



TECHNICAL DOCUMENTATION

SUFITY NAPINANE
STRETCH CEILINGS

DPS®

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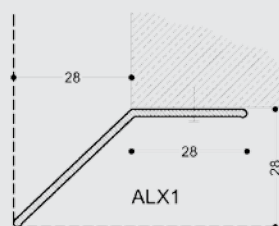
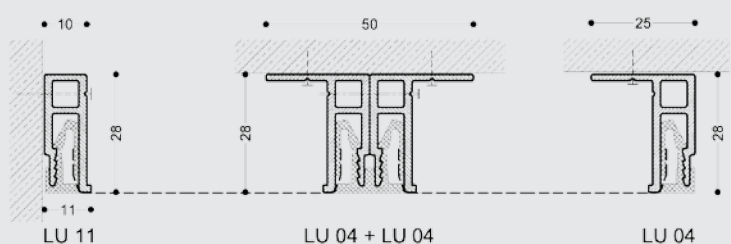
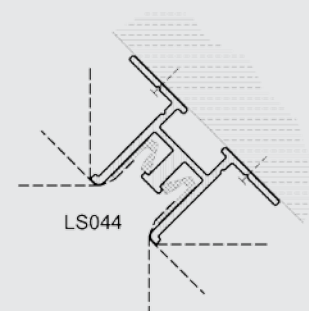
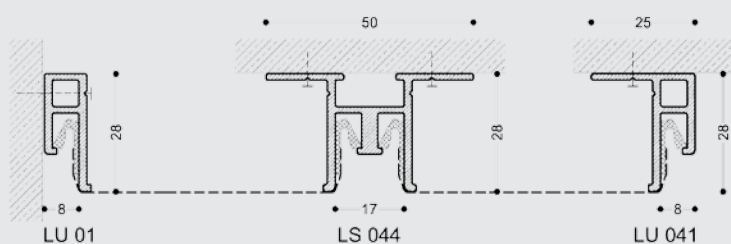
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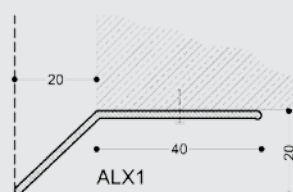
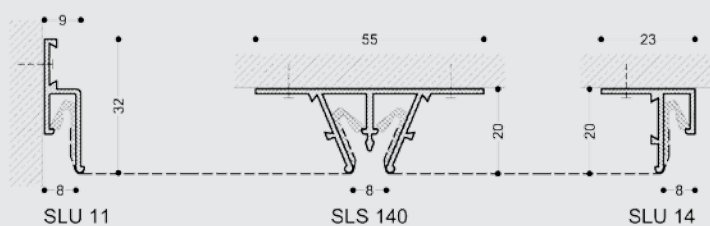
PROFILE SYSTEM

Basic profiles

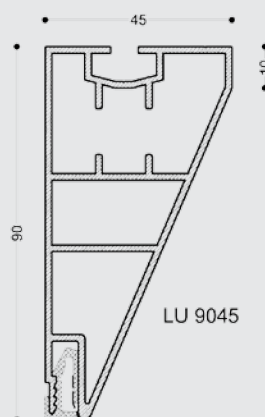
available in CAD format



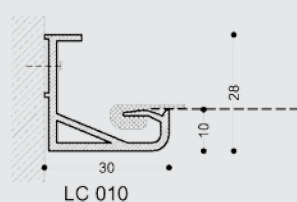
PROFILE ALUMINIOWE SLIM



PROFIL ALUMINIOWY SAMONOŚNY



PROFIL PVC



POWŁOKA DPS



ZACZEP KLINOWY: ALU



ZACZEP KLINOWY: CLASSIC



LISTWA MASKUJĄCA: LM07

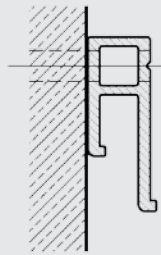


LISTWA MASKUJĄCA: LMS07

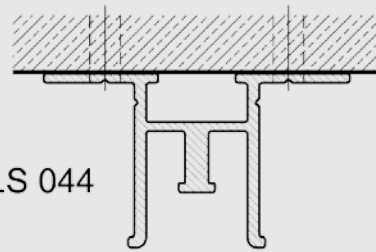
PROFILE SYSTEM

SLIM profiles

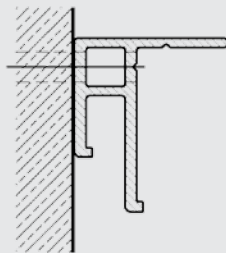
LU 01



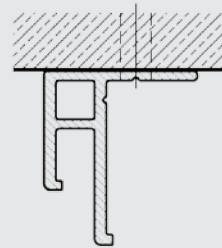
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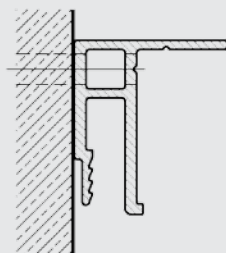
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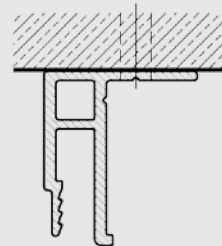
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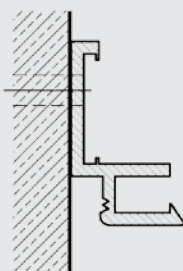
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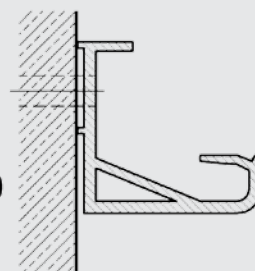
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LE 01

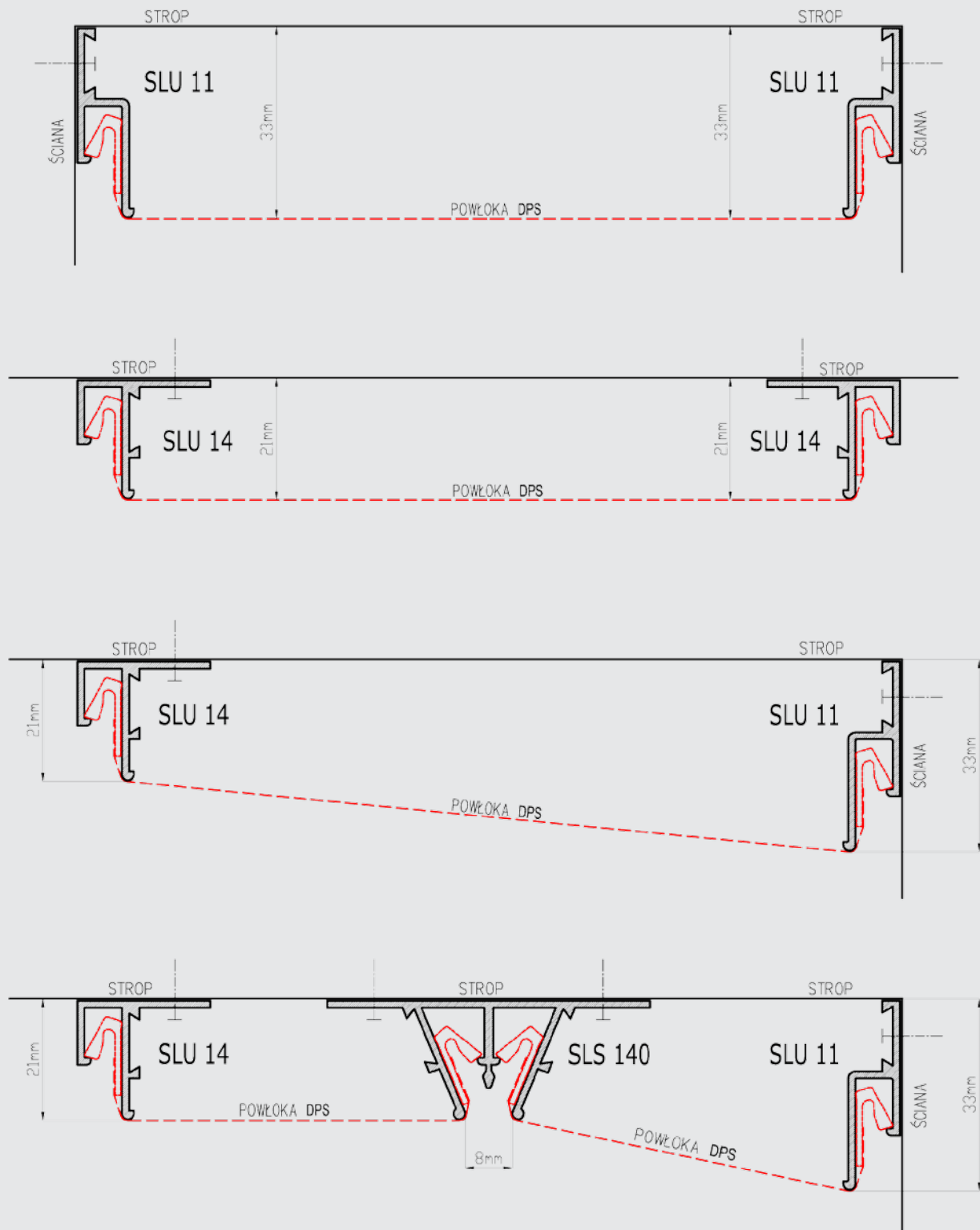


LC 010



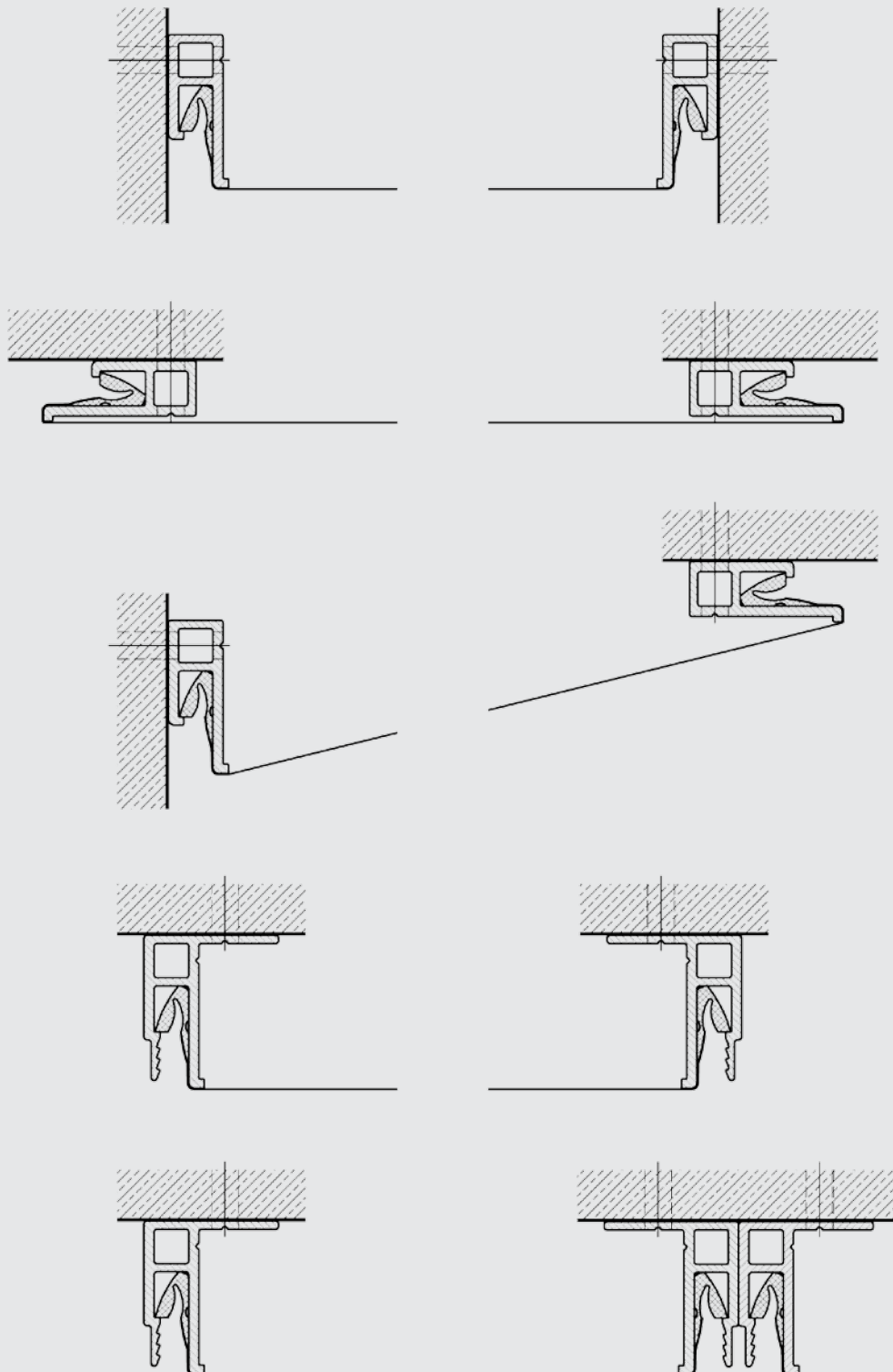
PROFILE SYSTEM

SLIM profiles



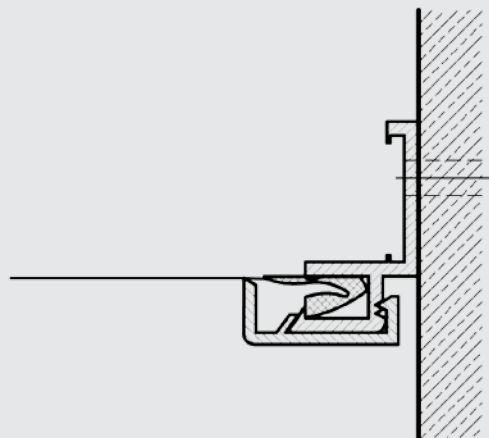
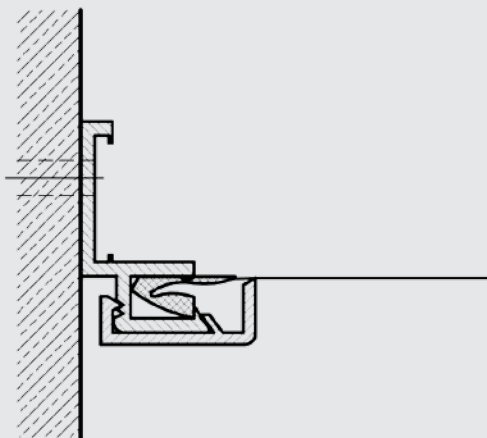
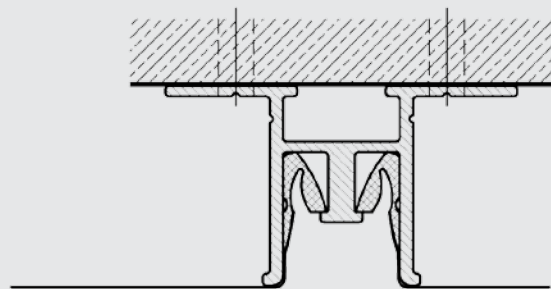
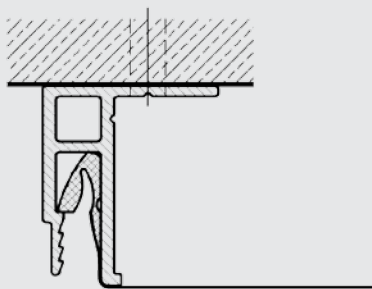
PROFILE SYSTEM

SLIM profiles



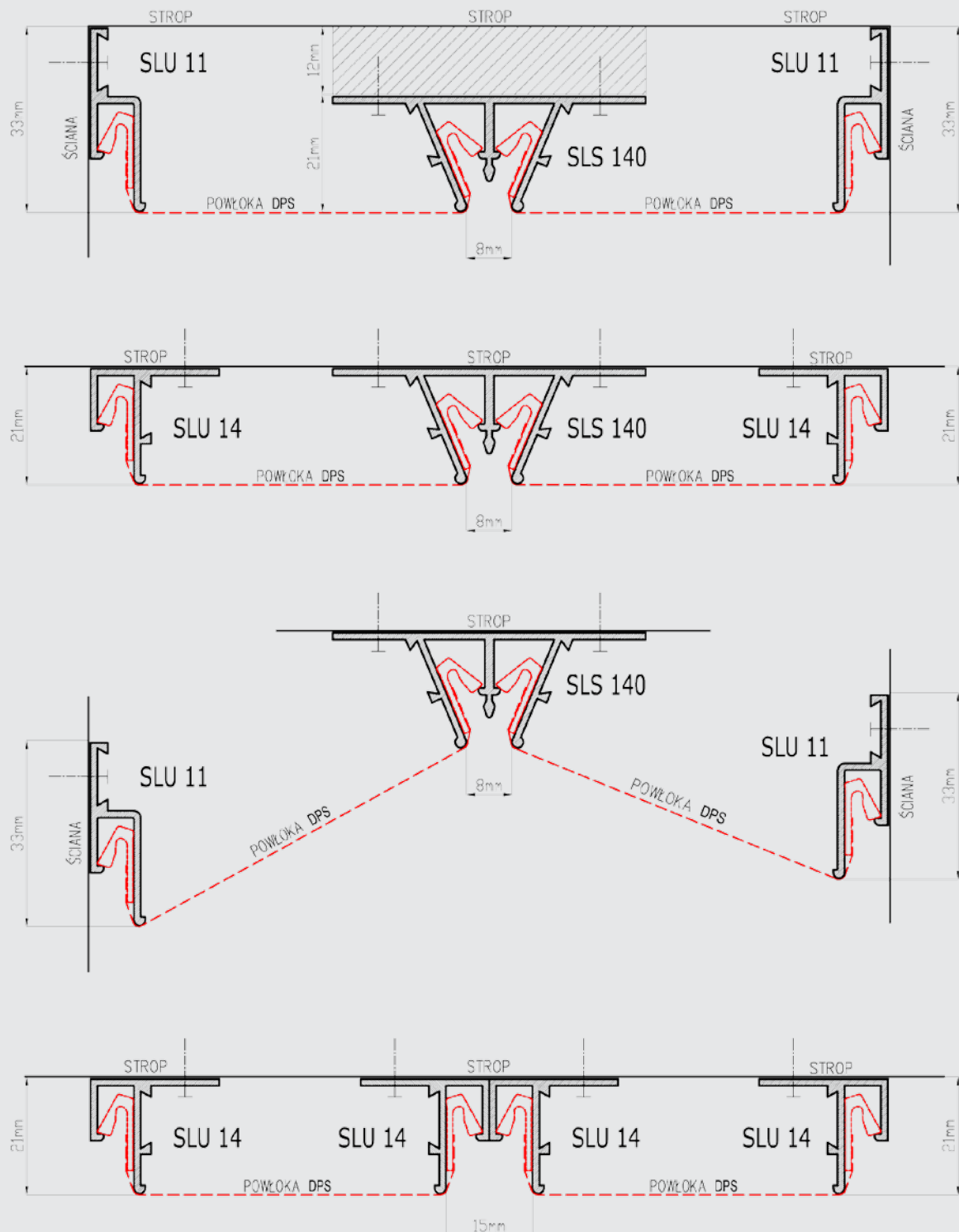
PROFILE SYSTEM

SLIM profiles



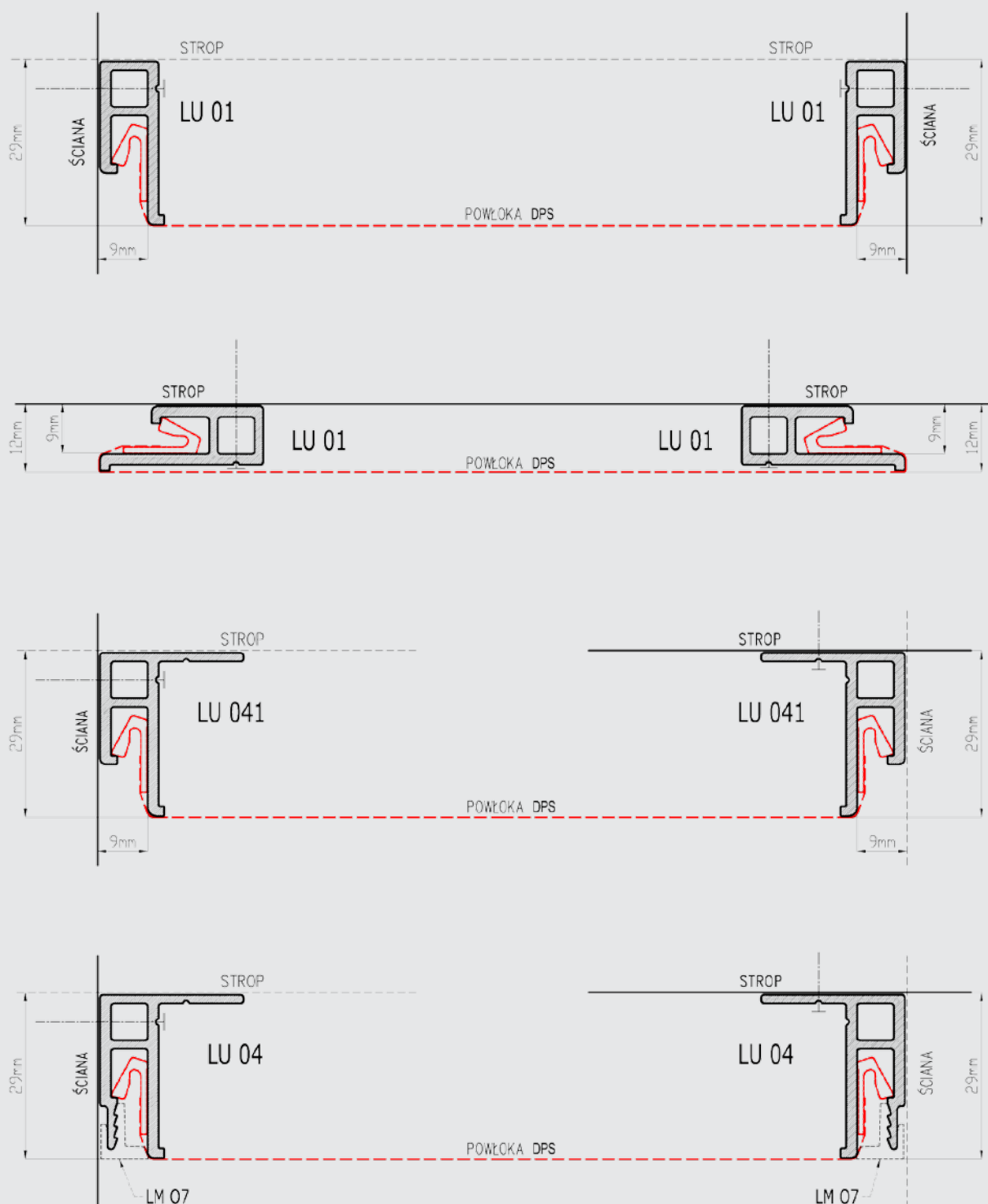
PROFILE SYSTEM

SLIM profiles



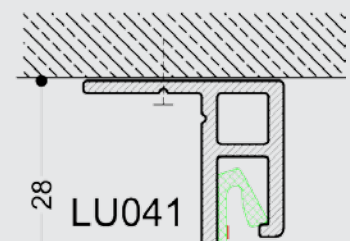
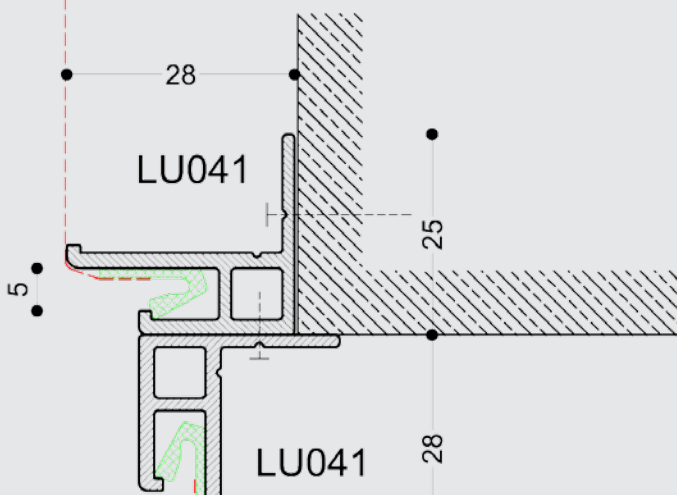
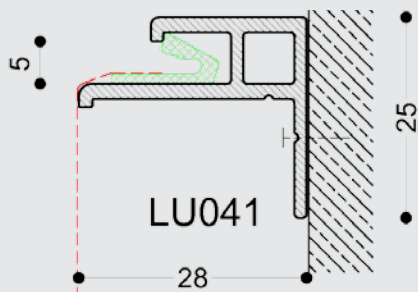
PROFILE SYSTEM

SLIM profiles



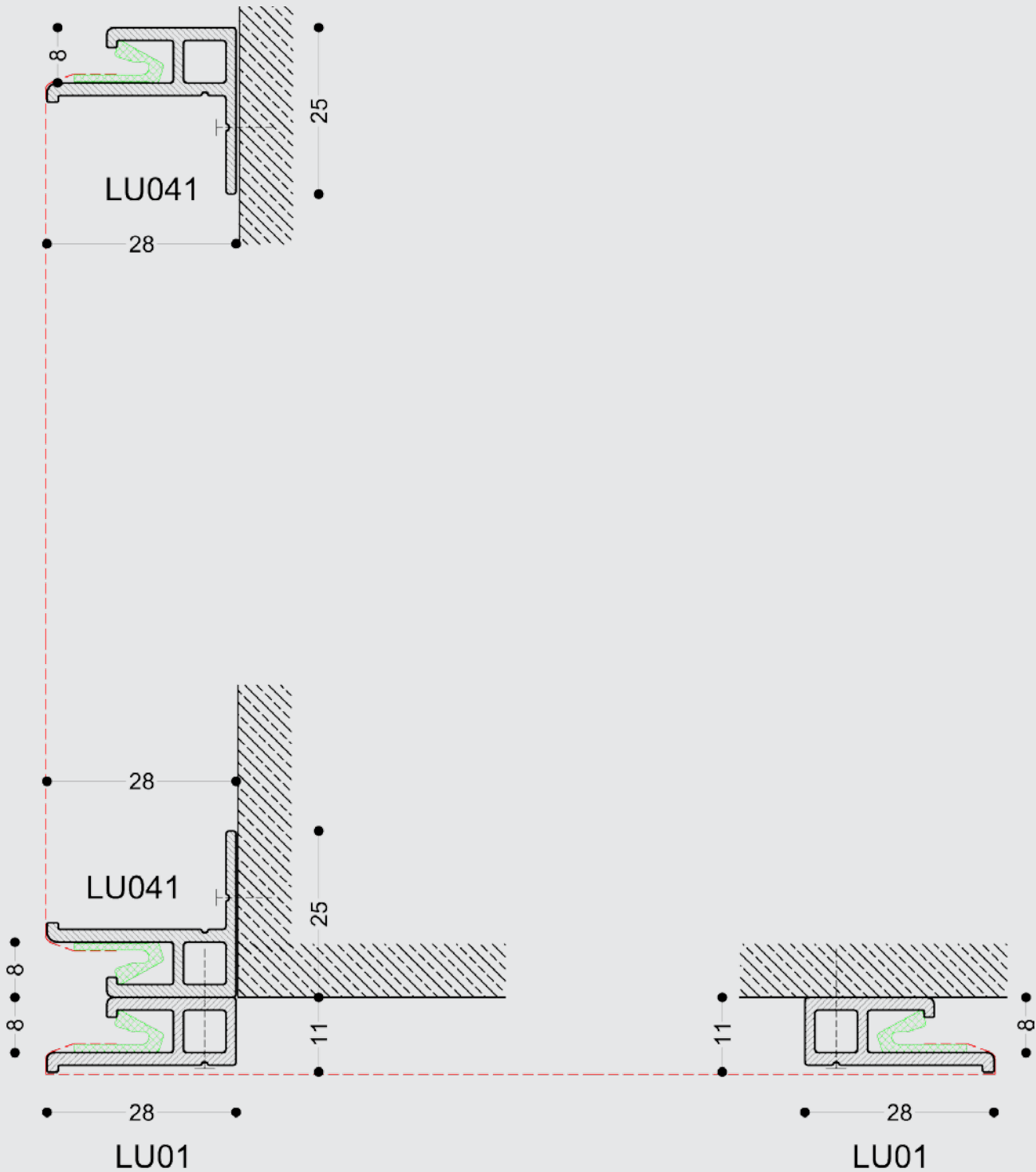
PROFILE SYSTEM

External corner 1



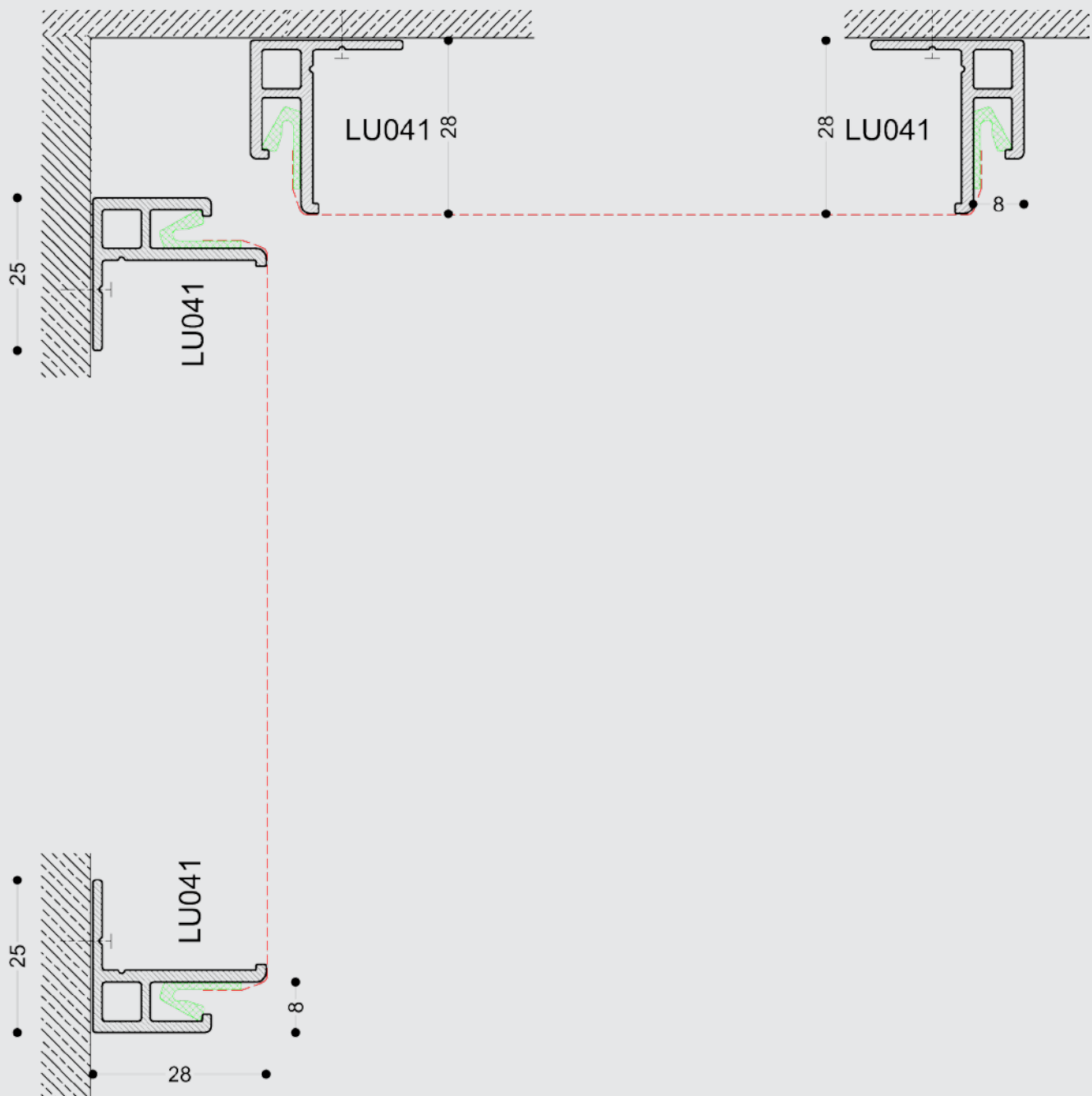
PROFILE SYSTEM

External corner 2



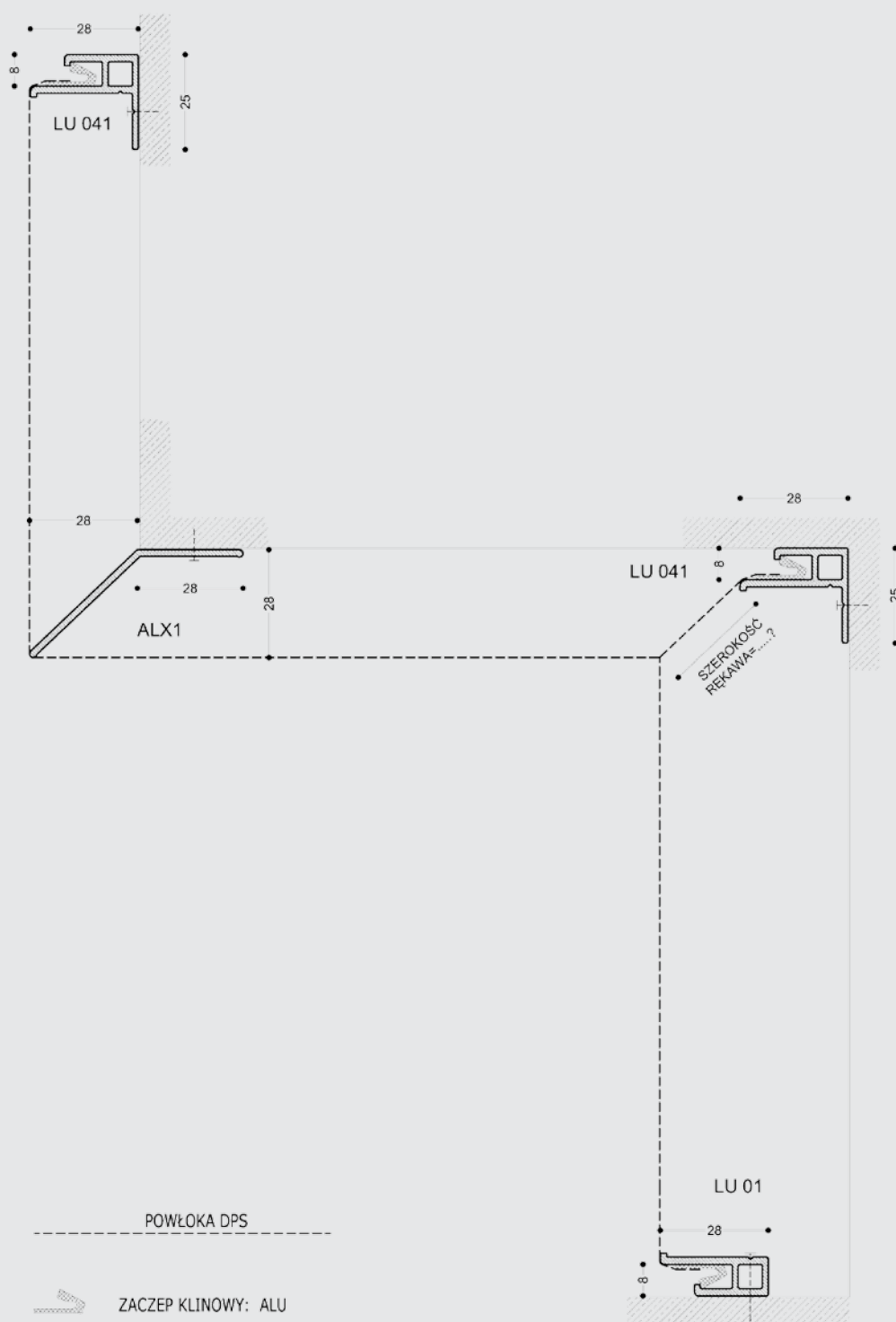
PROFILE SYSTEM

Internal corner



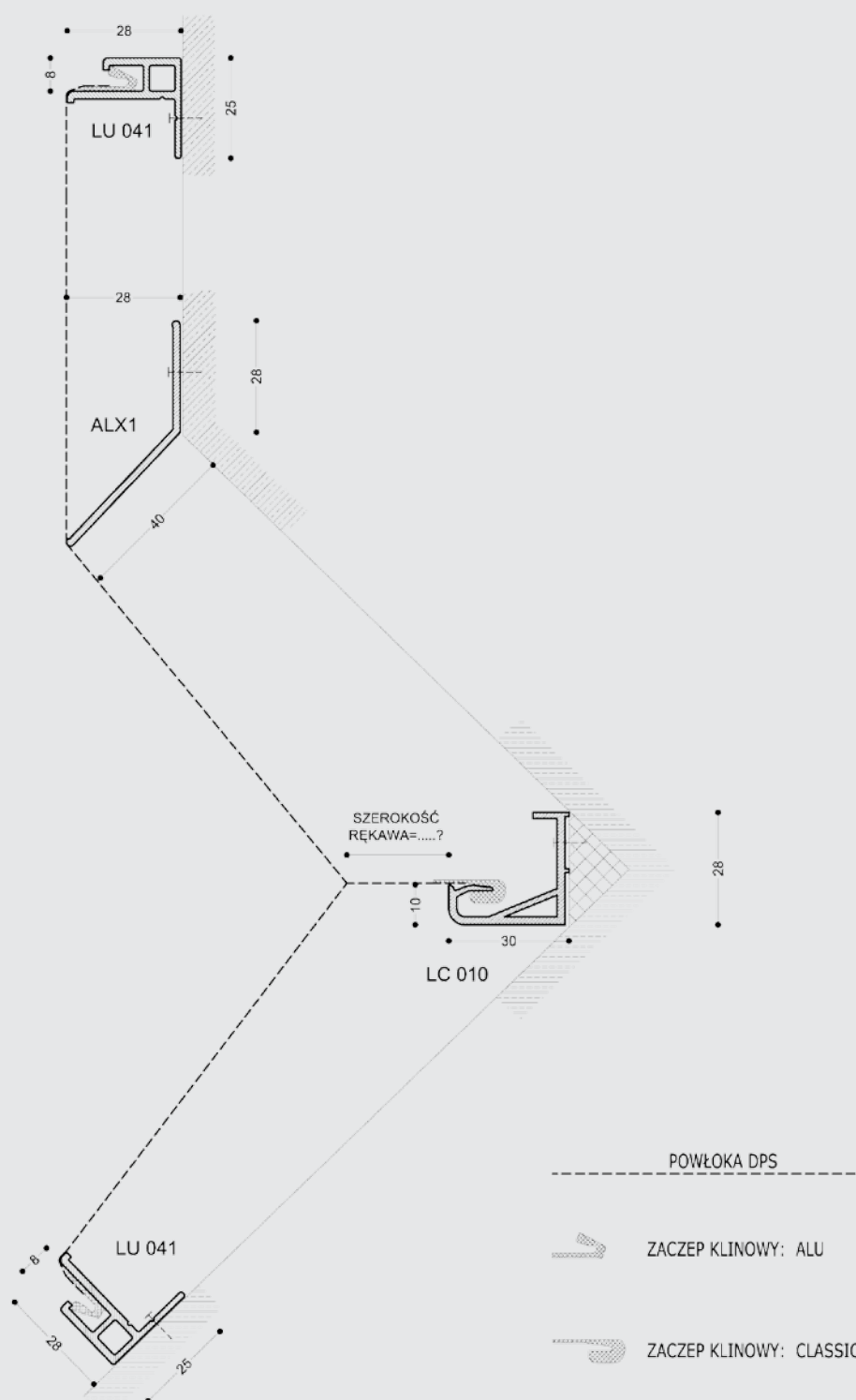
PROFILE SYSTEM

Turning angle + Return harpoon “Alu”

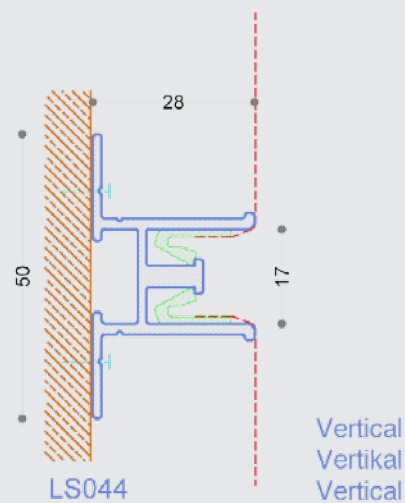


PROFILE SYSTEM

Turning angle + Return harpoon “Classic”

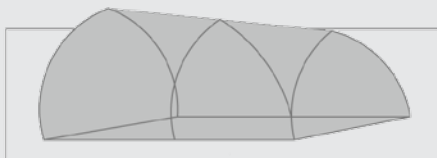


LS044 separator 1



Application/Anwendung/Application

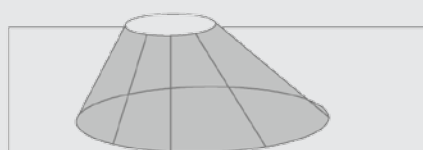
- Wall/Wand/Mur
- Vertical/Vertikal/Vertical
- Sloping Wall/Schräge Wand/Mur Oblique



Dome/Kuppel/Coupole

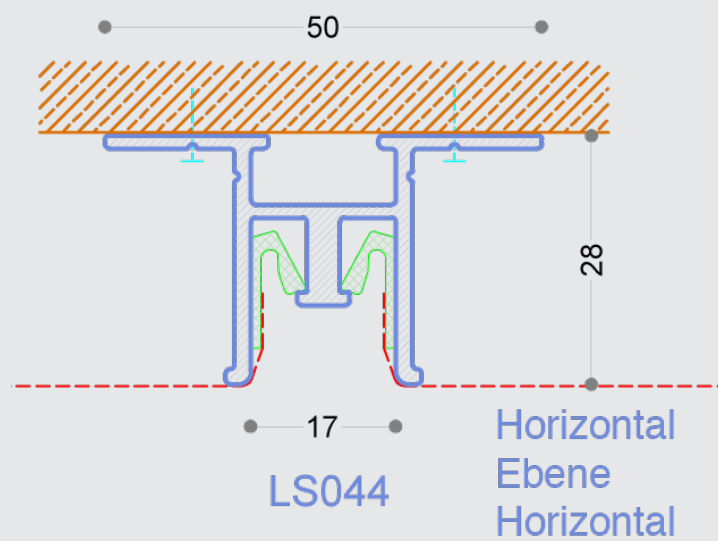


Dome/Kuppel/Coupole



Trumpet/Trichter/Clairon

LS044 separator 2

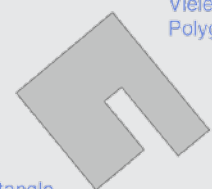


Trumpet/Trichter/Clairon

Form/Formen/Forme:



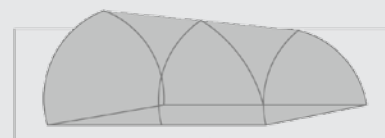
Rectangle/Rechteck/Rectangle



Polygon
Vieleck
Polygone



Wavy ceiling/wellige Decke/Plafond en Vague



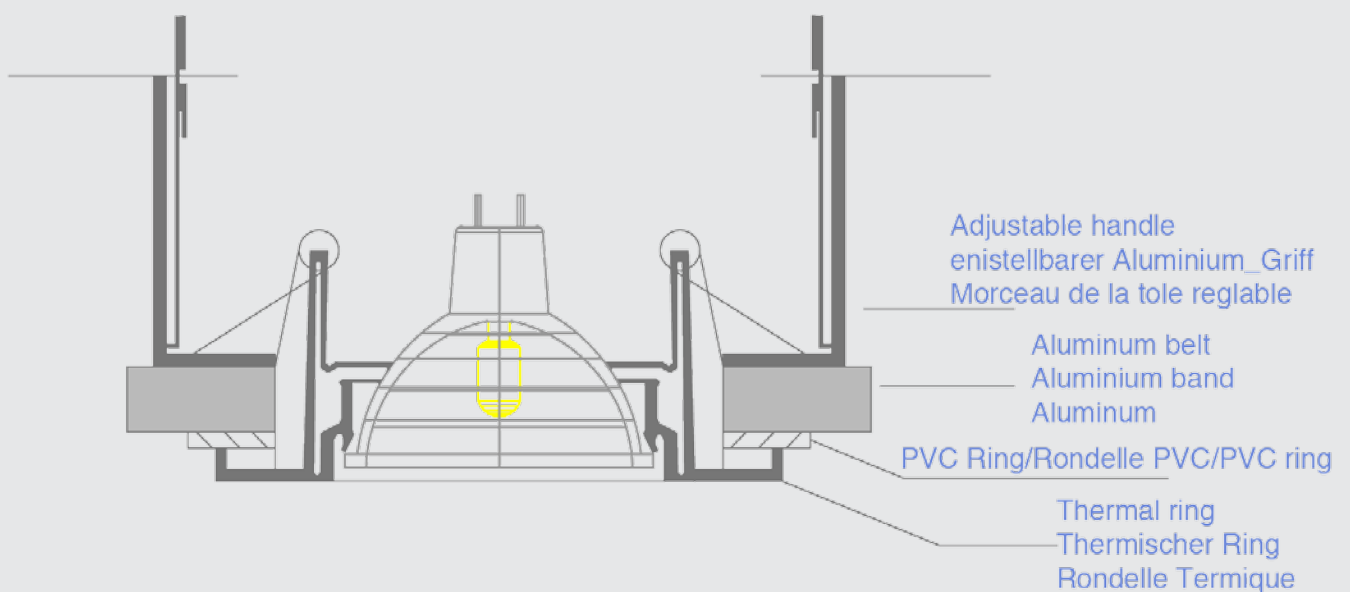
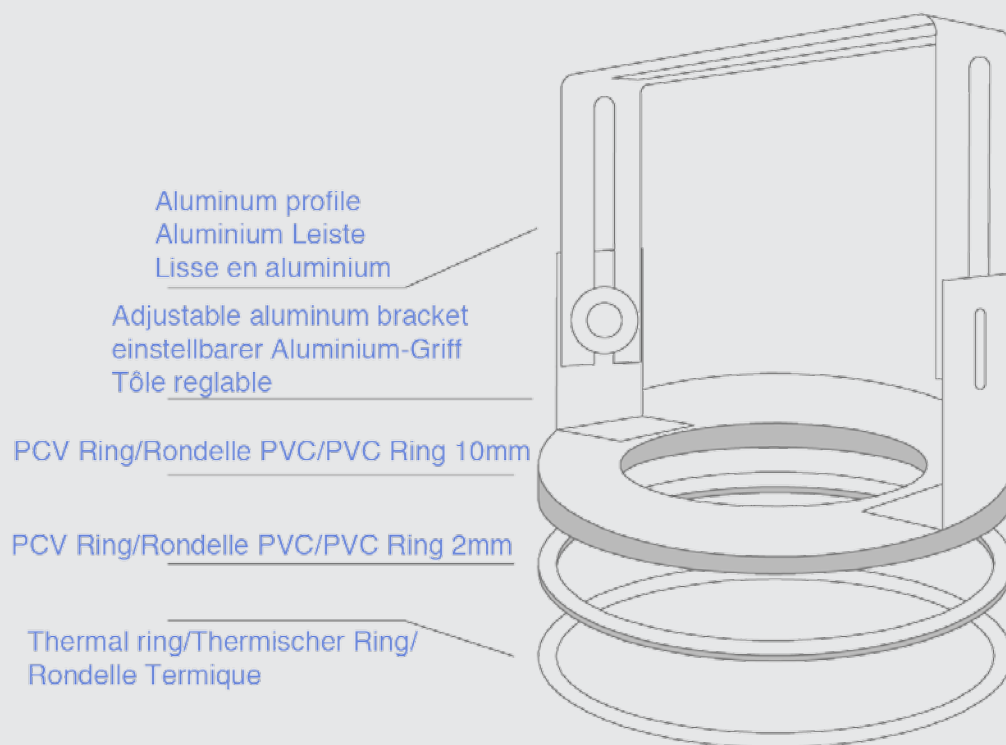
Dome/Kuppel/Coupole



Dome/Kuppel/Coupole

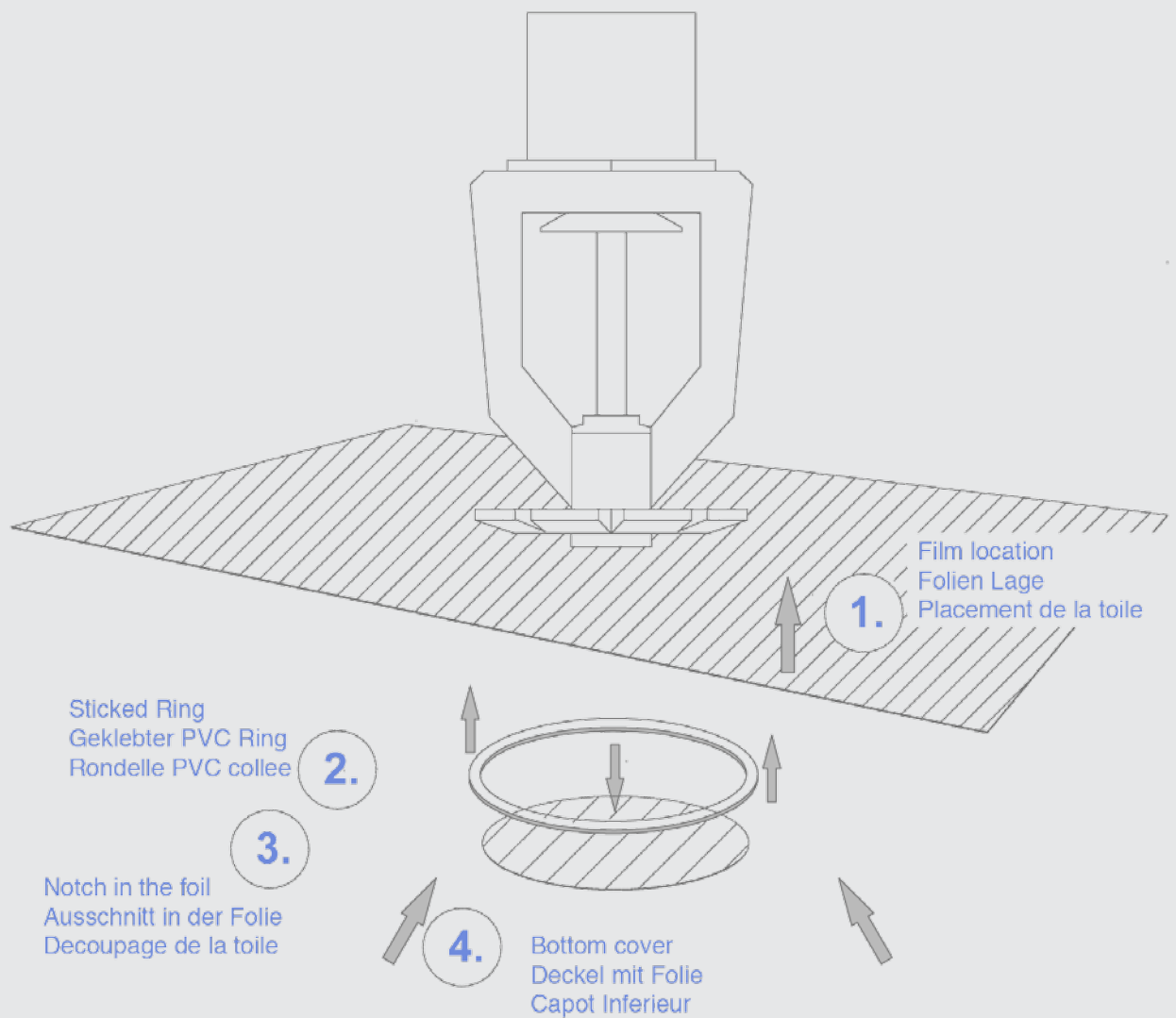
PROFILE SYSTEM

Light point



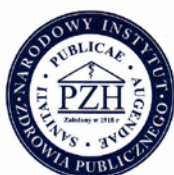
PROFILE SYSTEM

Sprinkler alarm



APPROVALS, CERTIFICATES

Hygienic certificate



**NARODOWY INSTYTUT ZDROWIA PUBLICZNEGO
- PAŃSTWOWY ZAKŁAD HIGIENY**

**NATIONAL INSTITUTE OF PUBLIC HEALTH
- NATIONAL INSTITUTE OF HYGIENE**

**ZAKŁAD HIGIENY KOMUNALNEJ
DEPARTMENT OF ENVIRONMENTAL HYGIENE**

24 Chocimska 00-791 Warsaw • Phone (22) 5421354; (22) 5421349 • Fax (22) 5421287 • e-mail: sek-zhk@pzh.gov.pl

ATEST HIGIENICZNY
HYGIENIC CERTIFICATE

HK/B/0700/01/2011

ORYGINAL

Wyrób / product: **Plastic film for production of stretch ceilings DPS**

Zawierający / containing: Poly(vinyl chloride), dye(stuff), plasticizer and other components in accordance with the produce's documentation

Przeznaczony do / destined: for use in the interiors of residential buildings and public utility buildings as well as production facilities and service workshops

Wymieniony wyżej produkt odpowiada wymaganiom higienicznym przy spełnieniu następujących warunków / is acceptable according to hygienic criteria with the following conditions:

A label in Polish language, containing the recommendations concerning safety measures according to the product data sheet, in accordance with the legal regulations in force, should be applied on the product packaging. Store the product in a place inaccessible for children. During and after using this product an interior should be ventilated until a characteristic smell disappears and then it is suitable for use.

Wytwórca / producer:

RENOLIT AG
D-67547 Worms
Horchheimer Str. 50, Germany

Niniejszy dokument wydano na wniosek / this certificate issued for:

Grupa DPS Sp. z o.o.
40-391 Katowice
ul. Krakowska 85A

Atest może być zmieniony lub unieważniony po przedstawieniu stosownych dowodów przez którąkolwiek stronę. Niniejszy atest traci ważność po 2016-04-27 lub w przypadku zmian w recepturze albo w technologii wytwarzania wyrobu.

The certificate may be corrected or cancelled after appropriate motivation.
The certificate loses its validity after 2016-04-27
or in the case of changes in composition or in technology of production.

Data wydania atestu higienicznego: 6 czerwca 2011

The date of issue of the certificate: 6th June 2011

Kierownik
Zakładu Higieny Komunalnej

2 mp. E. Krogulska
dr Bożena Krogulska

Reprodukcowanie, kopiowanie, fotografowanie, skanowanie, digitalizacja Atestu Higienicznego w celach marketingowych bez zgody NIZP-PZH jest zabronione.

mgr T. Prokorski

APPROVALS, CERTIFICATES

CE certificate

	BUILDING RESEARCH INSTITUTE CERTIFICATION DEPARTMENT 1 FILTROWA ST., 00-611 WARSZAWA ph.: (0 22) 57 96 167, 168 (0 22) 825 52 29, fax : (0 22) 57 96 295		 AC 020
CE CERTIFICATE OF CONFORMITY 1488-CPD-0106/W			
<p><i>Pursuant to the European Community Council Directive no. 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products and the amendments introduced by the European Community Council Directive no. 93/68/EEC of 22 July 1993 it is hereby confirmed that</i></p>			
STRETCH CEILINGS DPS			
<p>installed in closed interiors, in dry conditions, made of a single-layer film PCV and clamping system (wedge-shaped catches, aluminium strips, PCV strips, masking strips), which allows easy disassembly into parts and reassembly, film thickness 170 µm ± 10%, class of reaction to fire B-s2, d0</p>			
<p>produced and placed on the market by :</p> <p>GRUPA DPS Limited Liability Company 85a Krakowska St. 40-391 Katowice</p>			
<p>in the Production Plant :</p> <p>GRUPA DPS Limited Liability Company 85a Krakowska St. 40-391 Katowice</p>			
<p>have the performance described in :</p> <p>EN 14716:2004</p>			
<p>The manufacturer meets all the requirements concerning assessment of conformity : he implemented an internal production control system and conducts tests of samples of the products taken from the production plant in accordance with the testing schedule.</p>			
<p>The notified body – Building Research Institute – as part of the conformity assessment system 1, conducted preliminary tests of the type for the purpose of determining the product's properties and preliminary audit of the production plant and the internal production control system, exercises ongoing supervision, assesses and accepts the internal production control system.</p>			
<p>The CE Certificate of Conformity 1488-CPD-0106/W was issued for the first time 25.03.2009 and is valid as long as the reference document for the aforementioned product is valid, the product meets the requirements of that document and as long as the following have not changed : the product type, the production conditions and location, as well as the internal production control system.</p>			
Deputy Head of the Certification Department <i>(illegible signature)</i> Barbara Dobosz		Director of the Building Research Institute <i>(illegible signature)</i> Marek Kaproń	
<p><i>(impression of a round seal with national emblem of the Republic of Poland and words along the rim :) Building Research Institute</i></p>			
Warsaw, 25.03.2009			

APPROVALS, CERTIFICATES

Certification mark

 **INSTYTUT TECHNIKI BUDOWLANEJ**
ZAKŁAD CERTYFIKACJI
ul. FILTROWA 1, 00-611 WARSZAWA
tel.: (0 22) 57 96 167.168, (0 22) 825 52 29, fax: (0 22) 57 96 295

ZNAK CERTYFIKACJI

Upoważnia się firmę:

GRUPA DPS Sp. z o. o.
ul. Krakowska 85a
40-391 Katowice

producenta wyrobu:

SUFITY NAPINANE DPS

do stosowania znaku certyfikacji ITB-WYRÓB BUDOWLANY
w okresie ważności certyfikatu nr 1488-CPD-0106/W



CERTYFIKAT ZGODNOŚCI
1488-CPD-0106/W

ZASTĘPCA KIEROWNIKA
Zakładu Certyfikacji

Piotr Maciejak


Warszawa, 25.03.2009

DYREKTOR
Instytutu Techniki Budowlanej

Marek Kąproni

APPROVALS, CERTIFICATES

Fire report

CERTIFIED TRANSLATION FROM POLISH INTO ENGLISH

-/-

[logo ITB®] **THE BUILDING RESEARCH INSTITUTE**

00-611 Warszawa, ul. Filtrowa 1, tel. (0-22) 825-04-71, fax (0-22) 825-52-86, Head: tel. (0-22) 825-13-03, 825-28-85, fax (0-22) 825-77-30

www.ibt.pl**The Fire Testing Laboratory**02-656 Warszawa, ul. Ksawerów 21, tel. (0-22) 85334-27, fax (0-22) 847-23-11, e-mail: fire@itb.pl**THE CLASSIFICATION REPORT NP-1050/08/AK
IN THE SCOPE OF THE REACTION TO FIRE OF THE
PRODUCT:****WF-Opak Stretched Ceiling**

for

THE OWNER OF THE CLASSIFICATION REPORT

Grupa DPS Sp. z o.o.**ul. Krakowska 85A****40-391 Katowice**

-/-

Agreement No: NP-1050/P/2008/AK -/-

-/-

1. Introduction -/-

The present classification report specifies the classification of WF-Opak stretched ceiling in accordance with the procedures described in PN-EN 13501-1:2004. -/-

-/-

2. Detailed information on the product classified -/-

-/-

2.1. Type and Final Application

APPROVALS, CERTIFICATES

Fire report

WF-Opak stretched ceiling. The classification obtained is important for the final applications to which the scenario of internal fire is used exclusive of tile floors. -/-

-/-

2.2. Description -/-

WF-Opak stretched ceiling -/-

- thickness 170 μm , -/-

- surface mass 221 g/m^2 -/-

- PVC foil with the addition of plasticizers and stabilizers

Manufacturer: Renolit A.G., Horchheimer str. 50, D-67547

Worms, Germany. -/-

-/-

3. Tests Reports and Results Providing the Basis for the Classification -/-

-/-

3.1. Tests Reports -/-

Laboratory Name	Client	Test Report No	Test Method
LNE Laboratory	Renolit AG	G020458 CEMATE/1	EN ISO 11925-2:2002
		G020458 CEMATE/3	EN 13823:2002

3.2. Test Results -/-

Test Method	Parameter	Number of Tests	Results	
			Parameter measured, Average Value	Compliance Parameter
1	2	3	4	5
PN-EN ISO 11925-2:2004 Surface exposure 30 s	Flames spread-out	12	(-)	T
	$\leq 150 \text{ mm}$		(-)	N
EN 13823	Burning drops			
	FIGRA 0.2 MJ		0	(-)
	FIGRA 0.4 MJ		0	(-)

APPROVALS, CERTIFICATES

Fire report

LFS < endge		(-)	T
THR _{600s} [MJ]	5	0.5	(-)
SMOGR _A [m ² /s ²]		55	(-)
TSP _{600s} [m ²]		71	(-)
Burning drops/particles		(-)	N
(-) not applicable			
T: yes			
N: no			

4. Classification and its Direct Scope of Application -/-

-/-

4.1. Reference and Direct Scope of Application -/-

The classification has been defined in accordance with the chapter 10 PN-EN 13501-1:2004. -/-

-/-

4.2. Classification -/-

The suspended ceiling called WF-Opak, in the scope of reaction to fire, has obtained the basic classification: **B** -/-

Owing to the smoke emission, the product has achieved the additional classification: **s2** -/-

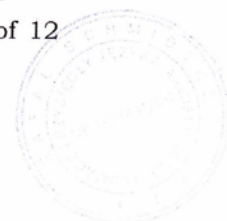
Owing to the occurrence of the burning drops and solid wastes, the product has been granted the additional classification: **d0** -/-

The suspended WF-Opak classification in the scope of its reaction to fire for tile floors: **B – s2,d0** -/-

-/-

4.3. Scope of Application -/-

The present classification is valid for the final applications, in accordance with the technical conditions that buildings ought to comply with as well as their location and the product “inflammable, not dripping after fire impact” according to the Minister’s of Infrastructure decree as of 12



APPROVALS, CERTIFICATES

Fire report

April 2002 (Journal of Laws – Dz. U. No 75 as of 15 June 2002). -/-

The present classification is valid for the following parameters that characterise the product: -/-

- plasticized PVC with the same content as the product tested, -/-
- surface mass: 221 g/m², -/-
- thickness 170 µm, -/-
- various colours -/-

The classification is valid for the following conditions for the final application: -/-

- without the prime coat -/-
 - on the A2 class prime coat maintaining the distance from it of at least 40 mm, -/-
 - the ceiling stretched through the system of edges fastening with the minimum tension force 30 daN/m of foil. -/-
- /-

5. Reservations -/-

The classification granted shall be valid as long as: -/-

- the test method is not changed; -/-
- the product standard or the product technical approval is not changed; -/-
- the structural and material changes do not exceed the limits of the application area stipulated in item 4.3. -/-

The present classification report has been issued in 2 copies. The certified copies may be issued by the ITB Fire Testing Laboratory upon the report Owner's request only. This classification report is not the product approval or certificate.



APPROVALS, CERTIFICATES

Fire report

Report	Full Name	Signature*	Date
Prepared by	Bartłomiej Papis	[illegible signature]	08/09/2008
Verified by	Andrzej Kolbrecki	[illegible signature]	08/09/2008
* on behalf and authorised by the Building Research Institute			

[rectangular seal: Andrzej Borowy, Ph. D., Deputy Manager of the Fire Testing Laboratory – illegible signature] -/-
-/-

[Translator's Note: in the foot of the first page: the Issuer's Statistical Identification Number REGON: 000063650; Bank account BPH S.A Warsaw No: 77 1240 5918 1111 0000 4913 4569; Taxpayer Identification Number NIP: 525-000-93-58; in the head of the remaining pages: THE CLASSIFICATION REPORT NO NP-1050/P/08/AK] -/-

I, the undersigned English Language Sworn Translator – Rafał Schmidtke - hereby certify that the present certified translation is compatible with the document in Polish. [4,717 characters – 4 pages] -/-

Katowice, 9 February 2009



Sworn Translator's Index No: 12/09

Acoustics

ACOUSTICS AND BUILDING PHYSICS
NOISE CONTROL
ENVIRONMENTAL TECHNOLOGY
FIRE SAFETY

PEUTZ

Report

Laboratory for Acoustics

Determination of the sound absorption (reverberation room method) of **Stretch Ceiling DPS**, manufacturer **Grupa DPS**

Reportnumber A 1988-1E-RA d.d. 24 June 2010

Member ONRI
ISO-9001: 2000 certified

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Paletsingel 2, Postbus 696
2700 AR Zoetermeer
Tel. (0719) 347 03 47
Fax (0719) 361 49 85
info@zoetermeer.peutz.nl
www.peutz.nl

Peutz bv
Lindenlaan 41, Molenhoek
Postbus 66, 6585 ZH Mook
Tel. (024) 357 07 07
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Daidalos Peutz bvba
Leuven
info@daidalospeutz.be
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Köhler Peutz Gevelechniek bv
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(DNR 2005)

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KvK: 12028033

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Report number: A 1988-1E-RA

Date: 24 June 2010

Ref.: TS/HvH/Lv/A 1988-1E-RA

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PEUTZ

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1. INTRODUCTION

At the request of Grupa DPS Sp. z o.o. based in Katowice (Poland), laboratory measurements of the sound absorption (reverberation room method) were carried out on

Stretch Ceiling DPS – Microsorber Acoustical Perforation

in the Laboratory for Acoustics of Peutz bv, at Mook, The Netherlands (see figure 1).



For this type of measurements the Laboratory for Acoustics has been accredited by the Dutch "Stichting Raad voor Accreditatie" (RvA). The RvA is member of the EA MLA¹

¹ EA MLA: European Accreditation Organisation MultiLateral Agreement: <http://www.european-accreditation.org>

EA: "Certificates and reports issued by bodies accredited by MLA and MRA members are considered to have the same degree of credibility, and are accepted in MLA and MRA countries."

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2. NORMS AND GUIDELINES

The measurements have been carried out according to the Quality Manual of the Laboratory for Acoustics as well as:

ISO 354:2003² Acoustics Measurement of sound absorption in a reverberation room

NOTE: this international standard has been accepted within all EU-countries as European Norm EN ISO 354:2003

Various other related norms:

EN ISO 11654:1997 Acoustics Sound absorbers for use in buildings Rating of sound absorption

ASTM C423-08a Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

² According to this norm, the report should include for each measurement the mean reverberation times T1 and T2 at each frequency. Because these figures are not relevant for judging the quality of the product being tested, but merely for judging the accuracy of the calculations, they have been omitted in this report. It is possible of course to reproduce those figures at any time if the principal requests this.

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3. TESTED CONSTRUCTION

The data presented here have been received from the principal or obtained by own observations.

Measurements have been carried out on two different stretched suspended ceilings.

Stretch Ceiling DPS (non perforated)

Design	DPS
Thickness	0,17 mm
mass	0,24 kg/m ²
Perforation	none

Stretch Ceiling DPS – Microsorber Acoustical Perforation

Design	DPS
Thickness	0,17 mm
mass	0,24 kg/m ²
Perforation	micro perforation, center to center approximately 2 mm

On behalf of the measurements the ceilings were clamped on a aluminum frame with a dimension of 1000 x 1000 mm.

The following variants are measured, whereby the mentioned wool exists of 40 mm glasswool type Sonepanel manufactured by Isover (density about 18 kg/m³).

- 1) non perforated, height (cavity) 100 mm, no wool;
- 2) non perforated, height (cavity) 100 mm, glasswool on the ground;
- 3) non perforated, height (cavity) 100 mm, glasswool direct behind fabric;
- 4) perforated, height (cavity) 100 mm, no wool;
- 5) perforated, height (cavity) 100 mm, glasswool on the ground;
- 6) perforated, height (cavity) 100 mm, glasswool direct behind fabric;
- 7) perforated, height (cavity) 300 mm, no wool;
- 8) perforated, height (cavity) 300 mm, glasswool on the ground;
- 9) perforated, height (cavity) 300 mm, glasswool direct behind fabric;
- 10) non perforated, height (cavity) 500 mm, no wool;
- 11) non perforated, height (cavity) 500 mm, glasswool on the ground;
- 12) perforated, height (cavity) 500 mm, no wool;
- 13) perforated, height (cavity) 500 mm, glasswool on the ground;
- 14) perforated, cavity 60 mm, perforated, cavity 40 mm, total height 100 mm, no wool;

The results as presented here relate only to the tested items and laboratory conditions as described in this report. The laboratory can make no judgement about the representativity of the tested samples.

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4. MEASUREMENTS

The stretched ceiling tiles to be measured (see description in chapter 3) are mounted on a support structure at a certain distance above the floor of the reverberation room. The non perforated stretched ceiling is measured with an airgap of 100 mm and 500 mm, the perforated ceiling is measured with an airgap of 100 mm, 300 mm and 500 mm. The testing area was 12 m².

The sides of the setup were enclosed by 18 mm thick plastic covered chipwood board and sealed by 18 mm thick plastic tape (see figure 2).

The measurement setups are according to type E-100, E-300 and E-500 of the annex ISO 354:2003 (Test specimen mountings for sound absorption tests).

4.1. Method

The tests were conducted in accordance with the provisions of the test method ISO 354 in the reverberation room of "Peutz bv" in Mook (the Netherlands) (see figure 1). The relevant data regarding the reverberation room are given in figure 3 of this report.

By means of reverberation measurements the reverberation time of the room is measured under two conditions:

- when the reverberation room is empty
- when the construction under test is inside the reverberation room

In general, once material is placed into the reverberation room a lower reverberation time will result.

The difference in reverberation times is a measure of the amount of absorption brought into the room.

Measurements and calculations were carried out in 1/3-octave bandwidth from 100 to 5000 Hz, according to the norms. Where applicable the octave values have been calculated from these 1/3-octave values.

From the reverberation measurements in the empty reverberation room the equivalent sound absorption A_1 is calculated (per frequency band) according to formula 1 and expressed in m²

$$A_1 = \frac{55,3 V}{c T_1} - 4 V m_1 \quad (1)$$

in which :

V = the volume of the reverberation room [m³]

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- T_1 = the reverberation time in the empty reverberation room [sec.]
 m_1 = "power attenuation coefficient" in the empty room,
 calculated according to formula [m⁻¹]
 c = the speed of sound in the air, in m/s, calculated according to [m/s]

$$c = 331 + 0,6t \quad (2)$$

in which :

- t = the temperature; this formula is valid for temperatures between 15 and 30 °C [°C]

$$m = \frac{\alpha}{10 \log(e)} \quad (3)$$

in which :

- α = "attenuation coefficient" according to ISO 9613-1

In the same manner the equivalent sound absorption A_2 for the room with the test specimen is calculated according to formula 4, also expressed in m²

$$A_2 = \frac{55,3 V}{c T_2} - 4 V m_2 \quad (4)$$

in which :

c and V have the same definition as in formula 1 and

- T_2 = the reverberation time of the reverberation room with
 the test specimen placed inside [sec]
 m_2 = "power attenuation coefficient" in the room with the test
 specimen placed inside, calculated according to formula 3 [m⁻¹]

The equivalent sound absorption A of the test specimen has been calculated according to formula 5 and is expressed in m²

$$A = A_2 - A_1 \quad (5)$$

When the test specimen consists of one plane with an area between 10 and 12 m² the sound absorption coefficient α_s has to be calculated according to formula 6:

$$\alpha = \frac{A}{S} \quad (6)$$

in which:

- S = the area of the test specimen [m²]

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4.2. Accuracy

The accuracy of the sound absorption as calculated can be expressed in terms of repeatability (tests within one laboratory) and reproducibility (between various laboratories).

When:

- two tests are performed on identical test material
- within a short period of time
- by the same person or team
- using the same instrumentation
- under unchanged environmental conditions

the probability will be 95% that the difference between the two test results will be less than or equal to r .

In order to evaluate the repeatability r for the sound absorption measurements performed in the reverberation room of "Peutz bv" in Mook (the Netherlands) eight series of measurements have been carried out according to ISO 354:1985 annex C. From the results of those measurements the repeatability r has been calculated. It was found that for the frequency range from 100 to 200 Hz and at 5000 Hz the repeatability r is 0,21 as a maximum. For the frequency range 250 to 4000 Hz the repeatability r is 0,09 as a maximum.

4.3. Atmospheric conditions

The atmospheric conditions during the measurements are presented in table 1.

Table 1

reverberation room	temperature [°C]	atmospheric pressure [kPa]	relative humidity [%]
Empty room 20 th of may 2010	16,8	103,1	51,8
Empty room 21 th of may 2010	18,1	102,9	55,1
Empty room 25 th of may 2010	19,1	101,4	54,5

4.4. Results

The results of the measurements are given in table 2 to 5 and in figure 4 to 17. The measurements were made in 1/3-octave bands. The results presented in octave-bands are the arithmetic average of the results of the three 1/3-octave bands belonging to that octave band.

From those values the following one-figure ratings have been calculated and stated :

- the "weighted sound absorption coefficient α_w " according to ISO 11654

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- the "Noise Reduction Coefficient NRC" according to ASTM-C423, being the average of the absorption coefficients (1/3 octave values) at the frequencies of 250, 500, 1000 and 2000 Hz, rounded to the nearest 0,05.

Table 2 Measurements results

Variant	sound absorption coefficient α_s					
	1		2		3	
perforated	no		no		no	
height	100 mm		100 mm		100 mm	
min. wool	—		on the floor		behind fabric	
record nr.	#110		#617		#620	
figure	4		5		6	
frequency [Hz]	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.
100	0,05		0,14		0,17	
125	0,05	0,05	0,17	0,21	0,23	0,27
160	0,05		0,33		0,41	
200	0,06		0,43		0,48	
250	0,10	0,11	0,72	0,66	0,75	0,71
315	0,18		0,84		0,89	
400	0,24		0,82		0,96	
500	0,24	0,24	0,66	0,66	0,81	0,80
630	0,23		0,50		0,63	
800	0,18		0,39		0,49	
1000	0,15	0,15	0,32	0,33	0,39	0,40
1250	0,11		0,27		0,31	
1600	0,09		0,27		0,27	
2000	0,11	0,10	0,27	0,25	0,25	0,23
2500	0,11		0,21		0,18	
3150	0,09		0,15		0,13	
4000	0,08	0,08	0,14	0,13	0,11	0,11
5000	0,08		0,09		0,08	
α_w	0,15		0,30(LM)		0,25(LM)	
NRC	0,15		0,50		0,55	

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Table 3 Measurements results

Variant	sound absorption coefficient α_s							
	4		5		6		7	
perforated	yes		yes		yes		yes	
height	100 mm		100 mm		100 mm		300 mm	
min. wool	—		on the floor		behind fabric		—	
record nr.	#73		#618		#619		#622	
figure	7		8		9		10	
frequency [Hz]	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.
100	0,04		0,14		0,18		0,16	
125	0,05	0,05	0,17	0,22	0,23	0,27	0,15	0,20
160	0,06		0,34		0,41		0,30	
200	0,08		0,42		0,52		0,37	
250	0,13	0,15	0,72	0,67	0,76	0,74	0,40	0,40
315	0,25		0,86		0,93		0,43	
400	0,38		0,93		1,03		0,43	
500	0,51	0,49	0,84	0,83	0,93	0,92	0,34	0,36
630	0,59		0,73		0,80		0,32	
800	0,58		0,65		0,73		0,46	
1000	0,55	0,54	0,59	0,59	0,67	0,67	0,50	0,48
1250	0,50		0,54		0,61		0,49	
1600	0,43		0,55		0,59		0,54	
2000	0,41	0,43	0,57	0,55	0,59	0,58	0,58	0,56
2500	0,46		0,54		0,56		0,56	
3150	0,42		0,49		0,48		0,50	
4000	0,37	0,39	0,46	0,44	0,44	0,43	0,47	0,46
5000	0,37		0,37		0,37		0,41	
α_w	0,45		0,60(LM)		0,60(LM)		0,45	
NRC	0,40		0,70		0,75		0,45	

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Table 4 Measurements results

Variant	sound absorption coefficient α_s							
	8		9		10		11	
perforated	yes		yes		no		no	
height	300 mm		300 mm		500 mm		500 mm	
min. wool	on the floor		behind fabric		--		on the floor	
record nr.	#623		#624		#625		#626	
figure	11		12		13		14	
frequency [Hz]	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.
100	0,20		0,21		0,22		0,35	
125	0,27	0,35	0,63	0,58	0,19	0,22	0,24	0,32
160	0,58		0,89		0,24		0,36	
200	0,65		0,79		0,19		0,35	
250	0,68	0,66	0,89	0,83	0,14	0,15	0,34	0,34
315	0,64		0,80		0,11		0,32	
400	0,58		0,84		0,13		0,46	
500	0,54	0,57	0,76	0,79	0,14	0,13	0,54	0,50
630	0,60		0,76		0,13		0,50	
800	0,74		0,85		0,13		0,55	
1000	0,75	0,75	0,81	0,83	0,12	0,13	0,48	0,48
1250	0,75		0,82		0,14		0,40	
1600	0,75		0,77		0,13		0,34	
2000	0,75	0,73	0,73	0,73	0,16	0,14	0,30	0,29
2500	0,68		0,69		0,14		0,23	
3150	0,63		0,63		0,13		0,17	
4000	0,56	0,56	0,58	0,57	0,11	0,11	0,14	0,14
5000	0,49		0,51		0,10		0,12	
α_w	0,65		0,75(L)		0,15		0,30(L)	
NRC	0,70		0,80		0,15		0,40	

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Table 5 Measurements results

Variant	sound absorption coefficient α_s					
	12		13		14	
perforated	yes		yes		yes 2x	
height	500 mm		500 mm		100 mm	
min. wool	--		on the ground		--	
record nr.	#628		#627		#621	
figure	15		16		17	
frequency [Hz]	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.	1/3 oct.	1/1 oct.
100	0,34		0,40		0,06	
125	0,28	0,33	0,33	0,40	0,08	0,08
160	0,36		0,48		0,11	
200	0,31		0,45		0,11	
250	0,30	0,29	0,42	0,43	0,19	0,23
315	0,27		0,42		0,39	
400	0,27		0,54		0,56	
500	0,41	0,37	0,68	0,64	0,71	0,68
630	0,42		0,69		0,76	
800	0,44		0,75		0,75	
1000	0,48	0,48	0,74	0,75	0,76	0,77
1250	0,52		0,76		0,80	
1600	0,55		0,76		0,80	
2000	0,59	0,57	0,78	0,75	0,75	0,73
2500	0,57		0,71		0,65	
3150	0,52		0,65		0,52	
4000	0,47	0,47	0,60	0,59	0,50	0,50
5000	0,43		0,53		0,47	
α_w	0,45		0,70		0,55	
NRC	0,45		0,65		0,60	

The sound absorption coefficient of a material is not a material property. It should be taken into account that the sound absorption of a construction depends on the dimensions, the way of mounting of the material and its position in the room.

Mook,

Th. Scheers
Laboratory Supervisor

ir. M.L.S. Vercammen
Manager

This report contains: 12 pages and 17 figures.

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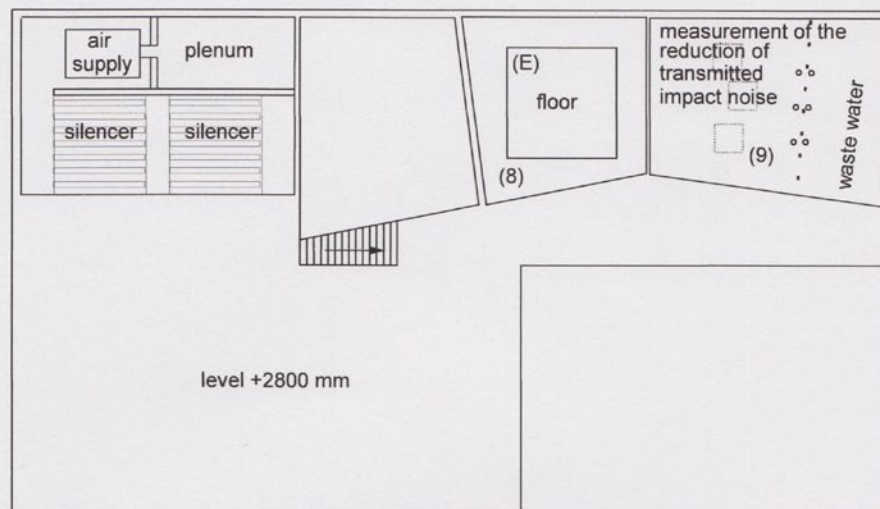
LABORATORY FOR ACOUSTICS

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PEUTZ bv
Lindenlaan 41, NL-6584 AC MOLENHOEK (LB), THE NETHERLANDS

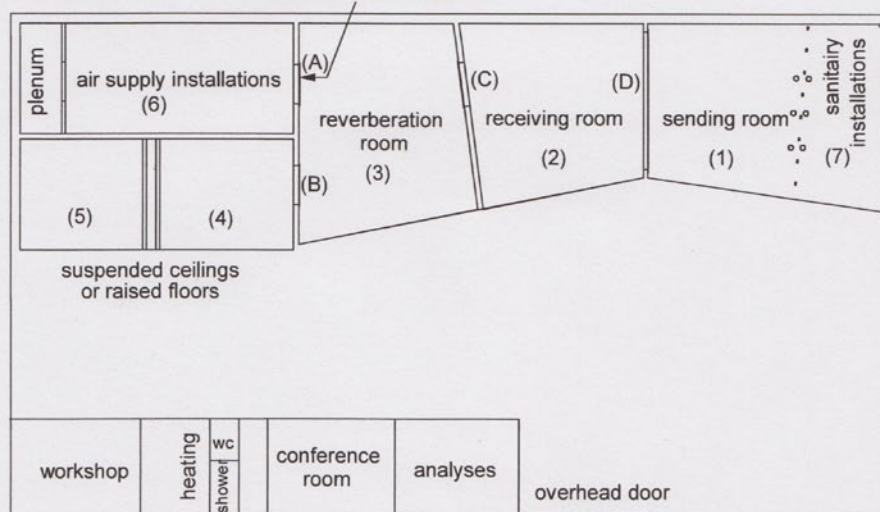
OVERVIEW

Story



Ground level

opening (A) (closed)
w x h = 1300 x 1905 mm



TEST OPENINGS (w x h in mm)

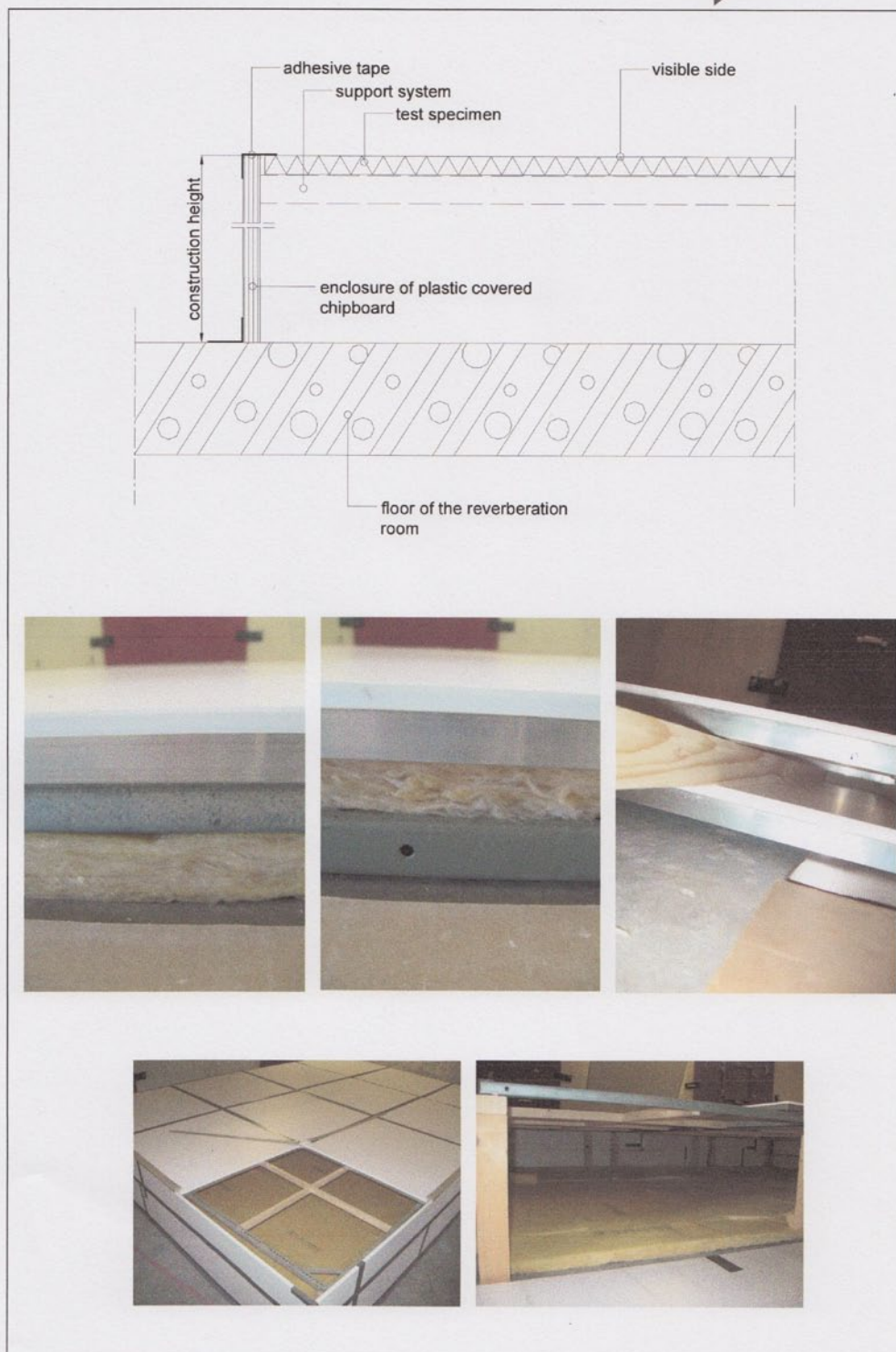
- (B) 1000 x 2200
- (C) 1500 x 1250
- (D) 4300 x 2800
- (E) 4000 x 4000

0 1 2 3 4 5 m
scale

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Figure 2

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LABORATORIUM VOOR AKOESTIEK

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REVERBERATION ROOM

The reverberation room meets the requirements of ISO 354:2003.

additional data:

volume : 214 m³

total area S_t (walls, floor and ceiling) : 219 m²

diffusion: by the shape of the room and by adding 6 curved and 2 flat reflecting elements with a total area of approx. 13 m² a sufficient diffusion has been gained.

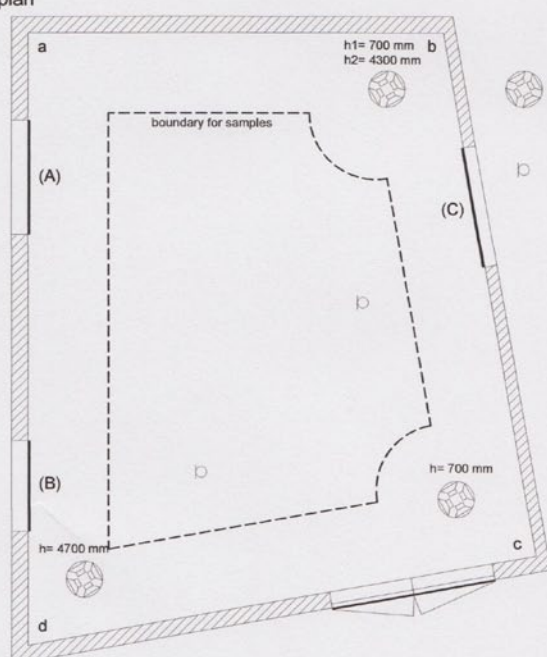
reverberation time of the empty reverberation room during measurements of 20-05-2010

frequentie (1/1 oct.)	125	250	500	1000	2000	4000	Hz
nagelmtijd	9,61	7,87	8,11	6,79	4,67	2,89	sec.

repeatability r (1/1 oct.) c.f. ISO 354:1985 annex C (see chapter 4.2 of this report).

r bij hoge α	0,13	0,04	0,04	0,02	0,02	0,08	-
r bij lage α	0,09	0,02	0,01	0,02	0,02	0,04	-

plan



loudspeaker (4x)

microphone (3x) (closed) testopenings
(width x height in mm)
(A): 1300 x 1800
(B): 1000 x 2200
(C): 1500 x 1250

height at:
a: 5573 mm
b: 5102 mm
c: 5000 mm
d: 5580 mm

0 1 2 m

Absorb, versie 5.5.7, mode 7, Pkt. JK, filer: a1988 E#1-38 T₁ = 16,8 °C p₁ = 103,1 kPa h₁ = 51,8 %

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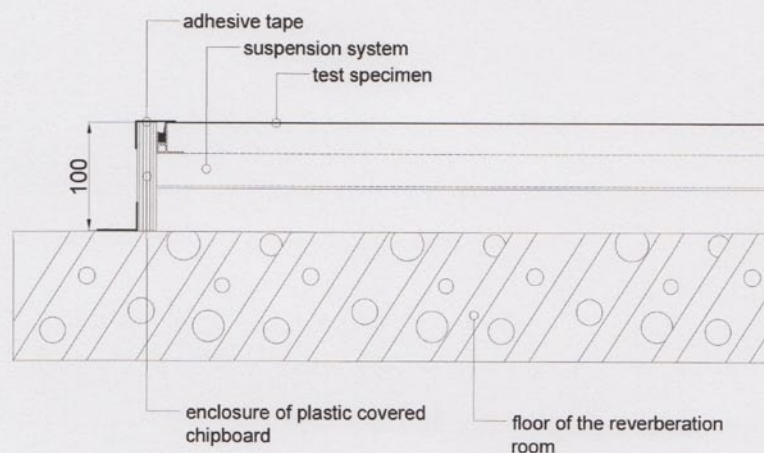
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#1 Stretch Ceiling DPS, cavity 100 mm, no absorbent material



Absorb., versie 5.5.7 mode 7, P/M: JK, file: a1988 E# 1-38 F# 74-109 A# 110 T₁ = 16,8 °C T₂ = 17,6 °C p₁ = 103,1 kPa p₂ = 103,0 kPa h₁ = 51,8 % h₂ = 49,7 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

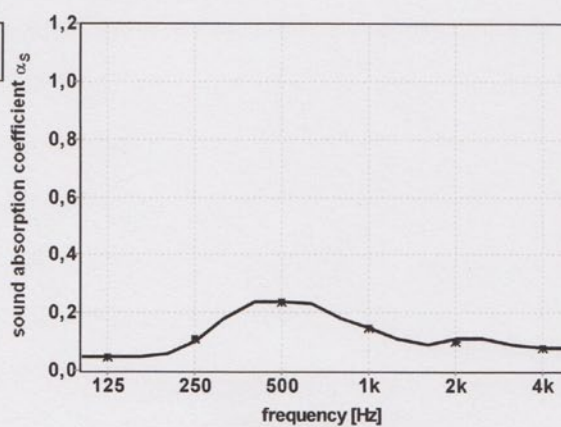
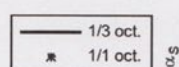
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_m (ISO 11654) = 0,15

NRC (ASTM - C423) = 0,15



	125	250	500	1k	2k	4k
1/3 oct.	0,05	0,06	0,24	0,18	0,09	0,09
1/1 oct.	0,05	0,10	0,24	0,15	0,11	0,08
	0,05	0,18	0,23	0,11	0,11	0,08
1/1 oct.	0,05	0,11	0,24	0,15	0,10	0,08

publication is permitted for the entire page only

Mook, 20-05-2010

Acoustics

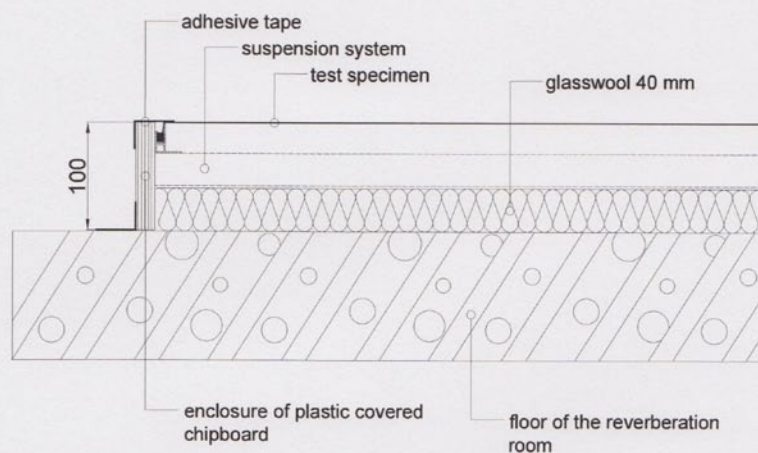
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#2 Stretch Ceiling DPS, cavity 60 mm, 40 mm glasswool on the ground



Absorb, version 5.5.7 mode 7, PM, JK, file: a1988 E# 293-328 F# 111-146 A# 617 T₁ = 18,1 °C T₂ = 17,6 °C p₁ = 102,9 kPa p₂ = 103,0 kPa h₁ = 55,1 % h₂ = 52,1 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

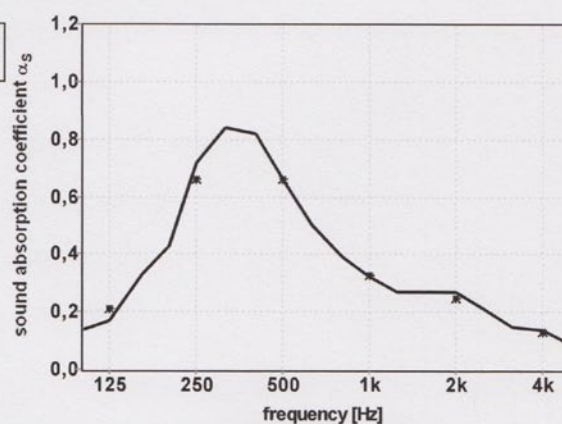
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_{av} (ISO 11654) = 0,30(LM)

NRC (ASTM - C423) = 0,50



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Mook, 21-05-2010

Acoustics

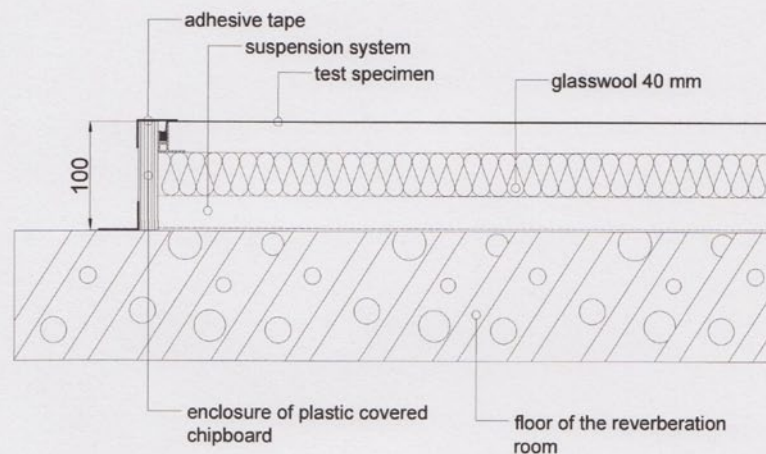
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#3 Stretch Ceiling DPS, 40 mm glasswool behind fabric, cavity 60 mm

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

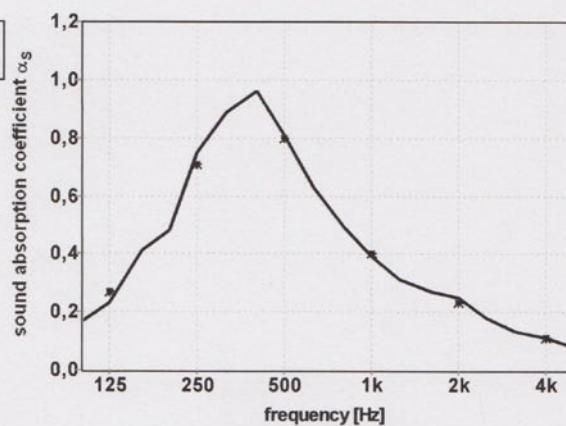
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,25(LM)

NRC (ASTM - C423) = 0,55



publication is permitted for the entire page only

Mook, 21-05-2010

Acoustics

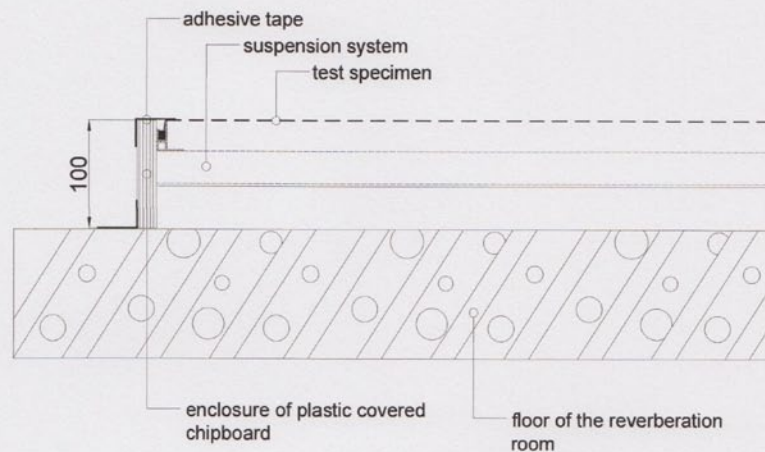
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#4 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 100 mm, no absorbent material



Absorb, versie 5.5.7, mode 7, PM, JK, file: a1988 E#1-36 F#1-37-72 A#1-73 T₁ = 16,8 °C T₂ = 17,5 °C p₁ = 103,1 kPa p₂ = 103,0 kPa h₁ = 51,8 % h₂ = 48,5 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

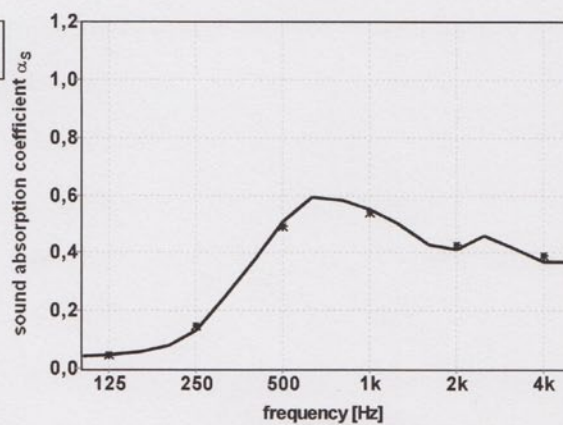
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,45

NRC (ASTM - C423) = 0,40



	0,04	0,08	0,38	0,58	0,43	0,42
1/3 oct.	0,05	0,13	0,51	0,55	0,41	0,37
	0,06	0,25	0,59	0,50	0,46	0,37
1/1 oct.	0,05	0,15	0,49	0,54	0,43	0,39

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Mook, 20-05-2010

Acoustics

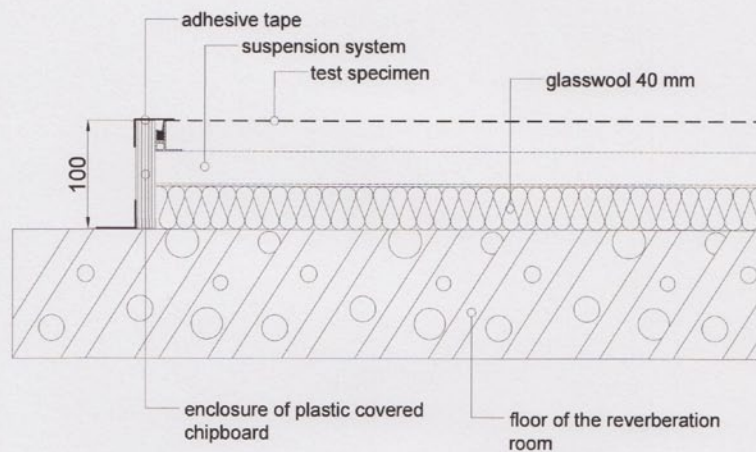
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#5 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 60 mm, 40 mm glasswool on the ground



Absorb, versie 5.5.7 mode 7, PM, JK, file: a1988 E# 283-328 F# 147-182 A# 618 T₁ = 18,1 °C T₂ = 17,7 °C p₁ = 102,9 kPa p₂ = 103,0 kPa h₁ = 55,1 % h₂ = 52,6 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

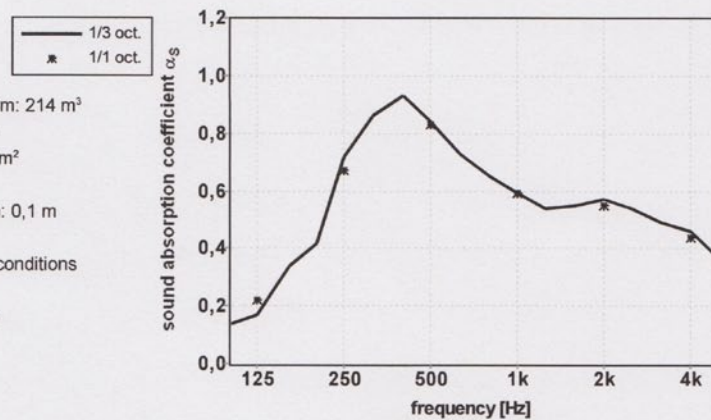
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,60(LM)

NRC (ASTM - C423) = 0,70



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Mook, 21-05-2010

Acoustics

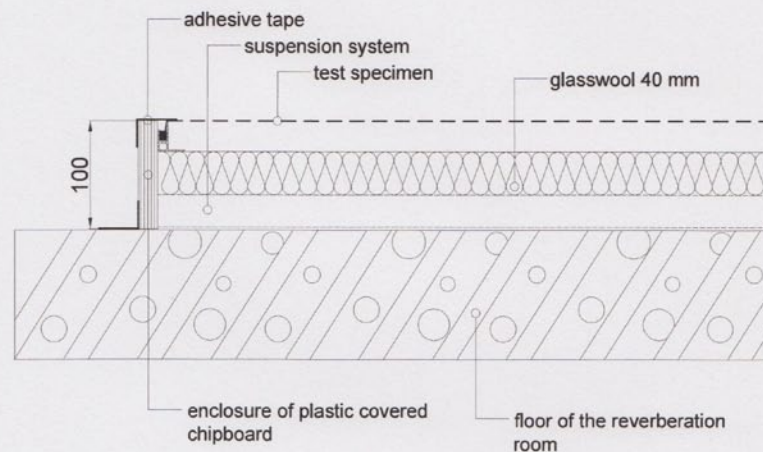
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#6 Stretch Ceiling DPS Microsorber Acoustical Perforation, 40 mm glasswool behind fabric, cavity 60 mm

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

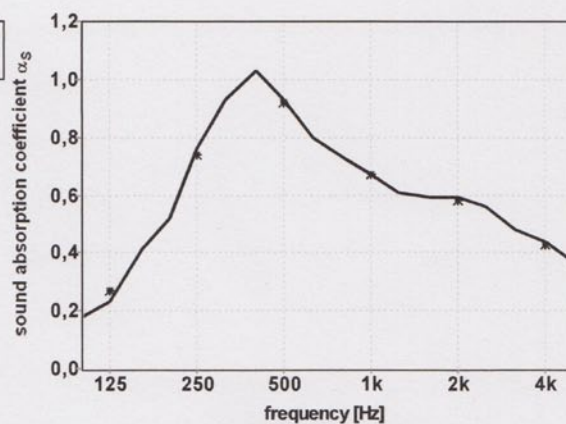
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,60(LM)

NRC (ASTM - C423) = 0,75



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Acoustics

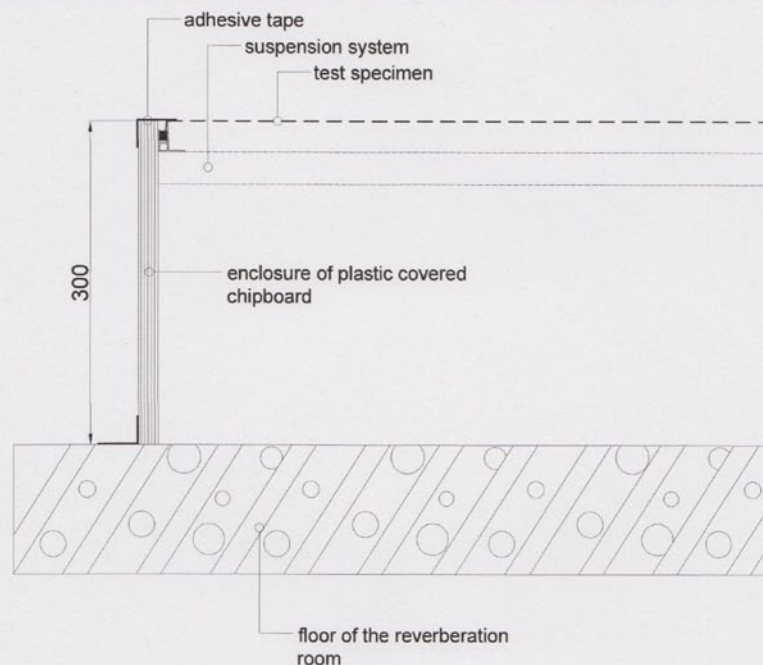
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#7 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 300 mm, no absorbent material



Absorb. versie 5.5.7 mode 7, P.M. J.K. file: a1988 E# 293-328 F# 329-364 A# 622 T₁ = 18,1 °C T₂ = 18,6 °C p₁ = 102,9 kPa p₂ = 102,8 kPa h₁ = 55,1 % h₂ = 55,1 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,3 m

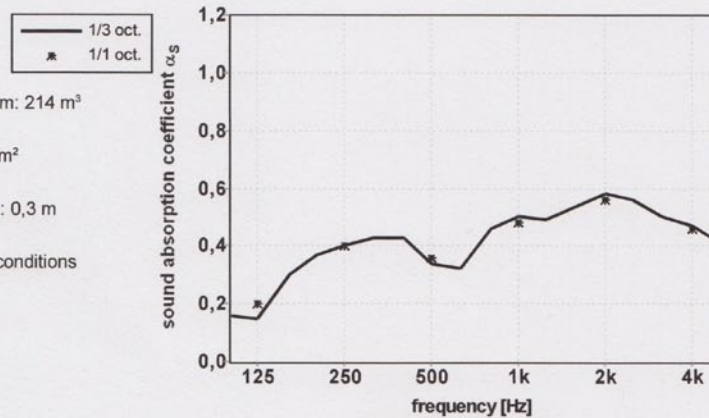
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,45

NRC (ASTM - C423) = 0,45



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Mook, 21-05-2010

Acoustics

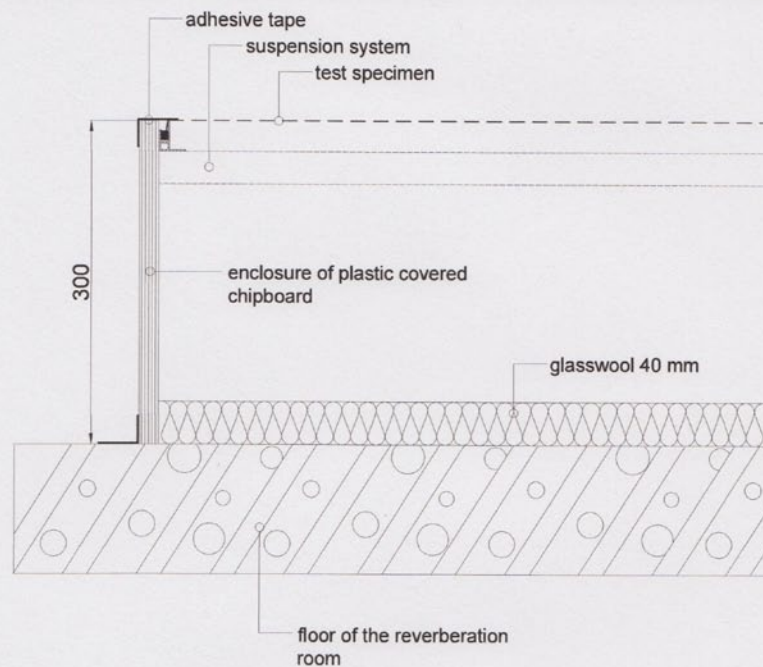
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#8 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 260 mm, 40 mm glasswool on the ground



Absorb. versie 5.5.7 mode 7, PM: JK, file: at1988 Ek-437-472 F# 365-400 A# 623 T₁ = 19,1 °C T₂ = 19,1 °C p₁ = 101,4 kPa p₂ = 101,4 kPa h₁ = 54,5 % h₂ = 54,2 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,3 m

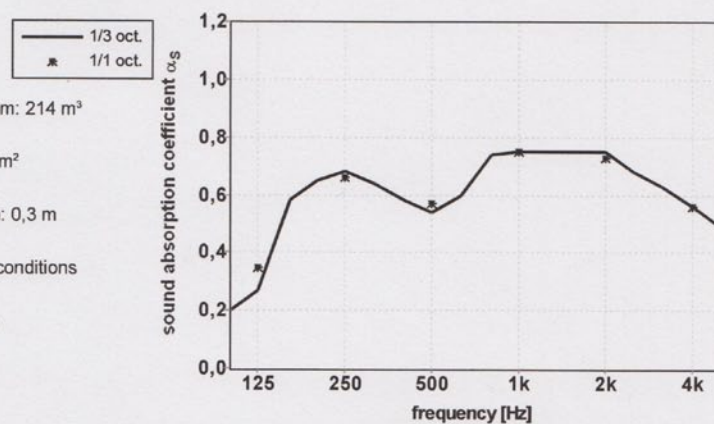
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_m (ISO 11654) = 0,65

NRC (ASTM - C423) = 0,70



	0,20	0,65	0,58	0,74	0,75	0,63
1/3 oct.	0,27	0,68	0,54	0,75	0,75	0,56
	0,58	0,64	0,60	0,75	0,68	0,49
1/1 oct.	0,35	0,66	0,57	0,75	0,73	0,56

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Mook, 25-05-2010

Acoustics

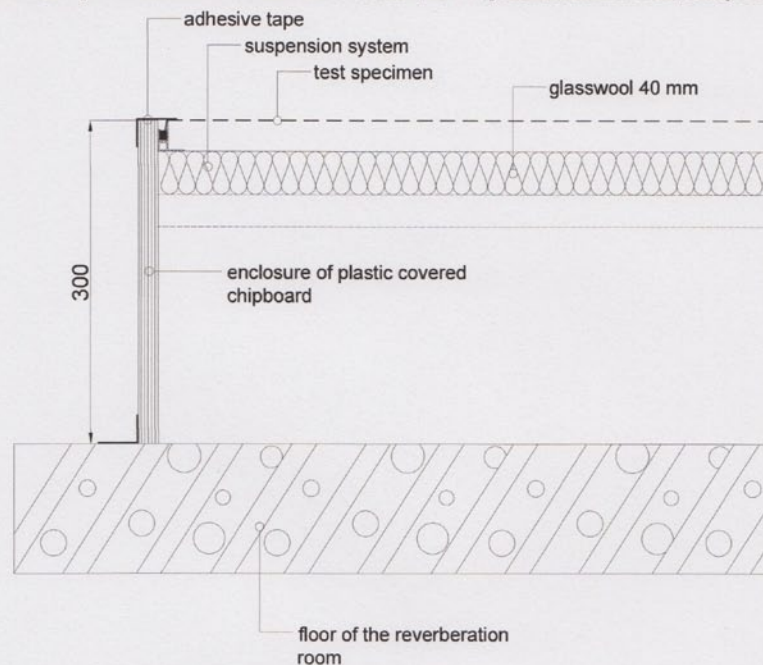
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#9 Stretch Ceiling DPS Microsorber Acoustical Perforation, 40 mm glasswool behind fabric, cavity 260 mm



Absorb, versie 5.5.7 mode 7, PM, JK, file: a1988 E#-437-472 F#-401-436 A#-624 T₁ = 19,1 °C T₂ = 19,2 °C p₁ = 101,4 kPa p₂ = 101,4 kPa h₁ = 54,5 % h₂ = 54,0 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,3 m

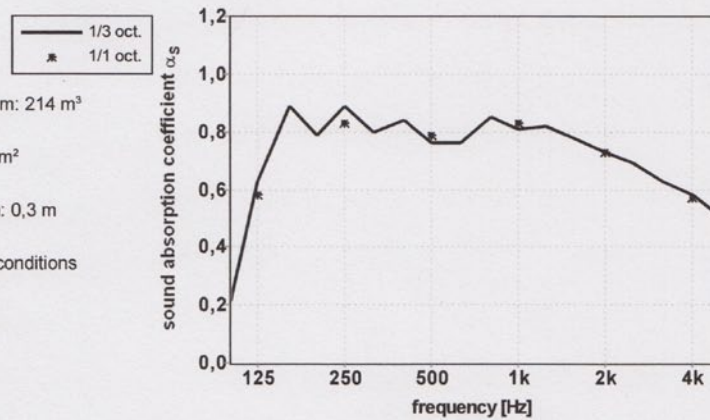
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,75(L)

NRC (ASTM - C423) = 0,80



	125	250	500	1k	2k	4k
1/3 oct.	0,21	0,79	0,84	0,85	0,77	0,63
	0,63	0,89	0,76	0,81	0,73	0,58
	0,89	0,80	0,76	0,82	0,69	0,51
1/1 oct.	0,58	0,83	0,79	0,83	0,73	0,57

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Acoustics

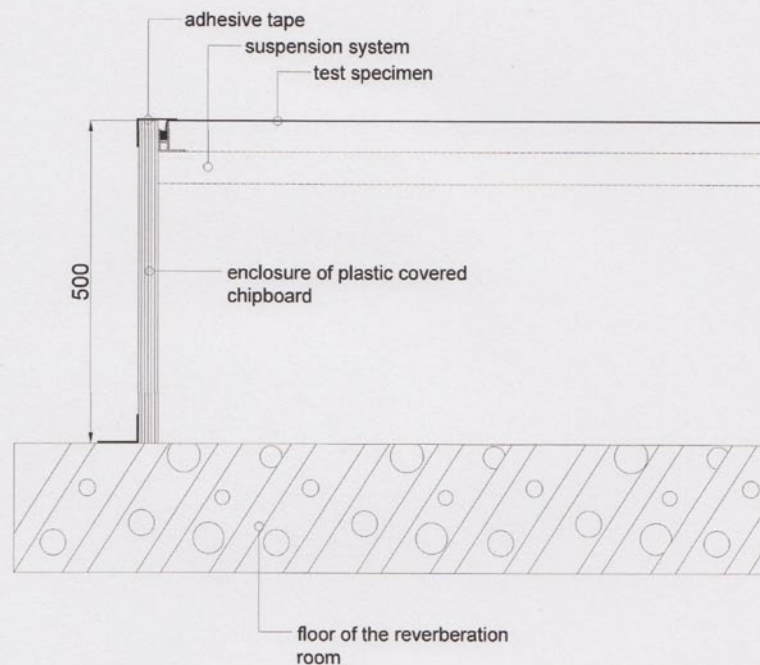
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#10 Stretch Ceiling DPS, cavity 500 mm, no absorbent material

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,5 m

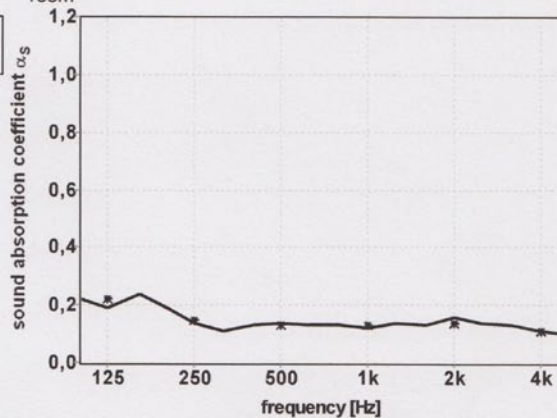
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,15

NRC (ASTM - C423) = 0,15



	0,22	0,19	0,13	0,13	0,13	0,13
1/3 oct.	0,19	0,14	0,14	0,12	0,16	0,11
	0,24	0,11	0,13	0,14	0,14	0,10
1/1 oct.	0,22	0,15	0,13	0,13	0,14	0,11

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Acoustics

LABORATORY FOR ACOUSTICS

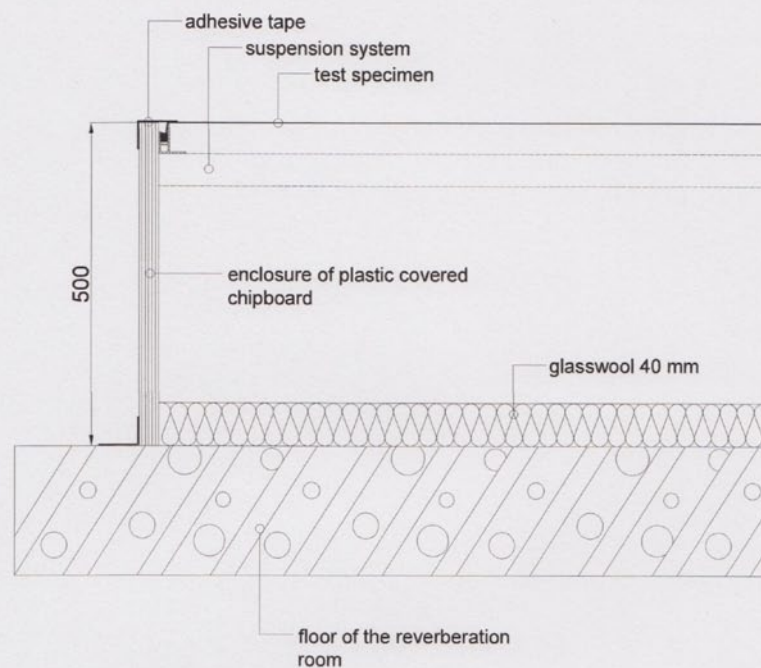
PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS



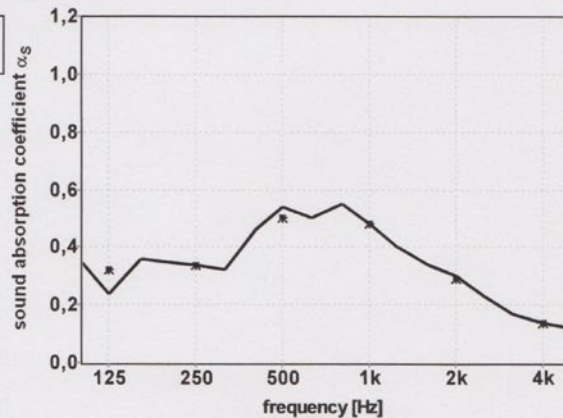
#11 Stretch Ceiling DPS, cavity 460 mm, 40 mm glasswool on the ground



volume reverberation room: 214 m³
 surface area sample: 12 m²
 height of the construction: 0,5 m
 measured at: laboratory conditions
 signal: broad-band noise
 bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,30(L)

NRC (ASTM - C 423) = 0,40



	125	250	500	1k	2k	4k
1/3 oct.	0,35	0,35	0,46	0,55	0,34	0,17
1/1 oct.	0,24	0,34	0,54	0,48	0,30	0,14
	0,36	0,32	0,50	0,40	0,23	0,12
1/1 oct.	0,32	0,34	0,50	0,48	0,29	0,14

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Acoustics

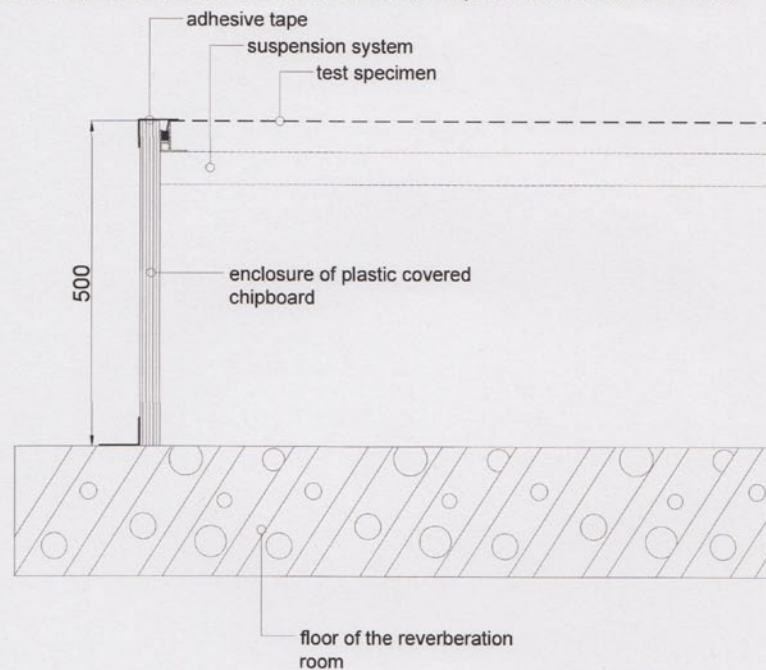
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#12 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 500 mm, no absorbent material



Absorb, versie 5.5.7 mode 7, PM, JK, file: a1988 E# 437-472 F# 581-616 A# 628 T₁ = 19,1 °C T₂ = 19,4 °C p₁ = 101,4 kPa p₂ = 101,2 kPa h₁ = 54,5 % h₂ = 48,4 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,5 m

measured at: laboratory conditions

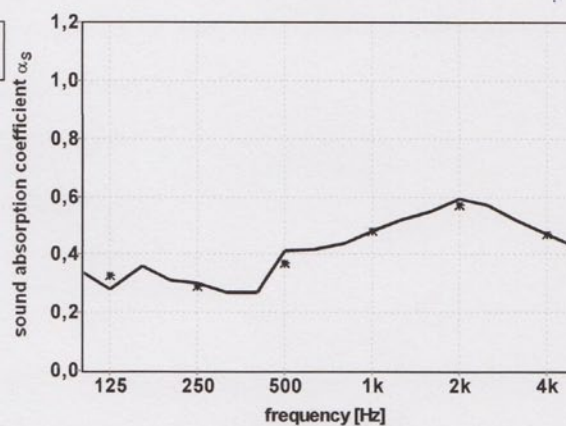
signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,45

NRC (ASTM - C423) = 0,45

— 1/3 oct.
* 1/1 oct.



	0,34	0,31	0,27	0,44	0,55	0,52
1/3 oct.	0,28	0,30	0,41	0,48	0,59	0,47
	0,36	0,27	0,42	0,52	0,57	0,43
1/1 oct.	0,33	0,29	0,37	0,48	0,57	0,47

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Acoustics

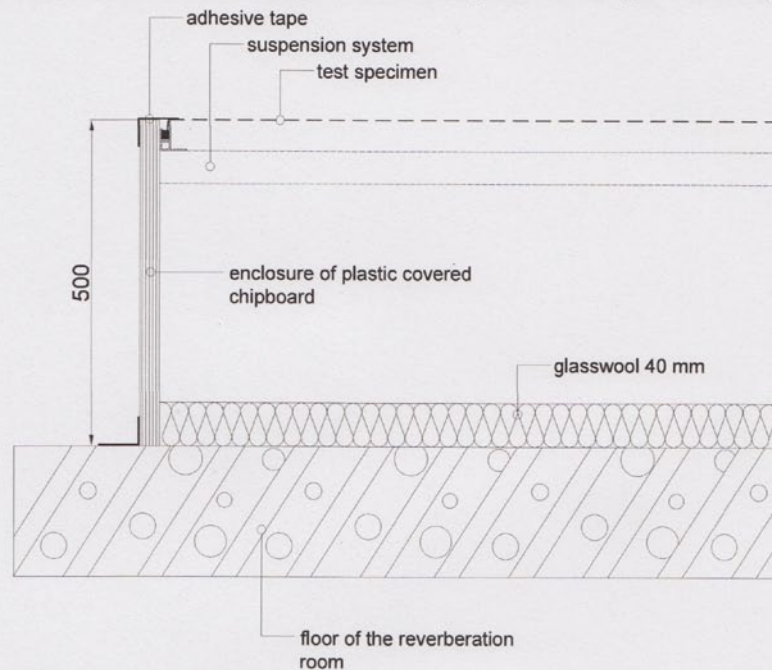
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

#13 Stretch Ceiling DPS Microsorber Acoustical Perforation, cavity 460 mm, 40 mm glasswool on the ground

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,5 m

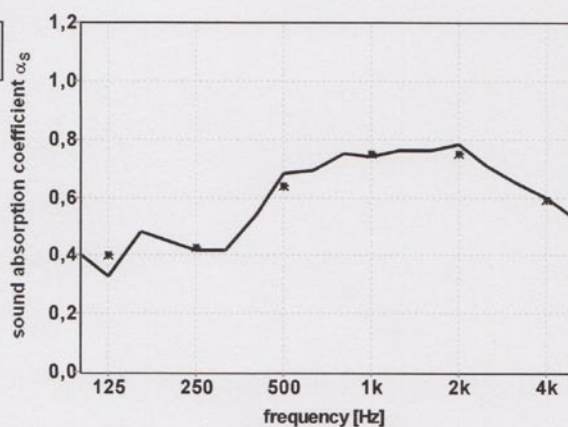
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,70

NRC (ASTM - C423) = 0,65



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Acoustics

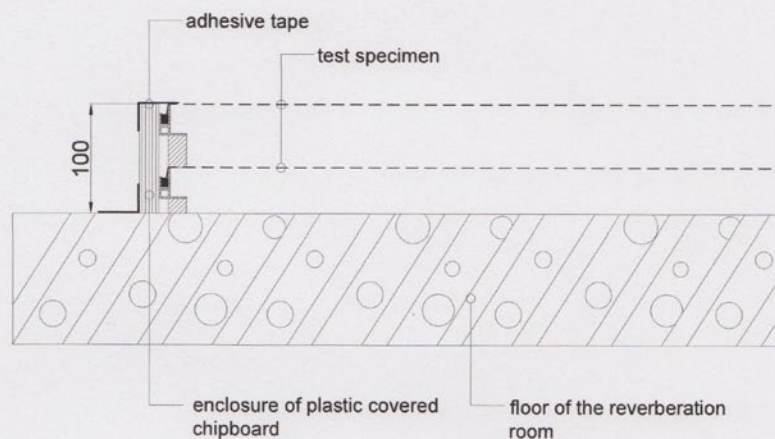
LABORATORY FOR ACOUSTICS

PEUTZ

MEASUREMENT OF SOUND ABSORPTION IN A REVERBERATION ROOM
ACCORDING TO ISO 354:2003

principal: DPS

- #14 Stretch Ceiling DPS Microsorber Acoustical Perforation,
cavity 60 mm,
Stretch Ceiling DPS Microsorber Acoustical Perforation,
cavity 40 mm, no absorbent material



Absorb, versie 5.5.7 mode 7, PM: JK, file: a1988 EA:293-328 F#:257-292 A#:621 T₁ = 18.1 °C T₂ = 18.2 °C p₁ = 102.9 kPa p₂ = 102.9 kPa h₁ = 55.1 % h₂ = 53.8 %

volume reverberation room: 214 m³surface area sample: 12 m²

height of the construction: 0,1 m

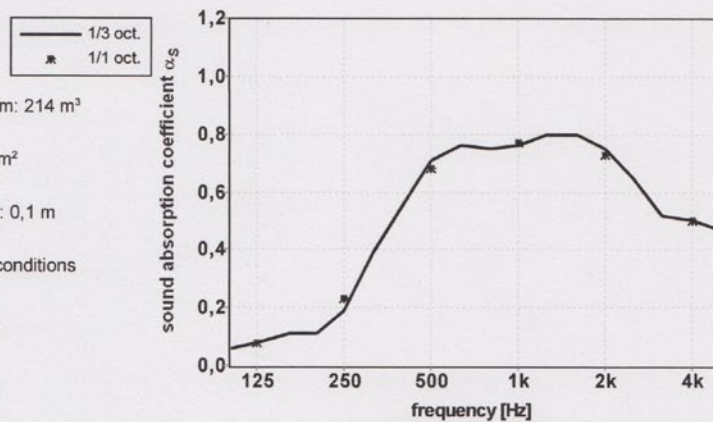
measured at: laboratory conditions

signal: broad-band noise

bandwidth: 1/3 octave

 α_w (ISO 11654) = 0,55

NRC (ASTM - C423) = 0,60






	0,06	0,11	0,56	0,75	0,80	0,52
1/3 oct.	0,08	0,19	0,71	0,76	0,75	0,50
	0,11	0,39	0,76	0,80	0,65	0,47
1/1 oct.	0,08	0,23	0,68	0,77	0,73	0,50

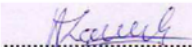
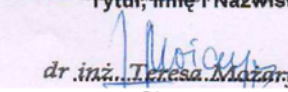
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Mook, 21-05-2010




Chlorinated atmosphere

		BUILDING RESEARCH INSTITUTE	
 		GROUP OF TESTING LABORATORIES accredited by the Polish Centre for Accreditation Certificate of accreditation no. AB 023	
LO	TEST REPORT NO. LO 1073/08/1		Page 1/2
LABORATORY OF MATERIAL AND PROTECTIVE COATING TESTING Address: 00-611 Warsaw, ul. Filtrowa 1, tel. no. (0-22) 5796402, (0-22) 825 04 71 ext. 402 or 238			
CUSTOMER: "GRUPA DPS" Sp. z o.o. ul. Krakowska 85A, 40-391 Katowice			
OBJECT: Stretch ceiling DPS* Received for tests on: 06.02.2008 under protocol no.: LO 1073/08 in accordance with management procedure no. 18 tested in the period from 21.02.2008 to 28.02.2008 The object was collected by the Importer "GRUPA DPS" Sp. z o.o. (Ltd. co.) at its seat in Katowice, ul. Krakowska 85A. The manner of collection – at random, by cutting off the film roll.			
IDENTIFICATION OF THE OBJECT: Producer: RENOLIT AG Venue of production: RENOLIT AG, Horchheimer Str. 50, 67547 Worms, Germany Production line: 68016/1/1 lot no. ID 59000044557 Type, kind and variety of the product: a glossy film made of soft PVC.			
REFERENCE DOCUMENT: harmonized norm PN-EN 14716:2005			
METHOD/PROCEDURE OF TESTING: Testing Procedure ITB L0-40 (linear dimensions ^{*)} .			
TEST FINDINGS:			
Tested characteristics	Test finding	Requirements in accordance with	
Change of length, %^{*)} Along the direction of calendering sample 1 sample 2 sample 3 ----- Average	 0.30 0.33 0.41 ----- 0.35	PN-EN 14716:2005 (orig.) Table 3 $\leq 1 \%$ in every direction	


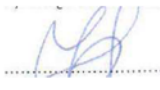
Chlorinated atmosphere

LO	REPORT ON THE TESTING NO. LO 1073/08/1	Page 2/2
TEST FINDINGS:		
Tested characteristics	Test finding	Requirements in accordance with
Across the direction of calendering		
sample 1	0.19	
sample 2	0.19	
sample 3	0.22	
-----	-----	
Average	0.20	
OTHER INFORMATION RELEVANT TO THE TESTING:		
<p>¹⁾ Stretch ceiling DPS – a plastic glossy white film.</p> <p>²⁾ testing was performed in accordance with the norm PN-EN 14716:2005 „Stretch ceilings – requirements and methods of testing, Attachment C. Changes of the sample sizes of films cut out along and across the direction of calendering after seven days of exposure in a humid, chlorine-containing atmosphere, were determined. The samples were exposed in a chamber with air circulation, at the temperature of 30±1°C in a humid, chlorine-containing atmosphere. Test solution for the creating of chlorine-containing atmosphere was prepared with de-ionized water and water-chlorination pills used in public swimming pools. The concentration of free chlorine in the solution amounted to 8.5 mg/l, and pH solution 7.4 (accepted upon the basis of sanitary-hygienic requirements for indoor swimming pools adopted by the Ministry of Health and Social Care by virtue of its regulation of 23rd November, 1998 file no. ZPN-093-21/9).</p> <p>³⁾ the assessment is not included within the scope of accreditation.</p>		
ASSESSMENT³⁾:		
<p>The changes of the elongation of the samples of the product: stretch ceiling DPS marked after storing for seven days in humid, chlorine-containing atmosphere at the temperature of 30±1°C, amounted on average to 0.35% along and 0.20% across the direction of calendering. The examined product, stretch ceiling DPS, met the requirements in the norm PN-EN 14716:2005 in terms of the stability of dimensions after the impact of humid, chlorine-containing atmosphere (PN-EN 14716:2005, Table 3).</p>		
Person in charge of testing: mgr inż. Aleksander Lamenta (Msc) ----- Degree, Name and Surname  ----- Signature	Head of Laboratory LO dr inż. Teresa Możaryn (PhD) ----- Degree, Name and Surname KIEROWNIK Laboratorium Badawczych i Powszechnych Tytuł, imię i Nazwisko  ----- Signature	
Warsaw, 06.05.2008		
<i>Testing Laboratory declares that the test findings refer solely to the examined object. This Report may not be duplicated without a prior written consent of the Testing Laboratory, save as a whole. Report on the testing is not a document of approval for the market and general use in the building industry.</i>		

Light immunity

		BUILDING RESEARCH INSTITUTE	
  AB 023		GROUP OF TESTING LABORATORIES accredited by the Polish Centre for Accreditation Certificate of accreditation no. AB 023	
LT	TEST REPORT NO.	LT-52/08	Page 1 / 2
LABORATORY OF FINISHING MATERIALS TESTING			
Address: 00-611 Warsaw ul. Filtrowa 1, tel. no. (0-22) 825-04-71 ext. 259			
CUSTOMER: GRUPA DPS Sp. z o.o. ul. Krakowska 85A, 40-391 Katowice			
PRODUCT: a film for stretch ceilings DPS Received for tests on 03.09.2007 under protocol no.: NL-4493/C/LL-347/M/07 In accordance with ...Procedure no. 18 Tested in the period from 21.01.2008 to 08.02.2008.			
METHOD/PROCEDURE OF TESTING: PN-EN ISO 105-B02:2006 Met.3			
TEST FINDINGS:			
Table 1			
Tested characteristics		Test findings	
Light resistance of colour ¹⁾ : No. on the blue scale		More than 6	

Light immunity

LT	TEST REPORT NO.	LT- 52/08	Page 2/2
OTHER INFORMATION RELEVANT TO THE TESTING: 1) A Weather-OMeter Ci 3000+ device; radiation intensity. 42 W/m ² , temp. BST: 50°C, humidity: 55%			
Person in charge of testing. Senior technician Iwona Gałąska Degree, Name and Surname  Signature		Head of Laboratory of Finishing Material Testing mgr inż. Jacek Popczyk (Msc) Degree, Name and Surname  Signature	
Warsaw, 2008.02.08			
<i>Testing Laboratory declares that the test findings refer solely to the examined object. This Report may not be duplicated without a prior written consent of the Testing Laboratory, save as a whole. Report on the testing is not a document of approval for the market and general use in the building industry.</i>			

Vapour transmission



Building Research Institute


00-611 Warsaw, ul. Filtrowa 1., tel. no. 022 8250471, fax. no. 022 8255286

Testing of water vapour transmission rate (WVTR) of stretch ceiling DPS

Order no.: NF-0623/A/2007 (LF-1 41/2007)

WARSAW, February 2008

Vapour transmission

	BUILDING RESEARCH INSTITUTE
GROUP OF TESTING LABORATORIES	

LF

TEST REPORT NO. NF-0623/A/LF-141/07

Page 1/2

LABORATORY OF THERMAL INSULATIONS

02-656 Warsaw, ul. Ksawerów 21, tel. no. (22) 849 36 15 or 56 64 149

CUSTOMER: Grupa DPS Sp. z o.o.
40-117 Katowice, ul. Krakowska 85A

OBJECT OF TESTING: film of a thickness of 0.17 mm produced by the Renolit AG company, used in stretch ceilings DPS

TESTED CHARACTERISTICS: water vapour transmission rate (WVTR)

Laboratory of Thermal Insulations does not possess an accreditation to conduct testing of water vapour transmission rate (WVTR) in accordance with ISO 2528:1995.

RECEIVED FOR TESTS: 10.12.2007

UNDER PROTOCOL NO.: LF-141/07, in accordance with management procedure no. 18.

DESCRIPTION OF PROVIDED SAMPLES: more than 1 m² of a glossy film of the thickness of 0.17 mm,

having the identification features described below:

Sampler: a representative of the DPS group

Marking of the sample by the DPS group: L65A3000707019221103

Producer and the place of production: Renolit AG, Horschheimer Str. 50, 67547 Worms/Germany

Marking of the product by the producer of the film: 10.40.10.0385.000 2/A

Period of production: July 2007

Production no. of the film: 68016/1/1

Identification no. of the film roll from which the sample was collected: ID 59000044557

For testing purposes, 5 samples (each of the diameter of 100 mm), marked with the codes: 1/LF-141/07 to 5/LF-141/07, were cut out of the provided film.

PERIOD OF TESTING: 15.01.2008 – 29.01.2008.

Vapour transimission

LF	TEST REPORT NO.-0623/A/LF-141/07	Page 2/2
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METHOD/PROCEDURE OF TESTING:

In accordance with the requirement in the Harmonized Norm PN-EN 14716 applicable to stretch ceilings, marking of water vapour transmission rate of the tested film was performed in accordance with ISO 2528:1995, on 5 samples, placed in measuring vessels with the constant difference of water vapour partial pressures on both sides of the sample. In accordance with the Ordering Party's wish, testing conditions in case of the tested film (temperature of 38°C and 90%-relative humidity of the air above the sample) were accepted in accordance with Attachment B (point B) of the Norm ISO 2528:1995. By means of measuring vessel mass measurements, the density of water vapour flowing through the sample under accepted testing conditions was determined.

TEST FINDINGS

Results of marking are presented in Table 1

Table 1. Results of the marking of water vapour transmission rate (WVTR) through the film used in stretch ceilings DPS

Sample marking	Total time of two final time slots of stabilized water vapour flow, t, hr	Increase in set mass in time t, mg	Water vapour transmission rate (WVTR) g/(m ² - 24 hrs)	Average water vapour transmission rate, g/(m ² - 24 hrs)
1/LF-141/07	48	340	34.0	32.9
2/LF-141/07	48	317	31.7	
3/LF-141/07	48	326	32.6	
4/LF-141/07	48	329	32.9	
5/LF-141/07	48	335	33.5	

<p>Person in charge of testing: mgr inż. Andrzej Bobociński (MSc)</p> <p>STARSZY SPECJALISTA</p> <p><i>[Signature]</i></p> <p>mgr inż. Andrzej BOBOCIŃSKI</p> <p>.....</p> <p>Signature</p>	<p>LF Head of Laboratory: dr inż. Robert Geryło (PhD)</p> <p>DIETROWNIK</p> <p>Laboratorium Izolacji Termicznych</p> <p><i>[Signature]</i></p> <p>dr inż. Robert Geryło</p> <p>.....</p> <p>Signature</p>
Warsaw, 23. 04. 2008.	
<p><i>Testing Laboratory declares that the test findings refer solely to the examined object. This Report may not be duplicated without a prior written consent of the Testing Laboratory, save as a whole. Report on the testing is not a document of approval for the market and general use in the building industry.</i></p>	

Durability



Building Research Institute

00-611 Warsaw, ul. Filtrowa 1, tel. no. 022 8250471, fax. no. 022 8255286

**Testing and technical expert evaluation applicable to film for
decorative stretch DPS ceilings produced by the
Renolit AG**

Order no.: NL-4493/C/LL-347/M/2007

Warsaw, March 2008

Durability

**Building Research Institute**

ul. Filtrowa 1, WARSAW

Post box 998

Tel. no: Director 022 825-13-03

Switchboard 022 825-04-71

Department of Light Partitions and Glazing Test

Order title: Testing and technical expert evaluation applicable to film for decorative
 stretch ceilings DPS produced by the Renolit AG company

Record no.: NL-4493/C/LL-347/M/2007

Ordering Party: Grupa DPS Sp. z o.o.
 ul. Krakowska 85A.
 40-391 Katowice

Performing staff: inż. Iwona Komosa (Eng.)
 Zygmunt Szaliński, Senior Specialist

Head of Team: mgr inż. Irena Kotwica (MSc)

Scientific management: ---

Verification: doc. dr inż. Olgierd Korycki (Ass. Prof.)

Durability

Order processing commenced in: December 2007

Order processing completed in: March 2008

Made in 3 copies

Attachments: Report on tests no. NL-4493/C/LL-347/M/07
LT-52/08

Copy no.:

STUDY

Durability

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6. TEST METHODS AND FINDINGS	3
7. DISCUSSION OF TEST FINDINGS	
8. TECHNICAL EXPERT EVALUATION.....	4

Attachment:

Testing Report no.: NL-4493/C/LL-347/M/07
LT-52/08

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1. Basis

This study has been conducted in accordance with the order of "Grupa DPS" Sp. z o.o., ul. Krakowska 85 A, 40-391 Katowice, submitted on 19.11.2007, as well as Contract no. NL-4493/C/07 concluded between the Ordering Party and the Building Research Institute.

The content-related basis is constituted by test findings set forth in Testing Report no. NL4493/C/LL-347/M/Ó7 and LT-052/08, constituting an integral part of this order.

2. Subject

The subject of this study is a film for decorative stretch DPS ceilings.

3. Goal and Scope

The aim of this paper is to confirm characteristics declared by the film producer in the scope of Initial TYPE Test.

The scope of Initial Type Test includes the following characteristics:

- surface mass
- thickness,
- colour durability,
- dimension stability,
- ultimate tensile strength,
- elongation-to-break,
- weldability.

4. Used documents

[1] PN-EN 14716:2005(U) Stretch ceilings. Requirements and test methods.

5. Materials for testing

For the purpose of testing, the Ordering Party provided film fragments (60x60) cm in the number of 10 pieces and also welded film fragments in the size (60x60) mm in the number of 10 pieces. The materials for testing were received on 3.09.07 under protocol no. NL-4493/C/LL-347/M/07.

6. Test methods and findings

Test methods and findings are included in the Testing Reporting no. NL-4493/C/LL-347/M./07 and LT-052/08.

7. Discussion of test findings

Collation of film test findings with the norm requirements [1] is set forth in Table 1.

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Table 1
Collation of film characteristics and requirements in PN-EN 14716:2005(11)

Ord. No.	Characteristics	Unit	Test findings /average value/	Norm requirements [1]
1	2	3	4	5
1	Surface mass	g/m ²	246 nominal value-240	nominal value ± 10%
2	Thickness	µm	166 nominal value-160	nominal value ± 10%
3	Colour stability ¹⁾	--	≥6	≥6
4	Dimension stability after exposure to heat	%	in longitudinal direction-0.23 in transverse direction+0.07	≤ 4.5 in any direction
5	Ultimate tensile strength-to-break	N/mm ²	in longitudinal direction 18.7 in transverse direction 17.1	in longitudinal direction > 12 in transverse direction > 10
6	Elongation on breaking	%	in longitudinal direction 138 ²⁾ in transverse direction 219	in longitudinal direction > 140 in transverse direction > 150
7	Weldability	---	Q = 0.8	Q > 0.5

1) Test findings set forth in Report on testing no. LT-52/08

2) After taking under consideration measurement uncertainty, the value amounts to 141 %.

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An analysis of the obtained findings demonstrates that the tested film meets requirements of the standard in terms of:

- surface mass, 9 thicknesses,
- colour durability,
- dimension stability under impact of heat,
- tensile strength,
- elongation-to-break,
- weldability.

On calculating operating stresses for a given structural solution /in accordance with attachment D to the norm [1]/, one should take under consideration the profile of film determined on stretching and compare it to the value of ultimate tensile strength. Value of ultimate tensile strength should be twice larger than that of operating stresses.

Dependency diagram of strength-elongation for the tested film is set forth in the report on testing no. NL-4493/C/LL-347/M/07.

8. Technical expert evaluation

On the basis of conducted Initial Type Test of film for decorative stretch ceilings DPS, Department of Light Partitions and Glazing Test of the Building Research Institute confirms their compatibility with the norm requirements in the scope of:

- surface mass
- thickness,
- colour durability,
- dimension stability under impact of heat,
- tensile strength,
- elongation-to-break
- weldability.

KIEROWNIK ZAKŁADU
Badan Lekkich Przegrod i Przeszkleń
doc. dr inż. Olgierd Korycki

Expert evaluation of:

I. Kotwica
M. Eng. Irena Kotwica

stamp of the Head of the Department
of Light Partitions and
Glazing Test
Doc. Ph. Eng. Olgierd Korycki

Durability

	Building Research Institute	
	DEPARTMENT OF LIGHT PARTITIONS AND GLAZING TEST	
LL	TEST REPORT NO. NL-4493/C/LL-347/M/07	Page 1 of 6
Laboratory	of Light Partitions and Glazing (LL)	
Address:	02-656 Warsaw, ul. Ksawerów 21 tel. no. (022) 56 64 207	
Client:	GRUPA DPS Sp. z o.o. 40-391 Katowice; ul. Krakowska 85A	
Test subject:	Film for decorative stretch ceilings DPS of the Renolit AG company	
Received for testing 03.09.2007 under protocol NL-4493/C/LL-347/M/07 in accordance with management procedure no. 18		
Period of testing 16.01.2008 to 27.02.2008		
Method/procedure of testing: PN-EN 14716:2005(U), PN-EN ISO 527-1:1998. PN-EN ISO 527-3:1998. PN-EN ISO 22863:2000		

1. SCOPE OF TESTING

Scope of film testing included:

- marking surface mass,
- checking thickness,
- checking dimension changes after exposure to heat,
- marking resistibility and relative elongation-to-break¹,
- marking weldability,
- marking operating stress.

¹ Tests covered by accreditation of the PCA (accreditation certificate no. AB 023)

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LL

REPORT ON TESTING No. NL 4493/C/LL 347/M/07

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2. MATERIALS FOR TESTING

For the purpose of testing, the Ordering Party provided a film of planar dimensions (600 x 600) mm:

- with a thermal weld in the middle of sheet - 10 pieces,
- without a thermal weld - 10 pieces.

3. SAMPLE IDENTIFICATION

- **Name of the producer** – Renolit AG,
- **Production site:** Renolit AG, Horschheimer Str. 50, 67547 Worms/Germany,
- **Film production no.:** 68016/1/1
- **Rolled-on film production no.:** ID 59000044558.
- **Production size:** 8.100.00 running m ,
- **Date of production** July 2007
- **Collecting manner:** cutting off the rolled-on film,
- **Marking the product by the film producer:** 10.40.10.0385.000 2/A,
- **Marking the sample by the DPS group:** L65A3000707019221103.
- **Producer of the stretch ceiling:** Grupa DPS sp. z o.o., ul. Krakowska 85A, 40-391 Katowice

4. Persons conducting tests:

- In the Laboratory LL- inż. Iwona Komosa and Zygmunt Szaliński, Senior Specialist

5. TEST METHODS AND FINDINGS

5.1 Surface mass

Marking the surface mass of film was performed in accordance with PN-EN 14716:2005(U) attachment B, on samples of dimensions (100 x 100) mm.

Test findings are set forth in Table 1.

Table 1. Findings of marking the surface mass of film

Ord. no.	Surface mass, g/m ²
1	2
1	241

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LL

REPORT ON TESTING No. NL 4493/C/LL 347/M/07

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2	240
3	244
4	250
5	250
6	250
on average:	246

5.2 Thickness

Checking the film thickness was performed in accordance with PN-EN 14716:2005(U) attachment B on samples of dimensions (100 x 100) mm. Test findings are set forth in Table 2.

Table 2. Findings of checking film thickness

ord. no.	thickness, μm
1	2
1	165
2	162
3	165
4	168
5	167
6	169
on average:	166

5.3 Dimension changes after exposure to heat

Marking film dimension changes after exposure to heat (kaolin method) was performed in accordance with PN-EN 14716:2005(U), attachment E.

Testing was performed in the following testing conditions:

- round samples of diameter of: 100 mm,
- temperature of exposure: +70°C,
- time of exposure at temp. of +70°C: 5 min.

Final measurements were conducted after 2 hrs of air-conditioning in laboratory conditions.

Test findings are set forth in Table 3.

Table 3. Findings for film dimension changes after 5 min. at temp. +70°C and 2 h in laboratory conditions

Ord. no.	Dimension changes*, %, in directions:	
	longitudinal	transverse
1	2	3
1	+0.06	-0.13
2	+0.10	-0.21
3	+0.09	-0.54

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LL	REPORT ON TESTING No. NL 4493/C/LL 347/M/07	Page 4 of 6
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4	+0.08	-0.24
5	+0.08	-0.30
6	+0.04	-0.08
7	+0.07	-0.15
8	+0.07	-0.23
9	+0.07	-0.23
on average:	+0.07	-0.23
* „-“ means shrinking of sample, „+“ elongation of sample		

5.4 Resistibility and relative elongation-to-break

Marking resistibility and relative elongation-to-break was performed in accordance with PN-EN ISO 527-1:1998. on samples of type 2 according to PN-EN ISO 527-3:1998. Head advance speed amounted to 50 mm/min. Measurement base of elongation amounted to 50 mm.

Test findings are set forth in table 4.

Table 4. Findings for marking resistibility and relative elongation-to-break in case of film

Ord. no.	Resistibility-to-break, N/mm (MPa)		Relative elongation-to-break, %	
	longitudinal direction	transverse direction	longitudinal direction	transverse direction
1	2	3	4	5
1	18.2	18.4	242	146
2	17.1	19.1	204	150
3	17.9	13.7	232	138
4	15.7	19.5	188	148
5	17.2	19.0	192	144
6	16.7	19.6	222	128
7	17.9	16.6	252	138
8	18.2	18.6	202	146
9	18.2	19.7	234	132
10	18.4	19.5	246	154
11	9.8	18.3	124	126
12	17.3	19.4	234	124
13	16.5	19.7	198	128
14	18.1	19.4	252	140
15	18.2	21.1	232	148
16	18.3	18.8	258	130
17	17.1	16.6	220	132
18	17.2	19.8	202	130
On average:	17.1	18.7	219	138

Measurement uncertainty of a single finding for resistibility and relative elongation amounts to $\pm 2\%$

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LL

REPORT ON TESTING No. NL 4493/C/LL 347/M/07

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5.5 Weldability

Marking weldability (thermal weld quality) was performed in accordance with PN-EN 14716:2005(U), attachment F.

Marking strength-to-break was performed in accordance with PN-EN ISO 527-1:1998. on samples of type 2 according to PN-EN ISO 527-3:1998. with a thermal weld in central part and without it. Head advance rate amounted to 50 mm/min.

Test findings are set forth in Table 5.

Table 5. Findings for weldability (thermal weld quality) marking of film

Ord. no.	strength-to-break, N, samples of film	
	With a thermal weld	without a thermal weld
1	2	3
1	64	71
2	64	80
3	64	73
4	61	80
5	61	73
6	61	80
7	61	72
8	63	68
9	64	71
10	61	76
11	60	74
12	61	73
13	59	73
14	59	75
15	56	73
16	63	80
17	60	71
18	55	67
Average strength-to-break, N	61	74
Average strength-to-break related to the width of tested sample, N/cm	R ₁ = 359	R ₂ = 435

5.6 Operating stresses

Marking of operating stress was performed in accordance with PN-EN 14716:2005(U), attachment D. In accordance with the standard, strength-to-break and elongation on the length and shortening on the width-to-break was determined. Test findings are presented in Table 6.

Durability

LL	REPORT ON TESTING No. NL 4493/C/LL 347/M/07	Page 6 of 6
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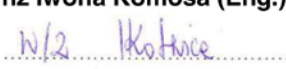

Table 6. Findings for marking breaking strength and elongation on length and shortening on width-to break for the film

Ord. no.	Strength-to-break N	Elongation-to-break %	Shortening on the width %
1	2	3	4
1	314	132	8.3
2	136	117	8.9
3	307	120	8.1
4	276	117	8.6
5	64	96	8.4
6	301	112	8.6
7	78	102	8.4
8	104	103	8.9
9	140	115	8.6
10	323	129	8.4
11	318	117	8.5
12	168	115	8.4
On average:		115	8.3

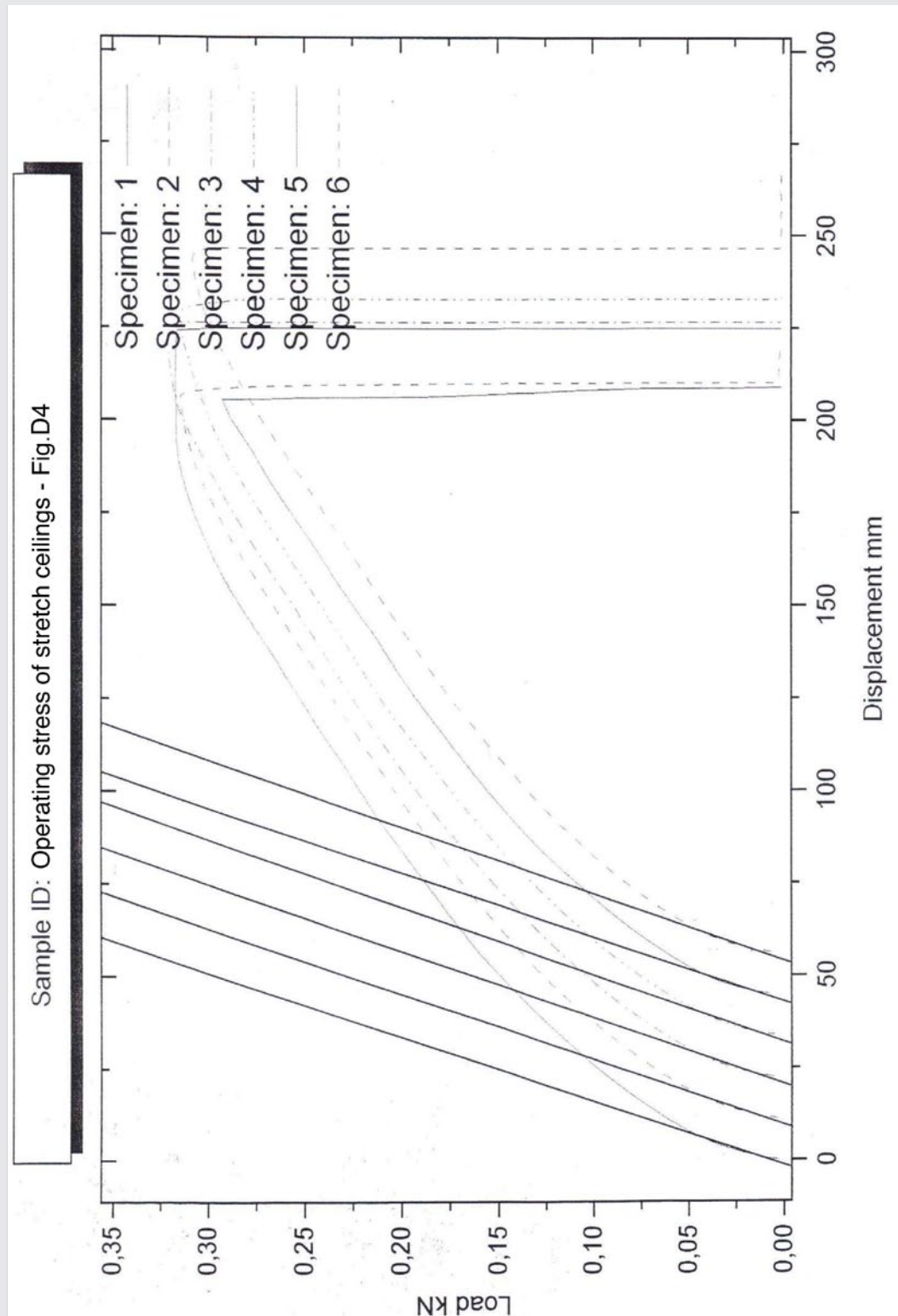
Measurement uncertainty of a single finding for resistibility and relative elongation amounts to $\pm 1\%$

6 RELATED DOCUMENTS

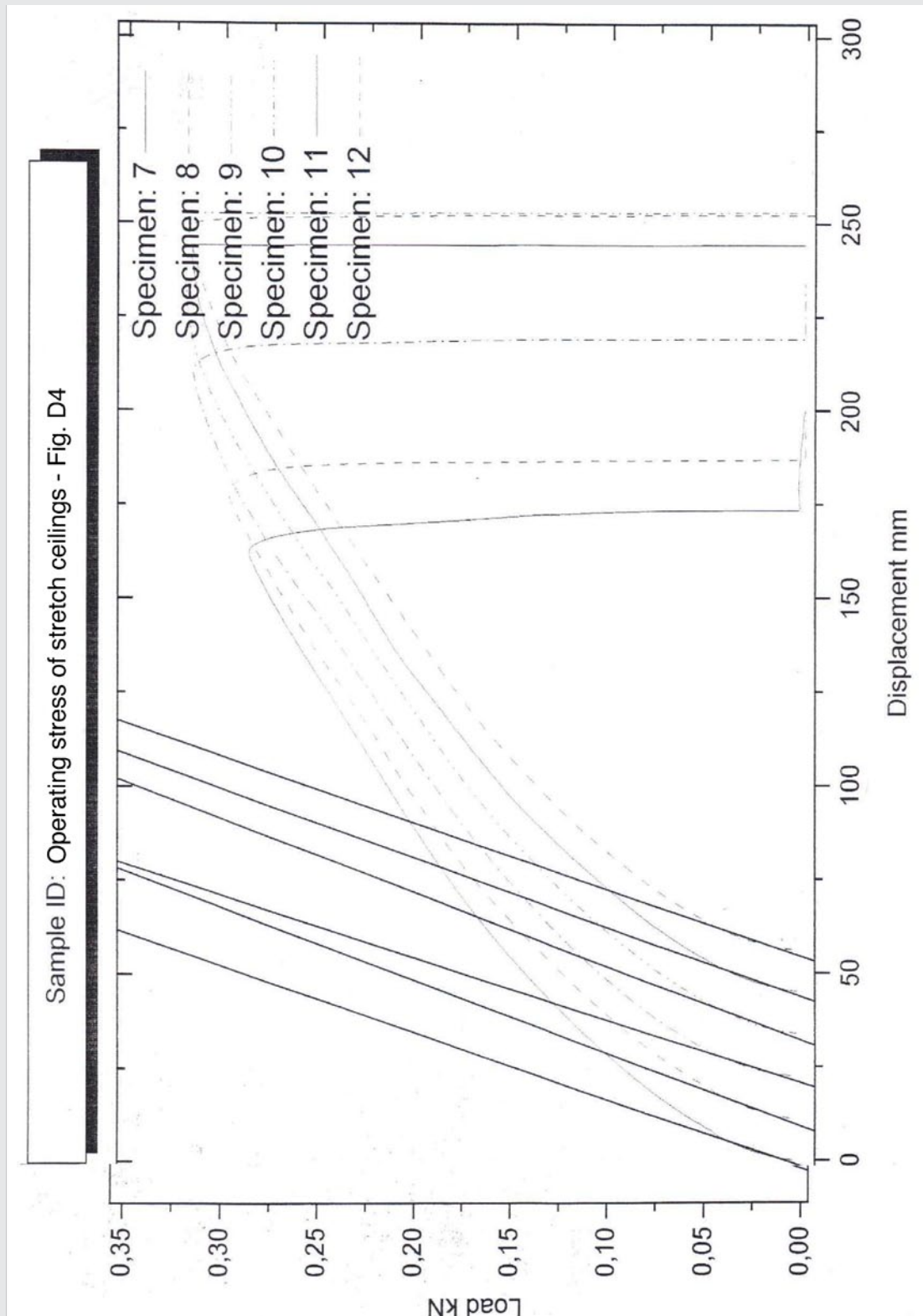
PN-EN 14716:2005(U)	Stretch ceilings. Requirements and test methods.
PN-EN ISO 527-1:1998	Plastics. Marking mechanical characteristics in static tension. General principles.
PN-EN ISO 527-3:1998	Plastics. Marking mechanical characteristics in static tension. Conditions for films and boards testing.

Person in charge of testing: inż Iwona Komosa (Eng.)  Signature	Head of Laboratory LL mgr inż. Irena Kotwica (MSc)  Signature
Warsaw, <u>10.03.08w</u>	
Testing Laboratory declares that the test findings refer solely to the examined object. This Report may not be duplicated without a prior written consent of the Testing Laboratory, save as a whole. Report on the testing is not a document of approval for the market and general use in the building industry.	

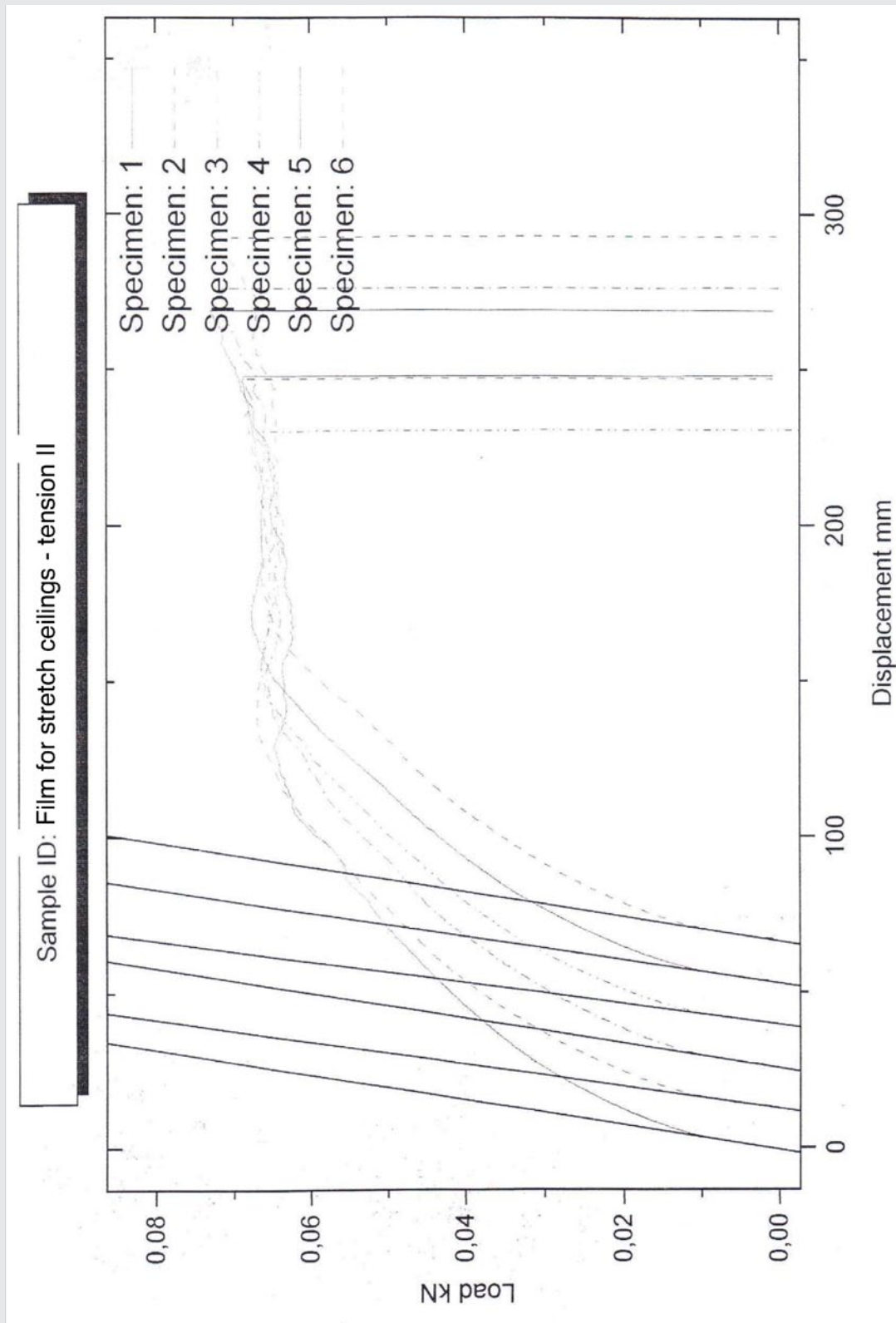
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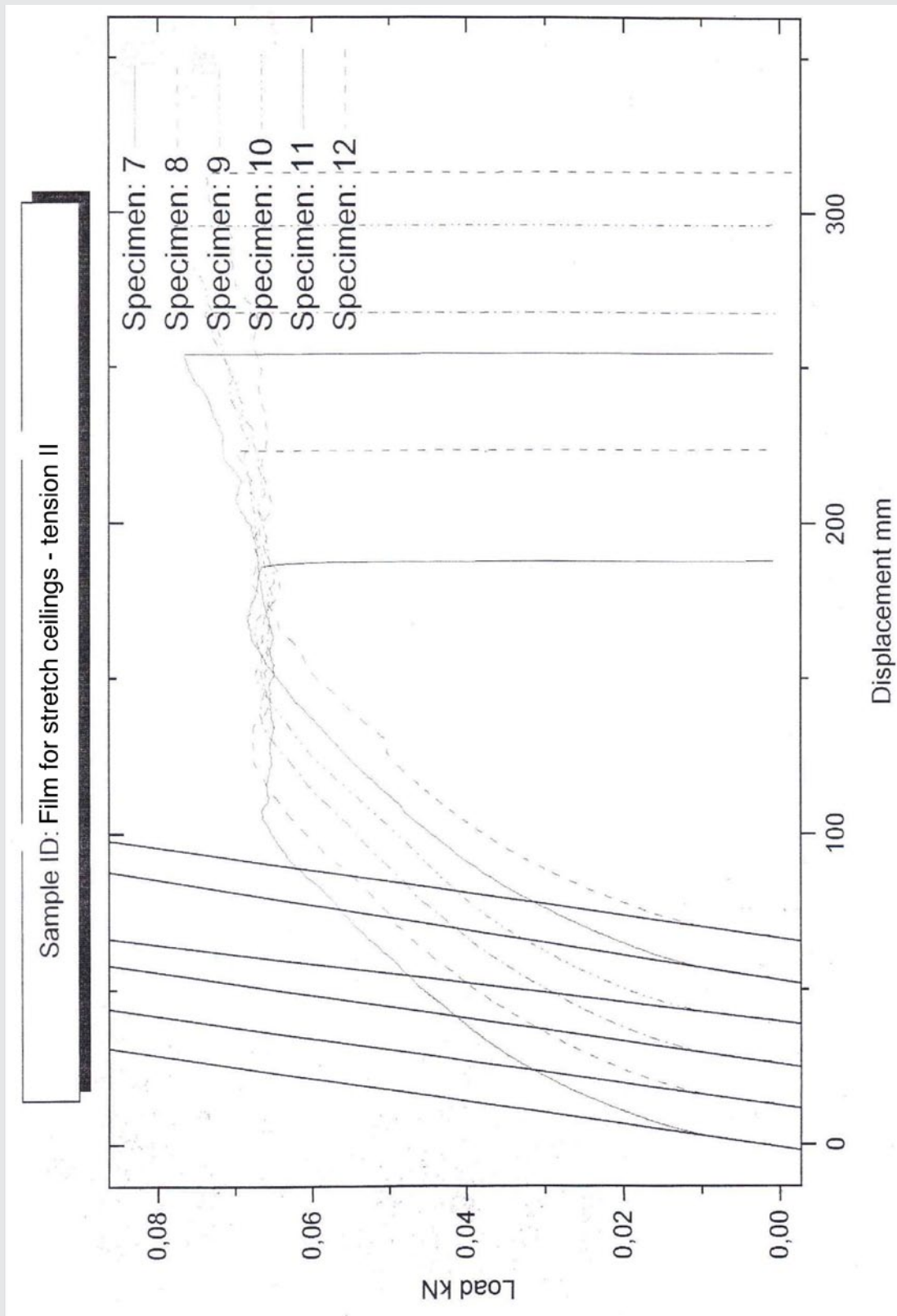
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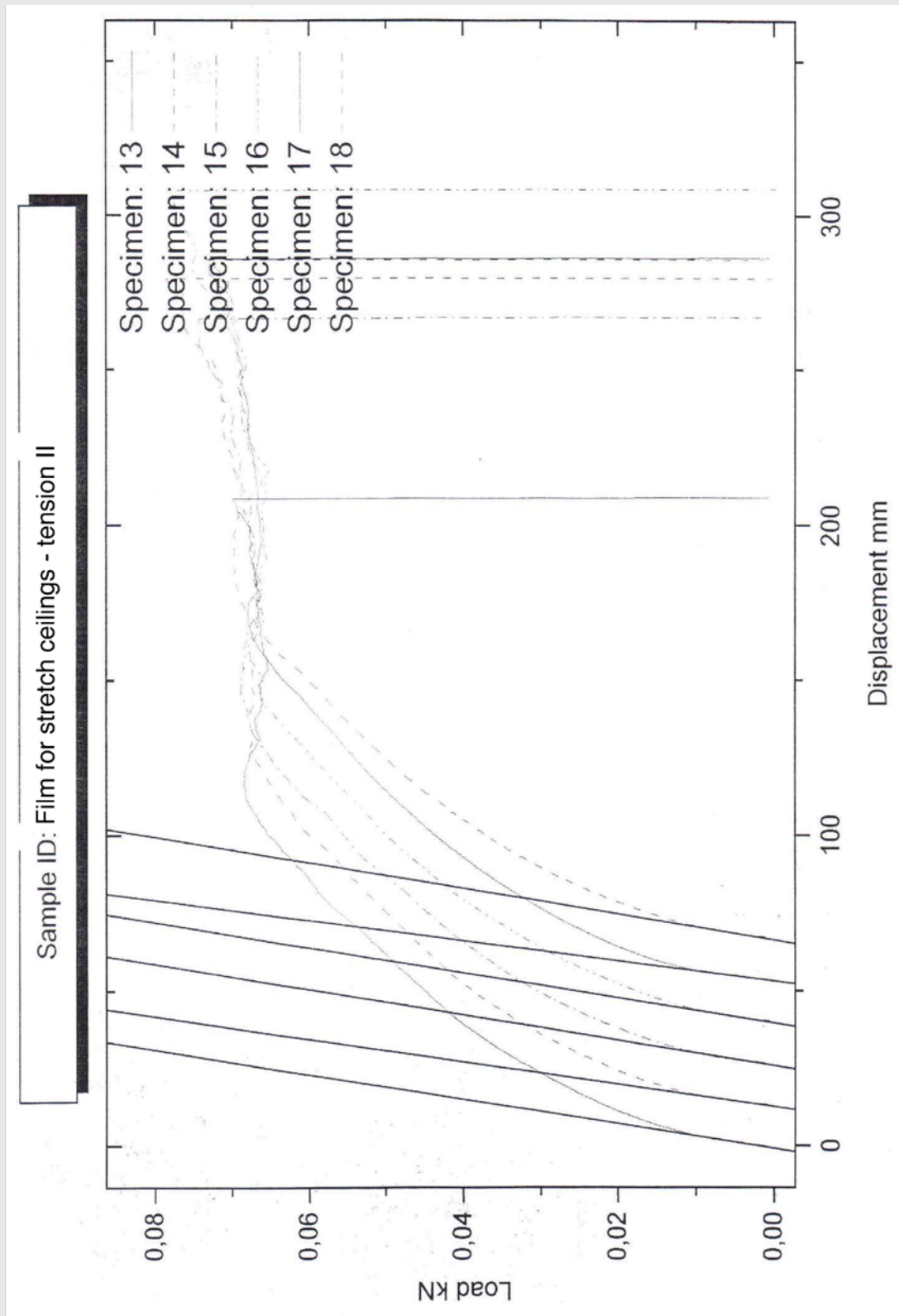
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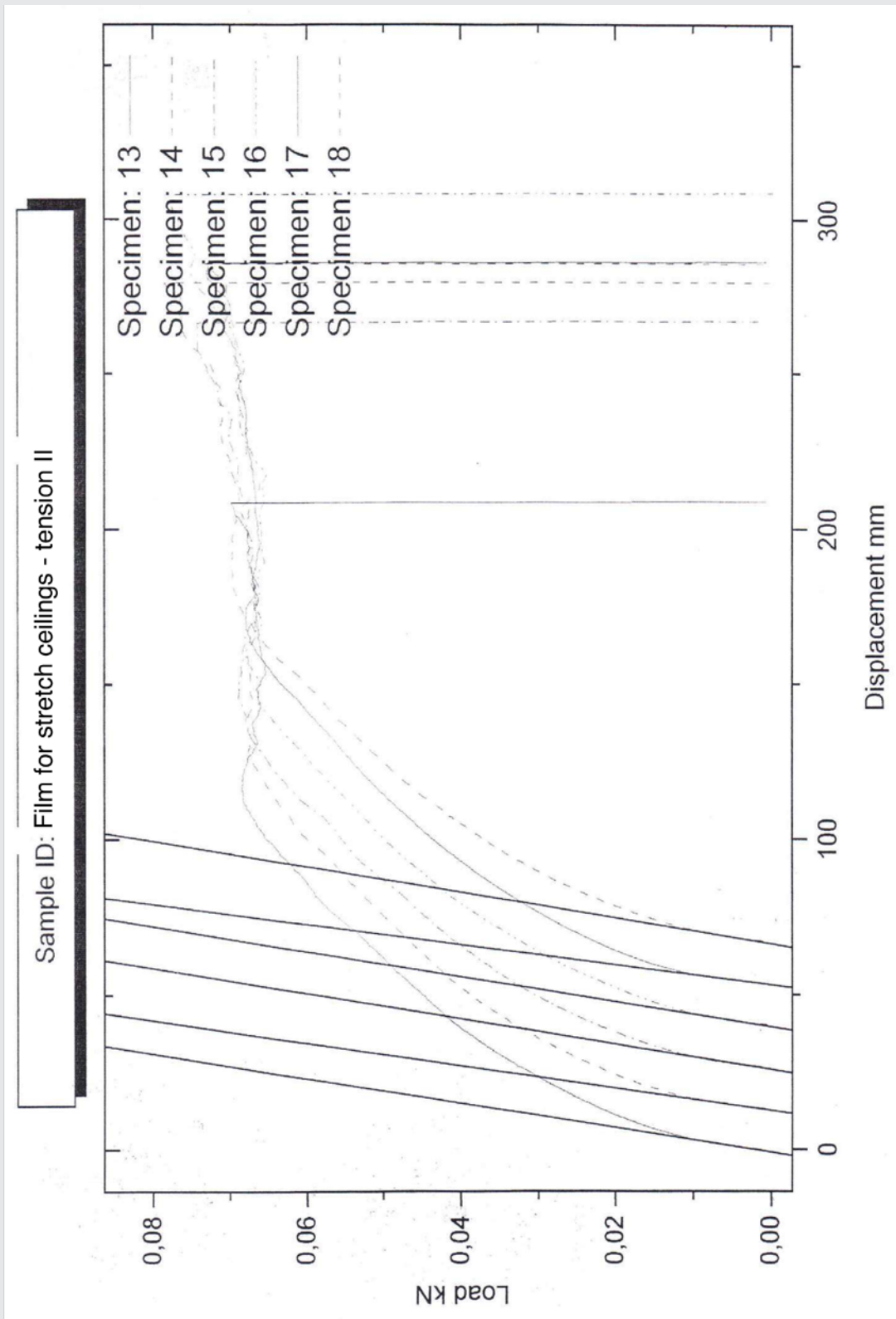
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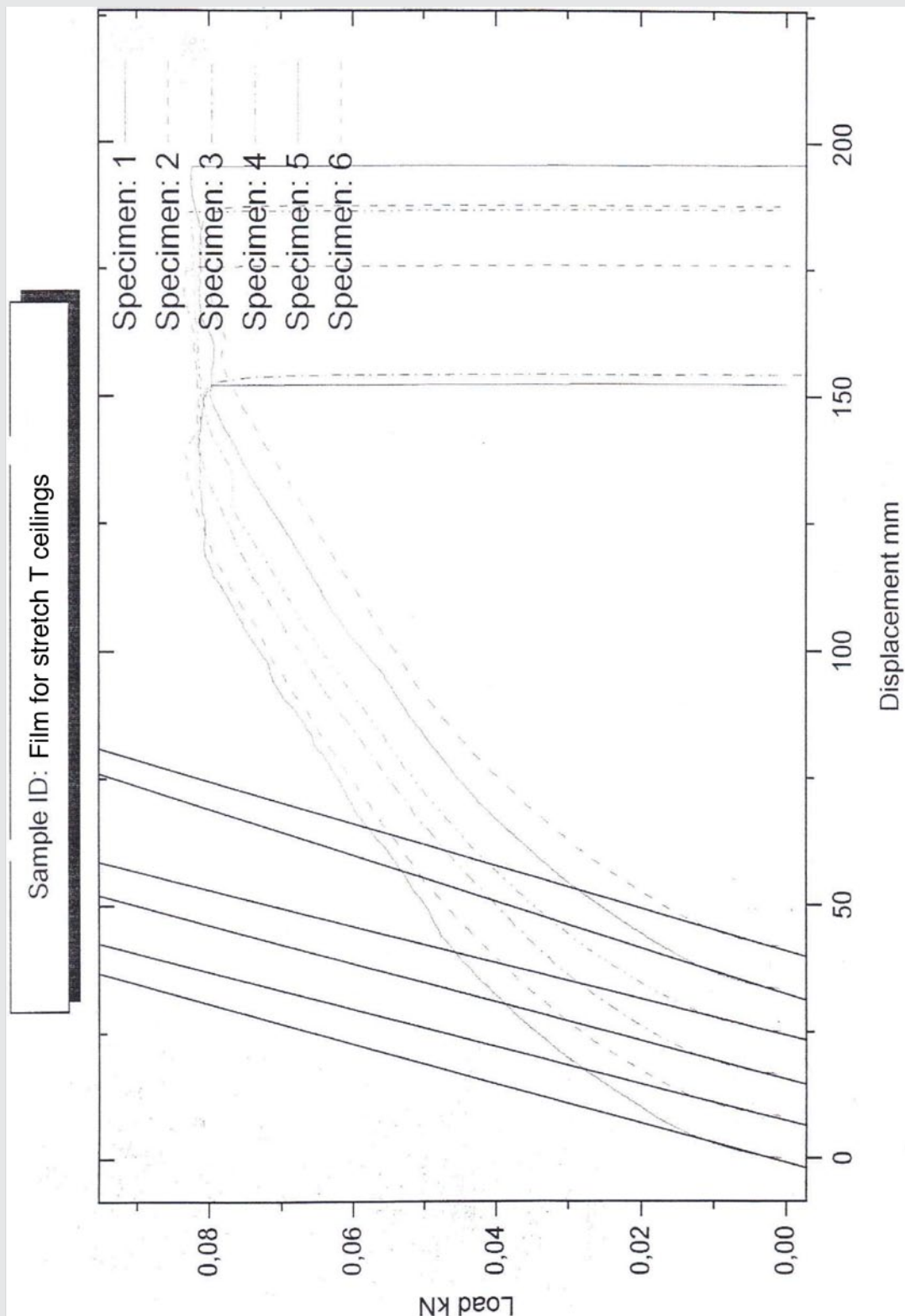
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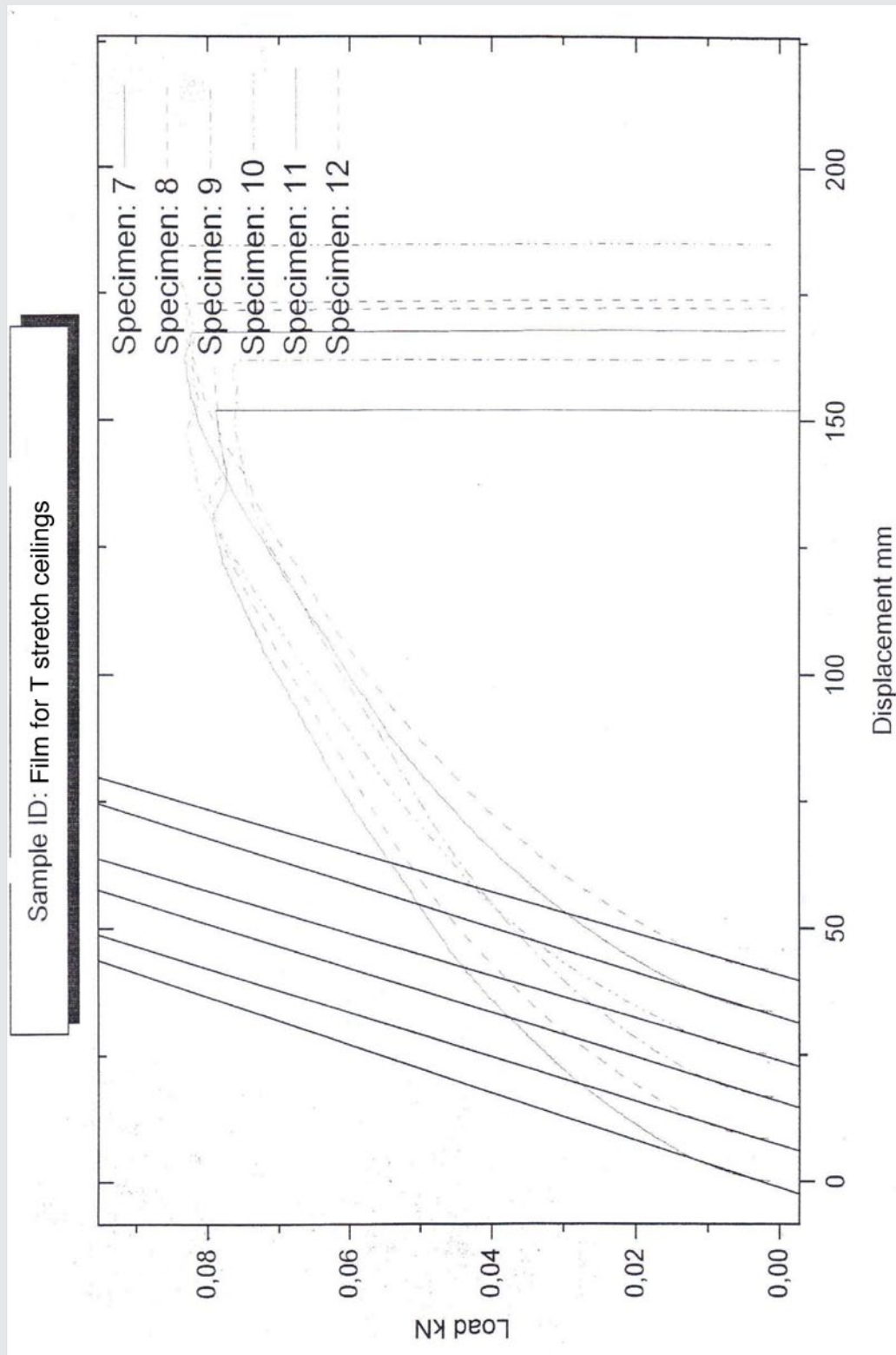
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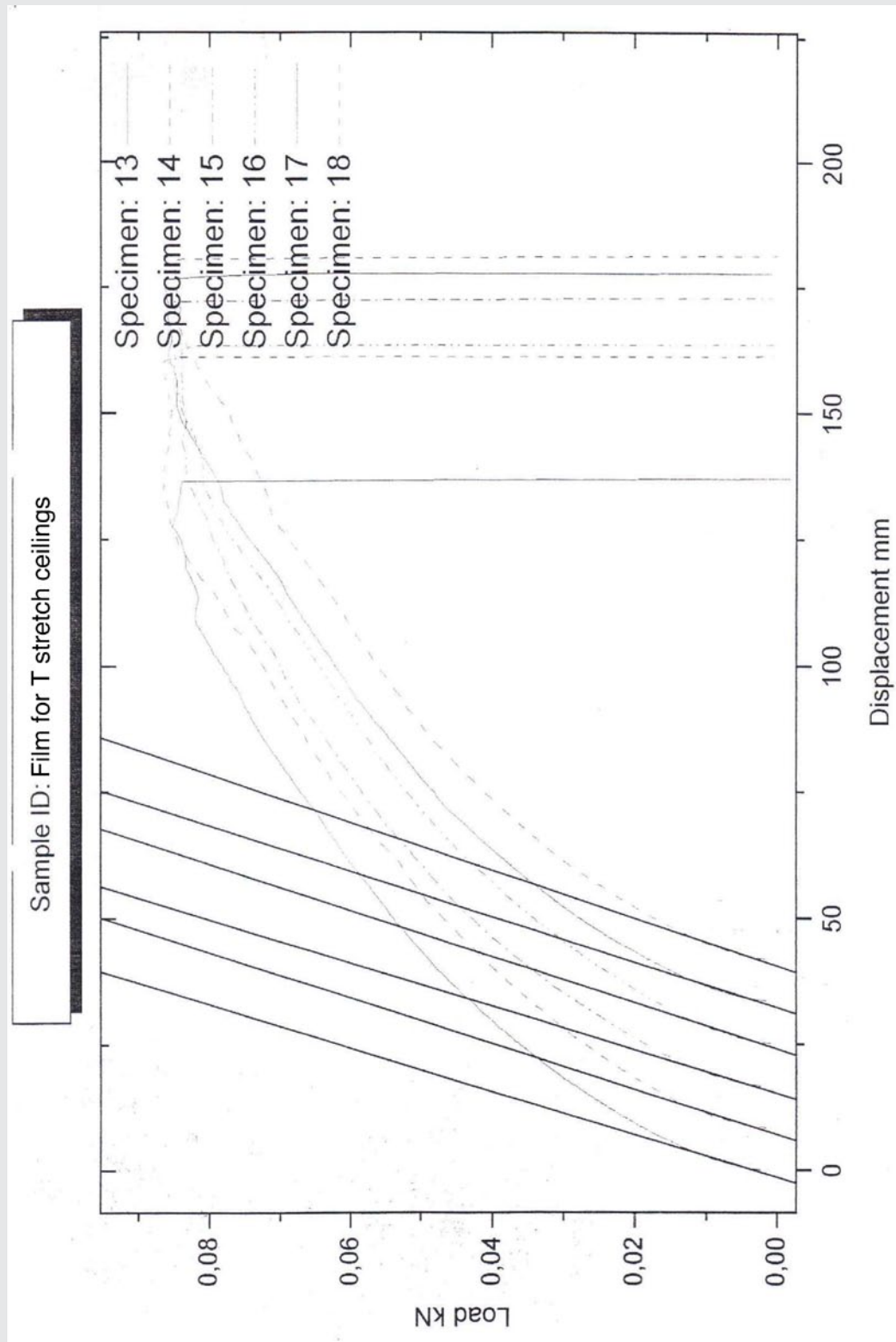
Durability




Durability



Durability



Photometric properties of translucent materials

 Certified translation from Polish into English.
(Translator's notes are written in italics and given in brackets.)

(page 1)

42 - 968	POZNAŃ TECHNICAL UNIVERSITY
Paper no – JO	INSTITUTE OF INDUSTRIAL ELECTRICAL ENGINEERING AND ELECTRONICS
Topic of the study	Testing of photometric properties of translucent materials
Principal	GRUPA DPS Limited Liability Company 85A Krakowska St. 40-391 Katowice
Order symbol and no	Order of 03.04.2009
Contractor	Krzysztof Wandachowicz Ph.D. Eng.

Poznań, 09.04.2009

Photometric properties of translucent materials

(page 2)

1. GENERAL INFORMATION

Testing of photometric properties of translucent materials was conducted in the Institute of Industrial Electrical Engineering and Electronics by order of GRUPA DPS Limited Liability Company. The principal provided for the examination four samples of flexible material used in production of suspended stretch ceilings. The material was stretched on frames with dimensions of 31 x 23 cm made of aluminium profiles. Three of the provided samples are made of a translucent material (dissipative) and one sample is made of a transparent material (T5000).

2. BASE OF THE TESTING

The testing was based on general and detailed procedures applicable to photometric measurement to assure the highest possible accuracy of measurement.

3. SUBJECT OF TESTING

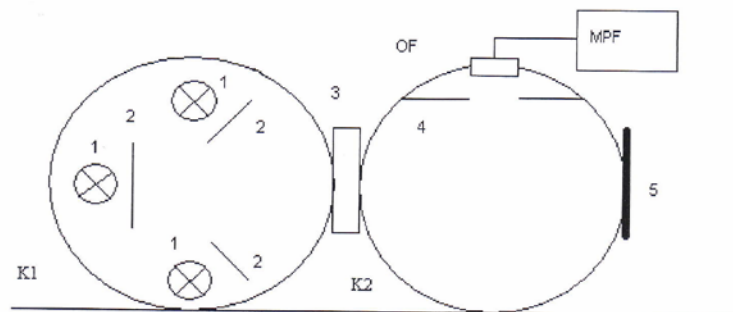
The subject of testing were four samples of flexible material used in production of suspended stretch ceilings, stretched on frames made of aluminium profiles. The scope of testing arranged with the Principal included performing measurements of total coefficients of reflection and transmission of luminous flux in scattered light.

4. TESTING RESULTS

The testing was conducted on measurement stand intended for determining total transmission coefficient and reflection coefficient of luminous flux in scattered light. Measurement stand (drawing 1) consists of two spheres and one of them is a scattered light source (K1), and another (K2) is a sphere integrating radiation coming into the sphere K1 and getting through the examined material (during measurement of transmission coefficient – sample 3) or radiation reflected from the examined material (during measurement of reflection coefficient – sample 5). The sphere K1 is a scattered light source with breakdown temperature of Illuminant A. Illumination meter LMT B510 with corrected photo converter (OF) was used as a photoelectric current meter (MPF). Standard of reflection coefficient made of sintered polytetrafluoroethylene (PTFE) was applied.

Photometric properties of translucent materials

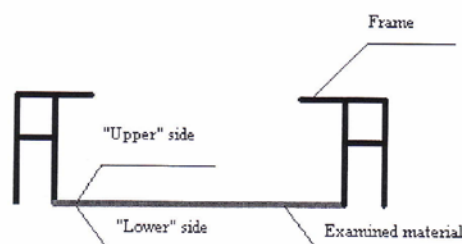
(page 3)



- 1 – light source
- 2 – diaphragm
- 3 – sample for testing transmission coefficient
- 4 – diaphragm
- 5 – sample for testing reflection coefficient
- OF – photo converter, MPF – photoelectric current meter

Drawing 1. Measurement system diagram

For the reason that there are differences in the structure of the two surfaces of the material, measurement of transmission coefficient was made for the light reflected on two sides of the material (Drawing 2).



Drawing 2. Accepted arrangement of sides of the examined materials.

Photometric properties of translucent materials

Measurement results are given in table 1.

Table 1. Results of measurement of total transmission coefficient τ and reflection coefficient ρ of luminous flux of the examined materials.

No	Name of the material	Total transmission coefficient for the light reflected on "upper" side of the material $\tau (g) [\%]$	Total transmission coefficient for the light reflected on "lower" side of the material $\tau (d) [\%]$	Total reflection coefficient for the light reflected on "lower" side of the material $\rho (d) [\%]$
1	T5000	85,6	85,6	12,3
2	T5001	51,4	51,1	42,6
3	T5077	48,6	48,5	48,6
4	T5240	54,0	53,8	41,1

I, Katarzyna Kluss sworn translator of English (entered into the Register of Sworn Translators maintained by the Minister of Justice under the number TP/5191/05) do hereby certify that the present translation is consistent with the submitted document drawn up in Polish.

Number of the sworn translator's repertory : 346/09

Translated on 15th April 2009.

(The text of translation contains 3515 characters – 3 pages.)

TLUMACZ PRZYSIĘGLY
mgr Katarzyna Kluss



Photometric properties of translucent materials



Certified translation from Polish into English.
(Translator's notes are written in italics and given in brackets.)

**BUILDING RESEARCH INSTITUTE
CERTIFICATION DEPARTMENT**
1 FILTROWA ST., 00-611 WARSZAWA
ph.: (0 22) 57 96 167, 168 (0 22) 825 52 29, fax : (0 22) 57 96 295

**CE CERTIFICATE OF CONFORMITY
1488-CPD-0106/W**

Pursuant to the European Community Council Directive no. 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products and the amendments introduced by the European Community Council Directive no. 93/68/EEC of 22 July 1993 it is hereby confirmed that

STRETCH CEILINGS DPS

installed in closed interiors, in dry conditions, made of a single-layer film PCV and clamping system (wedge-shaped catches, aluminium strips, PCV strips, masking strips), which allows easy disassembly into parts and reassembly, film thickness $170 \mu\text{m} \pm 10\%$, class of reaction to fire B-s2, d0

produced and placed on the market by :
GRUPA DPS Limited Liability Company
85a Krakowska St.
40-391 Katowice

in the Production Plant :
GRUPA DPS Limited Liability Company
85a Krakowska St.
40-391 Katowice

have the performance described in :
EN 14716:2004

The manufacturer meets all the requirements concerning assessment of conformity : he implemented an internal production control system and conducts tests of samples of the products taken from the production plant in accordance with the testing schedule.

The notified body – Building Research Institute – as part of the conformity assessment system 1, conducted preliminary tests of the type for the purpose of determining the product's properties and preliminary audit of the production plant and the internal production control system, exercises ongoing supervision, assesses and accepts the internal production control system.

The CE Certificate of Conformity 1488-CPD-0106/W was issued for the first time 25.03.2009 and is valid as long as the reference document for the aforementioned product is valid, the product meets the requirements of that document and as long as the following have not changed : the product type, the production conditions and location, as well as the internal production control system.

Photometric properties of translucent materials

Deputy Head
of the Certification Department
(illegible signature)
Piotr Maciejak

Director
of the Building Research Institute
(illegible signature)
Marek Kaproń

*(impression of a round seal with national
emblem of the Republic of Poland and words
along the rim :) Building Research Institute*

Warsaw, 25.03.2009

I, Katarzyna Kluss sworn translator of English (entered into the Register of Sworn Translators maintained by the Minister of Justice under the number TP/5191/05) do hereby certify that the present translation is consistent with the submitted document drawn up in Polish.

Number of the sworn translator's repertory : 348/09

Translated on 16th April 2009.

(The text of translation contains 2449 characters – 2 pages.)

TLUMACZ PRZYSIĘGŁY

Katarzyna Kluss
mgr Katarzyna Kluss



ADDITIONS

Colors and textures

LAQUES

	L 5014 CINNABAR
	L 5020 SPHALERITE
	L 5021 AMBER
	L 5049 FLUORITE
	L 5024 LEMON
	L 5022 PIRYTHE
	L 5063 OPAL
	L 5059 ALABASTER
	L 5011 BORDEAUX
	L 5012 KERNOLE
	L 5013 RUBIS
	L 5015 AMETHYST
	L 5016 RODONITE
	L 5017 MOONROCK
	L 5018 ARAGONITE
	L 5062 CALCITE
	L 5089 URANOFAN
	L 5041 VANADYNITE
	L 5039 PORPHIRE

	L 5091 ANDALUZYTE
	L 5056 DESERT DUNE
	L 5053 ANALEZYT
	L 5019 ORTHOCLASE
	L 5058 ANHYDRITE
	L 5057 WULFENIT
	L 5055 BARIT
	L 5036 MALACHITE
	L 5031 TURQUISE
	L 5033 BLUE DIAMOND
	L 5078 BIZMOT
	L 5035 CHALCOSITE
	L 5048 VIVANITE
	L 5038 TOURMALINE
	L 5050 OLIVINE
	L 5097 CARMEN
	L 5034 NEPHRITE
	L 5070 CYANITE
	L 5025 CAIRO NIGHT

	L 5023 KRUND
	L 5045 AQUAMARINE
	L 5046 KSENOT
	L 5028 SAFIR
	L 5030 APATITE
	L 5029 LIRAKONIT
	L 5075 LANDSBERGIT
	L 5052 GALENIT
	L 5060 CELESTYNE
	L 5043 ERYTHINE
	L 5040 MAGNETITE
	L 5042 ONYX
	L 5044 VIOLETTA
	L 5083 ARSEN
	L 5047 AUGITE
	L 5085 DYSKRAZYT
	L 5061 AGATE
	L 5064 KATAPLEIT
	L 5065 PEARL

ADDITIONS

Colors and textures

SATINE

	S 8030 CHESTNUT
	S 8024 BEGONIA
	S 8008 PETUNIA
	S 8026 AZALEA
	S 8025 MAGNOLIA
	S 8027 CYPRESS
	S 8011 ROSE
	S 8020 JONQUIL
	S 8021 NARCISSUS
	S 8018 GREEN TULIP
	S 8006 CROCUS
	S 8004 PEA
	S 8015 OLEANDER
	S 8010 ASTER
	S 8002 IRIS
	S 8003 IRIS SNOW
	S 8005 LILY WHITE
	S 8000 BLACK TULIP
	S 8009 DALIA

	S 8028 NAVY FLOWER
	S 8014 OCEAN FLOWER
	S 8012 CORN FLOWER
	S 8048 CHABER
	S 8007 CYCLAMEN
	S 8001 MALLOW
	S 8050 VASABI

METALIC

	C 6041 HEMATITE
	C 6046 GRAPHITE
	C 6042 SILVER
	C 6065 MANIT
	C 6049 INESYTE
	C 6047 MIXYTE

DAIMS

	D 7006 ALEXANDRA
	D 7002 AGATA
	D 7001 MONIKA
	D 7003 DOMINIKA
	D 7005 JOANNA
	D 7009 AGNES
	D 7004 MARTINA
	D 7008 CAROLINA
	D 7007 EVA

MAT

	M 4005 GERBERA
	M 4010 JASMINE
	M 4009 PAPER ROSE
	M 4004 PASQUE FLOWE

ADDITIONS

Colors and textures

DAIMS



D 7006 ALEXANDRA

D 7002 AGATA

D 7001 MONIKA

D 7003 DOMINIKA

D 7005 JOANNA

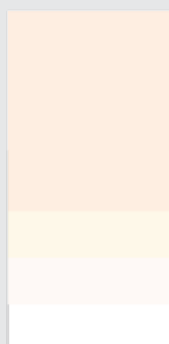
D 7009 AGNES

D 7004 MARTINA

D 7008 CAROLINA

D 7007 EVA

MAT



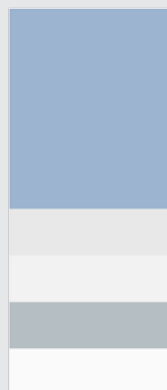
M 4005 GERBERA

M 4010 JASMINE

M 4009 PAPER ROSE

M 4004 PASQUE FLOWER

TRANSPARENT



T 5099 CRISTAL BLUE

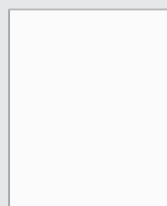
T 5001 CRISTAL

T 5077 CRISTAL WHITE

T 5240 CRISTAL MOON

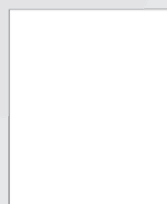
T 5000 CRISTAL RIVER

SUPER MAT

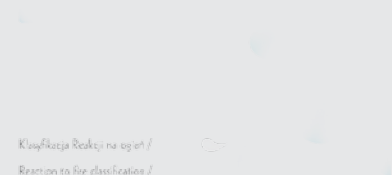


F 1010

HIGIENIC



H 3001



Klasifikacja Reakcji na ogień /

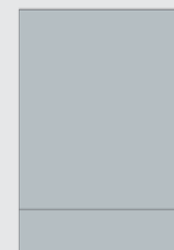
Reaction to fire classification /

Klasifikacja Reakcji na ogień /

Reaction to fire classification:

B – s2.d0

MICROSORBER



TS077M

F1010M

PERF



WS 9.21

WS 7.1

WS 7.4

WS 8.1

WS 8

ADDITIONS

Order sheet



SUFITY NAPINANE • STRETCH CEILINGS • PLAFONDS TENDUS
GRUPA DPS sp. z o.o. 40-391 Katowice ul. Krakowska 85A, POLSKA
 tel. (+48) 32 204 96 80, 32 209 98 23, 32 608 75 23, fax (+48) 32 209 96 86
 mail: atelier@grupadps.com, info@grupadps.com, www.grupadps.com

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2011-08-10 18:51:59.
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TO BE FILLED IN BY DISTRIBUTOR	ORDER <input type="checkbox"/> STRETCH CEILING <input type="checkbox"/> PRINTED CEILING <input type="checkbox"/> PERFORATED CEILING <input type="checkbox"/> LACO TILE <input type="checkbox"/> ACCESSORIES DPS						DISTRIBUTOR
	ORDER DATE:		ORDER NUMBER:		SHIPPING DATE:		
	DELIVERY WAY		<input type="checkbox"/> COLLECTED BY DEALER		<input type="checkbox"/> DISPATCHED BY COURIER, TYPE:		
	DPS FOIL NUMBER: COLOR:						
TO BE FILLED IN BY DISTRIBUTOR	WELD DIRECTION		<input type="checkbox"/> NORMAL BELT <input type="checkbox"/> CENTRAL BELT		<input type="checkbox"/> CENTRAL WELD <input type="checkbox"/> WITHOUT WELD		DELIVERY ADDRESS
	CATCH		<input type="checkbox"/> ALU WHITE <input type="checkbox"/> ALU BLACK <input type="checkbox"/> CLASSIC WHITE <input type="checkbox"/> ALU LIGHT WHITE <input type="checkbox"/> ALU LIGHT BLACK				
	CEILING PROJECTION		<input type="checkbox"/> CEILING <input type="checkbox"/> WALL FRONT VIEW				
TO BE FILLED IN BY DISTRIBUTOR	PLAN (cm)						TO BE FILLED BY GRUPA DPS
	CEILING NUMBER DPS						
	SURFACE (m2)						
	ANGLES (szt)						
	ARCHES (m)						
TO BE FILLED IN BY DISTRIBUTOR	OPENINGS (m)						TO BE FILLED BY GRUPA DPS
	PRODUCTION DATE						
• TO GIVE THE DIMENSIONS OF CEILING IN CENTIMETRES •• TO MARK DIRECTION OF WELDINGS ••• TO FILL IN WITH CAPITAL LETTER							
DRAWING PRODUCTION		DATE OF MANUFACTURE		QUALITY CONTROL			