



TÜRK STANDARLARI ENSTİTÜSÜ
DENEY ve KALİBRASYON
MERKEZİ BAŞKANLIĞI
YAPI MALZEMELERİ YANGIN VE AKUSTİK
LABORATUVAR MÜDÜRLÜĞÜ



Test
TS EN ISO/IEC 17025
AB-0001-T

AB-0001-T
309176
10-22

TURKISH STANDARDS INSTITUTION
HEADSHIP OF TSE TEST and CALIBRATION CENTER
CONSTRUCTION MATERIALS FIRE AND ACOUSTICS LABORATORY

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MUAYENE VE DENEY RAPORU
TEST REPORT

Deneysel Talep Eden/Firma : (Adi, Adresi, Şehir vb.) Requesting/Customer (Name, Address, City etc.)	İZOGUARD İZOLASYON VE İNŞAAT SANAYİ TİCARET LİMİTED ŞİRKETİ YEŞİLYURT MAH. ÇUHADAR CAD. Dış Kapı No:3 İç Kapı No:22 BAŞİSKELE KOCAELİ
Deneysel Talep Tarihi / No : Order Date/No.	25.08.2022 / 2022-154711
Numunenin Tanımı : (Cins, Marka, Sınıf, Tip, Tür, Model vb.) Sample Description (Type, Mark, Class, Model etc.)	2022-256794, Fenolik Elyaf Keçe-Phenolic Fiber Felt, İzoTon, -, -, -, -, 8.00, adet
Numune Kabul Tarihi : Sample Receipt Date	29.08.2022
Deneysel Yapıldığı Tarih : Date of Test	02.09.2022 / 04.10.2022
Uygulanan Standart Metot : Applied Standard/Method	TS EN ISO 10140-1: 2021/-, TS EN ISO 10140-3/-, TS EN ISO 717-2:2021/-
Raporun Sayfa Sayısı : Number of pages of the report	10
Deneysel Sonucu : Test Result	-
Açıklamalar : Remarks	

Yukarıda tanımlanan numune için laboratuvarımızda yapılan muayene ve deneylerden elde edilen sonuçlar müteakip sayfalarda verilmiştir.
The testing and /or measurement results are given on the following pages which are part of this report.

Deneysel laboratuvarları olarak faaliyet gösteren TSE Deney ve Kalibrasyon Merkezi Başkanlığı Deney Laboratuvarları TÜRKAK'tan AB-0001-T ile TS EN ISO/IEC 17025:2017 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 17025:2017 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.

Deneysel ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deneysel 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.

Karekod QR Code	Tarih Date	Deneysel Sorumlusu Person in charge of test	Kontrol Eden Reviewer	Onaylayan Head of Laboratory
	04.10.2022	BERAT USTA	HALİL ALPER YILDIRIM	SENCER GÜVEN

Bu rapor, hazırlayan laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve karekodsuz raporlar geçersizdir. Bu rapor, sadece deneysel 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.

Bu doküman elektronik ortamda imzalanmıştır.

Doğrulama adresi: <https://basvuru.tse.org.tr/uye/QRKodDogrulama?code=B194B3>



MUAYENE - DENEY SONUÇLARI TEST RESULTS
TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

Test Laboratory	TSE Yapı Malzemeleri Yangın ve Akustik Laboratuvar Müdürlüğü Aydınlı Mah. Ulus Sokak No:7/1 Tuzla/İSTANBUL
Requested by	İZOGUARD İZOLASYON VE İNŞAAT SAN. TİC. LTD. ŞTİ. Yeşilyurt Mah. Çuhadar Cad. No:22/3 Başiskele/ KOCAELİ
Test Sample	Floating floor system which is constituted with İzoTon Brand ≈15mm thick phenolic fiber felt and ≈60 mm screed concrete

1. Introduction

At the request of the “İZOGUARD İZOLASYON VE İNŞAAT SAN. TİC. LTD. ŞTİ.” for measuring the impact noise improvement value of the “Floating floor system which is constituted with İzoTon Brand ≈15mm thick phenolic fiber felt and ≈60 mm screed concrete”, according to “TS EN ISO 10140-3:2021, measurements were carried out at the acoustic department of TSE Construction Materials Fire and Acoustic Laboratory on 26.09.2022

2. Test Facility

Test facility complies with all requirements of TS EN ISO 10140-3 standard. Dimensions, shape and mounting conditions are presented at the end of the report

Volume of receiving room	174.4m³
Volume of source room	74.1m³
Test gap	18.3m²
Receiving room floor area	45m²

ROOM	Temperature °C	Pressure kPa	Humidity %
Source	22,9±0,8	100,5±1	45,2±5
Receiving	22,7±0,8	100,8±1	49,7±5

3. Test specimen

The specimen was prepared and installed by the client.

Date of production:-

Delivery date: 09.2022

Curing time:21 days



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

3.1 Description of the test specimen

Description of the product: Floating floor system which is constituted with İzoTon Brand ≈ 15 mm thick phenolic fiber felt

Concrete: ≈ 60 mm thickness

Made of: İzoTon Phenolic fiber felt is a heat and sound insulation material in which the fragmented fabrics and fibers obtained by recycling without chemical additives are blended, compressed by cooking method and brought to an applicable thickness.

Surface area: $18,3\text{m}^2$

Mass per unit area: $\approx 88,1\text{ kg/m}^2$

Dimensions	Width (mm)	Length (mm)	Thickness (mm)
	4890	3750	≈ 75 (felt+ screed concrete)

* Product specifications are based on client declaration.

3.2 Installation of the test specimen

* Heavyweight reinforced concrete slab is chosen according to TS EN ISO 10140-5. The slab has dimensions of 4,89m length and 3,75m width.

* Test specimen was installed in the reference slab by client in a similar manner to the actual construction practice.

* Installation of the test sample into the test frame was carried out by the client.

* Installation of the test slab between the test rooms is carried out by the laboratory itself.

* Firstly İzoTon Brand ≈ 15 mm thick polyester fiber felt was laid out on the reference slab directly (Samples were placed 4cm width on top of each other). Afterwards, screed concrete with ≈ 60 mm thick was applied on the phenolic fiber felt directly.

* Sample was conditioned for 21 days in laboratory.

4. Method

Test laboratory complies with all requirements of TS EN ISO 10140-5 and TS EN ISO 10140-3 standards.

- Two vertically adjacent rooms, one of them is source and the other one is receiving, are used for tests. Upper one is used as source room and lower one is used as receiving room.
- Test specimen was installed in the test gap as defined in clause 3.2 of this report.
- Loud speakers and microphones are placed at locations which are determined previously.
- Microphone calibration was made before measurements.
- Six different tapping machine position were used during measurements.
- Measurements didn't start until the noise become stable.
- 60 second duration was used for sound pressure level measurements for each tapping machine position. And also the time of rotating boom movement period is equal to 60 s measurement duration.



MUAYENE - DENEY SONUÇLARI TEST RESULTS
TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

- 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 make correction on the sound pressure levels if necessary.
- Results were obtained from formula below which is indicated in TS EN ISO 10140-3 and TS EN ISO 10140-1 standards;

With specimen;

$$L_n = L_i + 10 \log (A/A_0)$$

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

Where;

L_n : Normalized impact sound pressure level in the receiving room, decibel

L_i : Sound pressure level in the receiving room, decibel

A : Equivalent sound absorption area in the receiving room, m²

V : Volume of receiving room, m³

T : Reverberation time in the receiving room, s

A_0 : 10 m²

Without specimen (reference slab);

$$L_{n0} = L_i + 10 \log (A/A_0)$$

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

Where;

L_{n0} : Normalized impact sound pressure level in the receiving room, decibel

L_i : Sound pressure level in the receiving room, decibel

A : Equivalent sound absorption area in the receiving room, m²

V : Volume of receiving room, m³

T : Reverberation time in the receiving room, s

A_0 : 10 m²

Impact sound insulation improvement;

$$\Delta L = L_n - L_{n0}$$

Where, ΔL is impact sound insulation improvement as a function of frequency

- Single number rating was performed according to TS EN ISO 717-2



5. Results

Normalized impact sound pressure levels with and without specimen and impact sound insulation improvement levels are given in 1/3 octave band frequencies in tabular and graphic form below.

According to TS EN ISO 717-2 single number rating is;

$$\Delta L_w = 25,0 \text{ dB} \quad C_{1\Delta} = -14 \text{ dB} \quad C_{1,r} = 3 \text{ dB}$$

for the specimen under test.

MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

Reduction of impact sound pressure level according to ISO 10140-1

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavy weight reference floor

Client: İZOGUARD İZOLASYON VE İNŞAT SAN. TİC. LTD. ŞTİ. Date of test: 26.9.2022
Test room identification: Two vertically adjacent rooms, one of them is source room which is movable has 74,1 m³ volume and the other one is receiving room has 174,4 m³ volume, are used for tests. Diffusers are placed in rooms in order to provide diffuse sound field. Rooms are comply with all requirements of TS EN ISO 10140-2/3 and TS EN ISO 10140-5 standards. Figures regarding the rooms were presented in the report.

Description of the specimen: Floating floor system which is constituted with İzotOn Brand ≈15mm thick phenolic fiber felt and ≈60 mm screed concrete

Test specimen mounted by the client

Receiving room:

Source room:

Volume: 174,4 m³

Volume: 74,1 m³

Air temperature: 22,7 °C

Air temperature: 22,9 °C

Relative air humidity: 49,7 %

Relative air humidity: 45,2 %

Static pressure: 100,8 kPa

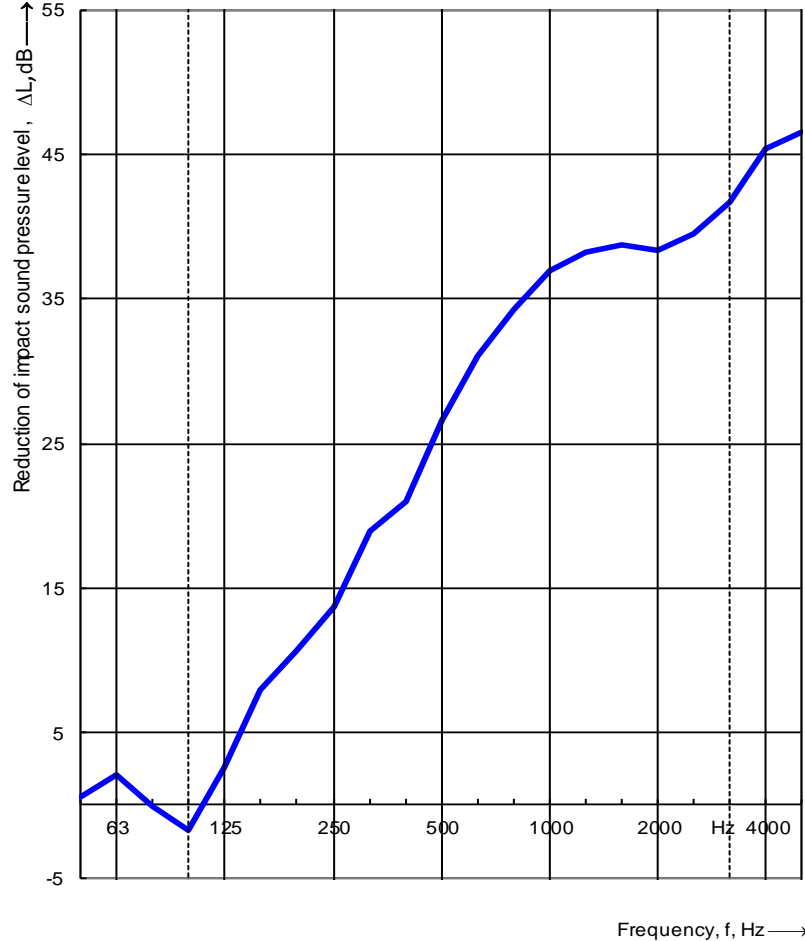
Type of reference floor: Heavyweight

Mass per unit area: ≈88,1 kg/m²

----- Frequency range for rating according to ISO 717-2

Curing time: 21 days

Frequency f [Hz]	L _{n,0} 1/3 oct. [dB]	ΔL 1/3 oct. [dB]
50	51,4	0,6
63	57,3	2,1
80	63,4	-0,1
100	64,8	-1,8
125	69,2	2,6
160	72,6	8,0
200	75,0	10,7
250	73,6	13,7
315	74,5	19,0
400	74,5	21,0
500	74,7	26,6
630	75,0	31,1
800	75,4	34,2
1000	75,1	37,0
1250	75,2	38,2
1600	76,0	38,7
2000	75,4	38,4
2500	74,8	39,5
3150	73,3	41,6
4000	72,7	45,4
5000	70,4	46,5



Rating according to ISO 717-2

ΔL_w = 25,0 dB

C_{1,Δ} = -14 dB

C_{1,r} = 3 dB

The results are based on a test performed with an artificial source under laboratory conditions (engineering method) with the specified reference floor.



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

Reduction of impact sound pressure level according to ISO 10140-1

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyw eight reference floor

Rating according to ISO 717-2

$$\Delta L_w = 25,0 \text{ dB}$$

$$C_{1,\Delta} = -14 \text{ dB}$$

$$C_{1,r} = 3 \text{ dB}$$

The results are based on a test performed with an artificial source under laboratory conditions (engineering method) with the specified reference floor.

Weighted normalized impact sound pressure level $L_{n,0,w} = 80,6 \text{ dB}$

Weighted normalized impact sound pressure level $L_{n,w} = 56,0 \text{ dB}$

Weighted normalized impact sound pressure level $L_{n,r,w} = 53,0 \text{ dB}$

Frequency [Hz]	ΔL [dB]	$L_{n,0}$ [dB]	L_n [dB]	$L_{n,r}$ [dB]	L2 [dB]	T [s]
50	0,6	51,4	50,8		51,0	2,93
63	2,1	57,3	55,2		56,0	3,38
80	-0,1	63,4	63,5		63,8	2,96
100	-1,8	64,8	66,6	68,8	66,9	3,02
125	2,6	69,2	66,6	64,9	65,4	2,13
160	8,0	72,6	64,6	60,0	63,5	2,15
200	10,7	75,0	64,3	57,8	63,6	2,38
250	13,7	73,6	59,9	55,3	58,9	2,21
315	19,0	74,5	55,5	50,5	53,5	1,78
400	21,0	74,5	53,5	49,0	51,9	1,92
500	26,6	74,7	48,1	43,9	47,3	2,32
630	31,1	75,0	43,9	39,9	43,5	2,52
800	34,2	75,4	41,2	37,3	40,9	2,59
1000	37,0	75,1	38,1	35,0	37,6	2,48
1250	38,2	75,2	37,0	33,8	36,3	2,36
1600	38,7	76,0	37,3	33,3	36,6	2,37
2000	38,4	75,4	37,0	33,6	36,5	2,47
2500	39,5	74,8	35,3	32,5	34,9	2,53
3150	41,6	73,3	31,7	30,4	31,1	2,42
4000	45,4	72,7	27,3		26,0	2,07
5000	46,5	70,4	23,9		22,2	1,88

Receiving room:

Volume: 174,4 m³
Air temperature: 74,1 m³
Relative air humidity: 49,70 %
Static pressure: 100,8 kPa
Mass per unit area: ≈88,1 kg/m²
Curing time: 21days

Source room:

Volume: 74,1 m³
Air temperature: 22,9 °C
Relative air humidity: 45,2 %

Type of reference floor: Heavyw eight



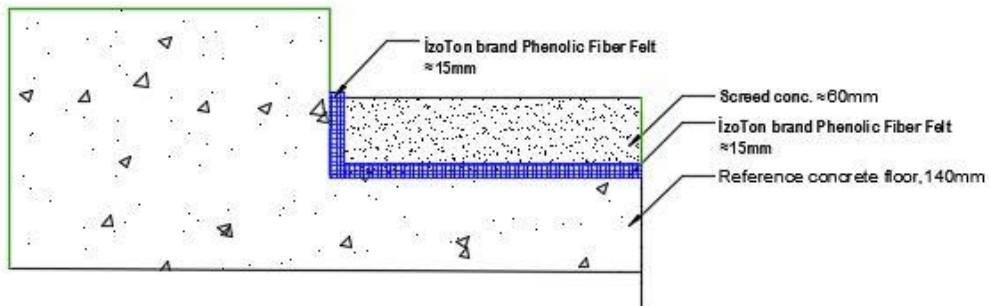
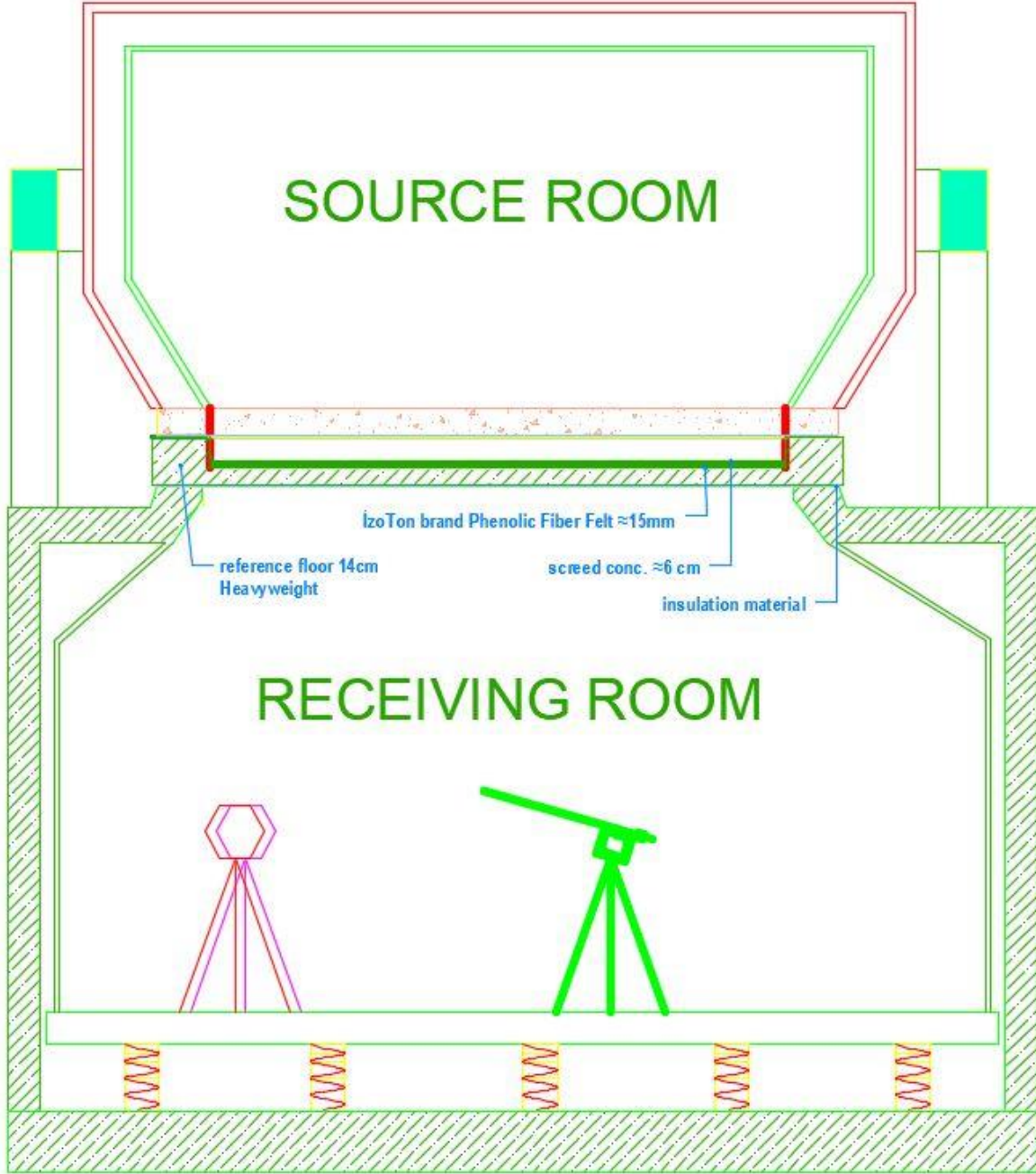
MUAYENE - DENEY SONUÇLARI TEST RESULTS
TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

PHOTOS FOR TEST SPECIMEN IN SEVERAL STAGES



MUAYENE - DENEY SONUÇLARI TEST RESULTS
TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

FIGURE REGARDING TEST ROOMS



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 10140-3 : 2021 ; TS EN ISO 10140-1: 2021; TS EN ISO 717-2:2021

SOURCE AND RECEIVING ROOM LAYOUTS AND TAPPING MACHINE POSITIONS

