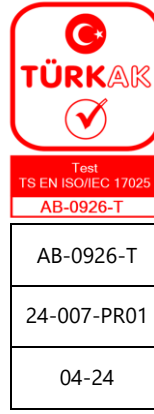




AVRASYA CEPHE-DOĞRAMA
TEST VE TEKNOLOJİ
Beyköy Beldesi Cumhuriyet OSB2 Mah. 2. Cad. No:1/1A
Merkez DÜZCE / TÜRKİYE



Deney Raporu
Test Report

Sayfa (Page): 1 / 34

Müşterinin adı / adresi: Okyanus Alüminyum A.Ş.
Customer Address Akçaburgaz Mh. 3101 Sk. No:5
Esenyurt / İstanbul

İstek Numarası: 24-007-PR01
Order No.

Numunenin tanımı ve tanımı: Okyanus ALC-55T Sistem - Çift Alüminyum Pencere
Name and identity of test item Okyanus ALC-55T System - Tilt and Turn Aluminium Window

Numunenin kabul tarihi: 15.04.2024
The date of receipt of test item

Açıklamalar: EN 1026, EN 1027, EN 12211 deney metodları kullanılmıştır.
Remarks EN 1026, EN 1027, EN 12211 testing methods were performed.

EN 12207 - Hava Geçirgenliği 4	EN 12207 - Air Permeability	Class 4
EN 12208 - Su Sızdırmazlığı E900	EN 12208 - Watertightness	Class E900
EN 12210 - Rüzgar Yüklemesi C4	EN 12210 - Resistance to Wind Load	Class C4

Deneyin yapıldığı tarih: 16.04.2024
Date of Test

Deney Raporu Sayfa Sayısı: 34
Number of pages of the test report

AVRASYA CEPHE-DOĞRAMA Test ve Teknoloji Merkezi Ltd. Şti. tarafından TÜRKAK'ın ATB EN ISO/IEC 17025:2017 standardına göre akredite edilmiştir.

AVRASYA CEPHE-DOĞRAMA Test ve Teknoloji Merkezi Ltd. Şti. tarafından TÜRKAK'ın ATB EN ISO/IEC 17025:2017 standardına göre akredite edilmiştir. Akreditasyon kayıtları T.C. Akademi Bakanlığı kayıtlarında kayıtlıdır. Akreditasyon kayıtları T.C. Akademi Bakanlığı kayıtlarında kayıtlıdır. Akreditasyon kayıtları T.C. Akademi Bakanlığı kayıtlarında kayıtlıdır.

Deney ve /veya ölçüm sonuçları, belirsizlikler (gerekliyse) güven olasılığı ve test yöntemleri aşağıdaki sayfalarda belirtilmiştir.

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 declaration.

"Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Akreditasyon Birliği (ILAC) ile Çok Taraflı Tanınma Anlaşmasını 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

Bu deney raporu: Firmamıza ulaşan numunelere deney ve/veya deneyler için müşteriye ait diğer numuneleri kapsamaz.

(This test report was prepared after applying test/tests to the samples that are sent to our company.)

(Note that this declaration does not involve other samples of the customer.)



Kaşe/Seal

22.04.2024

Yayımlandığı

Date

Deney Sorumlusu

Person in charge of test

Onaylayan

Approval

RPR001/03/20.11.2023

Bu rapor, yabak katılmadan kısmen kopyalanıp çoğaltılamaz.
İmzasız ve mühürlü raporlar geçersizdir.

This report shall not be reproduced other than in full except with the permission of the laboratory.

Testing reports without signature and seal are not valid



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1. Numune / Object

1.1 Deney Numunesi-T a n ı f Description of Test Specimen

Deney Numunesi

Test Specimen

Sistem Üreticisi

System Manufacturer

Ürün Üreticisi

Product Manufacturer

Tüm Alan Ölçüleri

Overall Area

Aç ı l B a m l e ş i m U z u n l u ğ u

Opening Joint Length

S a ğ ı l e i ç e r i A ç ı l Ç a r f t A l ü m i n y u m P e n c e r e

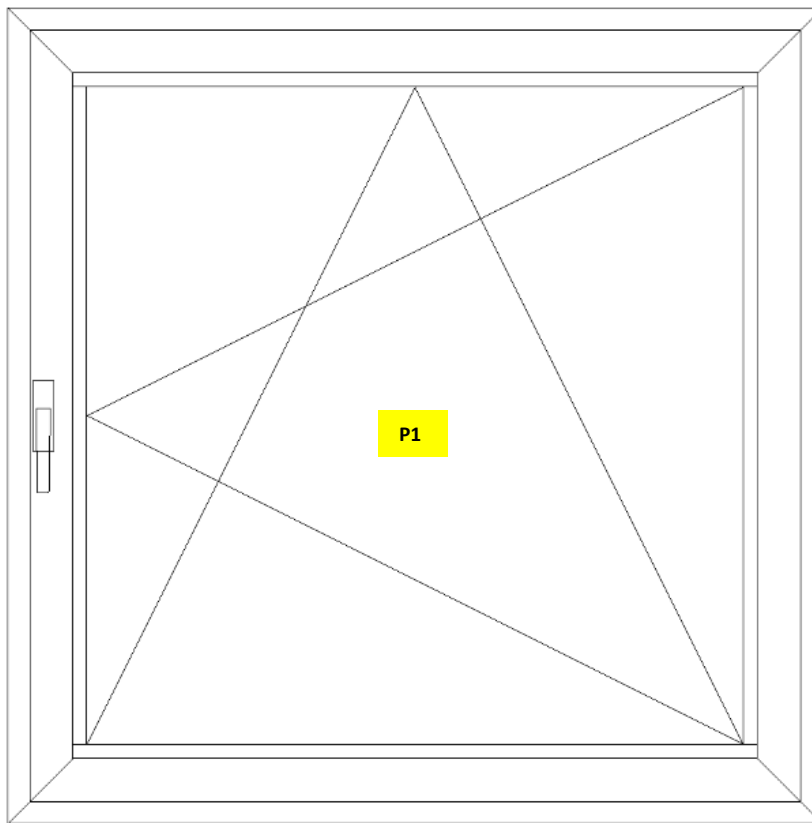
Tilt and turn aluminium window opening inwards with right hand

Okyanus ALC-55T

ESRE CEPHE

1,44 m²

4,38 m



Ç i z i m N o . 1 D e n e y N u m u n e ş i ç & G ö n ü

Drawing No. 1 Test Specimen & Analysis of Sections (Interior View)

Çerçeve Ölçüleri / Frame Dimensions (En x Boy) / (Wide x Height)

Tüm / Overall 1200 mm x 1200 mm

P1(Kanat/Casement) 1095 mm x 1095 mm

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Profiller / Profiles

Kasa Profili

Frame Profile

Profil No. ALC56-303, ısı bariyerli alüminyum profil, y başlığı ve dikme profili olarak kullanılmıştır.
Profile No. ALC56-303, aluminium profile with thermal break, used as head, sill and jamb profile at horizontal and vertical

Köşe Birleşim

Corner Connection

45° gönye kesim (ALC56-303-6170) ve çavuz (6170) kullanılarak yapıştir ve niel rek bki öşlee ştiirri el şmi nşly e j r u i l r a d e m i ş t i r .
45° mitre cut, glued and connected by crimping using with corner chocks (ALC56-303-6170) and corner cleats (6170). Silicone was applied in the joints.

Kanat Profili

Casement Profile

Profil No. ALC56-207, ısı bariyerli, alyümiyümda m v p e r d f ü i ş l e y d e ü s t b a ş l ı ğ ı v e s a ğ / s o l s e r e n o l a r a k k u l l a n ı l m ı ş t ı r .
Profile No. ALC56-207, aluminium profile with thermal break, used as head, bottom rail and stile profile at horizontal and vertical

Köşe Birleşim

Corner Connection

45° gönye kesim (ALC56-207-6170) ve çavuz (6170) kullanılarak yapıştir ve niel rek bki öşlee ştiirri el şmi nşly e j r u i l r a d e m i ş t i r .
45° mitre cut, glued and connected by crimping using with corner chocks (ALC56-207-6170) and corner cleats (6170). Silicone was applied in the joints.

Cam Çıtası

Glazing Bead

Profil No. 6165, 90° boy kesim, y a t a y d a k a n a t p r o f i l i n e y t d i e r t u l m u ş t u r .
B i r l e ş i m a l s a i r l i n d e n u y g u l a n m ı ş t ı r .
Profile No. 6165, cut to length 90°, fitted to the casement profiles at horizontal and vertical. Silicone was applied in the joints.

Cam Takozu

Glazing Wedge

Profil No. CT01, PVC, kanatta kanat profili ile cam paneli b a b a n d a m ı ş t ı r .
Profile No. CT01, PVC, at casement used between casement profile and glazing panel.

Yalıt-Fitiller

Seals-Gaskets

İç Cam Fitiili

Interior Glazing Gasket

Fitil No. FLT02, EPDM, 90° boy kesim, y a t a y d a v e d ü ş e A L C 5 6 - 2 0 7 ö ğ e n o ' l u c
fitil y u v a l a r ı n a d i t u r l u t e ş l i m u ş t u r . S i l i k o n v e E P D M n o k t a l a
k u l l a n ı l m ı ş t ı r .
Gasket FLT02, EPDM, cut to length 90°, fitted to the item no. 6165 glazing beads at
horizontally and vertically. Silicone and EPDM adhesive was applied in the joints.

Dış Cam Fitiili

Exterior Glazing Gasket

Fitil No. FLT01, EPDM, 45° gönye kesim, y a t a y d a v e d ü ş e A L C 5 6 - 2 0 7 ö ğ e n o ' l u
kanat profili fitil y u v a s ı n a o t u r t u l m u ş t u r . S i l i k o n v e E P D M n o k t a l a
y a p ı ş t ı r ı c ı k u l l a n ı l m ı ş t ı r .
Gasket No FLT01, EPDM, 45° mitre cut, fitted to the item no. ALC56-207 casement
profiles at horizontal and vertical. Silicone and EPDM adhesive was applied in the joints.

İç Bini Fitiili

Internal Rebate Gasket

Fitil No. FLT03, EPDM, 45° gönye kesim, y a t a y d a A L C 5 6 - 2 0 7 ö ğ e n o ' l u
kanat profili fitil y u v a s ı n a o t u r t u l m u ş t u r . S i l i k o n v e E P D M e ş i m n o
y a p ı ş t ı r ı c ı k u l l a n ı l m ı ş t ı r .
Gasket No. FLT03, EPDM, 45° mitre cut, fitted to the item no. ALC56-207 casement
profile at horizontal and vertical. Silicone and EPDM adhesive was applied in the joints.

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Orta Bini Fiteli

Center Rebate Gasket

Fitel No. FLT04, EPDM, 45° gönye kesim, yatay ve dikeyde ALC56-303 çerçeve profiline kasa profili fitil yuvasına oturtulmuştur. Yapıştırıcı kullanılmıştır.

Gasket No. FLT04, EPDM, 45° mitre cut, fitted to the item no. ALC56-303 frame profiles at horizontal and vertical. Silicone and EPDM adhesive was applied in the joints.

Dış Bini Fiteli

External Rebate Gasket

Fitel No. FLT03, EPDM, 45° gönye kesim, yatay ve dikeyde ALC56-303 çerçeve profiline kasa profili fitil yuvasına oturtulmuştur. Bilişim ve EPDM yapıştırıcı kullanılmıştır.

Gasket No. FLT03, EPDM, 45° mitre cut, fitted to the item no. ALC56-303 frame profiles at horizontal and vertical. Silicone and EPDM adhesive was applied in the joints.

Tahliye & Havalandırma

Drainage & Ventilation

ALC56-303 çerçeve profiline, kasa profili dış köşelerinde 100 mm mesafede ve ortada, maksimum 505 mm aralıklarla toplam 3 adet 5x30 mm kapalı tahliye olarak açılmıştır.

On item no. ALC56-303 frame sill profile, approximately 100 mm distance from outer corners and at the center, as maximum 505 mm intervals, totally 3 pieces 5x30 mm capped slots were opened as drainage.

ALC56-303 çerçeve profiline orta bini fitil 5x30 mm aralıklı kapaklı tahliye kanalları ile 90 mm aralıklarla 3 adet 15 mm kark tahliye olarak açılmıştır.

On item no. ALC56-303 frame sill profile center rebate gasket channel outer barrier, 3 pieces 15 mm notches were opened as drainage straggled by 90 mm with 5x30 mm capped slots.

ALC56-207 çerçeve profiline, dış köşelerinde 100 mm mesafede 2 adet 5x15 mm slot kanat tahliye çukurlukları ve bu deliklere 2 adet 5x15 mm slot tahliye çukurlukları açılmıştır.

On item no. ALC56-207 bottom rail casement profile, 2 pieces 5x15 mm slots were opened 100 mm distance from outer corners as drainage out and 2 pieces 5x15 mm slots were opened straggled by with these slots were opened as drainage in.

ALC56-207 çerçeve profiline, üst köşelerinde 100 mm mesafede 2 adet 5x15 mm slot kanat havalandırma olarak ve bu delikler şaşırtmalı olacak şekilde 2 adet 5x15 mm slot tahliye çukurlukları açılmıştır.

On item no. ALC56-207 casement stile profile, at vertical, 2 pieces 5x15 mm slots were opened 100 mm distance from top outer corners as ventilation in and 2 pieces 5x15 mm slots were opened straggled by with these slots were opened as ventilation out.

FLT03 dış bini fitil üst köşelerden 40 mm aks mesafesinde 2 adet 40 mm aralıklarla tahliye olarak açılmıştır.

On item no. FLT03 external rebate gasket, at 40 mm axle distance from top corners, 2 pieces 40 mm notches were opened as ventilation.

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Kapatma Panelleri / Infill Panels

P1 Çift Açılımlı Yıkılmaz (Isı korunumlu)
Tilt and Turn Casement - Vision Glazing (Heat insulated)

Yapılandırma (4mm Düz Cam / 6mm) HB / 4 mm Düz Cam

Configuration 4mm Float Glass / 6mm AS / 4 mm Float Glass

Kalınlık / Thickness /

24 mm

Doan / Hardware

SIEGENIA

Tip / Type

Sağ El ile İçerice Açılır Çift Açılım
Tilt and turn window (opening inwards with right hand)

Kilitleme / Locking

İspanya Espagötle

Kilit Adedi ve Tipi

4 adet ayarlanabilir 3 adet manstrial rindai şrl b a ş l l i t o l m a k

Number and type of locking

kilit mevcuttur.

There are 7 pieces in total as 4 pieces adjustable roller cam locks and 3 pieces mushroom head locks

Alt yatayda, iç bakış köşesinde 75 mm mesafede 1 adet mantar başlı
375 mm mesafede 1 adet ayarlanabilir silin

At bottom horizontal, 1 piece mushroom head lock at 75 mm distance and 1 piece
adjustable roller cam at 375 mm distance from interior view left (handle side) corner

Üst yatayda, iç bakış sol köşeden 555 mm mesafede
At top horizontal, 1 piece adjustable roller cam at 555 mm distance from interior view
left (handle side) corner

İç bakış sol köşede 495 mm mesafede 1 adet ayarlanabilir
silinç 1040 mm mesafede 1 adet mantar başlı

At interior view left jamb (handle side), 1 piece adjustable roller cam at 495 mm distance
and 1 piece mushroom head lock at 1040 mm distance from bottom corner,

İç bakış sağ köşede 640 mm mesafede 1 adet
ayarlanabilir, 915 mm mesafede 1 adet mantar başlı

At interior view right jamb (hinge side), 1 piece adjustable roller cam at 640 mm
distance and 1 piece mushroom head lock at 915 mm distance from bottom corner,

Menet / Handle

2 adet, iç bakış / 2 pieces, interior view right stile.

Açma-Kapama

1 adet kol, iç bakış / Single handles interior view left stile.

Opening-Closing

Deney numunesi tanıtımı, müşterinin temin ettiği bilgilerle (Avrasya TTM) tarafından yapılan testlerin sonuçları (item designations / numbers/process guideline / manufacturing process as well as material specifications were provided by the client unless "Avrasya TTM-checked") For details of the test specimen refer to the drawings of sections as well as Annex.1. The design details were examined solely on the basis of the characteristics / performance to be classified. The drawings are based on unchanged documentation provided by the client unless stated otherwise; the photographs were taken by the Avrasya TTM unless stated otherwise

1.2 Numune Kabul / Sample Approval

Avrasya TTM'ye aşağıda numune kabulü için verilen bilgilerin doğruluğu garanti edilmiştir.

Örnekleme / Sampled by

ESRE CEPHE

Doğru / Checked

Avrasya TTM'ye verilen imalat resimleri, stand montaj
deney numunesi kuayrğ u n l a u ş t u r k i d n a t r r a o l e d i l m i ş t i

The specimen fitted to the test chamber were checked by Avrasya TTM with comparing
provided manufacturing layouts, drawings.

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1.3 Deney / Testing

Deney tarihi / Date of Testing 16.04.2024

Deney Opr. / Test Opr. Z a f e r Ş A F A K

Çevre Şartları / Environmental Conditions

Sıcaklık / Temperature 21,4 °C

Nem / Humidity % 56,8

Basınç / Pressure

998,5 hPa

16.04.2024 tarihinde deneme yapıldığına 16.04.2024 were witnessed by

Mustafa Burak ÇBKAYŞAKNALSE AL ÜMİ NYUM

Sezer Uğur ÖNACIKYANUS AL ÜMİ NYUM

Abbas DEMİR ESRE CEPHE

2 Deney Prosedürü / Testing Procedure

2.1 Atfedilen Yöntemlere Referanslar / Methods*

TS EN 14351-1 + A2 (2016) Pencere ve Kapıların Performans Özellikleri - Bölüm 1: Pencere ve Yaya Geçişine Uygun Hazır Dış Kapılar
EN 14351-1 + A2 (2016) Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets

TS EN 12519 (2018) Pencere ve Yaya Geçişine Uygun Kapılar
EN 12519 (2018) Windows and pedestrian doors - Terminology

2.2 Deneyler / Testing

- Hava Geçirgenliği / Air Permeability (TS EN 1026-2016)
Air Permeability - (infiltration / exfiltration) (EN 1026 - 2016)
- Su Sızdırmazlığı / Watertightness (TS EN 1027-2016)
Watertightness - (EN 1027-2016)
- Rüzgar Yükleri ve Dayanıklılık / Resistance To Wind Load - Serviceability & 50 Çevrim - (TS EN 12211-2016)
Resistance To Wind Load - Serviceability & 50 Cycle (EN 12211-2016)
- Hava Geçirgenliği (Tekrar) / Air Permeability - Repeat (TS EN 1026-2016)
Air Permeability - Repeat - (infiltration / exfiltration) (EN 1026-2016)
- Rüzgar Yükleri ve Güvenlik / Resistance To Wind Load - Safety (TS EN 12211-2016)
Resistance To Wind Load - Safety - (EN 12211-2016)
- Söküm, İnceleme ve Raporlama / Dismantle, Inspect & Report

2.3 Sınıflandırma / Classification - Evaluation

- Hava Geçirgenliği Sınıflandırması (TS EN 12207-2017)
Air permeability - Classification (EN 12207-2017)
- Su Sızdırmazlığı Sınıflandırması (TS EN 12208-2004)
Watertightness-Classification (EN 12208-2004)
- Rüzgar Yükleri Sınıflandırması (TS EN 12210-2016)
Resistance to wind load - Classification (EN 12210-2016)



Resim No. 1 Monte Deney Numunesi / Fig. No.1 Mounted Test Specimen

3 Özet Deney - Yorumlar / Brief Description of Testing - Comments

3.1 Hava Geçirgenliği / Air Permeability

EN 1026 uyarınca hava geçirgenliği deneyi, maksimum basıncın kademelerinin oluşturulmasıyla gerçekleştirilmiştir. İçerisindeki basınçta yapay sistem verilmiş ve kalıcı esnek mastik ile

Deney numunesini hazır halden maksimum basınçta, en az 100, 150, 200, 250, 300, 450 ve 600 Pa pozitif basınç alınmıştır. Her basınç kademesine ulaşıldığında en az 10

Aynı işlemler negatif basınç farkları için de gerçekleştirilmiştir. Negatif basınçta da aynı şekilde değerlendirme yapılmıştır.

Hava geçirgenliği

Sonuçlar, tablo ve grafik ile Bölüm 4.1'de gösterilmiştir.

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Air permeability was tested in accordance with EN 1026 and conducted in steps at negative pressure and positive pressure up to the maximum test pressure difference. Leakages of the test set-up were made visible using artificially generated fog at maximum pressure step and sealed using permanently resilient sealant.

Three positive pressure differential pulses (bedding pulses) of $P_{max}+10\%$ (660 Pa) were applied to prepare the test sample, the pressure rise time was not less than one second and the pressure was maintained for at least three seconds.

Measurements of air flow were taken at positive pressure differentials of 50, 100, 150, 200,300, 450, 600 Pa. Each pressure increment was maintained for at least 10 seconds.

The same test procedure was done for the air exfiltration. Classification was done according to average values.

Air permeability: Class 4

The measured values are shown as graph & tabulated in Section 4.1

3.2 Statik Basınç Altı/Watertightness Index Statik Basınç

Hazırlık

Deney odası ve ortam hava sıcaklığı $+4^{\circ}\text{C}$ ve $+30^{\circ}\text{C}$ arasında tutulmuş ve nemli tutulmuştur.

EN 1027 uyarınca su sızdırmazlık deneyi, işletme şartları numunesi dış yüzüne düzenli aralıklarla artan pozitif hattan yaklaşıp her bir meme için 2 l/dk. akış oranı hale getirmek için, üç adet 990 Pa basınç değişimleriyle nabız (darbe) uy bir saniyeden az olmamış ve ulaşıncaya en az 3 saniye süresince su püskürtülmesi, 150, 200, 250, 300, 450, 600, 750 ve 900 Pa kademelerinde 5 dk süresince numuneye su püskürtülme devam edilmiş ve kor

Su sızdırmazlık:

Sonuçlar, tablo ile Bölüm 4.2'de gösterilmiştir.

Preparation

The test chamber and ambient air temperatures were recorded. The temperature of the water used was maintained between $+4^{\circ}\text{C}$ and $+30^{\circ}\text{C}$.

Watertightness was tested in accordance with EN 1027 up to the maximum test pressure difference. The external face of the test specimen was subjected to constant spraying of water by an upper row of nozzles at a flow rate of approx. 2 l/min per nozzle while increments of positive test pressure were applied at regular intervals.

Three positive pressure differential pulses 990 Pa were applied to prepare the test sample, the pressure rise time was not less than one second and the pressure was maintained for at least three seconds.

Water were sprayed onto the sample for 15 minutes at zero pressure differential. With the water spray continuing the pressure differential were across the sample increased up with increments 50, 100, 150, 200, 250, 300, 450, 600, 750, and 900 Pa and each was hold for 5 minutes.

Watertightness : Class E900

The measured values are shown as tabulated in Section 4.2

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3.3 Rüzgar Yükleri - **Biznetaverebilirlik- (P₁) / Wind Resistance Test – Serviceability (P₁)**

3.3.1 Sehim Deneyi /Deflection Test

Hazırlık

Deney numunesini hazır hale getirmek için üç adet P₁+10% (darbe) uygulanmıştır, darbe iyileşme zamanı ve süreleri Bu deney numunesinde mevcut kilit sayısı ve kilit mesafeleri ile ilgili olduğundan ve çerçeve elemanında belirlenmiş yük alımları ölçümü yapılmamıştır.

Deney basıncı gittikçe artarak ve kesintisiz şekilde 100 Pa basıncında 1600 Pa pozitif basınç farkında 30 ±10 s kalıncasına düşürülmüş ve 60 ±5 s için t e k k l e r m i a ş t m ı r ş t . A r y n ı d e n e y

Preparation

Three positive pressure differential pulses (bedding pulses) of P₁+10% (1760 Pa) (P₁=1600 Pa) for pressure were applied to prepare the sample, the pulsating pressure rise time was not less than one second and the pressure was maintained for at least three seconds.

Depending on the number of locks and lock distances available in this test sample, the load is directly transmitted to the frame profile and there will be no deformation greater than l / 300 under the specified load on the frame element, deflection has not been measured.

The test pressure was raised up to serviceability pressure in at a rate not exceeding 100 Pa/s either incrementally or continuously and held for 30 ±10 s at the pressure step 1600 Pa. Then the test pressure was reduced to 0 Pa at a rate not greater than 100 Pa/s and wait 60 ±5 s. Same testing procedure was repeated for -P₁.

3.3.2 Tekrar Deney /Repeated Pressure Test

Deney numuneleri, özellikleri aşağıda verildiği gibi olmalıdır.

- Deney basıncı P₂' = ½ P₁ = 800 Pa alınmıştır. P₂
- İlk kademesi negatif olmak üzere 50 basınç darbesi
- (-) P₂' den (+) P₂' ye değişim ve tersi (7 ± 3) saniyede g
- (+) P₂ değeri en az (7 ± 3) saniyede elde edilmiştir.

50 çevrimi tamamlandıktan sonra hareketli elemanlar açılıp kapatılmış ve hasar veya fonksiyonel kusur görülmemiştir.

The test specimen was subjected to 50 cycles including negative and positive pressures with the following features;

- Test pressure was taken equal to P₂ = ½ P₁ = 800 Pa
- First step was negative, next was positive as is the last of the sequence of 50 impulses were applied.
- Variation from (-) P₂ to (+) P₂ and the reverse was taken (7±3) s.
- Value (+) P₂ is maintained at least for (7±3) s.

After completion of the 50 cycles, the moving parts of specimen were opened & closed and no damage nor functioning defects has detected.

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3.4 Hava Geçirgenlik Testi / Repet Test - Air Permeability

Bölüm 3.1'deki işlemler tekrar edilmiştir. Hava geçirgen %20' sinden fazlasını geçmemiştir.

Sonuçlar, tablo ve grafik ile Bölüm 4.3'te gösterilmiştir.

The same testing procedure at Section 3.1 was repeated. The air permeability after tests P₁ and P₂ were not exceed the upper limits the air permeability as measured in Section 3.1 more than %20.

The measured values are shown as graph & tabulated in Section 4.3

3.5 Rüzgar Yükleri - Güvenlik (P₃) / Wind Resistance Test - Safety (P₃)

Deney numuneleri özellikleri aşağıda verildiği gibi olartutulmuştur

- Deney basıncı P₃' = 1.5 P₁ = 2400 Pa (P₁ = 1600 Pa) tır.

- İlk olatıfak dneengeay basıncı uygulanmıştır

- 0 Pa (-) 3 he değışi (-) P₃ ' vdeeng eOr iPa ' a değigşir me (k 7 e ş m 3) ş ; s æmi y b e d y ü k (-) P₃ (7 ± 3) saniye süre ile sabit tutulmuştur.

- Pozitif deney basıncı ekl e n d i a k t e n (7 0 e r 3) u ş g u n l i y e m b ş t i r

- Aynı pr (e) P₃ e i d ü r n t e k r a r e d i l m i ş t i r .

Artırılmış yük altında, çerçeve elemanları, dolgu panel gelmemiştir. Paneller, cam elemanlar ve contalar yerinde

Rüzgar Yükleri: B n e C 4 D a y a n ı m

Sonuçlar, tablo ve grafik ile Bölüm 4.3'te gösterilmiştir.

The test specimen was subjected to cycle including negative and positive pressures with the following features;

- Test pressure was taken equal to P₃. P₃ = 1.5 P₁ = 2400 Pa (P₁ = 1600 Pa)

- First step was negative.

- Variation from 0 Pa to (-) P₃ and back from (-) P₃ to 0 Pa was taken (7±3) s, the maximum test pressure (-) P₃ was maintained for (7±3) s

- Positive test pressure was applied after a (7±3) s rest at 0 Pa

- Same procedure was repeated for (+) P₃

Under increased negative and positive pressure load, no permanent damage at framing members, infill panels, fixing brackets or anchors was detected. Panels, glazing beads and gaskets were not displaced.

Resistance to wind load: Class C4

The measured values are shown as graph & tabulated in Section 4.3

3.6 Söküm, İnceleme & Disman & Klasifikasyon & Record

Deney standına monte edilen numune, müşteri beyan çizimi altına altına Müşir red ş et n i m . ö n c e s i n s d u e n d t u a ğ r u a f i ş t e r d e n b e y a n e d i l e n d e n f a r u k u l a m a t e s p i t e d i l m e m i ş t i

The test specimen mounted to the test rig was inspected and recorded by comparing the provided manufacturer layouts and clients drawings. There is no difference between the test sample and declared drawing.

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4. Deneysel Sonuçlar / Detailed Results /

4.1 Hava Geçirgenliği / Air Permeability /



Deneysel Standart / Test Standard	TS EN 1
Sınıflandırma / Classification	TS EN 12207
Test Tarihi / Date of testing	16.04.2024

Ortamlar / Ambient conditions /

Sıcaklık / Temperature	Nem / Humidity	Basınç / Pressure
21,4 °C	56,8 %	998,5 hPa

A	Tüm alan / Overall area	1,44 m ²
OL	Açılabilir birleşim / Length of opening joint	4,38 m

Maksimum test basıncı / Maximum test pressure	± 600 Pa
Darbe basıncı / Pulse pressure & Repeat	660 Pa & 3 repeat

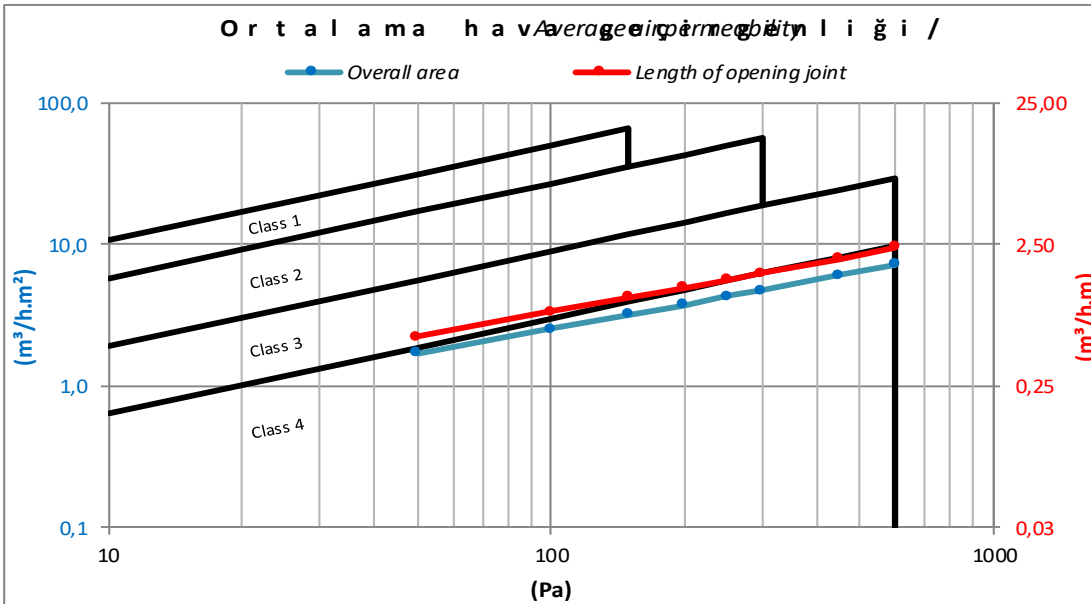
Test sonucu / Test result

Hava akışı / Air flow	10,44 m ³ / h
Tüm alana göre hava geçirgenliği / Air permeability based on overall area	7,25 m ³ / h.m ²
Açılan birleşim uzunluğuna göre hava geçirgenliği / Air permeability based on length of opening joint	2,38 m ³ / h.m
Tüm alana göre hava geçirgenliği / Air permeability based on overall area	Sınıf 4 /
Açılan birleşim uzunluğuna göre hava geçirgenliği / Air permeability based on length of opening joint	Sınıf 3 /
Genel sınıflandırma / Overall classification	Sınıf 4 /

Kayıplar / Losses /

Basınç sınıfı / Pressure class	Pa	50	100	150	200	250	300	450	600
Pozitif basınç / Positive pressure	m ³ / h	2,39	3,58	4,53	5,34	6,06	6,72	8,50	10,27
Negatif basınç / Negative pressure	m ³ / h	2,50	3,75	4,72	5,53	6,29	7,02	8,99	10,61

Ortalama hava geçirgenliği / Average air permeability /



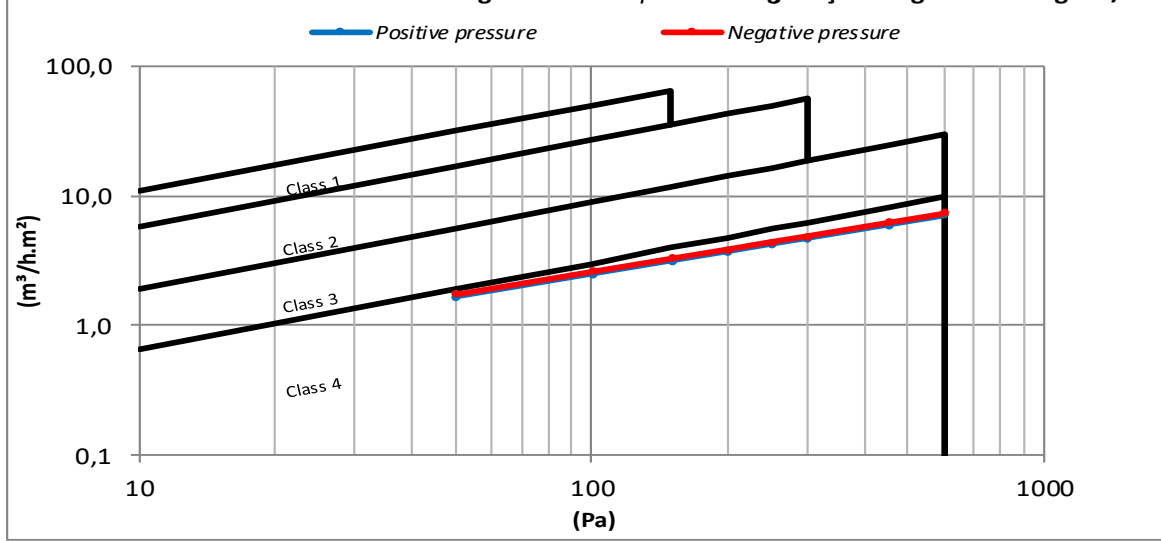
Hava akış hızları / Air flow values /

Basınç / Pressure /	Pa	50	100	150	200	250	300	450	600
Pozitif / Positive /	m^3 / h	2,39	3,58	4,53	5,34	6,06	6,72	8,50	10,27
Negatif / Negative /	m^3 / h	2,50	3,75	4,72	5,53	6,29	7,02	8,99	10,61
Ortalama / Average	m^3 / h	2,45	3,67	4,63	5,44	6,18	6,87	8,75	10,44

Tüm alana göre Ait permeability based on overall area /

Basınç / Pressure /	Pa	50	100	150	200	250	300	450	600
Pozitif / Positive /	m^3 / h	1,66	2,49	3,15	3,71	4,21	4,67	5,90	7,13
Negatif / Negative /	m^3 / h	1,74	2,60	3,28	3,84	4,37	4,88	6,24	7,37
Ortalama / Average	m^3 / h	1,70	2,55	3,21	3,77	4,29	4,77	6,07	7,25

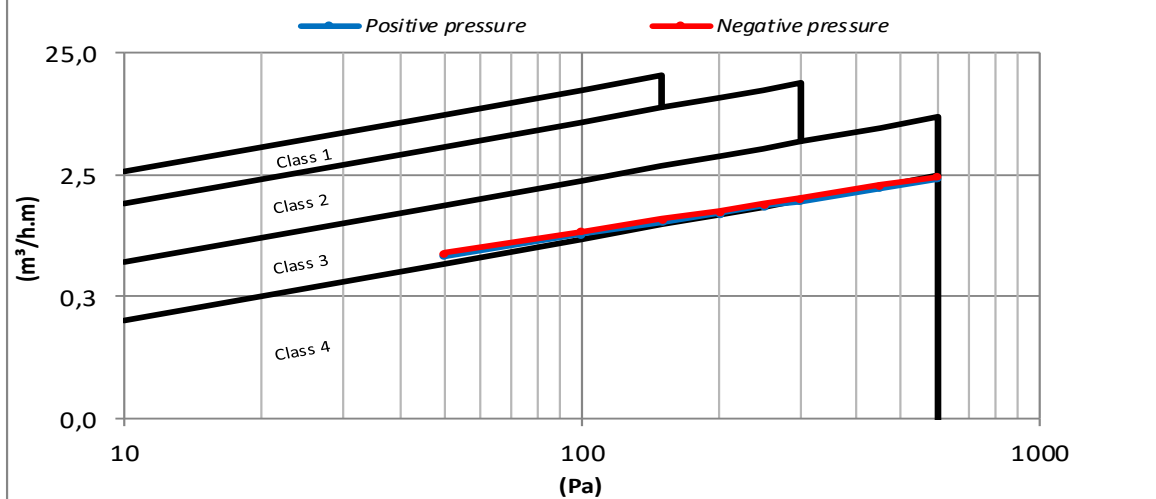
Tüm alana göre Ait permeability based on overall area /



Açılabilir birleşim uzunluğuna göre Ait permeability based on opening joint length /

Basınç / Pressure /	Pa	50	100	150	200	250	300	450	600
Pozitif / Positive /	m^3 / h	0,55	0,82	1,03	1,22	1,38	1,53	1,94	2,34
Negatif / Negative /	m^3 / h	0,57	0,86	1,08	1,26	1,44	1,60	2,05	2,42
Ortalama / Average	m^3 / h	0,56	0,84	1,06	1,24	1,41	1,57	2,00	2,38

Açılabilir birleşim uzunluğuna göre Ait permeability based on opening joint length /



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4.2 Statik Basınç Altı İvdařıtı Stress İndex Statia Pressure İ /



Deneys Test standardı /	TS EN 1
Sınıflandı Classification standardı /	TS EN 12208
Test tarihi/Date of testing	16.04.2024

Ortam k Ambient conditions/

Sıc a Temperature	Nem/Humidity	Bas ı Pressure
21,4 ° C	56,8 %	998,5 hPa

P ü s k ü r m e Spraying method	1A
No z ü l Number of nozzle	3
No z ü l s Number of nozzle rows /	1
T o p l a m Total water flow l /	6 l/dk

M a k s i m u m t Maximum test pressure /	900 Pa
D a r b e b a s ı Pulse pressure & Repeat /	990 Pa & 3 repeat

Test sonucu/Test result

Deneys de su giri Ő i g ö r ü l m e d i . No water penetration was detected in the test.	
S i n i f l / Classification	S i n i f E 9 0

K a y ı Records /

Bas ı Pressure	S ü r T i m e	S o n B e Ő u l t
0 Pa	15 min	✓
50 Pa	5 min	✓
100 Pa	5 min	✓
150 Pa	5 min	✓
200 Pa	5 min	✓
250 Pa	5 min	✓
300 Pa	5 min	✓
450 Pa	5 min	✓
600 Pa	5 min	✓
750 Pa	5 min	✓
900 Pa	5 min	✓

✓	S u g i r i Ő i No water penetration was detected.
☒	S u g i r i Ő i Water penetration was detected.

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Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.
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4.3 Rüzgar Yükleri / Resistance to Wind Loads



* Bu deney numunesinde mevcut kilit doğrudan çerçeve elemanına iletilen altındaki 1/300' den büyük deformasyon yapılmamıştır.

* Depending on the number of locks and lock distances available in this test sample, the load is directly transmitted to the frame profile and there will be no deformation greater than 1/300 under the specified load on the frame element, deflection has not been measured.

Deneys Test standardı /	TS EN 12211
Sınıflandı Classificati on standardı /	TS EN 12210
Test tarihi/Date of testing	16.04.2024

Ortam k Ambient conditions /

Sıcaklık/Temp erature	Nem/Humidity	Basınç/Pressure
21,4 ° C	56,8 %	998,5 hPa

Etkin Effective kpbm k /	L	1095 mm
Sehim limiti/Deflection limit	A	L/150 7,30 mm
Sehim limiti/Deflection limit	B	L/200 5,48 mm
Sehim limiti/Deflection limit	C	L/300 3,65 mm

Tasarı Design yükü /	± 1600 Pa
Darbe bası Pulse pressure & Repeat /	1760 Pa & 3 repeat

Test sonucu/Test result

Sehim testi nedeniyle görünür h
Visible damage did not occur due to the deflection test.

Tekrarlı basınç testi nedeniyle
Visible damage did not occur due to the repeated pressure test.

Hava geçirgenliği tekrar testinde sınıfının üst sınırlarını %20'de
The measured values in the repeated air permeability test did not exceed the upper limits of the claimed class for air permeability by more than 20%.

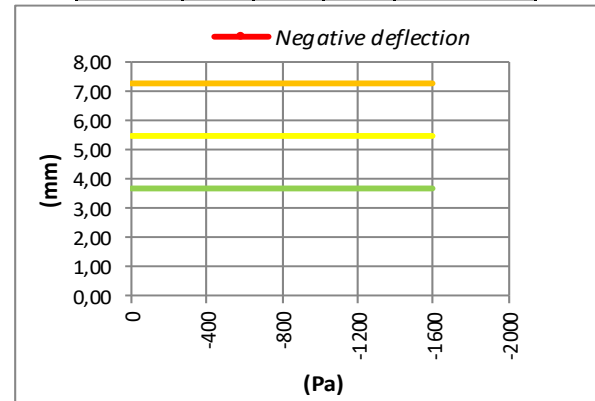
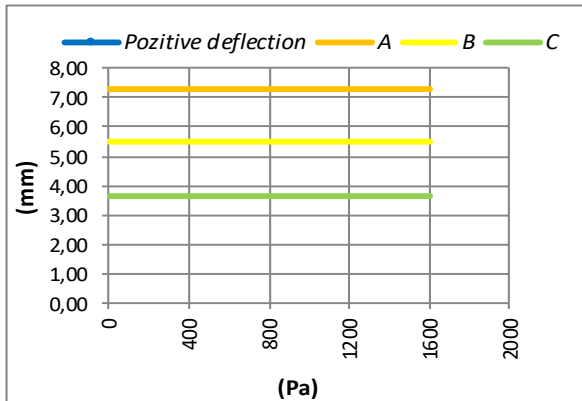
Numune emniyet testinde kapalı k
The specimen remained closed in the safety test.

Sınıflı/Classificati on a	Sınıf C4
---------------------------	----------

Rüzgar yüklerine day aResistance to wind loads test Deflection measurements

Pozitif maksimum basınç/Positive maximum pressure						1600 Pa
Basınç/Pressure	M1 (mm)	M2 (mm)	M3 (mm)	Sehim/Deflection		
1 400 Pa				mm	C	
2 800 Pa				mm	C	
3 1200 Pa				mm	C	
4 1600 Pa				mm	C	
0 Pa				mm		

Negatif maksimum basınç/Negative maximum pressure						-1600 Pa
Basınç/Pressure	M1 (mm)	M2 (mm)	M3 (mm)	Sehim/Deflection		
1 -400 Pa				mm	C	
2 -800 Pa				mm	C	
3 -1200 Pa				mm	C	
4 -1600 Pa				mm	C	
0 Pa				mm		



Rüzgar yüklerine dayan Resistance to wind load Test Reported pressure test in ç

Test bİastsPressure /	Kalma Hold time si /	De ğ i ŝ i mChange time si /	Ç evri mNunber of Cycles /
± 800 Pa	7 s	7 s	50

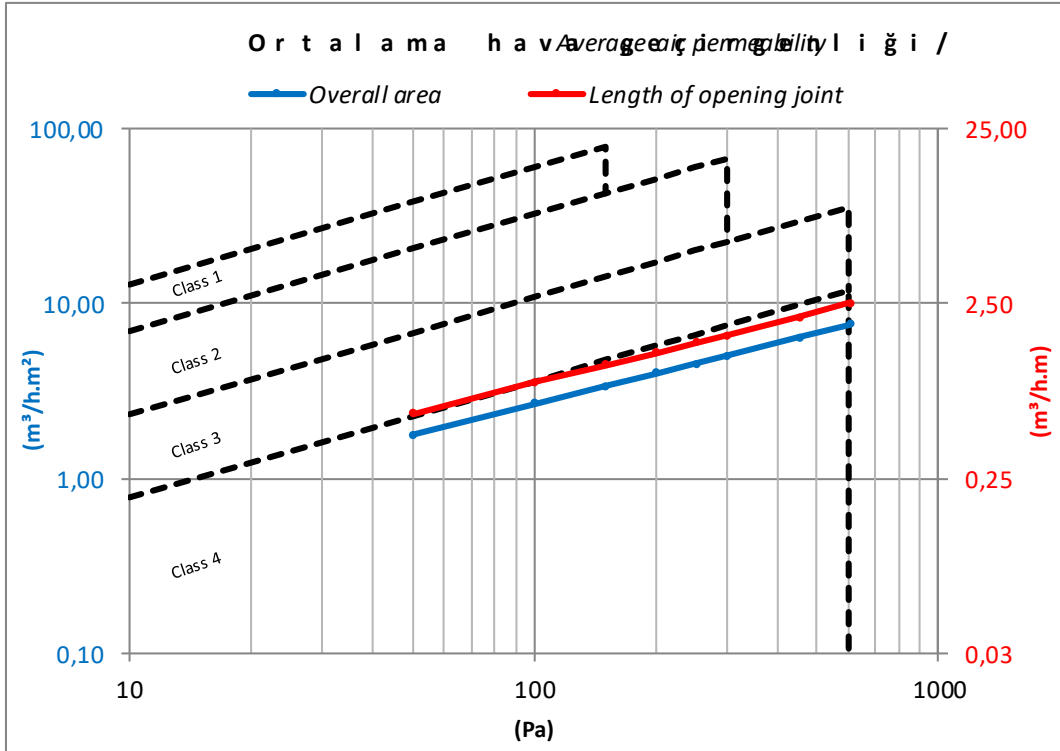
Rüzgar yüklerine dayanım t Air permeability test of aers resistance to wind load ç i

Tüm Overall area	A	1,44 m ²	Aç ı l a b i l Opening joint le ŝ i i OL	4,38 m
------------------	---	---------------------	--	--------

K a y ı Recbrsr /

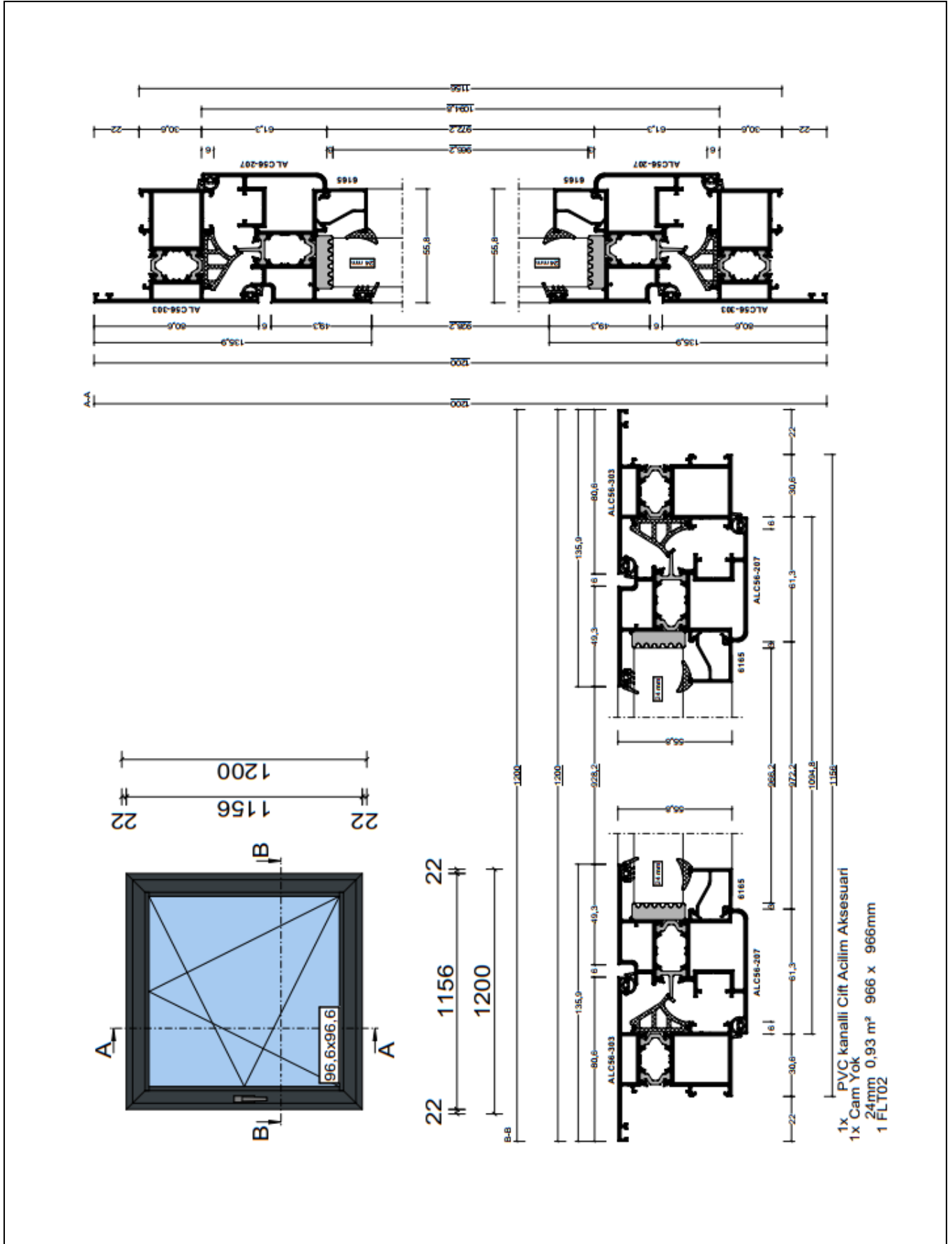
Basınç k ardsuunstepse ri /	Pa	50	100	150	200	250	300	450	600
Poziti Positiveapessuueç /	m ³ / h	2,35	3,53	4,43	5,23	5,88	6,55	8,34	10,07
Negati fNegtiavespsuueç /	m ³ / h	2,77	4,16	5,22	6,19	7,08	7,83	9,94	11,75

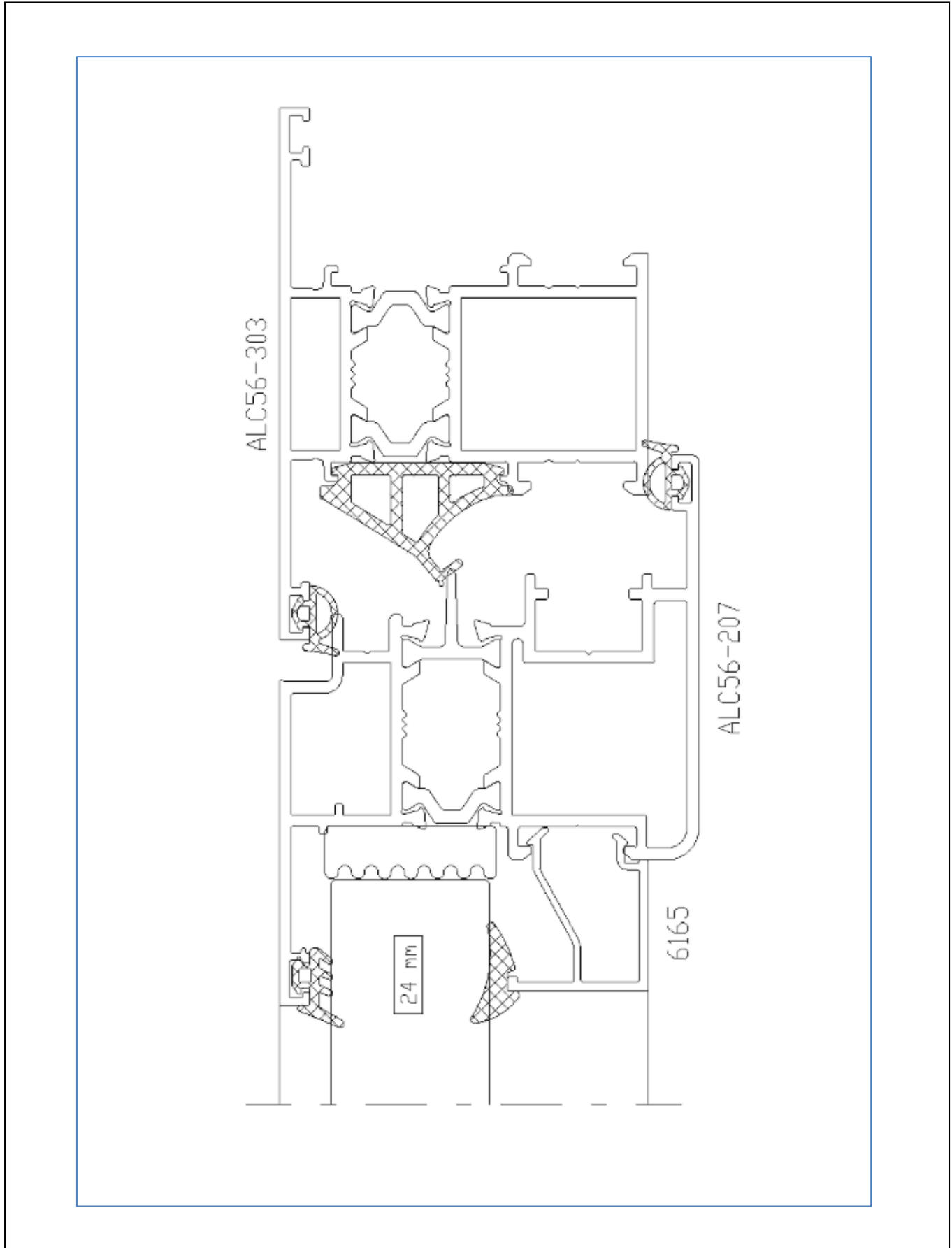
Basınç k ardsuunstepse ri /	Pa	50	100	150	200	250	300	450	600
Hava akı şAir fbu vğlerleri /	m ³ / h	2,56	3,85	4,83	5,71	6,48	7,19	9,14	10,91
Tüm alana göre hava g Air permeability based on overall area	m ³ / h .	1,78	2,67	3,35	3,97	4,50	4,99	6,35	7,58
Aç ı l a b i l i r b i r l e ŝ i m u z u n l Air permeability based on length of opening joint	m ³ / h .	0,58	0,88	1,10	1,30	1,48	1,64	2,09	2,49

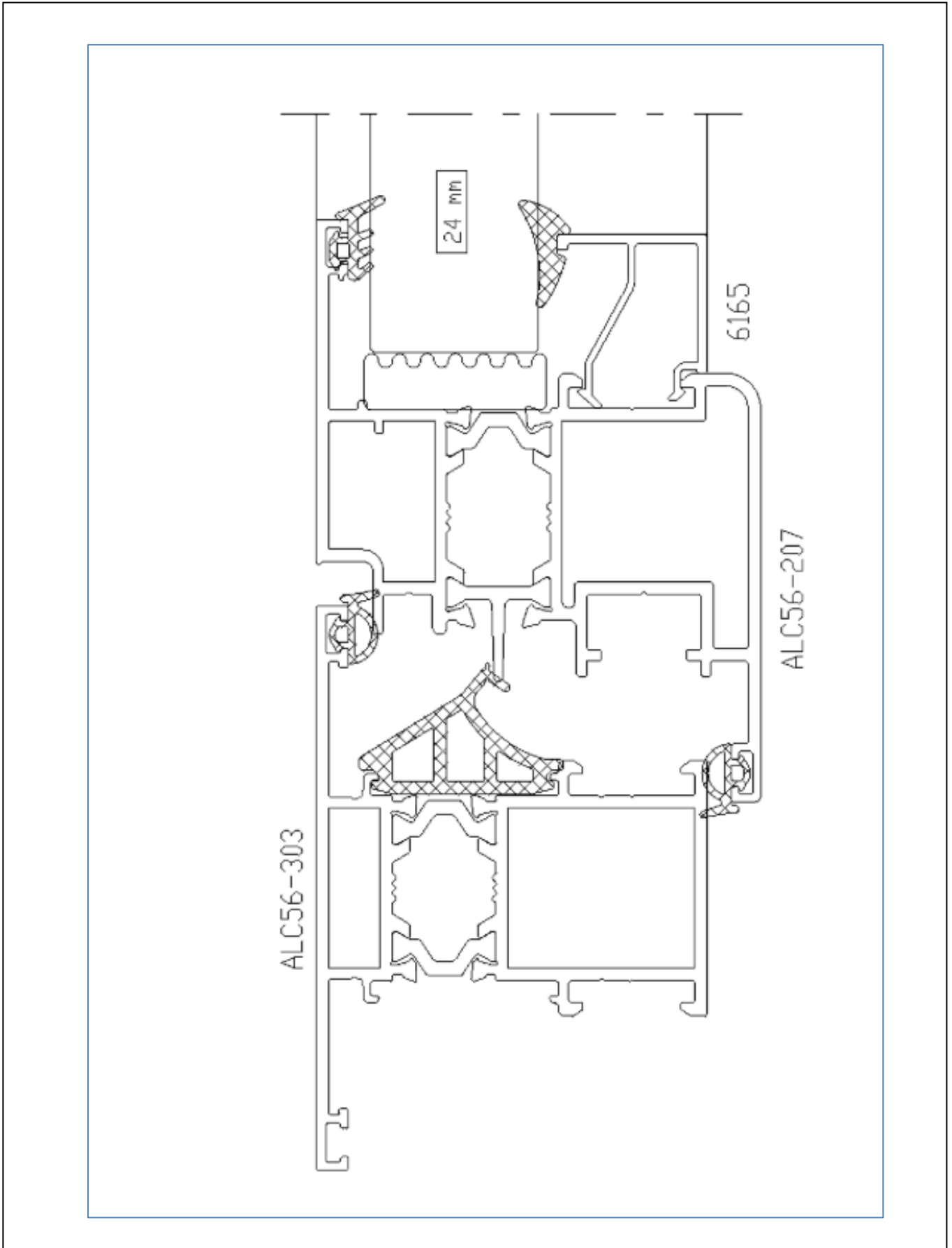


Rüzgar yüklerine da Resistance to wind load Safety test t e :

Test bİastsPressure /	Kalma Hold time si	De ğ i ŝ i mChange time si	Mola sBreak time i /	Ç evri mNunber of cycle /
± 2400 Pa	7 s	7 s	7 s	1







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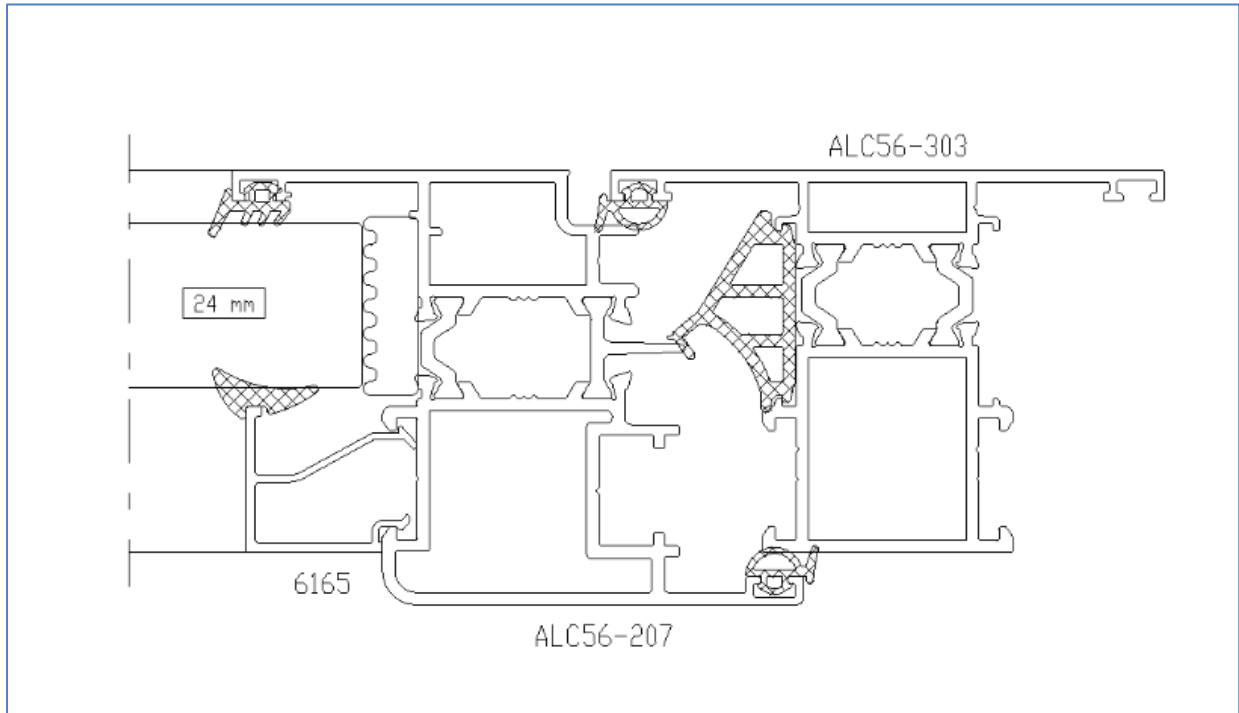
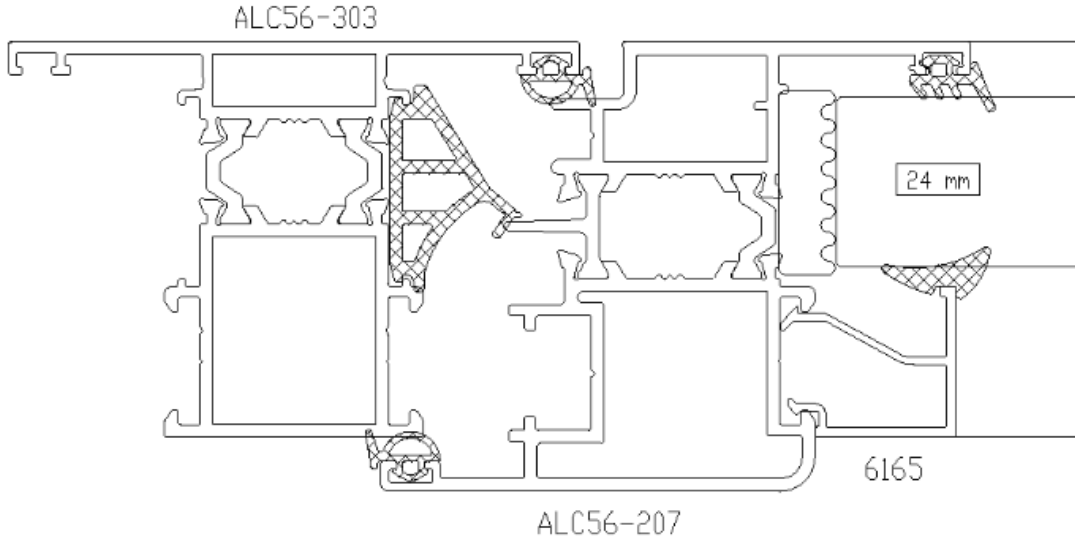
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Ek 1: Deney numunesi kesit çizimi
Annex 1: Section drawings of the specimen



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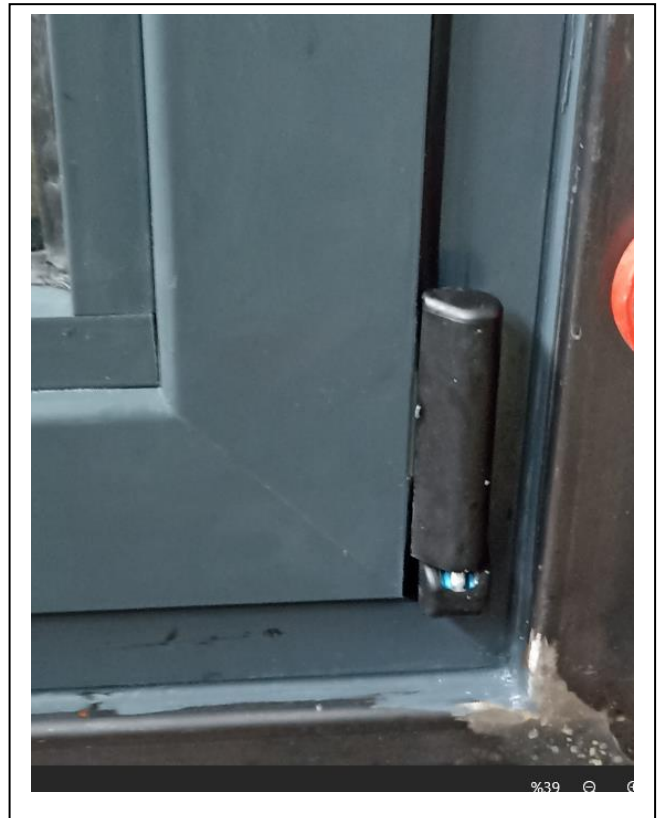
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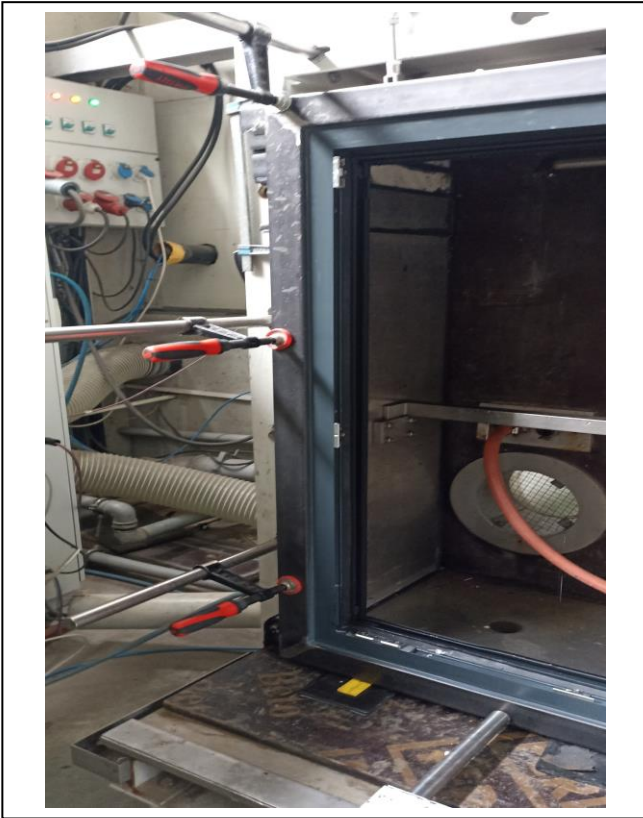
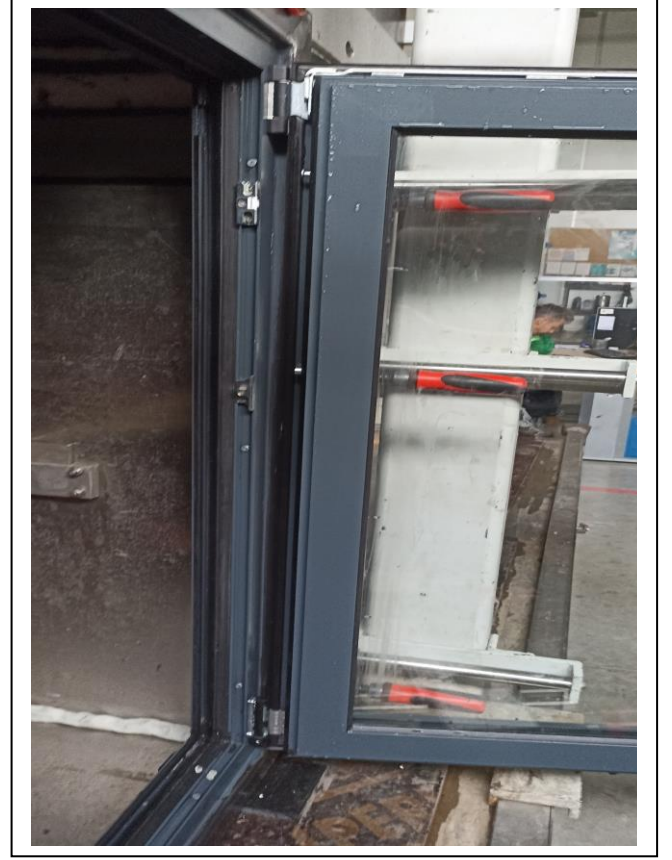
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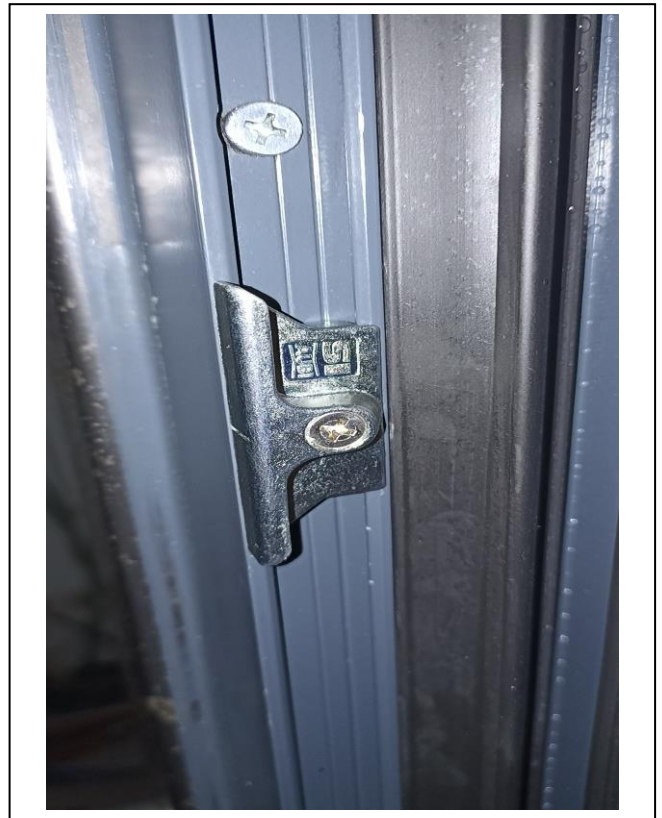
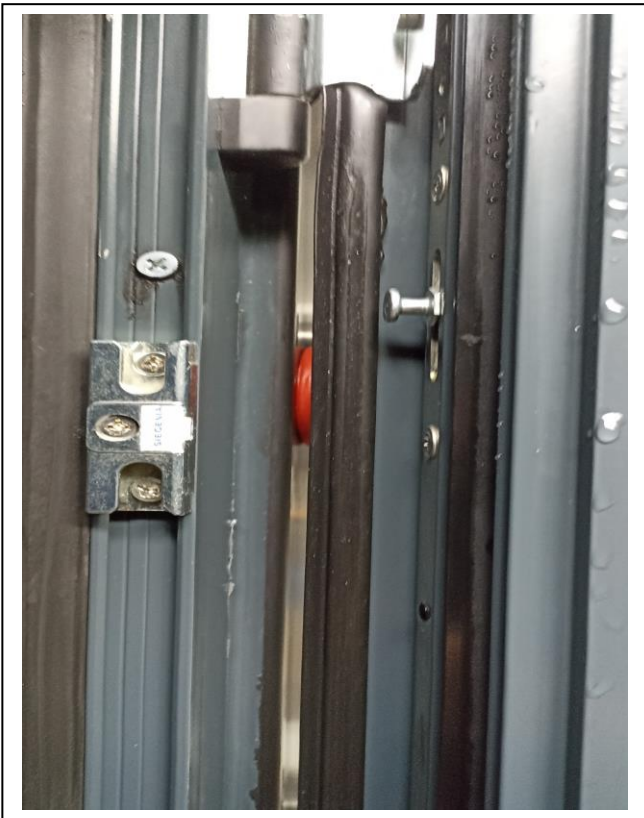
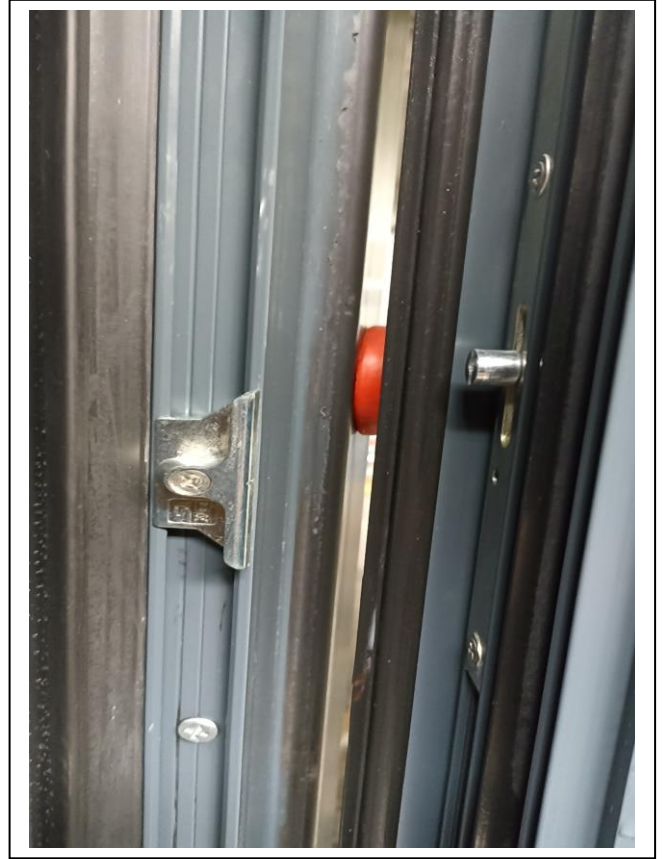
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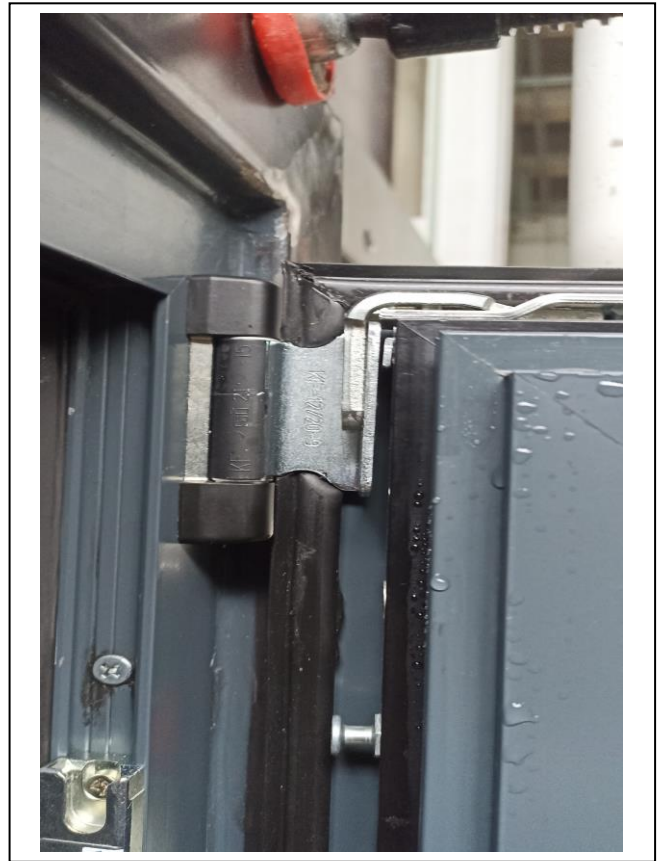
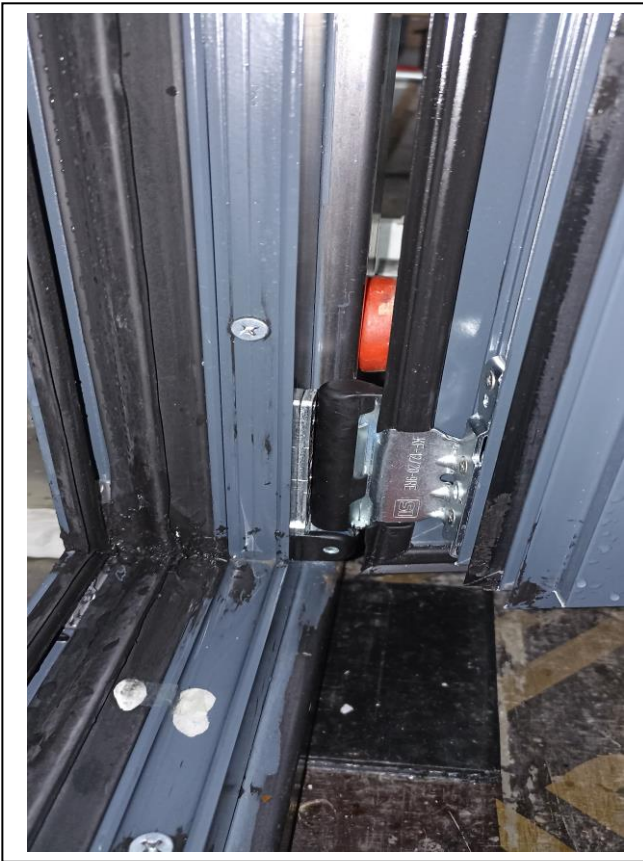
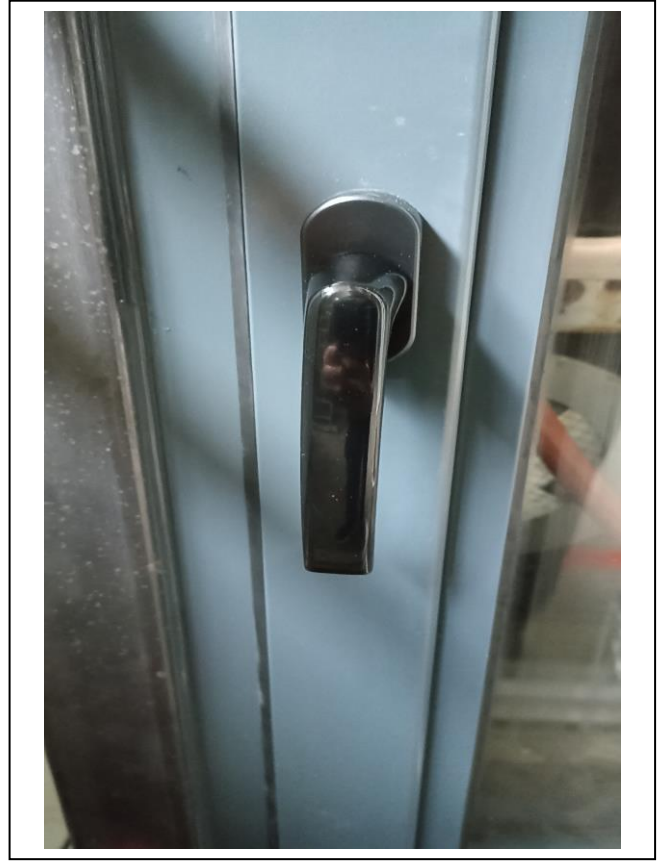


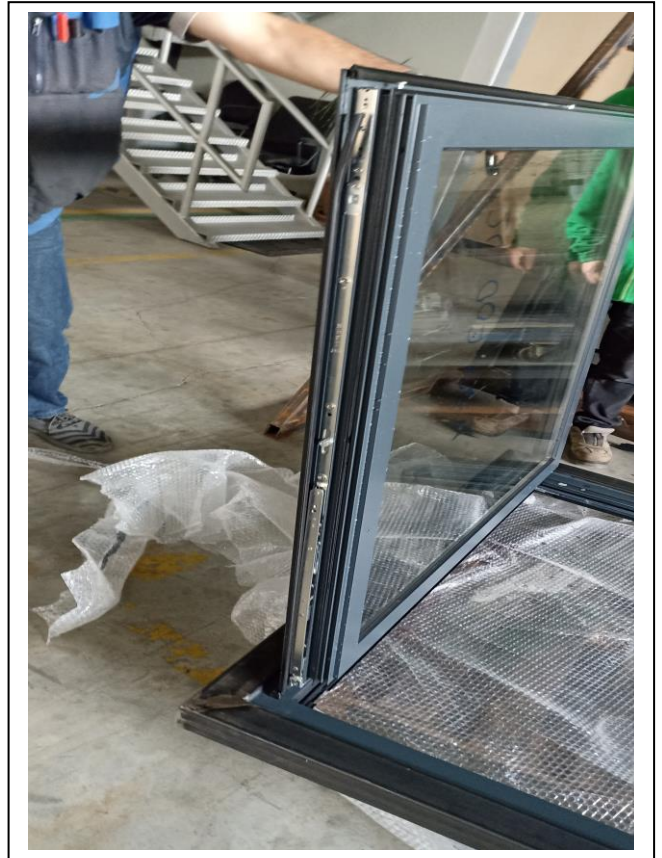


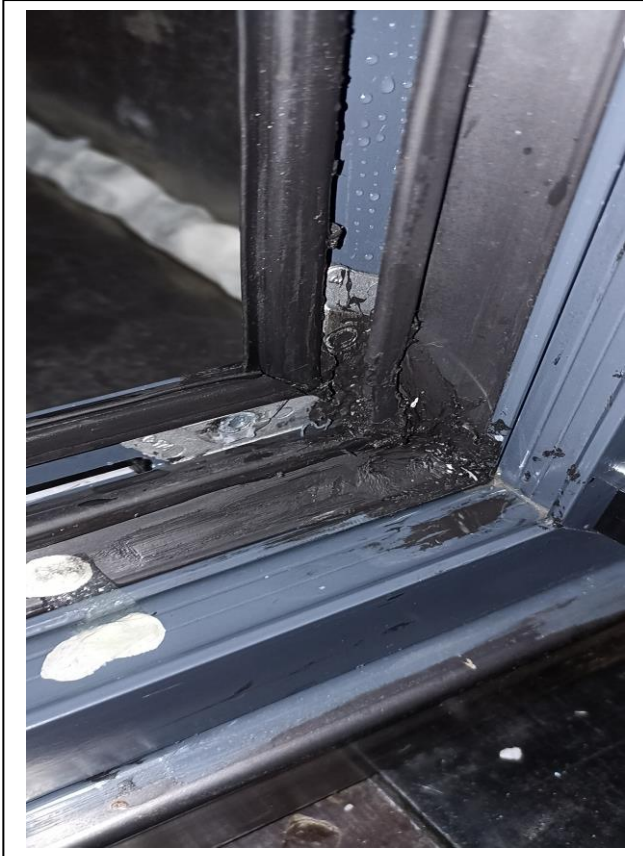
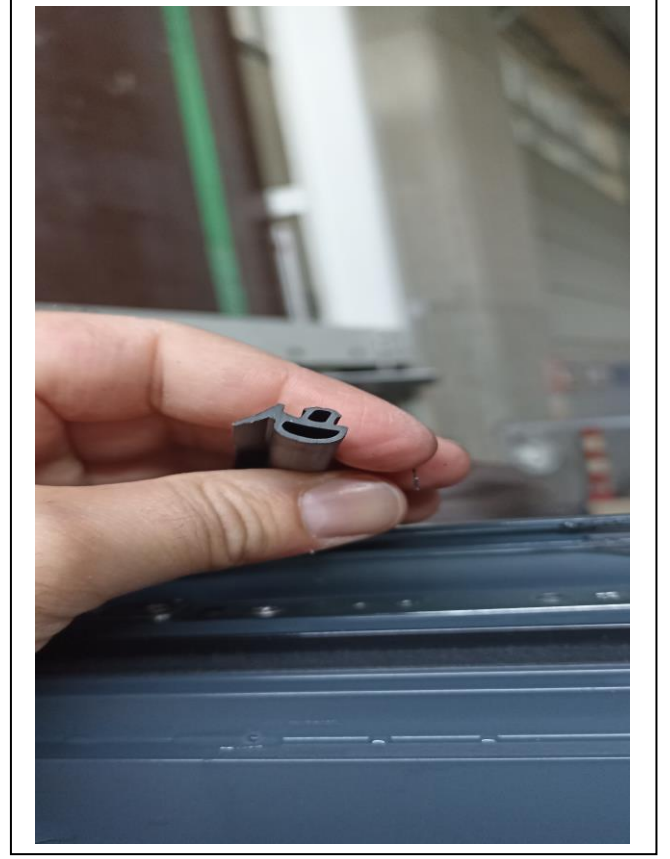


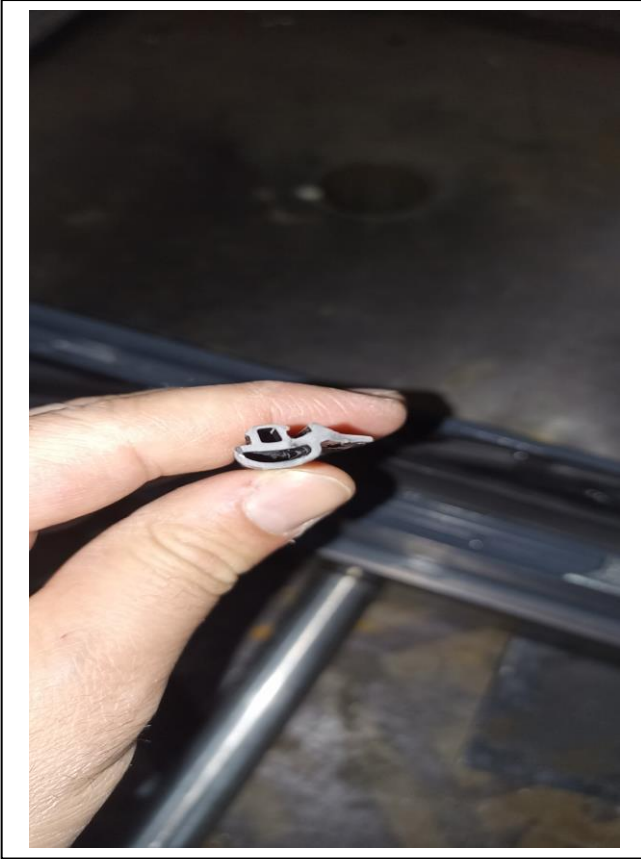
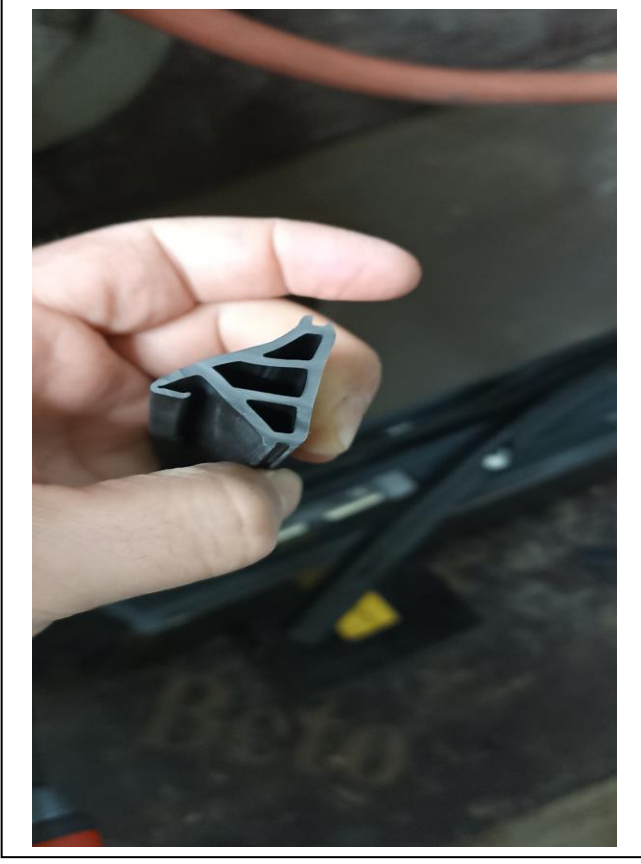


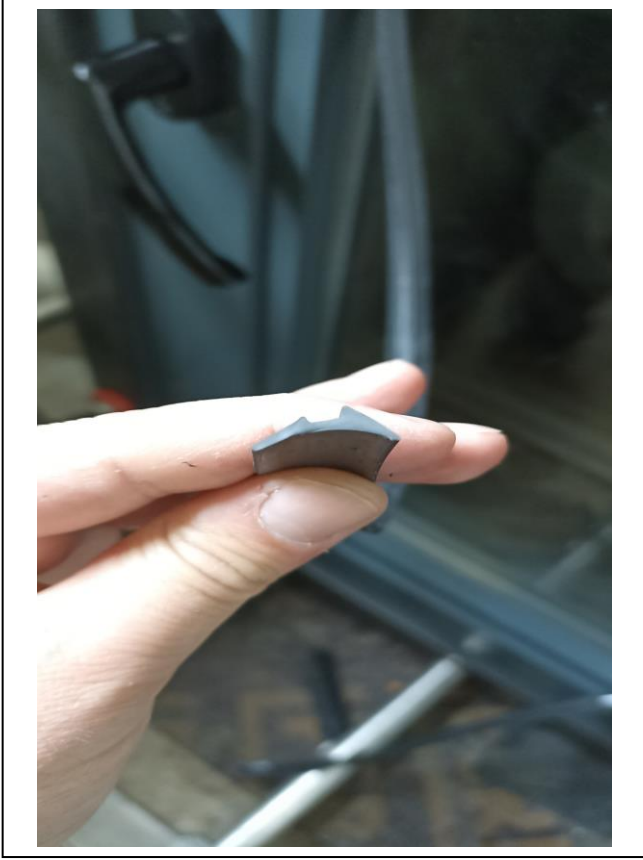


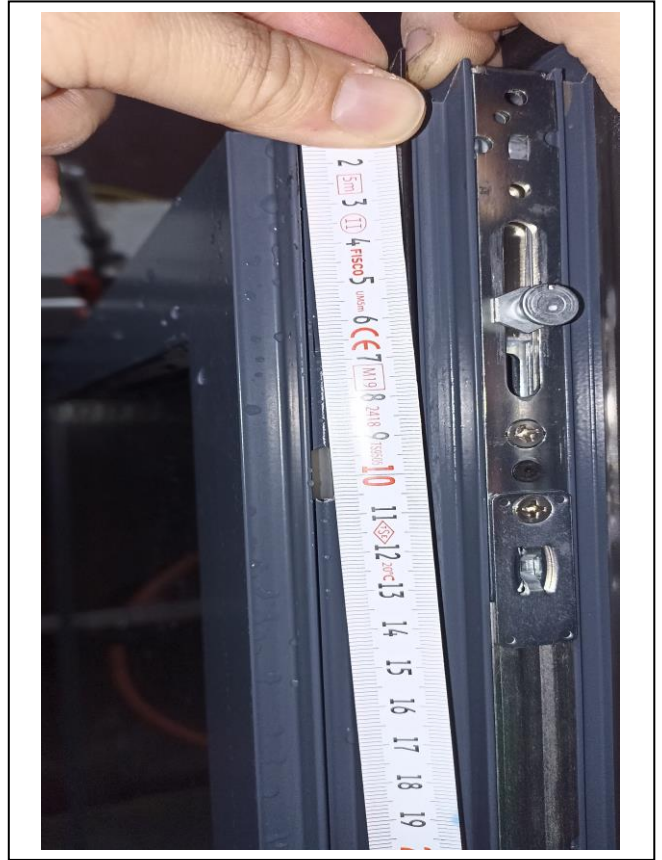


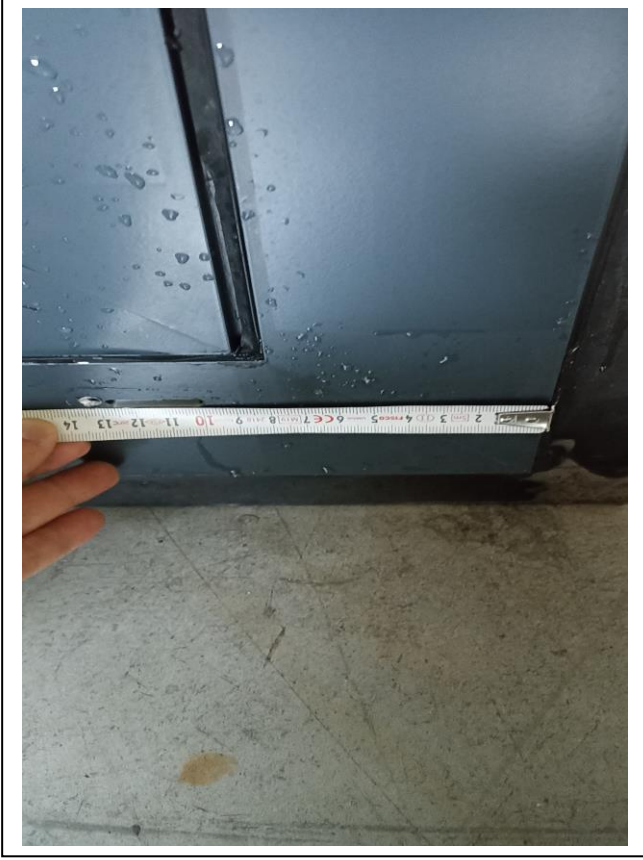












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Ek 2: Kontrollü Söküm Resimler
Annex 2: Dismantling Photos

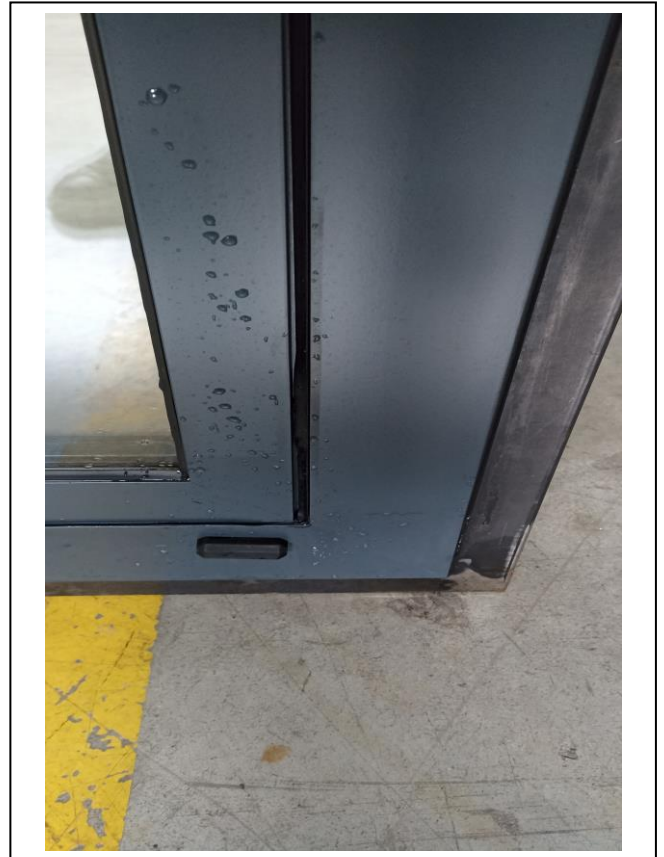


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Evidence of Performance

Calibration of a test rig to determine joint permeability, watertightness and wind load

Calibration Report

No. 22-004324-PR01

(Kal. B-M01-KA12-en-01)



Client	AVRASYA Cephe-Dograma Test ve Teknoloji Merkezi A.S. 2. Organize Sanayi Bölgesi Cumhuriyet Mah. 1. Cadde No:1 81600 Beyköy - Düzce Türkiye	
Product	Window and facade test rig	
Designation	Machine number 12-000825	
ift- number	26263	
Measuring interval	Air pressure: -10000...-40; +40...+10000 Pa Air flow rate: -800...-0.5; +0.5...+800 m³/h i.N. Deflection: 0...+90 mm Water flow rate: 3.9...278 l/min	
Test wall	Clamping area: window facade width: 4000 mm 12000 mm height: 3800 mm 12500 mm	
Special features	Software V3.9.8 with façade and window choice	

Basis *)

EN 13830:2003-09
EN 14351-1:2006+A2:2016-09
PTB-Richtlinie DKD-R 6-1 rev2:2016-05
ift-KAL 2991 KA Länge:2020-01
ift-KAL 2495-6 KA Durchfluss Luft:2020-08
ift-KAL 3231-3 KA Durchfluss Wasser:2020-10

*) Correspond/s to the national standard/s (e.g. DIN EN)

Representation



Instructions for use

This calibration record can be used as evidence of suitability of the test installations in accordance with the above basis.

Validity

The data and results given relate solely to the tested and described test equipment.

Date of calibration:

12.04.2023

Recommended re-calibration:

12.07.2024

Notes on publication

The ift-Guidance Sheet "Conditions and Guidance for the Use of ift Test Documents" applies. The cover sheet can be used as abstract.

Contents

The report contains a total of 1 page/s including the calibration certificates listed in the following Annex

- 1 Cal. of pressure transducer
- 2 Cal. of air flow sensor
- 3 Cal. of displacement transducer
- 4 Cal. of water flow sensor

Result



The requirements are fulfilled :

Pressure and flow system according to EN 1026, EN 1027, EN 12211, EN 12153, EN 12155 and EN 12179

The specified exp. measurement uncertainty and accuracy^{*)} of $\pm 5\%$ of measured value is fulfilled.

Displacement transducer according to EN 12179 and EN 12211

The specified accuracy^{*)} of ± 0.1 mm and $\pm 5\%$ of measured value is fulfilled.

Water flow/volume for watertightness test according to EN 1027 and EN 12155

The specified accuracy^{*)} of $\pm 10\%$ of measured value is fulfilled.

*)Accuracy=Deviation + expanded measurement uncertainty

ift Rosenheim

04.05.2023

Weinzierl

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Testing and Calibration – EN ISO/IEC 17025
Inspection – EN ISO/IEC 17020
Product Certification – EN ISO/IEC 17065
Certification of Management Systems – EN ISO/IEC 17021

Notified Body 0757
POZ-Stelle: BAY 18