



TEBAR®

Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

Order Number:	UDI1800024
Report Number:	CPR-PTD/R18-30
Page Number	1/4
Report Date:	18 th September 2018

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş. 'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Product Type Determination Report

Applicant (Name and Address):

PLUSKİM KİMYA ve SAN. TİC. A. Ş.

Cumhuriyet Mah. Nazım Hikmet Bulvarı
Concepta Plaza A Blok Sok. No:6 Kat 4 D:22
Esenyurt / İSTANBUL

Content: Product type determination report according to EN 14315-1 and EN 13172 of factory made thermal insulation products from sprayed rigid polyurethane foam (PUR)

Product Standard: EN 14315-1:2013

Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

Trademarks: PLUSKİM

Intended Use: Thermal insulation for buildings

Plant: Selahaddin Eyyübi Mah. Kırac Esenyurt /İSTANBUL

Number of Production Line: 1

Approved By

Gülsüm ÖZGÜN GÜVEN

AoC Manager

İNZA KASE

Notified Body Number: 2164

Şerif Ali Çiftliği Hendem Cd. No:58
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İlgili ürün için hazırlanmış olan bu ürün tipi tayin (PTD)raporu; uygunluk teyit sistemi 3 kapsamında üretici tarafından uygunluk beyanının ve Yapı Malzemeleri Yönetmeliği kapsamında CE işaretleme sisteminin yapılması amacıyla kullanılabilir. Deney laboratuvarı, deneye tabi tutulan numuneler ile ilgili üreticinin fabrika üretim kontrolüne uygun referans numuneleri saklamakla birlikte deneye tabi tutulacak ürünlerden numune alımında herhangi bir rol oynamamakta ve sadece kendisi tarafından saklanan referans numunelerin izlenebilirliğini sağlamaktadır. The product type determination report assigned to the related product is appropriate to a declaration of conformity by the manufacturer within the context of a system 3 attestation of conformity and CE marking under the Construction Products Directive. The test laboratory has, therefore, played no part in sampling the product for the test, although it holds appropriate references to the manufacturer's factory production control that is aimed to be relevant to the samples tested and that will provide for their traceability.

Bu rapor izin alınmadan kısmi olarak ya da içeriği değiştirilerek çoğaltılamaz. Bu raporun sadece orijinal kopyası geçerlidir. TEBAR A.Ş. Orijinali dışındaki kopyalardan sorumlu tutulamaz.
FR.075/05/01.07.2013



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Report Number:	CPR-PTD/R18-30
Page Number	2/4
Report Date:	18 th September 2018

1.PROCEDURE:

The declared values of water permeability, thermal conductivity, reaction to fire, compressive strength classes of thermal insulation products made from sprayed rigid polyurethane foam (PUR) established by the manufacturer "PLUSKİM KİMYA ve SAN. TİC. A.Ş." and documented to the TEBAR Co. Inc.

Characteristics defined by CPR	Related clauses of harmonized product Standard	Test Method	PLUSKİM
Water permeability	4.3.3. Short term water absorption	EN 1609	0,2
Reaction to fire	4.2.3. Reaction to fire	EN 13501-1	E
Release of dangerous substances	-	-	-
Thermal Resistance	4.2.2. Thermal conductivity (W/m.K)	TS EN12667, TS EN 14315-1 Ek C	0,031
Compressive strength	4.3.4. Compressive stress at 10 % deformation	EN 826	CS(10/Y)400

The required test samples which are to be used for attestation of conformity purposes were taken by the representative of "PLUSKİM KİMYA ve SAN. TİC. A.Ş." according to TEBAR Co. Inc's instructions and EN 13172 sent by the manufacturer "PLUSKİM KİMYA ve SAN. TİC. A.Ş." product type determination tests performed by the TEBAR Co. Inc. (Notified Body Number 2164); according to Annex ZA2 of EN 14315-1 regarding the following properties as requested by the manufacturer:

- Thermal Conductivity and Thermal Resistance EN 12667/ EN 14315-1 EK C
- Reaction to fire EN ISO 11925-2
- Compressive strength EN 826
- Short term water absorption EN 1609

2.TEST RESULTS:

The product type determination test results performed by TEBAR Co. Inc. and declared values for related property defined by manufacturer "PLUSKİM KİMYA ve SAN. TİC. A.Ş." are given below in tables.

2.1.THERMAL CONDUCTIVITY:

The products collected into product groups according to clause 4 of EN 13172, regarding to the manufacturer's declaration on single thickness. Thermal conductivity of the product determined according to EN 12667 regarding to clause 4.2.2 of EN 14315-1.

Bu rapor izin alınmadan kısmi olarak ya da içeriği değiştirilerek çoğaltılamaz. Bu raporun sadece orijinal kopyası geçerlidir. TEBAR A.Ş. Orijinali dışındaki kopyalardan sorumlu tutulamaz.
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Report Number:	CPR-PTD/R18-30
Page Number	3/4
Report Date:	18 th September 2018

Group 1: Thermal insulation products made from sprayed rigid polyurethane foam (PUR) (40 kg/m³)

Product	Production Date (dd.mm.yyyy)	Declared Value (W/m.K)	Measured Value (W/m.K)	Evaluation	Report No:
PLUSKİM	10.08.2018	0,031	0,0301	Uygun	CPR-T/R18-474
	11.08.2018		0,0298	Uygun	CPR-T/R18-475
	12.08.2018		0,0297	Uygun	CPR-T/R18-476
	13.08.2018		0,0300	Uygun	CPR-T/R18-477

2.2.COMPRESSIVESTRENGTH

The products collected into product groups according to clause 4 of EN 13172, regarding to the manufacturer's declaration on single thickness. Compressive strength of the product determined according to EN 826 regarding to clause 4.3.4 of EN 14315-1.

Group 1: Thermal insulation products made from sprayed rigid polyurethane foam (PUR) (40 kg/m³)

Product	Production Date (dd.mm.yyyy)	Declared Value (kPa)	Measured Value (kPa)	Evaluation	Report No:
PLUSKİM	10.08.2018	CS(10/Y)400	408	Uygun	CPR-T/R18-470
	11.08.2018		414	Uygun	CPR-T/R18-471
	12.08.2018		453	Uygun	CPR-T/R18-472
	13.08.2018		443	Uygun	CPR-T/R18-473

2.3. SHORT TERM WATER ABSORPTION

The products collected into product groups according to clause 4 of EN 13172, regarding to the manufacturer's declaration on single thickness. Water absorption of the product determined according to EN 1609 regarding to clause 4.3.3. of EN 14315-1.

Group 1: Thermal insulation products made from sprayed rigid polyurethane foam (PUR) (40 kg/m³)

Product	Production Date (dd.mm.yyyy)	Declared Value (kg/m ²)	Measured Value (kg/m ²)	Evaluation	Report No:
PLUSKİM	10.08.2018	0,2	0,11	Uygun	CPR-T/R18-466
	11.08.2018		0,11	Uygun	CPR-T/R18-467
	12.08.2018		0,09	Uygun	CPR-T/R18-468
	13.08.2018		0,10	Uygun	CPR-T/R18-469

Bu rapor izin alınmadan kısmi olarak ya da içeriği değiştirilerek çoğaltılamaz. Bu raporun sadece orijinal kopyası geçerlidir.
TEBAR A.Ş. Orijinali dışındaki kopyalardan sorumlu tutulamaz.
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Order Number:	UDİ1800024
Report Number:	CPR-PTD/R18-30
Page Number	4/4
Report Date:	18 th September 2018

2.4. REACTION TO FIRE

The products collected into product groups regarding to clause 4.2.3 of EN 14315-1 according to EN 13501-1. Regarding to the manufacturer's declaration on reaction to fire classification as "E", the product tested according to EN ISO 11925-2.

Group 1: Thermal insulation products made from sprayed rigid polyurethane foam (PUR) (40 kg/m³)

Product	Production Date (dd.mm.yyyy)	Reaction to fire		Evaluation	Report No:
		Declared Value	Measured		
PLUSKİM	10.08.2018	E	E	Uygun	CPR-T/R18-478
	11.08.2018				
	12.08.2018				
	13.08.2018				

3. EVALUATION:

The tested thermal insulation products made from sprayed rigid polyurethane foam (PUR) samples comply with the declared water permeability, thermal conductivity, reaction to fire, compressive strength classes of the manufacturer "PLUSKİM KİMYA ve SAN. TİC. A.Ş."

Product type determination tests are valid until the conditions not changed. Any modifications on manufacturing process and raw materials or any changes on component suppliers which may have affect on one or more properties of the product, product type determination testing should be repeated for relevant characteristics. The manufacturer can use this product type determination report for issuing Performance Declaration according to EN 14315-1 (Annex ZA Clause ZA2.2.) only if factory production control is correctly carried out.

The manufacturer "PLUSKİM KİMYA ve SAN. TİC. A.Ş." entitled to use CE Conformity Mark regarding to Performance Declaration with the declared values of water permeability, thermal conductivity, reaction to fire, compressive strength classes as long as factory production control is correctly carried out according to EN 14315-1:2013; Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation which are produced with a trademark of "PLUSKİM" in the plant in "Selahaddin Eyyübi Mah. Kırış Esenyurt / İSTANBUL"

Date: 18/09/2018, İstanbul



Approved by
Gülsüm ÖZGÜN GÜVEN
AoC Manager

Bu rapor izin alınmadan kısmi olarak ya da içeriği değiştirilerek çoğaltılamaz. Bu raporun sadece orijinal kopyası geçerlidir. TEBAR A.Ş. Orijinali dışındaki kopyalardan sorumlu tutulamaz.
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REACTION TO FIRE CLASSIFICATION REPORT – EN 13501-1

Rapor No: **CPR-S/R18-96**

Owner: PLUSKİM KİMYA ve SAN. TİC. A. Ş.

Product Definition: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

Trade Mark: PLUSKİM

Product Standard: TS EN 14315-1:2013

Production Plant: Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

TEBAR A.Ş; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Tebar Test Belgelendirme Araştırma ve Geliştirme Tic. A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası 2164

Prepared by Hasan ATABAY/ Laboratory Tec.		Reviewed by Evren KARA / Tech. Lab. Man.
İMZA		İMZA

*Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.
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İstek Numarası:	Rapor Numarası:	Sayfa No/Sayısı	Rapor Tarihi:
UDİ1800024	CPR-S/R18-96	1/4	10.09.2018

FR.084/03/01.07.2013



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Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

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1. Introduction:

This classification report defines the classification of thermal insulation products made from sprayed rigid polyurethane foam which is produced by "PLUSKİM KİMYA ve SAN. TİC. A.Ş." assigned to "PLUSKİM", in accordance with procedures given in EN 13501-1.

2. Details of classified product:

2.1. General information

The product thermal insulation products made from sprayed rigid polyurethane foam produced by "PLUSKİM KİMYA ve SAN. TİC. A.Ş." is defined as "PLUSKİM" which is used for thermal insulation in buildings.

2.2. Description of the product

Thermal insulation products made from sprayed rigid polyurethane foam produced by "PLUSKİM KİMYA ve SAN. TİC. A.Ş." is defined as "PLUSKİM", is described below depends on manufacturer's declarations.

Product Density : 40 kg/m³

Coating : Yok

Blowing agent : 365 mfc

2.3.Product Standards: EN 14315-1: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation.

3.Sınıflandırmayı Destekleyen Deney Raporları ve Deney Sonuçları:

3.1.Deney Raporları:

Name of laboratory	Name of sponsor	Test report ref. no.	Test method
TEBAR A.Ş.	PLUSKİM KİMYA ve SAN. TİC. A.Ş.	CPR-T/R18-478	TS EN ISO 11925-2

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UDİ1800024	CPR-S/R18-96	2/4	10.09.2018

FR.084/03/01.07.2013





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3.2. Test results:

Test Method	Parameter	Number of tests	Results	
			Continuous parameter mean (m)	Compliance parameters
EN ISO 11925-2 Surface flame attack* 15s exposure Flaming droplets/particles	$F_s \leq 150 \text{ mm}$	6x1	0,12	Compliant
	Ignition of the filter paper		N	Compliant

*: as required to the end use application of the product.

4. Classification and field of application:

4.1. Reference of classification:

This classification has been carried out in accordance with clause 10.3 and 10.10.2. of EN 13501-1 "Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests".

4.2. Classification:

The product thermal insulation products made from sprayed rigid polyurethane foam produced by "PLUSKİM KİMYA ve SAN. TİC. A.Ş." is defined as "PLUSKİM" in relation to its reaction to fire behavior is classified as below.

Fire Behavior		Smoke Production		Flaming Droplets
E	-	-	-	-

Reaction to fire classification: E

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FR.084/03/01.07.2013



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4.3. Field of application:

4.3.1. This classification is only valid for the products which are to be used for thermal insulation in buildings.

4.3.2. This classification is only valid for the products which complies with definition in clause 2.2 and produced in the manufacturing plant defined in this report.

5. Warning and Limitations:

5.1. This classification report does not represent type of approval or certification of the product.

Report	Name	Signature*	Date
Prepared by	Hasan ATABAY		10.08.2018
Reviewed by	Evren KARA		10.08.2018
*For and on behalf of "PLUSKİM KİMYA ve SAN. TİC. A.Ş."			

*Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.
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UDİ1800024	CPR-S/R18-96	4/4	10.09.2018

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R18-470
09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.

Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800164

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of sent by the client to the laboratory.

Date of Test: 04.09.2018-06.09.2018(dd/mm/yyyy)

Number of pages of the Report: 1/3

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslar arası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

The Turkish Accreditation Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation (EA) and of the International Laboratory Accreditation (ILAC) for the Mutual recognition of test reports.

Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Mühür Seal	Tarih Date	Deneyi Yapan Person in charge of test Kimya Teknikeri/Chemistry Tec.	Teknik Laboratuvar Yöneticisi Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples , which sent by the client to the laboratory in 14.08.2018 , tested according to EN 826 and test results with related information given below.

a-) Test Method: EN 826: Thermal insulating products for building applications-Determination of compression behavior.

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

🔴 **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

🔴 **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

🔴 **Brand Name:** PLUSKİM

🔴 **Lot Number/Production Code/Serial Number:-/-/-**

Production Date: 10.08.2018

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-)Information's for specimen preparation:

Three test specimens taken from the sample test piece with size of (50x50) mm and tested by the laboratory.

The test specimens stored in laboratory conditions at least 6 hours at (23±5)°C.

e-)General information relating to the test:

🔴 Number and dimensions of test specimens: three test specimens, (50x50)mm.

🔴 The test carried out at (23±5)°C. Universal compression testing machine, square pressure plates [(300x300)mm] and computer (for controlling test speed and force measurements) used for the tests. The length, width and thickness of test specimens measured in accordance with EN 12085 with an accuracy of 0,5%.

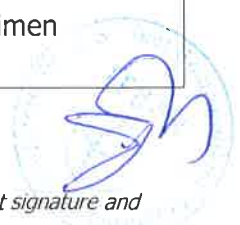
The test specimens placed centrally between two pressure plates of the compression testing machine and preload with a pressure of (250 ± 10) Pa is applied to the specimen by using original software prepared specially for the testing machine by the manufacturer. The test specimen

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 3/3
Page : 3 of 3

compressed by the movable plate at a constant rate of displacement which shall be equal to 0,1 d per minute (to within ± 25 %), where d is the thickness of the specimen, expressed in millimeters

• Compression continued until the specimen yields, providing a compressive strength value, or until a strain of 10 % has been reached, providing a compressive stress at 10 % strain.

• The force-displacement curves are recorded.

• **Date of test:** 04.09.2018-06.09.2018

• **Deviation of standard condition:** -

• **Kind of surface treatment (grinding or type of coating):** -

• **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	Average
Test Parameters ▼				
Compressive stress at 10 % deformation (kPa)	406,70	407,13	410,37	408

Compressive stress at 10 % deformation = $408 \pm 5,3$ kPa
(k=2 and %95 Confidence Interval)

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800166

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of sent by the client to the laboratory.

Date of Test: 04.09.2018-06.09.2018(dd/mm/yyyy)

Number of pages of the Report: 1/3

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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.

Mühür Seal	Tarih Date	Deneyi Yapan Person in charge of test Kimya Teknikeri/Chemistry Tec.	Teknik Laboratuvar Yöneticisi Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples , which sent by the client to the laboratory in 14.08.2018 , tested according to EN 826 and test results with related information given below.

a-) Test Method: EN 826: Thermal insulating products for building applications-Determination of compression behavior.

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

🔴 **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

🔴 **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

🔴 **Brand Name:** PLUSKİM

🔴 **Lot Number/Production Code/Serial Number:-/-/-**

Production Date: 12.08.2018

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-)Information's for specimen preparation:

Three test specimens taken from the sample test piece with size of (50x50) mm and tested by the laboratory.

The test specimens stored in laboratory conditions at least 6 hours at (23±5)°C.

e-)General information relating to the test:

🔴 Number and dimensions of test specimens: three test specimens, (50x50)mm.

🔴 The test carried out at (23±5)°C. Universal compression testing machine, square pressure plates [(300x300)mm] and computer (for controlling test speed and force measurements) used for the tests. The length, width and thickness of test specimens measured in accordance with EN 12085 with an accuracy of 0,5%.

The test specimens placed centrally between two pressure plates of the compression testing machine and preload with a pressure of (250 ± 10) Pa is applied to the specimen by using original software prepared specially for the testing machine by the manufacturer. The test specimen

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU**
TEST REPORT**Sayfa : 3/3**
Page : 3 of 3

compressed by the movable plate at a constant rate of displacement which shall be equal to 0,1 d per minute (to within ± 25 %), where d is the thickness of the specimen, expressed in millimeters

- ☛ Compression continued until the specimen yields, providing a compressive strength value, or until a strain of 10 % has been reached, providing a compressive stress at 10 % strain.
- ☛ The force-displacement curves are recorded.
- ☛ **Date of test:** 04.09.2018-06.09.2018
- ☛ **Deviation of standard condition:** -
- ☛ **Kind of surface treatment (grinding or type of coating):** -
- ☛ **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	Average
Test Parameters ▼				
Compressive stress at 10 % deformation (kPa)	454,64	455,81	447,21	453

Compressive stress at 10 % deformation = $453 \pm 5,8$ kPa
(k=2 and %95 Confidence Interval)

§ İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.

Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800165

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of sent by the client to the laboratory.

Date of Test: 04.09.2018-06.09.2018(dd/mm/yyyy)

Number of pages of the Report: 1/3

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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.

Mühür Seal	Tarih Date	Deneyi Yapan Person in charge of test Kimya Teknikeri/Chemistry Tec.	Teknik Laboratuvar Yöneticisi Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples , which sent by the client to the laboratory in 14.08.2018 , tested according to EN 826 and test results with related information given below.

a-) Test Method: EN 826: Thermal insulating products for building applications-Determination of compression behavior.

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

☛ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

☛ **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

☛ **Brand Name:** PLUSKİM

☛ **Lot Number/Production Code/Serial Number:-/-/-**

Production Date: 11.08.2018

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-)Information's for specimen preparation:

Three test specimens taken from the sample test piece with size of (50x50) mm and tested by the laboratory.

The test specimens stored in laboratory conditions at least 6 hours at (23±5)°C.

e-)General information relating to the test:

☛ Number and dimensions of test specimens: three test specimens, (50x50)mm.

☛ The test carried out at (23±5)°C. Universal compression testing machine, square pressure plates [(300x300)mm] and computer (for controlling test speed and force measurements) used for the tests. The length, width and thickness of test specimens measured in accordance with EN 12085 with an accuracy of 0,5%.

The test specimens placed centrally between two pressure plates of the compression testing machine and preload with a pressure of (250 ± 10) Pa is applied to the specimen by using original software prepared specially for the testing machine by the manufacturer. The test specimen

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU**
TEST REPORT**Sayfa : 3/3**
Page : 3 of 3

compressed by the movable plate at a constant rate of displacement which shall be equal to 0,1 d per minute (to within ± 25 %), where d is the thickness of the specimen, expressed in millimeters

• Compression continued until the specimen yields, providing a compressive strength value, or until a strain of 10 % has been reached, providing a compressive stress at 10 % strain.

• The force-displacement curves are recorded.

• **Date of test:** 04.09.2018-06.09.2018

• **Deviation of standard condition:** -

• **Kind of surface treatment (grinding or type of coating):** -

• **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	Average
Test Parameters ▼				
Compressive stress at 10 % deformation (kPa)	414,06	416,58	411,54	414

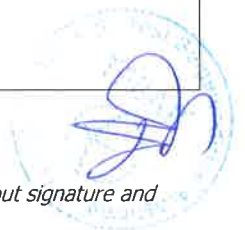
Compressive stress at 10 % deformation = $414 \pm 5,3$ kPa
(k=2 and %95 Confidence Interval)

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

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Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800167

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of sent by the client to the laboratory.

Date of Test: 04.09.2018-06.09.2018(dd/mm/yyyy)

Number of pages of the Report: 1/3

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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.

Mühür Seal	Tarih Date	Deneyi Yapan Person in Charge of test Kimya Teknikeri/ Chemistry Tec.	Teknik Laboratuvar Yöneticisi Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples , which sent by the client to the laboratory in 14.08.2018 , tested according to EN 826 and test results with related information given below.

a-) Test Method: EN 826: Thermal insulating products for building applications-Determination of compression behavior.

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

❗ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

❗ **Production Plant:** Selahaddin Eyyübi Mah. Kırış Esenyurt / İSTANBUL

❗ **Brand Name:** PLUSKİM

❗ **Lot Number/Production Code/Serial Number:-/-/-**

Production Date: 13.08.2018

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-)Information's for specimen preparation:

Three test specimens taken from the sample test piece with size of (50x50) mm and tested by the laboratory.

The test specimens stored in laboratory conditions at least 6 hours at (23±5)°C.

e-)General information relating to the test:

❗ Number and dimensions of test specimens: three test specimens, (50x50)mm.

❗ The test carried out at (23±5)°C. Universal compression testing machine, square pressure plates [(300x300)mm] and computer (for controlling test speed and force measurements) used for the tests. The length, width and thickness of test specimens measured in accordance with EN 12085 with an accuracy of 0,5%.

The test specimens placed centrally between two pressure plates of the compression testing machine and preload with a pressure of (250 ± 10) Pa is applied to the specimen by using original software prepared specially for the testing machine by the manufacturer. The test specimen

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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TEST REPORT**Sayfa : 3/3**
Page : 3 of 3

compressed by the movable plate at a constant rate of displacement which shall be equal to 0,1 d per minute (to within ± 25 %), where d is the thickness of the specimen, expressed in millimeters

• Compression continued until the specimen yields, providing a compressive strength value, or until a strain of 10 % has been reached, providing a compressive stress at 10 % strain.

• The force-displacement curves are recorded.

• **Date of test:** 04.09.2018-06.09.2018

• **Deviation of standard condition:** -

• **Kind of surface treatment (grinding or type of coating):** -

• **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	Average
Test Parameters ▼				
Compressive stress at 10 % deformation (kPa)	445,39	443,53	439,11	443

Compressive stress at 10 % deformation = $443 \pm 5,7$ kPa
(k=2 and %95 Confidence Interval)

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL

Order No: UDİ1800024

Specimen No: UDN1800164

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of "Polyurethane Foam" sent by the client to the laboratory.

Date of Test: 15.08.2018-07.09.2018(dd/mm/yyyy)

Raporun Sayfa Sayısı: 1/5

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

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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.

Seal Mühür	Date Tarih	Person in charge of test Deneyi Yapan Kimya Teknikeri/ Chemistry Tec.	Head of Testing Laboratory Teknik Laboratuvar Yöneticisi
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/5**Page : 2 of 5**

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 14315-1 EK C ve TS EN 12667 and test results with related information given below.

Tests performed without any treatments to reduce edge heat losses according to EN 12667 "Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance" and EN 14315 Annex C "Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation" by using single heat flow meter with specimen symmetrical configuration and analytical balance and dial gauge and metal ruler. During the tests, ambient temperature of the environment surrounding the apparatus was (23±5) °C

Product Standard applicable to tested specimens: EN 14315: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

b-)Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

☛ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

☛ **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

☛ **Brand Name:** PLUSKİM

☛ **Lot Number/Production Code/Serial Number:-/-/-**

☛ **Production Date:** 10.08.2018

Test specimen size: (300x300)mm

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test samples which are described in clause (b) were taken by the client and sent to the laboratory

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 3/5
Page : 3 of 5

Product Standard applicable to the test specimen: EN 14315-1: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

d-) Thickness of test specimen

Measurement results according to EN 12085

$$D_{\text{specimen}} = 0,01924\text{m (19,24mm)}$$

Thickness value of the test specimen after placing in the equipment:

$$D_{\text{specimen}} = 0,019240\text{m (19,240mm)}$$

Thickness value of the test specimen :- mm

After placing the device in place of the test piece is based on the measured thickness value.

e-) Method and Temperatures of Conditioning: Test specimen stored at (23±3)°C and %(50±10) relative humidity for 48 hours.

✶ Cut a test specimen of minimum dimensions 200mm length and width 20(+2/-0)mm thickness from the central area of the product sample. Stored the test specimen at (70±2) °C for (21±1) days. After reconditioning for 16 h at (23±3)°C and %(50±10) relative humidity determined the aged value of thermal conductivity of the test specimen. The difference between the aged and the initial values of thermal conductivity is not more than 0,0060 W/(m.K) for pentane blown. Aged thermal conductivity is calculated as adding 0,006W/(m.K) value to the value of initial thermal conductivity value (manufacturer declared that blowing agent is 365 mfc).

f-) Densities of conditioned materials as tested:

$$\rho_{\text{specimen}} = 72,25 \text{ kg/m}^3$$

Declared apparent density value: 40kg/m³

g-) Relative mass changes during conditioning: $\Delta m_{\text{cspecimen}} = 0,0$

h-) Relative mass changes during the test: $\Delta m_{\text{wspecimen}} = 0,0$

✶ **Observed thickness and volume changes during the test:**

$$\Delta d_{\text{specimen}} = 0,00\text{mm (Changes in thickness)}, \Delta l_{\text{specimen}} = 0,0\text{mm (Changes in length)},$$

$$\Delta w_{\text{specimen}} = 0,0\text{mm (Changes in width)}$$

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.**Adres:** Şerifali Mah Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU****TEST REPORT****Sayfa : 4/5****Page : 4 of 5****i-) Average temperature difference across the specimens during the test:**

20,00°C (20,00 K)

j-) Mean temperature of test: 10,01°C (283,01 K)**k-) Density of heat flow rate through the specimens during the test** $q_{\text{specimen}} = 25,0 \text{ W/m}^2$ **l-) Thermal resistance of test specimens:** $R_{\text{specimen}} = 0,799 \text{ m}^2 \cdot \text{K} / \text{W}$ **m-) Date of completion of the tests/duration: 07.09.2018 / $t_{\text{specimen-t}} = 47 \text{ min.}$**

- ☑ Steady state part of the tests : $t_{\text{specimen-t}} = 38 \text{ min.}$
- ☑ Date of last heat flow meter calibration : 03.09.2018
- ☑ Type of the calibration specimen used: IRRM 440-A
- ☑ Thermal conductivity of calibration specimen:

Temperature	Thermal Conductivity W/(m.K)	
	Cerification Value	Uncertainty of measurement
$-10^\circ\text{C} \leq T \leq 50^\circ\text{C}$	$2,93949 \cdot 10^{-2} + \frac{T}{^\circ\text{C}} \cdot 1,060 \cdot 10^{-4} + \frac{T^2}{(^{\circ}\text{C})^2} \cdot 2,047 \cdot 10^{-7}$	0,00028

Ortalama Sıcaklık 10°C'de	$\lambda = 0.03050 \text{ W/m.K}$
Ortalama Sıcaklık 20°C'de	$\lambda = 0.03158 \text{ W/m.K}$
Ortalama Sıcaklık 30°C'de	$\lambda = 0.03259 \text{ W/m.K}$
Ortalama Sıcaklık 40°C'de	$\lambda = 0.03330 \text{ W/m.K}$
Ortalama Sıcaklık 50°C'de	$\lambda = 0.03479 \text{ W/m.K}$

- ☑ Thermal conductivity of calibration specimen:
- ☑ Date of calibration specimen certification: 01.04.2015
- ☑ Orientation of the apparatus: Horizontal
- ☑ The position of the hot side of the specimen: Bottom

n-) Usage of water-vapour tight envelopes: Water-vapour tight envelopes not used for tests

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Thermal conductivity= 0,0301±0,0012 W/m.K
(k=2 ve %95 Confidence Interval)

Test specimen/piece ►	UDN1800164 (10°C)
Test parameters ▼	
Densities of conditioned materials as tested, (kg/m ³)	72,25
Declared density of test specimen, (kg/m ³)	40
Relative mass changes during conditioning	0,0
Relative mass changes during test,	0,0
Declared thickness value of the test specimen, (m)	-
Measured thickness of test specimen as tested (TS EN 12085), m	0,01924
Thickness value of the test specimen after placing in the equipment, (m)	0,019240
Observed thickness change during the test, (mm)	0,0
Observed length change during the test, (mm)	0,0
Observed width change during the test, (mm)	0,0
Density of heat flow rate through the specimens during the test, (W/m ²)	25,0
Thermal resistance of test specimen, (m ² .K/W)	0,799
Test duration, (min)	47dk.
Steady state part of the tests, (min)	38dk.
Thermal Conductivity, (W/m.K)	0,02408
Aged Thermal Conductivity, (W/m.K) (Blowing agent:365 mfc)	0,0301

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800167

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of "Polyurethane Foam" sent by the client to the laboratory.

Date of Test: 15.08.2018-07.09.2018(dd/mm/yyyy)

Raporun Sayfa Sayısı: 1/5

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

The Turkish Accreditation Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation (EA) and of the International Laboratory Accreditation (ILAC) for the Mutual recognition of test reports.

Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Seal Mühür	Date Tarih	Person in charge of test Deneyi Yapan Kimya Teknikeri/Chemistry Tec.	Head of Testing Laboratory Teknik Laboratuvar Yöneticisi
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/5
Page : 2 of 5

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 14315-1 EK C ve TS EN 12667 and test results with related information given below.

Tests performed without any treatments to reduce edge heat losses according to EN 12667 "Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance" and EN 14315 Annex C "Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation" by using single heat flow meter with specimen symmetrical configuration and analytical balance and dial gauge and metal ruler. During the tests, ambient temperature of the environment surrounding the apparatus was (23±5) °C

Product Standard applicable to tested specimens: EN 14315: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

b-)Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

- ❖ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.
- ❖ **Production Plant:** Selahaddin Eyyübi Mah. Kıraç Esenyurt / İSTANBUL
- ❖ **Brand Name:** PLUSKİM
- ❖ **Lot Number/Production Code/Serial Number:** -/-
- ❖ **Production Date:** 13.08.2018

Test specimen size: (300x300)mm

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test samples which are described in clause (b) were taken by the client and sent to the laboratory

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 3/5
Page : 3 of 5

Product Standard applicable to the test specimen: EN 14315-1: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

d-) Thickness of test specimen

Measurement results according to EN 12085

$$D_{\text{specimen}} = 0,02010\text{m (20,10mm)}$$

Thickness value of the test specimen after placing in the equipment:

$$D_{\text{specimen}} = 0,020091\text{m (20,091mm)}$$

After placing the device in place of the test piece is based on the measured thickness value.

e-) Method and Temperatures of Conditioning: Test specimen stored at (23±3)°C and %(50±10) relative humidity for 48 hours.

❗ Cut a test specimen of minimum dimensions 200mm length and width 20(+2/-0)mm thickness from the central area of the product sample. Stored the test specimen at (70±2) °C for (21±1) days. After reconditioning for 16 h at (23±3)°C and %(50±10) relative humidity determined the aged value of thermal conductivity of the test specimen. The difference between the aged and the initial values of thermal conductivity is not more than 0,0060 W/(m.K) for pentane blown. Aged thermal conductivity is calculated as adding 0,006W/(m.K) value to the value of initial thermal conductivity value (manufacturer declared that blowing agent is 365 mfc).

f-) Densities of conditioned materials as tested:

$$\rho_{\text{specimen}} = 64,07 \text{ kg/m}^3$$

Declared apparent density value: 40kg/m³

g-) Relative mass changes during conditioning: $\Delta m_{\text{cspecimen}} = 0,0$

h-) Relative mass changes during the test: $\Delta m_{\text{wspecimen}} = 0,0$

❗ **Observed thickness and volume changes during the test:**

$$\Delta d_{\text{specimen}} = 0,00\text{mm (Changes in thickness)}, \Delta l_{\text{specimen}} = 0,0\text{mm (Changes in length)},$$

$$\Delta w_{\text{specimen}} = 0,0\text{mm (Changes in width)}$$

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.**Adres:** Şerifali Mah Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU
TEST REPORT****Sayfa : 4/5****Page : 4 of 5****i-) Average temperature difference across the specimens during the test:**

20,00°C (20,00 K)

j-) Mean temperature of test: 10,01°C (283,01 K)**k-) Density of heat flow rate through the specimens during the test** $q_{\text{specimen}} = 23,9 \text{ W/m}^2$ **l-) Thermal resistance of test specimens:** $R_{\text{specimen}} = 0,838 \text{ m}^2 \cdot \text{K} / \text{W}$ **m-) Date of completion of the tests/duration: 07.09.2018 / $t_{\text{specimen-t}} = 34 \text{ min.}$**

- ⌚ Steady state part of the tests : $t_{\text{specimen-t}} = 29 \text{ min.}$
- ⌚ Date of last heat flow meter calibration : 03.09.2018
- ⌚ Type of the calibration specimen used: IRRM 440-A
- ⌚ Thermal conductivity of calibration specimen:

Temperature	Thermal Conductivity W/(m.K)	
	Cerification Value	Uncertainty of measurement
$-10^\circ\text{C} \leq T \leq 50^\circ\text{C}$	$2,93949 \cdot 10^{-2} + \frac{T}{^\circ\text{C}} \cdot 1,060 \cdot 10^{-4} + \frac{T^2}{(^\circ\text{C})^2} \cdot 2,047 \cdot 10^{-7}$	0,00028
Ortalama Sıcaklık 10°C'de	$\lambda = 0.03050 \text{ W/m.K}$	
Ortalama Sıcaklık 20°C'de	$\lambda = 0.03158 \text{ W/m.K}$	
Ortalama Sıcaklık 30°C'de	$\lambda = 0.03259 \text{ W/m.K}$	
Ortalama Sıcaklık 40°C'de	$\lambda = 0.03330 \text{ W/m.K}$	
Ortalama Sıcaklık 50°C'de	$\lambda = 0.03479 \text{ W/m.K}$	

- ⌚ Thermal conductivity of calibration specimen:
- ⌚ Date of calibration specimen certification: 01.04.2015
- ⌚ Orientation of the apparatus: Horizontal
- ⌚ The position of the hot side of the specimen: Bottom

n-) Usage of water-vapour tight envelopes: Water-vapour tight envelopes not used for tests

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU**
TEST REPORT

Thermal conductivity= 0,0300±0,0012 W/m.K
(k=2 ve %95 Confidence Interval)

Test specimen/piece ►	UDN1800167 (10°C)
Test parameters ▼	
Densities of conditioned materials as tested, (kg/m ³)	64,07
Declared density of test specimen, (kg/m ³)	40
Relative mass changes during conditioning	0,0
Relative mass changes during test,	0,0
Declared thickness value of the test specimen, (m)	-
Measured thickness of test specimen as tested (TS EN 12085), m	0,02010
Thickness value of the test specimen after placing in the equipment, (m)	0,020091
Observed thickness change during the test, (mm)	0,0
Observed length change during the test, (mm)	0,0
Observed width change during the test, (mm)	0,0
Density of heat flow rate through the specimens during the test, (W/m ²)	23,9
Thermal resistance of test specimen, (m ² .K/W)	0,838
Test duration, (min)	34dk.
Steady state part of the tests, (min)	29dk.
Thermal Conductivity, (W/m.K)	0,02396
Aged Thermal Conductivity, (W/m.K) (Blowing agent:365 mfc)	0,0300

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL

Order No: UDİ1800024

Specimen No: UDN1800166

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of "Polyurethane Foam" sent by the client to the laboratory.

Date of Test: 15.08.2018-07.09.2018(dd/mm/yyyy)

Raporun Sayfa Sayısı: 1/5

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

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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.

Sel Mühür	Date Tarih	Person in charge of test Deneyi Yapan Kimya Teknikeri/Chemistry Tec.	Head of Testing Laboratory Teknik Laboratuvar Yöneticisi
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 2/5

Page : 2 of 5

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 14315-1 EK C ve TS EN 12667 and test results with related information given below.

Tests performed without any treatments to reduce edge heat losses according to EN 12667 "Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance" and EN 14315 Annex C "Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation" by using single heat flow meter with specimen symmetrical configuration and analytical balance and dial gauge and metal ruler. During the tests, ambient temperature of the environment surrounding the apparatus was (23±5) °C

Product Standard applicable to tested specimens: EN 14315: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

b-)Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

- 🔴 **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.
- 🔴 **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL
- 🔴 **Brand Name:** PLUSKİM
- 🔴 **Lot Number/Production Code/Serial Number:-/-/-**
- 🔴 **Production Date:** 12.08.2018

Test specimen size: (300x300)mm

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test samples which are described in clause (b) were taken by the client and sent to the laboratory

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 3/5
Page : 3 of 5

Product Standard applicable to the test specimen: EN 14315-1: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

d-) Thickness of test specimen

Measurement results according to EN 12085

$$D_{\text{specimen}} = 0,01935\text{m (19,35mm)}$$

Thickness value of the test specimen after placing in the equipment:

$$D_{\text{specimen}} = 0,019348\text{m (19,348mm)}$$

After placing the device in place of the test piece is based on the measured thickness value.

e-) Method and Temperatures of Conditioning: Test specimen stored at $(23 \pm 3)^{\circ}\text{C}$ and $\%(50 \pm 10)$ relative humidity for 48 hours.

❗ Cut a test specimen of minimum dimensions 200mm length and width $20(+2/-0)\text{mm}$ thickness from the central area of the product sample. Stored the test specimen at $(70 \pm 2)^{\circ}\text{C}$ for (21 ± 1) days. After reconditioning for 16 h at $(23 \pm 3)^{\circ}\text{C}$ and $\%(50 \pm 10)$ relative humidity determined the aged value of thermal conductivity of the test specimen. The difference between the aged and the initial values of thermal conductivity is not more than $0,0060 \text{ W/(m.K)}$ for pentane blown. Aged thermal conductivity is calculated as adding $0,006 \text{ W/(m.K)}$ value to the value of initial thermal conductivity value (manufacturer declared that blowing agent is 365 mfc).

f-) Densities of conditioned materials as tested:

$$\rho_{\text{speciment}} = 58,17 \text{ kg/m}^3$$

Declared apparent density value: 40 kg/m^3

g-) Relative mass changes during conditioning: $\Delta m_{\text{cspeciment}} = 0,0$

h-) Relative mass changes during the test: $\Delta m_{\text{wspecimen}} = 0,0$

❗ **Observed thickness and volume changes during the test:**

$$\Delta d_{\text{specimen}} = 0,00\text{mm (Changes in thickness)}, \Delta l_{\text{specimen}} = 0,0\text{mm (Changes in length)},$$

$$\Delta W_{\text{specimen}} = 0,0\text{mm (Changes in width)}$$

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

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TEBAR TEST ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.

Adres: Şerifali Mah Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

**DENEY RAPORU
TEST REPORT**

Sayfa : 4/5

Page : 4 of 5

i-) Average temperature difference across the specimens during the test:

20,00°C (20,00 K)

j-) Mean temperature of test: 10,01°C (283,01 K)

k-) Density of heat flow rate through the specimens during the test

$q_{\text{specimen}} = 24,5 \text{ W/m}^2$

l-) Thermal resistance of test specimens:

$R_{\text{specimen}} = 0,818 \text{ m}^2 \cdot \text{K} / \text{W}$

m-) Date of completion of the tests/duration: 07.09.2018 / $t_{\text{specimen-t}} = 35 \text{ min.}$

- ⚙ Steady state part of the tests : $t_{\text{specimen-t}} = 30 \text{ min.}$
- ⚙ Date of last heat flow meter calibration : 03.09.2018
- ⚙ Type of the calibration specimen used: IRRM 440-A
- ⚙ Thermal conductivity of calibration specimen:

Temperature	Thermal Conductivity W/(m.K)	
	Cerification Value	Uncertainty of measurement
$-10^\circ\text{C} \leq T \leq 50^\circ\text{C}$	$2,93949 \cdot 10^{-2} + \frac{T}{^\circ\text{C}} \cdot 1,060 \cdot 10^{-4} + \frac{T^2}{(^\circ\text{C})^2} \cdot 2,047 \cdot 10^{-7}$	0,00028

Ortalama Sıcaklık 10°C'de	$\lambda = 0.03050 \text{ W/m.K}$
Ortalama Sıcaklık 20°C'de	$\lambda = 0.03158 \text{ W/m.K}$
Ortalama Sıcaklık 30°C'de	$\lambda = 0.03259 \text{ W/m.K}$
Ortalama Sıcaklık 40°C'de	$\lambda = 0.03330 \text{ W/m.K}$
Ortalama Sıcaklık 50°C'de	$\lambda = 0.03479 \text{ W/m.K}$

- ⚙ Thermal conductivity of calibration specimen:
- ⚙ Date of calibration specimen certification: 01.04.2015
- ⚙ Orientation of the apparatus: Horizontal
- ⚙ The position of the hot side of the specimen: Bottom

n-) Usage of water-vapour tight envelopes: Water-vapour tight envelopes not used for tests

⚠ İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Thermal conductivity= 0,0297±0,0012 W/m.K
(k=2 ve %95 Confidence Interval)

Test specimen/piece ►	UDN1800166 (10°C)
Test parameters ▼	
Densities of conditioned materials as tested, (kg/m ³)	58,17
Declared density of test specimen, (kg/m ³)	40
Relative mass changes during conditioning	0,0
Relative mass changes during test,	0,0
Declared thickness value of the test specimen, (m)	-
Measured thickness of test specimen as tested (TS EN 12085), m	0,01935
Thickness value of the test specimen after placing in the equipment, (m)	0,019348
Observed thickness change during the test, (mm)	0,0
Observed length change during the test, (mm)	0,0
Observed width change during the test, (mm)	0,0
Density of heat flow rate through the specimens during the test, (W/m ²)	24,5
Thermal resistance of test specimen, (m ² .K/W)	0,818
Test duration, (min)	35dk.
Steady state part of the tests, (min)	30dk.
Thermal Conductivity, (W/m.K)	0,02365
Aged Thermal Conductivity, (W/m.K) (Blowing agent:365 mfc)	0,0297

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL

Order No: UDİ1800024

Specimen No: UDN1800165

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of "Polyurethane Foam" sent by the client to the laboratory.

Date of Test: 15.08.2018-07.09.2018(dd/mm/yyyy)

Raporun Sayfa Sayısı: 1/5

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslar arası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

The Turkish Accreditation Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation (EA) and of the International Laboratory Accreditation (ILAC) for the Mutual recognition of test reports.

Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Seal Mühür	Date Tarih	Person in charge of test Deneyi Yapan Kimya Teknikeri/Chemistry Tec.	Head of Testing Laboratory Teknik Laboratuvar Yöneticisi
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mührsüz raporlar geçersizdir.

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**TEBAR**

Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

AB-0302-T CPR-2164
CPR-T/ R18-475
09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 2/5
Page : 2 of 5

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 14315-1 EK C ve TS EN 12667 and test results with related information given below.

Tests performed without any treatments to reduce edge heat losses according to EN 12667 "Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance" and EN 14315 Annex C "Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation" by using single heat flow meter with specimen symmetrical configuration and analytical balance and dial gauge and metal ruler. During the tests, ambient temperature of the environment surrounding the apparatus was (23±5) °C

Product Standard applicable to tested specimens: EN 14315: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

b-)Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

- 🔴 **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.
- 🔴 **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL
- 🔴 **Brand Name:** PLUSKİM
- 🔴 **Lot Number/Production Code/Serial Number:-/-/-**
- 🔴 **Production Date:** 11.08.2018

Test specimen size: (300x300)mm

c-)Product description, sampling and reference to product Standard for specimen preparation procedure:

Test samples which are described in clause (b) were taken by the client and sent to the laboratory

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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CPR-T/ R18-475
09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 3/5
Page : 3 of 5

Product Standard applicable to the test specimen: EN 14315-1: Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation

d-) Thickness of test specimen

Measurement results according to EN 12085

$$D_{\text{specimen}} = 0,01860\text{m (18,60mm)}$$

Thickness value of the test specimen after placing in the equipment:

$$D_{\text{specimen}} = 0,018599\text{m (18,599mm)}$$

After placing the device in place of the test piece is based on the measured thickness value.

e-) Method and Temperatures of Conditioning: Test specimen stored at (23±3)°C and %(50±10) relative humidity for 48 hours.

❗ Cut a test specimen of minimum dimensions 200mm length and width 20(+2/-0)mm thickness from the central area of the product sample. Stored the test specimen at (70±2) °C for (21±1) days. After reconditioning for 16 h at (23±3)°C and %(50±10) relative humidity determined the aged value of thermal conductivity of the test specimen. The difference between the aged and the initial values of thermal conductivity is not more than 0,0060 W/(m.K) for pentane blown. Aged thermal conductivity is calculated as adding 0,006W/(m.K) value to the value of initial thermal conductivity value (manufacturer declared that blowing agent is 365 mfc).

f-) Densities of conditioned materials as tested:

$$\rho_{\text{specimen}} = 67,19 \text{ kg/m}^3$$

Declared apparent density value: 40kg/m³

g-) Relative mass changes during conditioning: $\Delta m_{\text{cspecimen}} = 0,0$

h-) Relative mass changes during the test: $\Delta m_{\text{wspecimen}} = 0,0$

❗ Observed thickness and volume changes during the test:

$$\Delta d_{\text{specimen}} = 0,00\text{mm (Changes in thickness)}, \Delta l_{\text{specimen}} = 0,0\text{mm (Changes in length)},$$

$$\Delta w_{\text{specimen}} = 0,0\text{mm (Changes in width)}$$

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 4/5
Page : 4 of 5

i-) Average temperature difference across the specimens during the test:

20,00°C (20,00 K)

j-) Mean temperature of test: 10,01°C (283,01 K)

k-) Density of heat flow rate through the specimens during the test

$q_{\text{specimen}} = 25,6 \text{ W/m}^2$

l-) Thermal resistance of test specimens:

$R_{\text{specimen}} = 0,781 \text{ m}^2 \cdot \text{K} / \text{W}$

m-) Date of completion of the tests/duration: 07.09.2018 / $t_{\text{specimen-t}} = 35 \text{ min.}$

- ⌚ Steady state part of the tests : $t_{\text{specimen-t}} = 30 \text{ min.}$
- ⌚ Date of last heat flow meter calibration : 03.09.2018
- ⌚ Type of the calibration specimen used: IRRM 440-A
- ⌚ Thermal conductivity of calibration specimen:

Temperature	Thermal Conductivity W/(m.K)	
	Cerification Value	Uncertainty of measurement
$-10^\circ\text{C} \leq T \leq 50^\circ\text{C}$	$2,93949 \cdot 10^{-2} + \frac{T}{^\circ\text{C}} \cdot 1,060 \cdot 10^{-4} + \frac{T^2}{(^\circ\text{C})^2} \cdot 2,047 \cdot 10^{-7}$	0,00028
Ortalama Sıcaklık 10°C'de	$\lambda = 0.03050 \text{ W/m.K}$	
Ortalama Sıcaklık 20°C'de	$\lambda = 0.03158 \text{ W/m.K}$	
Ortalama Sıcaklık 30°C'de	$\lambda = 0.03259 \text{ W/m.K}$	
Ortalama Sıcaklık 40°C'de	$\lambda = 0.03330 \text{ W/m.K}$	
Ortalama Sıcaklık 50°C'de	$\lambda = 0.03479 \text{ W/m.K}$	

- ⌚ Thermal conductivity of calibration specimen:
- ⌚ Date of calibration specimen certification: 01.04.2015
- ⌚ Orientation of the apparatus: Horizontal
- ⌚ The position of the hot side of the specimen: Bottom

n-) Usage of water-vapour tight envelopes: Water-vapour tight envelopes not used for tests

⚠ İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Thermal conductivity= 0,0298±0,0012 W/m.K
(k=2 ve %95 Confidence Interval)

Test specimen/piece ►	UDN1800165 (10°C)
Test parameters ▼	
Densities of conditioned materials as tested, (kg/m ³)	67,19
Declared density of test specimen, (kg/m ³)	40
Relative mass changes during conditioning	0,0
Relative mass changes during test,	0,0
Declared thickness value of the test specimen, (m)	-
Measured thickness of test specimen as tested (TS EN 12085), m	0,01860
Thickness value of the test specimen after placing in the equipment, (m)	0,018599
Observed thickness change during the test, (mm)	0,0
Observed length change during the test, (mm)	0,0
Observed width change during the test, (mm)	0,0
Density of heat flow rate through the specimens during the test, (W/m ²)	25,6
Thermal resistance of test specimen, (m ² .K/W)	0,781
Test duration, (min)	35dk.
Steady state part of the tests, (min)	30dk.
Thermal Conductivity, (W/m.K)	0,02381
Aged Thermal Conductivity, (W/m.K) (Blowing agent:365 mfc)	0,0298

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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09-18

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.

Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800164

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of arrival of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of polyurethane foam sent by the client to the laboratory

Date of Test: 04.09.2018-07.09.2018(dd/mm/yyyy)

Number of pages of the Report: 1/4

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

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Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Mühür Seal	Tarih Date	Deneyi Yapan Person in charge of test Kimya Teknikeri/ Chemistry Tec.	Teknik Laboratuvar Yöneticisi Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 2/4
Page : 2 of 4

Polyurethane foam , density: 40 kg/m³, for test samples which sent by the client to the laboratory in 14.08.2018, tested according to EN ISO 11925-2 and test results with related information given below.

a-) Test Method: EN ISO 11925-2: Reaction to fire tests-Ignitability of building products subjected to direct impingement of flame-Part 2: Single-flame source test

b-)Product Description: Thermal insulation products made from sprayed rigid polyurethane (PU) foam.

🔴 **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

🔴 **Production Plant:** Selahaddin Eyyübi Mah. Kıraç Esenyurt / İSTANBUL

🔴 **Brand Name:** PLUSKİM

🔴 **Lot Number /Production Code/Serial Number:** -

Production Date: 2110.08.2018/11.08.2018/12.08.2018/13.08.2018

c-) Sampling: Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-)Information's for specimen preparation:

🔴 Test specimens stored for 48h at (23±2)°C and relative humidity (50±5)% and conditioned to constant mass with EN 13238.

🔴 Fire behaviour of the product determined according to EN 13501-1 (Euro classes) by applying Class E criterion.

e-)General information relating to the test:

🔴 The product tested according to EN ISO 11925-2 with 15s exposure time to meet of Class E criterions (EN 13501-1).

🔴 **Class E Criterion:** Under conditions of surface flame attack with 15 s exposure time, there shall be no flame spread in excess of 150 mm vertically from the point of application of the test flame within 20 s from the time of application.

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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DENEY RAPORU
TEST REPORT

Sayfa : 3/4
Page : 3 of 4

- 🔴 **Specimen holder:** The specimen holder consists of a double stainless U-shaped frame, 15mm wide, (5±1)mm thick and (250x90)mm dimensions. Test specimens clamped in the specimen holder so that one end and both sides are covered by the holder frames.
- 🔴 Flame application time: 15s
- 🔴 Test time: Flame applications time is 15s, the total test duration is 20s from the time at which the flame is first applied.
- 🔴 **Deviation of standard condition:** -
- 🔴 **Date of test:** 04.09.2018-07.09.2018
- 🔴 **Likely other factors of test results:** -
- f-) Test Results:**
 - 1-) Occurrence of ignition
 - 2-) Whether flame reaches 150mm
 - 3-) Time to reach 150mm
 - 4-) Ignition of the filter paper
- 🔴 **Intended application of the building product:** -

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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DENEY RAPORU
TEST REPORT

Sayfa : 4/4
Page : 4 of 4

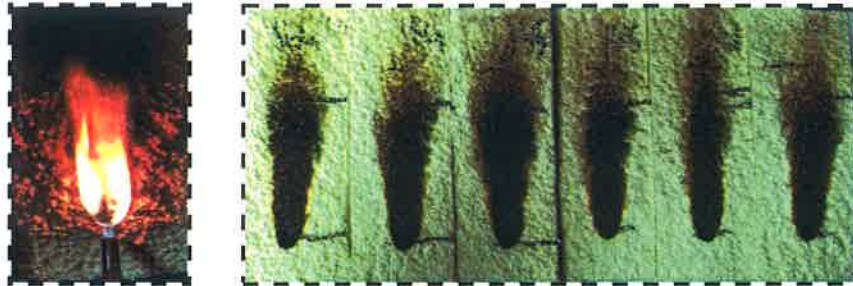
TABLE 1: TEST RESULTS

Sample Number	Occurrence of Ignition (Y/N)	Whether flame reaches 150 mm (Y/N)	Time to reach t_{150} (s)	Ignition of the filter paper (Y/N)	Decision (P/F)
UDN1800164-1	Y	N	-	N	P
UDN1800164-2	Y	N	-	N	P
UDN1800165-3	Y	N	-	N	P
UDN1800165-4	Y	N	-	N	P
UDN1800166-5	Y	N	-	N	P
UDN1800167-6	Y	N	-	N	P

Abbreviations:

Y: Yes **N:** No **P:** Passed **F:** Failed **t_{150} :** Time to reach 150 mm

"The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be sole criterion for assessing the potential fire hazard of the product in use"



Picture 1: After test and in test photographs

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

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Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800164

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of polyurethane foam sent by the client to the laboratory

Date of Test: 01.09.2018-04.09.2018

Number of pages of the Report: 1/3

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The Turkish Accreditation Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation (EA) and of the International Laboratory Accreditation (ILAC) for the Mutual recognition of test reports.

Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Seal	Date	Person in charge of test Chemistry Tec.	Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 2/3

Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 1609 and test results with related information given below.

a-) Test Method: EN 1609: Thermal insulating products for building applications-Determination of short term water absorption by partial immersion

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

❖ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

❖ **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

❖ **Brand Name:** PLUSKİM

❖ **Lot Number/Production Code/Serial Number:-/-/-**

❖ **Production Date:** 10.08.2018

c-) Product description, sampling and reference to product Standard for specimen preparation procedure: Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-) Deney numunelerinin hazırlanması ile ilgili bilgiler:

d-)Information's for specimen preparation:

❖ Four test specimens taken from the full size test piece with size of (200x200)mm and tested by the laboratory. The test specimens stored in laboratory conditions for 24h at (23±5)°C.

e-)General information relating to the test:

❖ Water tank, balance, chronometer and drainage equipment (stainless steel mesh) used for the test.

❖ The length, width and thickness of test specimens measured in accordance with EN 12085.

❖ The test specimens weighed to the nearest 0,1 g and determined its initial mass and recorded as "m₀".

❖ The test specimens placed in the water tank for 10 s, after that place it within 5s in a plastic tray. Weigh this tray with the test specimen to determine the test specimen mass including the initial water uptake "m₁".

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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- ❗ Replace the test specimen in the water tank and applied sufficient load on the specimen to keep the test specimen partial immersed in water with its bottom face 10mm below the water level.
- ❗ The test specimen removed after 24 hours and drained for $(10 \pm 0,5)$ min by placing it vertically on a mesh, inclined at 45° . Then the test specimen weighed again and determined its mass after immersion and measured value recorded as " m_{24} ".
- ❗ The short term water absorption by partial immersion, in volume percent is calculated by using related equations.
- ❗ **Date of test:** 01.09.2018-04.09.2018
- ❗ **Deviation of standard condition:** -
- ❗ **Kind of surface treatment (grinding or type of coating):** -
- ❗ **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	4	Average
Test Parameters ▼					
Short term water absorption by partial immersion, kg/m ²	0,10	0,11	0,11	0,10	0,11

Short term water absorption by partial immersion = $0,11 \text{ kg/m}^2 \pm 0,001 \text{ kg/m}^2$

(k=2 and %95 Confidence Interval)

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDI1800024

Specimen No: UDN1800165

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of polyurethane foam sent by the client to the laboratory

Date of Test: 01.09.2018-04.09.2018

Number of pages of the Report: 1/3

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Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Seal	Date	Person in charge of test Chemistry Tec.	Head of Testing Laboratory
	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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DENEY RAPORU
TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 1609 and test results with related information given below.

a-) Test Method: EN 1609: Thermal insulating products for building applications-Determination of short term water absorption by partial immersion

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

☑ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

☑ **Production Plant:** Selahaddin Eyyübi Mah. Kıraç Esenyurt / İSTANBUL

☑ **Brand Name:** PLUSKİM

☑ **Lot Number/Production Code/Serial Number:-/-/-**

☑ **Production Date:** 11.08.2018

c-) Product description, sampling and reference to product Standard for specimen preparation procedure: Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-) Deney numunelerinin hazırlanması ile ilgili bilgiler:

d-)Information's for specimen preparation:

☑ Four test specimens taken from the full size test piece with size of (200x200)mm and tested by the laboratory. The test specimens stored in laboratory conditions for 24h at (23±5)°C.

e-)General information relating to the test:

☑ Water tank, balance, chronometer and drainage equipment (stainless steel mesh) used for the test.

☑ The length, width and thickness of test specimens measured in accordance with EN 12085.

☑ The test specimens weighed to the nearest 0,1 g and determined its initial mass and recorded as "m₀".

☑ The test specimens placed in the water tank for 10 s, after that place it within 5s in a plastic tray. Weigh this tray with the test specimen to determine the test specimen mass including the initial water uptake "m₁".

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU
TEST REPORT

Sayfa : 3/3**Page : 3 of 3**

- ❗ Replace the test specimen in the water tank and applied sufficient load on the specimen to keep the test specimen partial immersed in water with its bottom face 10mm below the water level.
- ❗ The test specimen removed after 24 hours and drained for $(10 \pm 0,5)$ min by placing it vertically on a mesh, inclined at 45°. Then the test specimen weighed again and determined its mass after immersion and measured value recorded as "m₂₄".
- ❗ The short term water absorption by partial immersion, in volume percent is calculated by using related equations.
- ❗ **Date of test:** 01.09.2018-04.09.2018
- ❗ **Deviation of standard condition:** -
- ❗ **Kind of surface treatment (grinding or type of coating):** -
- ❗ **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	4	Average
Test Parameters ▼					
Short term water absorption by partial immersion, kg/m ²	0,12	0,10	0,11	0,10	0,11

Short term water absorption by partial immersion = $0,11 \text{ kg/m}^2 \pm 0,001 \text{ kg/m}^2$
(k=2 and %95 Confidence Interval)

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

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Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800166

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of polyurethane foam sent by the client to the laboratory

Date of Test: 01.09.2018-04.09.2018

Number of pages of the Report: 1/3

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	10.09.2018	H.ATABAY	E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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DENEY RAPORU
TEST REPORT

Sayfa : 2/3
Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 1609 and test results with related information given below.

a-) Test Method: EN 1609: Thermal insulating products for building applications-Determination of short term water absorption by partial immersion

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

☛ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

☛ **Production Plant:** Selahaddin Eyyübi Mah. Kıraç Esenyurt / İSTANBUL

☛ **Brand Name:** PLUSKİM

☛ **Lot Number/Production Code/Serial Number:-/-/-**

☛ **Production Date:** 12.08.2018

c-) Product description, sampling and reference to product Standard for specimen preparation procedure: Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-) Deney numunelerinin hazırlanması ile ilgili bilgiler:

d-)Information's for specimen preparation:

☛ Four test specimens taken from the full size test piece with size of (200x200)mm and tested by the laboratory. The test specimens stored in laboratory conditions for 24h at (23±5)°C.

e-)General information relating to the test:

☛ Water tank, balance, chronometer and drainage equipment (stainless steel mesh) used for the test.

☛ The length, width and thickness of test specimens measured in accordance with EN 12085.

☛ The test specimens weighed to the nearest 0,1 g and determined its initial mass and recorded as "m₀".

☛ The test specimens placed in the water tank for 10 s, after that place it within 5s in a plastic tray. Weigh this tray with the test specimen to determine the test specimen mass including the initial water uptake "m₁".

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU**
TEST REPORT**Sayfa : 3/3****Page : 3 of 3**

- ❖ Replace the test specimen in the water tank and applied sufficient load on the specimen to keep the test specimen partial immersed in water with its bottom face 10mm below the water level.
- ❖ The test specimen removed after 24 hours and drained for $(10 \pm 0,5)$ min by placing it vertically on a mesh, inclined at 45° . Then the test specimen weighed again and determined its mass after immersion and measured value recorded as " m_{24} ".
- ❖ The short term water absorption by partial immersion, in volume percent is calculated by using related equations.
- ❖ **Date of test:** 01.09.2018-04.09.2018
- ❖ **Deviation of standard condition:** -
- ❖ **Kind of surface treatment (grinding or type of coating):** -
- ❖ **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	4	Average
Test Parameters ▼					
Short term water absorption by partial immersion, kg/m ²	0,08	0,08	0,09	0,09	0,09

Short term water absorption by partial immersion = $0,09 \text{ kg/m}^2 \pm 0,001 \text{ kg/m}^2$
($k=2$ and %95 Confidence Interval)

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEBAR A.Ş.; 20.10.2015 tarih ve 29508 sayılı Resmi Gazetede yayımlanan Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında TEBAR Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.'nin Onaylanmış Kuruluş Olarak Görevlendirilmesine Dair Tebliğ (Tebliğ No: MHG/2015-19) ile Çevre ve Şehircilik Bakanlığı tarafından yetkilendirilmiştir.

Onaylanmış Kuruluş Numarası: 2164

DENEY RAPORU
TEST REPORT

Customer Name/Adresse: PLUSKİM KİMYA ve SAN. TİC. A.Ş.

**Cumhuriyet Mah. Nazım Hikmet Bulvarı Concepta Plaza A Blok Kat 4
D:22 Esenyurt / İSTANBUL**

Order No: UDİ1800024

Specimen No: UDN1800167

Name and identity of test item: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam : "PLUSKİM"

The date of receipt of test item: 14.08.2018

The date of acceptance of test item: 14.08.2018

Remarks: Test sample of polyurethane foam sent by the client to the laboratory

Date of Test: 01.09.2018-04.09.2018

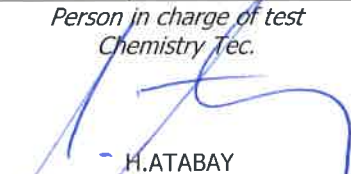
Number of pages of the Report: 1/3

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşması imzalamıştır.

The Turkish Accreditation Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation (EA) and of the International Laboratory Accreditation (ILAC) for the Mutual recognition of test reports.

Deney ve/veya ölçüm sonuçları genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın 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.

Seal	Date	Person in charge of test Chemistry Tec.	Head of Testing Laboratory
	10.09.2018	 H.ATABAY	 E.KARA

İşareti ile gösterilen deney metodları Akreditasyon kapsamı dışındadır.

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TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

DENEY RAPORU TEST REPORT

Sayfa : 2/3

Page : 2 of 3

Polyurethane foam (density: 40 kg/m³) for test samples, which sent by the client to the laboratory in 14.08.2018 , tested according to EN 1609 and test results with related information given below.

a-) Test Method: EN 1609: Thermal insulating products for building applications-Determination of short term water absorption by partial immersion

b-) Product Description: Thermal insulation products made from sprayed rigid polyurethane (PUR) foam

❖ **Sponsor/Client:** PLUSKİM KİMYA ve SAN. TİC. A.Ş.

❖ **Production Plant:** Selahaddin Eyyübi Mah. Kırac Esenyurt / İSTANBUL

❖ **Brand Name:** PLUSKİM

❖ **Lot Number/Production Code/Serial Number:-/-/-**

❖ **Production Date:** 13.08.2018

c-) Product description, sampling and reference to product Standard for specimen preparation procedure: Test sample which are described in clause (b) were taken by the client and sent to the laboratory.

d-) Deney numunelerinin hazırlanması ile ilgili bilgiler:

d-)Information's for specimen preparation:

❖ Four test specimens taken from the full size test piece with size of (200x200)mm and tested by the laboratory. The test specimens stored in laboratory conditions for 24h at (23±5)°C.

e-)General information relating to the test:

❖ Water tank, balance, chronometer and drainage equipment (stainless steel mesh) used for the test.

❖ The length, width and thickness of test specimens measured in accordance with EN 12085.

❖ The test specimens weighed to the nearest 0,1 g and determined its initial mass and recorded as "m₀".

❖ The test specimens placed in the water tank for 10 s, after that place it within 5s in a plastic tray. Weigh this tray with the test specimen to determine the test specimen mass including the initial water uptake "m₁".

❗ İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.

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Adres: Şerifali Mah. Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL**DENEY RAPORU**
TEST REPORT**Sayfa : 3/3**
Page : 3 of 3

- ❌ Replace the test specimen in the water tank and applied sufficient load on the specimen to keep the test specimen partial immersed in water with its bottom face 10mm below the water level.
- ❌ The test specimen removed after 24 hours and drained for $(10 \pm 0,5)$ min by placing it vertically on a mesh, inclined at 45° . Then the test specimen weighed again and determined its mass after immersion and measured value recorded as " m_{24} ".
- ❌ The short term water absorption by partial immersion, in volume percent is calculated by using related equations.
- ❌ **Date of test:** 01.09.2018-04.09.2018
- ❌ **Deviation of standard condition:** -
- ❌ **Kind of surface treatment (grinding or type of coating):** -
- ❌ **Events which may have affected the results:** -

f-) Test Results:

Test Specimen ►	1	2	3	4	Average
Test Parameters ▼					
Short term water absorption by partial immersion, kg/m^2	0,09	0,11	0,09	0,10	0,10

Short term water absorption by partial immersion = $0,10 \text{ kg/m}^2 \pm 0,001 \text{ kg/m}^2$
($k=2$ and %95 Confidence Interval)

İşareti ile gösterilen deney metotları Akreditasyon kapsamı dışındadır.

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