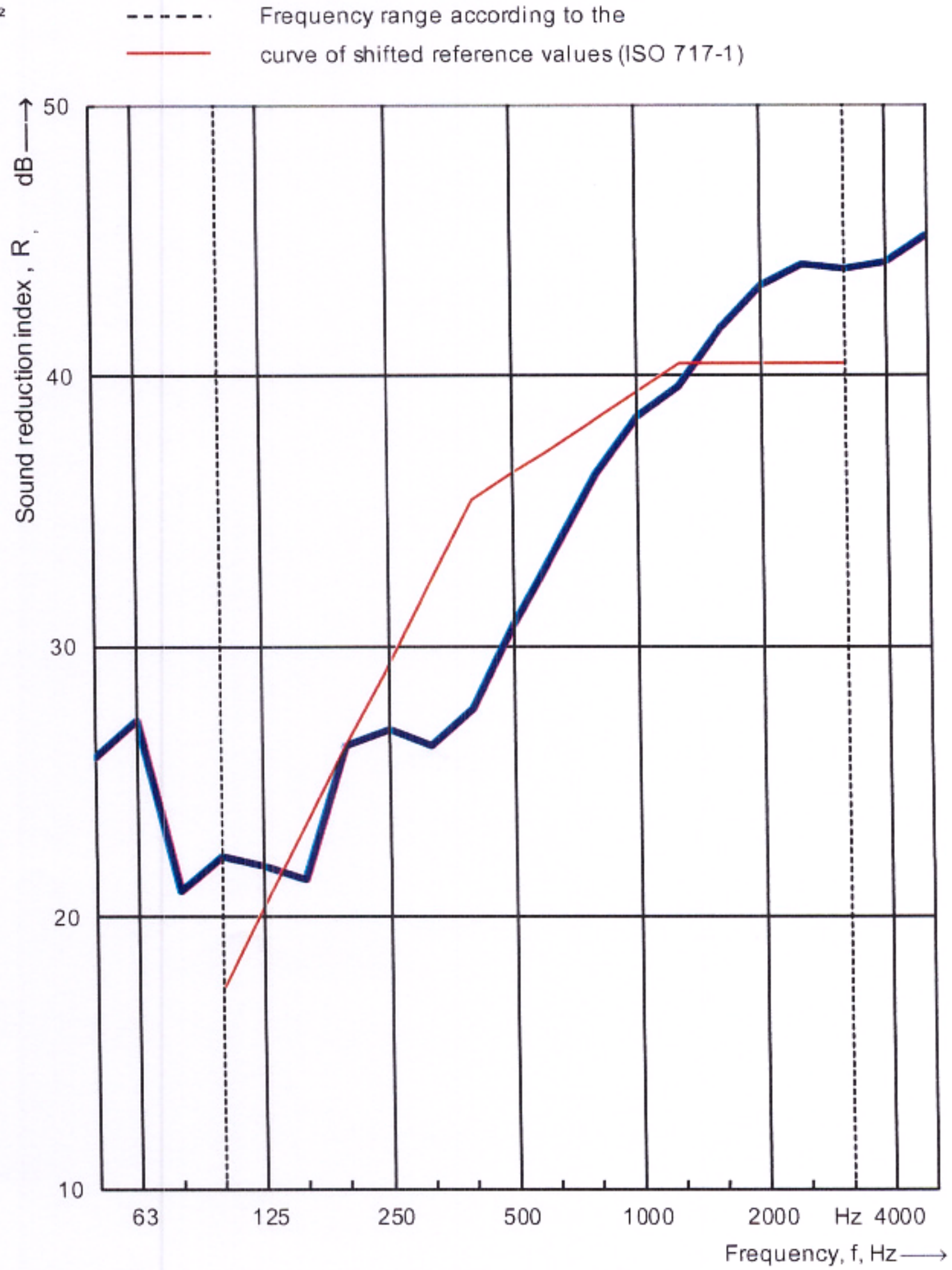
Sound reduction index according to ISO 10140-2

Laboratory measurement of sound insulation of building elements

Client: EPSBLOK YAPI A.Ş. Date of test: 4.11.2020
Test room identification: Two horizontally adjacent rooms, one of them is source room has a 114,9 m³ volume and the other one is receiving room has a 174,4 m³ volume, were used for tests. Diffusers were placed in rooms in order to provide diffuse sound field. Rooms are comply with all requirements of TS EN ISO 10140-2 and TS EN ISO 10140-5 standards. Figures regarding the rooms were presented in the report.
Test specimen mounted by: Test specimen was mounted by the client
Description of the specimen: WALL WHICH IS CONSTITUTED BY LIFEPAK LP-150 WALL PANEL
Static pressure: 101,1 kPa
Air temperature: 22,5 °C
Relative air humidity: 51,7 %
Mass per unit area: ≈63,7 kg/m²
Area, S_i of test element: 12,42 m²
Source room volume: 114,9 m³
Receiving room volume: 174,4 m³

Frequency f [Hz]	R 1/3 octave [dB]
50	25,9
63	27,2 ²
80	20,9
100	22,2
125	21,9
160	21,4
200	26,3
250	26,9
315	26,3
400	27,7
500	30,8
630	33,5
800	36,3
1000	38,5
1250	39,6
1600	41,7
2000	43,3
2500	44,1
3150	43,9
4000	44,2
5000	45,2

² Minimum values



Rating according to ISO 717-1

$R_w (C; C_{tr}) = 36,4 (-1 ; -5)$ dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50-3150} = -1$ dB $C_{50-5000} = -1$ dB $C_{100-5000} = 0$ dB

$C_{tr,50-3150} = -5$ dB $C_{tr,50-5000} = -5$ dB $C_{tr,100-5000} = -5$ dB



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

Sound reduction index according to ISO 10140-2

Laboratory measurement of sound insulation of building elements

Rating according to ISO 717-1

$R_w (C;C_{tr}) = 36,4 (-1 ; -5)$ dB

$C_{50-3150} = -1$ dB $C_{50-5000} = -1$ dB $C_{100-5000} = 0$ dB

Evaluation based on laboratory measurements results obtained in one-third-octave bands by an engineering method.

$C_{tr,50-3150} = -5$ dB $C_{tr,50-5000} = -5$ dB $C_{tr,100-5000} = -5$ dB

Sum of unfavourable deviations : 31,7 dB

Max. unfavourable deviation : 7,7 dB at 400 Hz

Frequency [Hz]	R [dB]	L1 [dB]	L2 [dB]	T [s]	Corr. [dB]	u. Dev. [dB]	Bgn status	Ftm status
50	25,9			2,28				Minimum values
63	27,2			2,90				
80	20,9			3,41				
100	22,2			2,96				
125	21,9			2,74				
160	21,4			2,48		2,0		
200	26,3			2,82		0,1		
250	26,9			2,83		2,5		
315	26,3			2,78		6,1		
400	27,7			2,93		7,7		
500	30,8			3,11		5,6		
630	33,5			3,01		3,9		
800	36,3			2,84		2,1		
1000	38,5			2,61		0,9		
1250	39,6			2,41		0,8		
1600	41,7			2,31				
2000	43,3			2,48				
2500	44,1			2,58				
3150	43,9			2,41				
4000	44,2			2,09				
5000	45,2			1,88				

Receiving room volume: 174,4 m³

Source room volume: 114,9 m³

Area, S, of test element: 12,42 m²

Air temperature: 22,5 °C

Relative air humidity: 51,7 %

Static pressure: 101,1 kPa

Mass per unit area: ≈63,7 kg/m²





MUAYENE - DENEY SONUÇLARI TEST RESULTS
TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

R'_{max} comparison table

Frequency [Hz]	R [dB]	R' _{max} [dB]	R' _{max} - R [dB]
50	25,9	43,8	17,9
63	27,2	40,6	13,4
80	20,9	46,1	25,2
100	22,2	50,8	28,6
125	21,9	49,5	27,6
160	21,4	51,1	29,7
200	26,3	53,5	27,2
250	26,9	53,6	26,7
315	26,3	58,9	32,6
400	27,7	62,8	35,1
500	30,8	64,9	34,1
630	33,5	69,1	35,6
800	36,3	73,1	36,8
1000	38,5	77,2	38,7
1250	39,6	80,4	40,8
1600	41,7	83,6	41,9
2000	43,3	88,2	44,9
2500	44,1	90,2	46,1
3150	43,9	91,2	47,3
4000	44,2	89,8	45,6
5000	45,2	89,4	44,2

Legend:

R: Sound reduction index of the test specimen.

R'_{max}: The maximum sound reduction index of a building element.

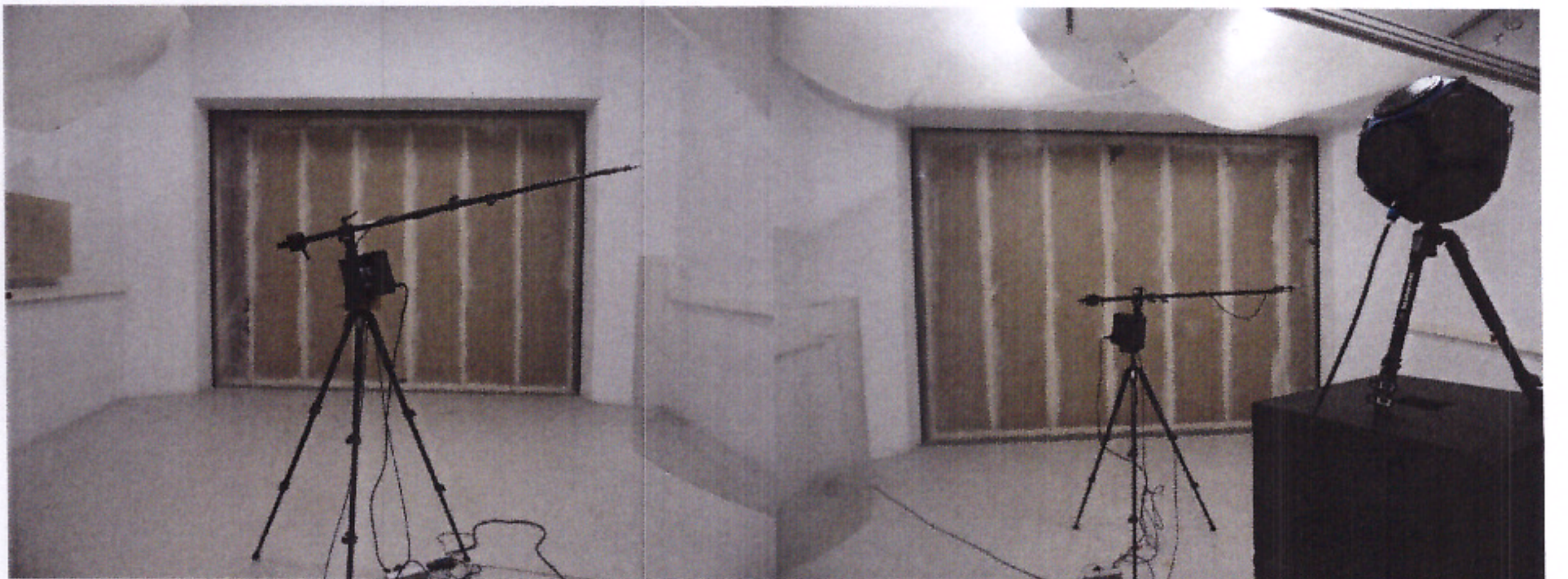
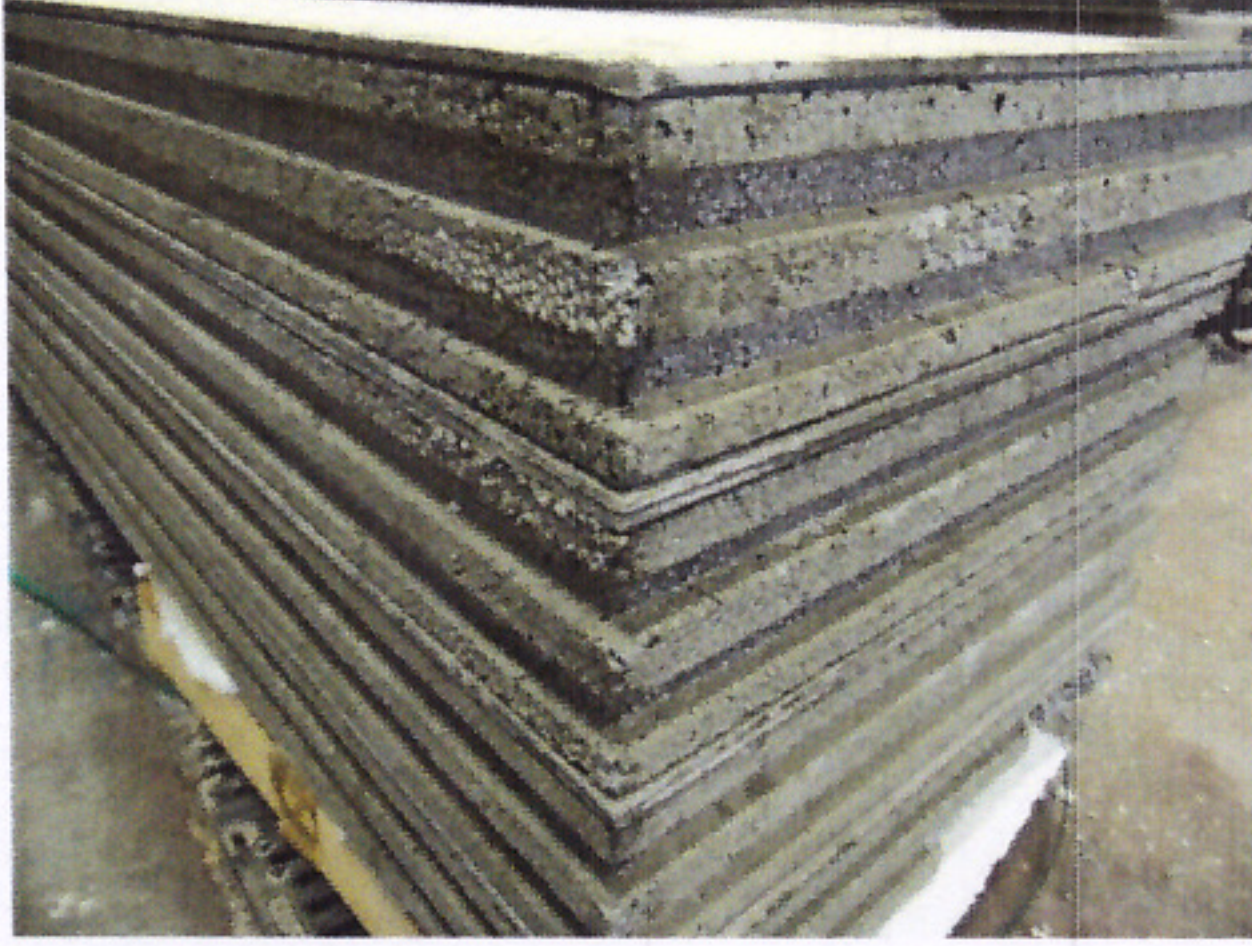




MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

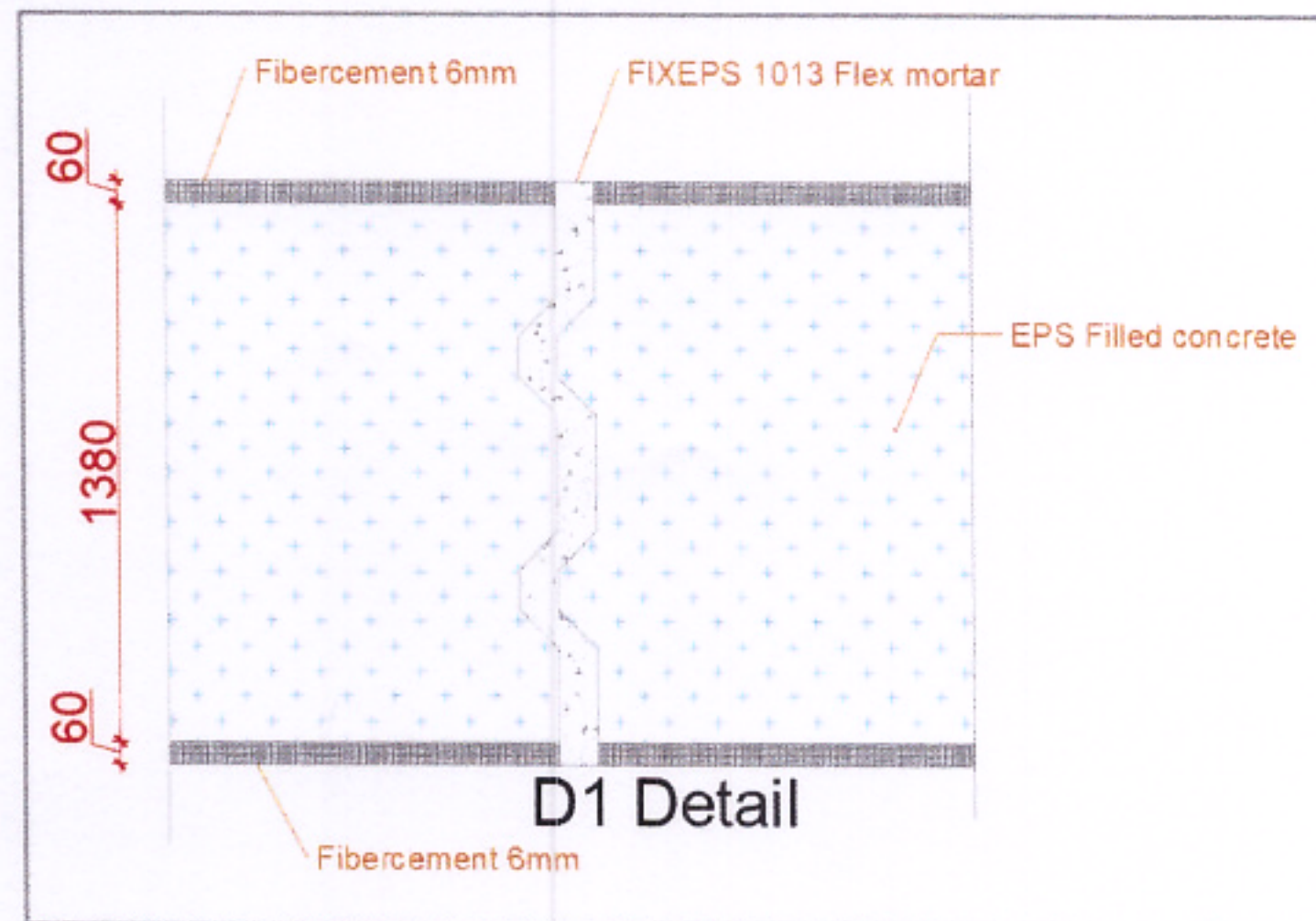
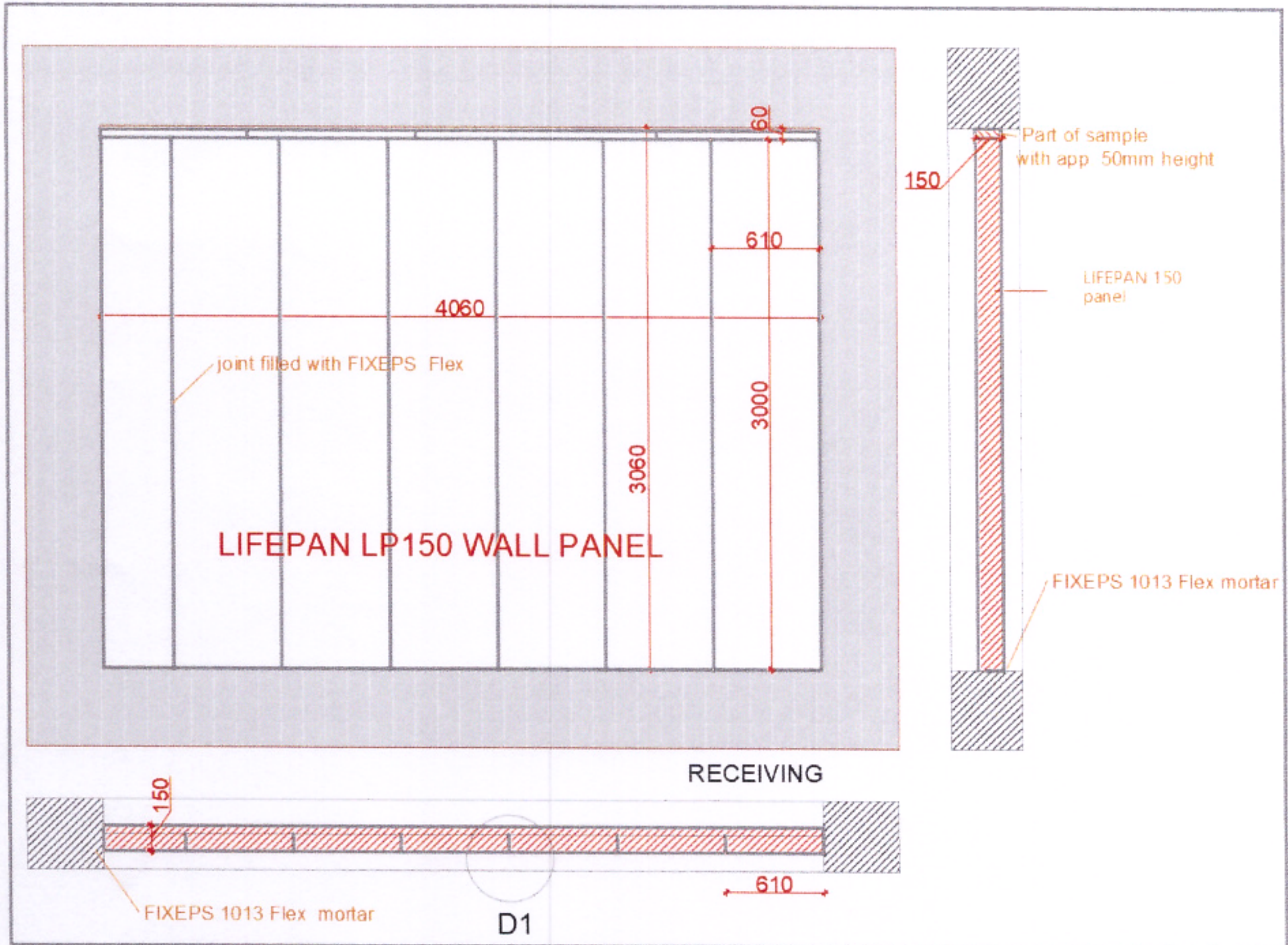
PHOTOS FOR TEST SPECIMEN IN SEVERAL STAGES



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

SAMPLE APPEARANCE AND SECTIONS





MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

AB-0001-T

565242

11-20

FIGURES REGARDING THE TEST FACILITY

