GEALAN

INNOVATION MIT SYSTEM

TEST REPORTS

ACCREDITED BY:

CERTIFICATE OF MEMBERSHIP

uPVC WINDOW AND DOOR MANUFACTURERS ASSOCIATION

UWDMA
uPVC Window and Door Manufacturers Association

This is to certify that

M/s Gealan Pvt. Ltd.

is an active member of uPVC Window and Door Manufacturers Association (UWDMA) from March 2023 to February 2024.

Treasurer

President

uPVC Window and Door Manufacturers Association
Communication Address: C-55, Okhla Industrial Area, Phase-I, New Delhi - 110020
Email: marketing@uwdmaindia.org | info@uwdmaindia.org | convenor@uwdmaindia.org | Web: www.uwdmaindia.org
Ms. Shobhita Mishra | +91-9560908115 | skill@uwdmaindia.org

IGBC

Confederation of Indian Industry

Membership Certificate

This is to certify that

GEALAN Pvt Ltd

is an Annual Member of Indian Green Building Council (IGBC)

Bearing Membership No ***IGBCMM220037***

This certificate shall be valid up to December 2023

K S Venkatagiri
Executive Director
CII - IGBC

Gurmit Singh Arora
Chairman
Indian Green Building Council

B Thiagarajan
Vice Chairman
Indian Green Building Council

Indian Green Building Council
CII - Sohrabji Godrej Green Business Centre, Survey No. 64, Near Hitech City, R R Dist, Hyderabad - 500 084
T: +91 40 4418 5132 / 33 F: +91 40 4418 5189 E: igbc@cii.in W: igbc.in

BQSR

CERTIFICATE

This is to certify that the
Quality Management System of

GEALAN PRIVATE LIMITED

Head Office: 1st Floor, Door No.1-18/HIE/NR-2, Holiday Inn Express & Suits, Nanakramguda, Hyderabad, Telangana, 500032
Factory: warehouse -I, Part -II, Sy.No.98/A(Part), Industrial Park, Mucherla Village, Hathnoora Mandal, Sangareddy District, 502296- Telagana

has been assessed and found to conform to the requirements of

ISO 9001:2015

This Certificate is valid for the following scope:

UPVC PROFILES FOR WINDOWS AND DOORS

Certificate No.	**:BQSR16572**
Registration Date	**:02/07/2022**
Issue Date	**:07/07/2022**
Expiry Date	**:01/07/2023**
Recertification Date	**:01/07/2025**

Director

BQSR QUALITY ASSURANCE PVT. LTD.
Key Location: 183 Broadway, Ste 210 Hicksville, New York NY 11801, USA
Operations Office: D 303, 104-108, Nisarg Plaza, Wakad, Pune - 411057. | Web: www.bqsrcert.com
Accredited by IAS (0360 Saturn Street, Suite 100, Brea, California 92821 U.S.A.)

IAS ACCREDITED Management System Certification Body MSCB-197

INTERNATIONAL IAF ACCREDITATION FORUM

BQSR

Prüfbericht - Nr.: *Test Report No.:*	**IND/BLR/CH/2021/6326**	**Seite 1 von 3** *Page 1 of 3*
ULR NO:	**TC568821500006326F**	
Auftraggeber: *Client:*	**GEALAN PRIVATE LIMITED** 1 st floor, Door No-1-18/HIE/NR-2, Holiday Inn Express Suits, Nanakramguda, Gachibowli, Hyderabad, Ranga Reddy, Hyderabad 500032, India	
Gegenstand der Prüfung: *Test item:*	GEALAN PRIMA SERIES 60×45MM SLIDER 2 TRACK FRAME PROFILE	
Bezeichnung: *Identification:*	-	**Serien-Nr.:** *Serial No./* Document Submitted*:* Email Dated: 14.07.2021
Wareneingangs-Nr.: *Receipt No.:*	21072021	**Eingangsdatum:** *Date of receipt:* 21.07.2021
Order No.:	166569052	*Testing Period:* 21.07.2021 to 26.07.2021
Prüfort: *Testing location:*	TÜV Rheinland India Pvt Ltd, Plot No.27B, 2nd cross, Electronic City Phase I Industrial Area, Hosur Road, Bangalore - 560 100, Karnataka, India.	
Prüfgrundlage: *Test specification:*	Customer's Requirement: Vicat Softening Temperature acc. to EN 12608-1: 2016, Annex-A	
Prüfergebnis: *Test Result:*	Refer Page No. 2 to 3	

Prüflaboratorium/ Testing Laboratory:

zusammengestellt/ *compiled by*:			**kontrolliert/** *checked by*:		
27.07.2021	Nitin Gate Asst. Manager – Polymer Section, Material Testing Laboratories, Industry Services		27.07.2021	Ranabir Pal Sr. Manager - Polymer Section, Material Testing Laboratories, Industry Services	
Datum *Date*	**Name** *Name*	**Unterschrift** *Signature*	**Datum** *Date*	**Name** *Name*	**Unterschrift** *Signature*

Sonstiges/ Other Aspects: Nil

Abkürzungen:	***ok / P =***	***entspricht Prüfgrundlage***	***Abbreviations:***	***ok / P =***	***passed***
	fail / F =	***entspricht nicht Prüfgrundlage***		***fail / F =***	***failed***
	n.a. / N =	***nicht anwendbar***		***n.a. / N =***	***not applicable***

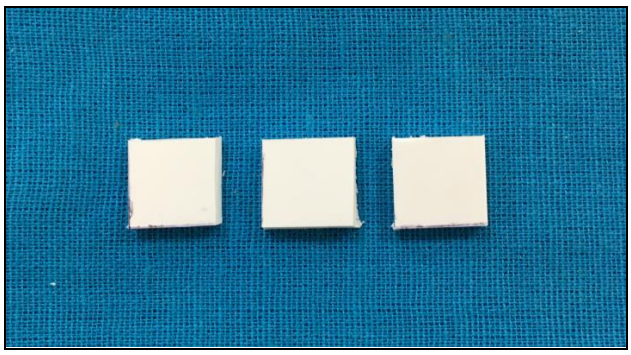
Prüfbericht - Nr.:		**Seite 2 von 3**
Test Report No.:	**IND/BLR/CH/2021/6326**	*Page 2 of 3*
ULR NO:	**TC568821500006326F**	

TEST RESULTS

Discipline: Mechanical
Product Group: Plastic and Plastic Products

Photograph of sample as in received condition

Test Name:	Vicat Softening Temperature acc. to EN 12608-1: 2016, Annex-A
Test Method:	EN 12608-1:2016, ISO 306:2013 Method B50
Pre- Conditioning:	Specimen conditioned at 23±2°C & 50±5% RH for 88 hours
Test Condition:	Heating rate - 50°C/h Force - 50 N Penetration – 1 mm
Requirement:	Min. 75°C (Average)



Photograph of prepared specimens

Prüfbericht - Nr.: **Seite 3 von 3**
Test Report No.: **IND/BLR/CH/2021/6326** *Page 3 of 3*

ULR NO: **TC568821500006326F**

Observation:

Sl. No.	Vicat Softening Temperature (VST), °C	Average, °C
1	78.7	79.1
2	78.4	
3	80.1	

Conclusion: Tested sample meet the requirement of client's specification.

---- End of Report ----

Prüfbericht - Nr.: *Test Report No.:*	**IND/BLR/CH/2021/6327**	**Seite 1 von 3** *Page 1 of 3*
ULR NO:	**TC568821500006327F**	
Auftraggeber: *Client:*	**GEALAN PRIVATE LIMITED** 1 st floor, Door No-1-18/HIE/NR-2, Holiday Inn Express Suits, Nanakramguda, Gachibowli, Hyderabad, Ranga Reddy, Hyderabad 500032, India	
Gegenstand der Prüfung: *Test item:*	GEALAN PRIMA SERIES 60×45MM SLIDER 2 TRACK FRAME PROFILE	
Bezeichnung: *Identification:*	-	**Serien-Nr.:** *Serial No./* Document Submitted*:* Email Dated: 14.07.2021
Wareneingangs-Nr.: *Receipt No.:*	21072021	**Eingangsdatum:** *Date of receipt:* 21.07.2021
Order No.:	166569052	*Testing Period:* 21.07.2021 to 26.07.2021
Prüfort: *Testing location:*	TÜV Rheinland India Pvt Ltd, Plot No.27B, 2nd cross, Electronic City Phase I Industrial Area, Hosur Road, Bangalore - 560 100, Karnataka, India.	
Prüfgrundlage: *Test specification:*	Customer's Requirement: Flexural Modulus of elasticity acc. to EN 12608-1: 2016, Annex-A	
Prüfergebnis: *Test Result:*	Refer Page No. 2 to 3	

Prüflaboratorium/ Testing Laboratory:

zusammengestellt/ *compiled by*:			**kontrolliert/** *checked by*:		
27.07.2021	Nitin Gate Asst. Manager – Polymer Section, Material Testing Laboratories, Industry Services		27.07.2021	Ranabir Pal Sr. Manager - Polymer Section, Material Testing Laboratories, Industry Services	
Datum *Date*	**Name** *Name*	**Unterschrift** *Signature*	**Datum** *Date*	**Name** *Name*	**Unterschrift** *Signature*

Sonstiges/ Other Aspects: Nil

Abkürzungen:	***ok / P = entspricht Prüfgrundlage***		***Abbreviations:***	***ok / P = passed***	
	fail / F = entspricht nicht Prüfgrundlage			***fail / F = failed***	
	n.a. / N = nicht anwendbar			***n.a. / N = not applicable***	

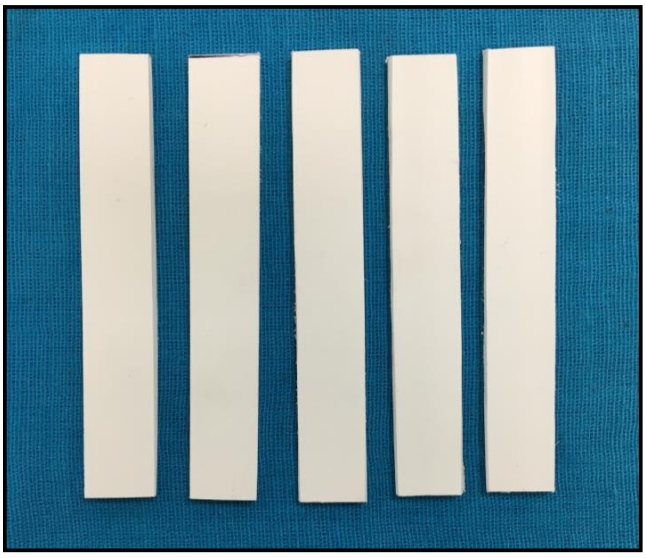
Prüfbericht - Nr.: *Test Report No.:*	**IND/BLR/CH/2021/6327**	**Seite 2 von 3** *Page 2 of 3*
ULR NO:	**TC568821500006327F**	

TEST RESULTS

Discipline: Mechanical
Product Group: Plastic and Plastic Products

Photograph of sample as in received condition

Test Name:	Flexural Modulus of elasticity acc. to EN 12608-1: 2016, Annex-A
Test Method:	EN 12608-1:2016, ISO 178:2019 Method A
Pre- Conditioning:	Specimen conditioned at 23±2°C & 50±5% RH for 88 hours
Test Condition:	Test Speed: 2 mm/min
Requirement:	Flexural modulus: Min. 2200 N/mm^2 (Average)



Photograph of prepared specimens

Prüfbericht - Nr.: **Seite 3 von 3**
Test Report No.: **IND/BLR/CH/2021/6327** *Page 3 of 3*

ULR NO: **TC568821500006327F**

Observation:

Specimen No.	Flexural Modulus of Elasticity, N/mm^2	Average, N/mm^2
1	2735	**2907**
2	3026	
3	2988	
4	2909	
5	2878	

Conclusion: Tested sample meet the requirement of the client's specification.

---- End of Report ----

ट्रल इंस्टिट्यूट ऑफ पेट्रोरसायन
ोनियरिंग एण्ड टेक्नोलॉजी
यन एवं पेट्रोरसायन विभाग,
ान एवं उर्वरक मंत्रालय, भारत सरकार)
सी.एल. पोस्ट, आई.डी.ए.,
- २, चेरलापल्ली, हैदराबाद -५०० ०५१.
ाष : 040-27263750, 27263615
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CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
(Department of Chemicals & Petrochemicals,
Ministry of Chemicals & Fertilizers, Govt. of India)
H.C.L. Post, IDA - Phase - II,
Cherlapally, Hyderabad - 500 051.
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E-mail : cipethyderabad@yahoo.co.in
hyderabad@cipet.gov.in
Web : www.cipet.gov.in

सिपेट/हैदराबाद/पीटीसी/2021–22
CIPET/HYD/PTC/2021-22

दिनांक: 26.07.2021
Date: 26.07.2021

सेवा मे,
To

M/s. Gealan Private Limited.,
1-18/HIE/NR, 1st Floor,,
Holiday inn Express Building,Road No.2
Financial Dist. Gachibowli
Hyderabad, Telangana- 500 032

विशय :– परीक्षण प्रतिवेदन – संदर्भ मे ।

Sub : Issue of test report
Ref: Your Letter No. WO/2021-22/001 , dtd.10.06.2021

प्रिय महोदय, / Dear Sir,

उपरोक्त विशय के संदर्भ में, कृपया इस पत्र के साथ परीक्षण प्रतिवेदन सं : 210403 दि:26.07.2021 एतथा प्रतिपुष्टी प्रारूप संलग्नीय हैं । कृपया इसे भरकर हमें वापस लौटा दे ।

With reference to the above cited subject, we are enclosing herewith Revised Test Report No.2104034dated: 26.07.2021 and Invoice. We are also enclosing herewith feedback form. Kindly fill it and sent it back to us.

धन्यवाद तथा अच्छी सेवा के आश्वासन के साथ ।

Thanking you and assuring you of our best services.

आपका भवदिय, / Yours faithfully,

AUTHORISED SIGNATORY

संलग्न : यथोक्त / Encl : As above

सेन्ट्रल इंस्टिट्यूट ऑफ पेट्रोरसायन इंजीनियरिंग एण्ड टेक्नोलॉजी

(रसायन एवं पेट्रोरसायन विभाग, रसायन एवं उर्वरक मंत्रालय, भारत सरकार)

एच.सी.एल. पोस्ट, आई.डी.ए., फेस - २, चेरलापल्ली, हैदराबाद -५०० ०५१.

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

H.C.L. Post, IDA - Phase - II, Cherlapally, Hyderabad - 500 051.

Phone : 040-27263750, 27263615, Fax : 91-40-27264051

E-mail : cipethyderabad@yahoo.co.in / hyderabad@cipet.gov.in Web : www.cipet.gov.in

Plastics Testing Centre

Test Certificate

0131995

Date: 26.07.2021

Issued to: M/s. Gealan Private Limited.,
1-18/HIE/NR, 1st Floor,,
Holiday inn Express Building,Road No.2
Finanncial Dist. Gachibowli
Hyderabad, Telangana- 500 032

Ref: Your Letter No.WO/2021-22/001 , dtd.10.06.2021

TEST REPORT AS PER:- ASTMD/ASTME/ISO REPORT NO :2104034

PART A: PARTICULARS OF SAMPLE SUBMITTED

a) Name of the Sample	:	*UPVC Profile as stated by party*
b) Grade/Variety/Type/Size/Class	:	Nil
c) Declared values, if any	:	Nil
d) Code No.	:	Nil
e) Batch No. and Date of Manufacture	:	Nil
f) Quantity	:	01 meter x 06 Nos.
g) Mode of Packing	:	Loose
h) Seal	:	Nil
i) Any other information	:	Samples received on 23.04.2021
j) Date of initiation of testing	:	23.04.2021
k) Date of completion of testing	:	21.06.2021

PART B : SUPPLEMENTARY INFORMATION

a) Reference to sampling Procedure	:	Nil
b) Supporting documents for the measurement taken and result derived	:	Nil
c) Deviation from the test method as prescribed in relevant work instructions, if any	:	Nil
d) Statement of conformity as per the test result obtained	:	As per Part-C
e) Decision Rule applicable or not	:	Nil

सेन्ट्रल इंस्टिट्यूट ऑफ पेट्रोरसायन इंजीनियरिंग एण्ड टेक्नोलॉजी
चेरलापल्ली, हैदराबाद - ५०० ०५१.
CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
Cherlapally, Hyderabad - 500 051.

Test Certificate

0131995

Continuation Sheet

REPORT No. 2104034 Page 2 of 2

PART – C TEST RESULTS

S. No.	Test	Test Method	Result Obtained	Unit
1.	Vicat Softening Point (VST) @ 50N Load)	EN 306/ ASTMD 1525	86.0	°C
2.	Flexural Modulus of Elasticity	ASTMD 790/EN178	4362.5	MPa
3.	Heat Stability	ASTMD 1204	No Dimensional Change observed Confirmed	-
4.	a) Colour Fastness after weathering test(visual assessment) b) Colorimetric Assessment	EN 513	Test Under Progress	-
5.	Behaviour after Heating at 150 °C (30minutes)	EN 478	No Cracks /Bubbles Observed	-
6.	Tensile Impact Strength	EN 8256	675.0	kJ/ m2
7.	Resistance to Impact by falling mass (1 m heigth/1 kg load) @ -10 °C for 1 hr	EN 477/EN 12608-2003	(0/10)0% No Failure Observed Confirmed	-
8.	Density	ASTMD 792	1.50	g/cc
9.	Fire Resistance	UL-94	V-0 (Self Extinguishers, Flame put off within 2seconds)	-
10.	Heat Reversion(1hr @ 100 °C)	EN 479	1.8	%
11.	Limiting Oxygen Index (%)	ASTMD 2863	49.0	%
12.	Thermal Conductivity	ASTME 1530	0.050	W/mk
13.	Tensile Strength	ISO 527/ASTMD 638	47.5	Mpa
14.	Elongation at break		7.4	%
15.	Hardness (Shore-D)	EN 53505/ ASTMD 2240	84.0	D
16.	Water Absorption	ASTMD 570	0.01	%
17.	Izod Impact Strength (Notched)	EN 180/ASTMD 256	25.1	kJ/ m2

PART D: REMARKS : Nil

NB: 1. This Test Report/Certificate is issued only for the samples submitted to CIPET.
2. The results stated above related only to the items tested
3. The report shall not be reproduced in full/part without written approval of the laboratory.
4. The quality of the subsequent production lot has to be ensured by the purchaser.
5. Any anomaly/discrepancy in this report should be brought to be the notice of CIPET within 30 days from the date of issue

AUTHORISED SIGNATORY

ATMY ANALYTICAL LABS PVT.LTD.

I-30, DLF Industrial Area, Phase-1, Faridabad (Haryana) INDIA
Phone: +91-129-4019544
info@atmylabs.com, www.atmylabs.com

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TEST REPORT

Report No.: **2107100075**

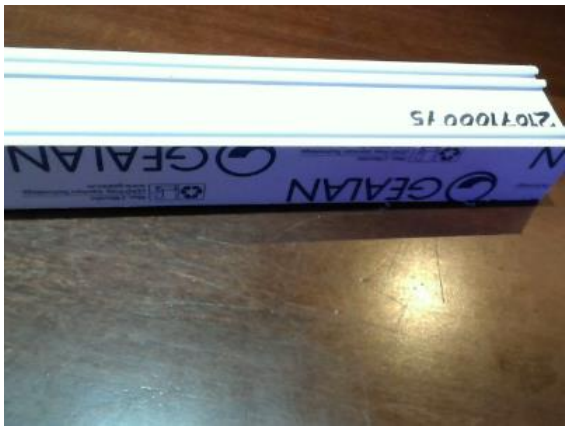
Date: 05-08-2021

Issued To:

M/s GEALAN PVT. LTD.
1ST FLOOR, DOOR NO. - 1-18/HIE/NE-2, HOLIDAY INN EXPRESS SUITS, NANAKRAMGUDA, GACHIBOWLI, RANGA REDDY
TELANGANA - 50032

Sample Description	:	SLIDING FRAME 2 TRACK 60 MM SERIES
Sample Received Date	:	10-07-2021
Sample Drawn By	:	Client
Specification	:	**BS 476: Part-7:1997 & BS 476: Part 5:1979**
Test Requested	:	Fire Resistance & Ignitability Test
Test Method	:	BS 476-Part-7:1997 & BS 476-Part-5:1979.
Test Result	:	Refer to Attached Pages.

SAMPLE PICTURE



Terms & Conditions:-
1. Sample will not be retained more than one month for chemical and three month for mechanical unless specified instructed. 2. Sample analysis conducted on as received basis and followed by customer description unless specified otherwise. 3. The laboratory will not be liable for sample destroy/damage during testing, unless instructed otherwise. 4. Any complaints matter about this report should be communicated in written, within 7 days of issue of this report. .5. The result listed refer only to the tested samples and applicable parameters as described by customer. Endorsement of product is neither inferred nor implies. 6. Total liability of our laboratory is limited to the invoiced amount only. 7. This report cannot be used as an evidence in a court of law without the written approval of the laboratory.

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TEST REPORT

Report No.: **2107100075**

Date: 05-08-2021

I. FIRE TEST (as per Std. BS 476-part-7:1997)

Fire Resistance **Test Performed on : 12-07-2021 to 15-07-2021**

Sample Description:

Product:	uPVC Profile (Sliding Frame 2 Track 60mm Series)
Specification:	- -
Sample Quantity:	02
Sample ID:	2107100075
Date of sample received:	10.07.2021
Date of Test Performed:	12.07.2021

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TEST REPORT

Report No.: **2107100075**

Date: 05-08-2021

CONTENTS **PAGE NO.**

TEST REPORT

Report No.: **2107100075** Date: 05-08-2021

1.0 SUMMARY

The objective of test was to determine of surface spread flame classification of the product "uPVC profile" in accordance with BS 476 Part – 7:1997. The test was performed in accordance with the procedures specified in the standard (BS 476 Part-7:1997) and the specimens were tested in the form of a composite. Test result of the product depicted that the sample tested has **"Class -1"** surface spread of flame in accordance with the class specified in the standard. The detailed results are summarized in the table-1.

Remarks:
The test results relate only to the behavior of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire Hazard of the product in use.

TEST REPORT

Report No.: **2107100075** Date: 05-08-2021

2.0 TEST DETAILS

2.1 Conditioning of Specimen:

Prior to the test, the specimens were prepared and conditioned in accordance with standard at a temperature 23 ± 2°C and relative humidity of 50 ± 5%.

2.2 Form in which the specimens were tested: Composite

2.3 Exposed faces:

The one face of the specimens was exposed to the heating conditions of the test.

TEST REPORT

Report No.: **2107100075** Date: 05-08-2021

3.0 TEST RESULTS

3.1 The test results for individual samples are given in Table-1 below:

Table -1

Specimen No.	1	2	3	4	5	6
Spread of flame at first 1.5 minutes (mm)	55	58	55	57	54	57
Distance (mm)	Time of spread of flame to indicated distance (minutes : seconds)					
75 165 190 215 240 265 290 375 455 500 525 600 675 710 750 785 825						
Time of maximum spread of flame (minutes, seconds)	01:02	01:02	01:03	01:03	01:02	01:02
Distance of maximum spread of flame (mm)	69	69	70	70	70	69
Comments	None					

TEST REPORT

Report No.: **2107100075** Date: 05-08-2021

4.0 CLASSIFICATION CRITERIA

4.1 Classification of Surface spread of flame

Classification	Spread of flame at 1.5 min.		Final spread of flame	
	Limit (mm)	Limit for one specimen in sample (mm)	Limit (mm)	Limit for one specimen in sample (mm)
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	Exceeding the limits for class 3			

5.0 CONCLUSION:

In accordance with the class definitions specified in the standard, the test results shows that the sample tested has **"Class -1"** surface spread of flame.

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TEST REPORT

Report No.: **2107100075**

Date: 05-08-2021

II. IGNITABILITY TEST (as per Std. BS 476:part 5:1979)

Ignitability Test **Test Performed on : 02-08-2021 to 05-08-2021**

SAMPLE DESCRIPTION:

Product:	uPVC Profile (Sliding Frame 2 Track 60mm Series)
Specification:	- -
Sample Quantity:	02
Sample ID:	2107100075
Date of sample received:	10.07.2021
Date of Test Performed:	05.08.2021

TEST REPORT

Report No.: **2107100075**

Date: 05-08-2021

TEST PURPOSE:

To determine the ignitability characteristics of the exposed surface of essentially flat, rigid or semi-rigid building materials, UPVC profile or composites, when tested in the vertical position to the specified in British Standard 476: Part 5:1979 “Method of test for ignitability”.

TEST CONDITIONING:

Three specimens were conditioned for 48 hours at temp.23±2ºC and relative humidity 50±5%.

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TEST REPORT

Report No.: **2107100075**

Date: 05-08-2021

OBSERVATION:

Description	Specimens			Requirement	Conformity
	1	2	3		
1.Time of flaming removal of test flame	0	0	0	Not more than 10 sec.	Yes
2. Burning of the test specimen extending to the edges	No	No	No	Do not extent to any edge during flame application or within 10 sec period after removal of the test flame.	Yes

REMARKS: The above sample conforms to as per BS 476: Part 5: 1979 with respect to above test.

----------**End of Report**----------

ATMY ANALYTICAL LABS PVT.LTD. FARIDABAD

D. Kumar
QUALITY MANAGER

Authorised Signatory

Terms & Conditions:-

1. Sample will not be retained more than one month for chemical and three month for mechanical unless specified instructed. 2. Sample analysis conducted on as received basis and followed by customer description unless specified otherwise. 3. The laboratory will not be liable for sample destroy/damage during testing, unless instructed otherwise. 4. Any complaints matter about this report should be communicated in written, within 7 days of issue of this report. .5. The result listed refer only to the tested samples and applicable parameters as described by customer. Endorsement of product is neither inferred nor implies. 6. Total liability of our laboratory is limited to the invoiced amount only. 7. This report cannot be used as an evidence in a court of law without the written approval of the laboratory.

ATMY ANALYTICAL LABS PVT.LTD.

I-30, DLF Industrial Area, Phase-1, Faridabad (Haryana) INDIA
Phone: +91-129-4019544
info@atmylabs.com, www.atmylabs.com

• Testing
• Research
• Innovation

TEST REPORT

Report No.: **2107100076**

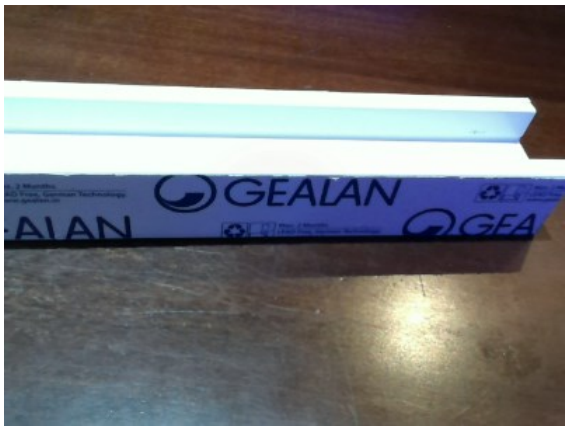
Date: 15-07-2021

Issued To:

M/s GEALAN PVT. LTD.
1ST FLOOR, DOOR NO. - 1-18/HIE/NE-2, HOLIDAY INN EXPRESS SUITS, NANAKRAMGUDA, GACHIBOWLI, RANGA REDDY
TELANGANA - 50032

Sample Description	:	SLIDING FRAME 2 TRACK 60 MM SERIES
Sample Received Date	:	10-07-2021
Sample Drawn By	:	Client
Specification	:	--
Test Requested	:	RoHS 2.0 (Pb,Cd,Hg,Cr6,PBB,PBDE,Phthalates)
Test Method	:	Refer to Attached Pages.
Test Result	:	Refer to Attached Pages.

SAMPLE PICTURE



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TEST REPORT

Report No.: **2107100076**

Date: 15-07-2021

I. Chemical

1.

RoHS 2.0 (Pb,Cd,Hg,Cr6,PBB,PBDE,Phthalates) **Test performed on : 13-07-2021 to 15-07-2021**

TEST PARAMETER	TEST METHOD	MDL (mg/kg)	RESULTS (mg/kg)	LIMIT (mg/kg)
Lead (as Pb) (CAS No. 7439-92-1)	IEC 62321-5:2013,	1.0	ND	Max 1000.0
Cadmium (as Cd) (CAS No. 7440-43-09)	IEC 62321-5:2013,	1.0	ND	Max 100.0
Mercury (as Hg) (CAS No. 7439-97-6)	IEC 62321-4:2013	2.0	ND	Max 1000.0
Hexa Chromium (as Cr+6) (CAS No. 10588-01-9)	IEC 62321-7-2:2017	1.0	ND	Max 1000.0
Sum of PBBs (Mono to Deca)				Max 1000.0
Monobromobiphenyl (CAS No. 92-52-4)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Dibromobiphenyl (CAS No. 92-86-4)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Tribromobiphenyl (CAS No. 59080-34-1)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Tetrabromobiphenyl (CAS No. 40088-45-7)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Pentabromobiphenyl (CAS No. 56307-79-0)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Hexabromobiphenyl (CAS No. 59080-40-9)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Heptabromobiphenyl (CAS No. 35194-78-6)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Octabromobiphenyl (CAS No. 6188-13-9)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Nonabromobiphenyl (CAS No. 27753-52-2)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Decabromobiphenyl (CAS No. 13654-09-6)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	

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TEST REPORT

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Date: 15-07-2021

TEST PARAMETER	TEST METHOD	MDL (mg/kg)	RESULTS (mg/kg)	LIMIT (mg/kg)
Sum of PBDEs (Mono to Deca)				Max 1000.0
Monobromodiphenyl ether (CAS No. 101-55-3)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Dibromodiphenyl ether (CAS No. 205047-7)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Tribromodiphenyl ether (CAS No. 49690-94-0)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Tetrabromodiphenyl ether (CAS No. 40088-47-9)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Pentabromodiphenyl ether (CAS No. 32534-81-9)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Hexabromodiphenyl ether (CAS No. 36483-60-0)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Heptabromodiphenyl ether (CAS No. 68928-80-3)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Octabromodiphenyl ether (CAS No. 32536-52-0)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Nonabromodiphenyl ether (CAS No. 63936-56-1)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	
Decabromodiphenyl ether (CAS No. 1163-19-5)	IEC 62321-6:2015 test performed by GC-MS	5.0	ND	

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TEST REPORT

Report No.: **2107100076** Date: 15-07-2021

TEST PARAMETER	TEST METHOD	MDL (mg/kg)	RESULTS (mg/kg)	LIMIT (mg/kg)
Phthalates				
Di-ethylhexlphthalate (DEHP) (CAS No. 117-81-7)	IEC 62321-8:2017 test performed by GC-MS	30.0	ND	Max 1000.0
Benzylbutylphthalate (BBP) (CAS No. 85-68-7)	IEC 62321-8:2017 test performed by GC-MS	30.0	ND	Max 1000.0
Dibutylphthalate (DBP) (CAS No. 84-74-2)	IEC 62321-8:2017 test performed by GC-MS	30.0	ND	Max 1000.0
Di-isobutylphthalate (DIBP) (CAS No. 84-69-5)	IEC 62321-8:2017 test performed by GC-MS	30.0	ND	Max 1000.0

Note:

1. The maximum permissible limits are quoted from the European Parliament and Council Directive 2005/84/EC(amending Directive 2015/863 amending annex. II to Directive 2011/65/EU).
2. MDL = Method detection limits
3. N.D.= Not detected at the detection limits.
4. mg/kg = ppm (parts per million); 0.1wt% = 1000ppm
5. Lead content more than 85% in its alloys (Tin-Lead solder alloys) are exempted as per directives 2002/95/EC, Annexure article-7.

----------End of Report----------

ATMY ANALYTICAL LABS PVT. LTD. FARIDABAD

P.N.Rao
SR. ANALYST

Authorised Signatory

Authentication: To Check authenticity of Test report (s), Scan **QR** code to get original data.

Interim Report after 10,101 h

Artificial weathering climate S according to DIN EN 513/DIN EN 12608-1

to report number: 202120602-02

Customer: **GEALAN Pvt Ltd**
Mr. G.A Jagadeesh Kumar
1st Floor, Fairfield by Marriott
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India

Contractor: **Polymer Service GmbH Merseburg**
An-Institute at the Merseburg University of Applied Sciences
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Editor: Dr. Katja Oßwald
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Order number: 202120602
Incoming orders: 06.12.2021
Report date: 27.02.2023

This report comprises 7 pages.

The tests were carried out in the PSM test laboratory "Mechanical Testing of Plastics", which is accredited by DAkkS according to DIN EN ISO/IEC 17025.
No. of the accreditation certificate: **D-PL-20227-01-00**,
List of accredited standards see www.psm-merseburg.de

Task and object of investigation

The client provided a total of one specimen for the weather fastness test. Table 1 lists the designations of the specimens.

Table 1: Designations of the samples

No.	Product type	Product no..	Designation	Batch no.
1	PVC-U Profile	2105-1102	Prima sliding sash	2011213

The weather fastness test is carried out according to DIN EN 513:2019-03 [1] / DIN EN 12608-1:2020-11 [2], climate zone S for a weathering period of 10,101 h.
To evaluate the aging behavior of the specimens, a color measurement is performed every 1,000 h by using DIN EN ISO/CIE 11664-4:2020-03 [3] and a comparison against a reference - non-weathered test specimen – in accordance with DIN ISO 4582:2019-03 [4] by determining the fastness number using the nine-step gray scale in accordance with DIN EN 20105-A02:1994-10 [5].

Experimental
Weathering parameters

Table 2: Conditions for weathering test according to DIN EN 513:2019-03/DIN EN 12608-1:2020-11, climate zone (S)

Type of weathering device	Q-Sun Xe-2-HS, rotating specimen rack, synchronous run
Service and calibration (manufacturer)	2021-10-20, 2023-01-18
Light source	Xenon arc lamp, silica glass
Filter	Daylight-Q, daylight filter
Broadband irradiance	300–400 nm
Irradiance (300–800 nm) E	(550 ± 55) W·m^{-2}
Irradiance (300–400 nm) E	(60 ± 2) W·m^{-2}
Radiometer	UC20/TUV calibration-radiometer
Calibration date UC20/TUV	2021-10-15, 2022-10-14
Surface temperature sensor	Black-standard thermometer BST
Specified value black-standard temperature	(65 ± 3) °C
Reference Black-standard thermometer	UC202/IBP calibration-radiometer
Calibration date UC202/IBP	2021-10-22, 2022-10-13
Surface temperature sensor	White-standard thermometer WST
Specified value white-standard temperature	45–50 °C
Specified chamber temperature	(30 ± 3) °C
Specified value relative-humidity U	(65 ± 10) %
Exposure time	114 min
Spray cycle	6 min
Spraying	Exposed surface
Mounting of the test specimens	Specimen holders
Start of the weathering	2021-12-12
Ende of the weathering (calculated)	2023-02-06
Interruption of the test (≥ 72 h)	none
Lamp replacement	
Number	6
Dates	2022-02-07, 2022-04-11, 2022-06-14, 2022-08-25, 2022-11-05, 2023-01-14
Total exposure time	10,101 h
Total irradiance (300–800 nm) H	20 GJ·m^{-2}

Color measurement

The test conditions for evaluating color change according to the standard DIN EN ISO/CIE 11664-4:2020-03 [3] are listed in Table 3.

Table 3: Test conditions for determining the color/color change according to DIN EN ISO/CIE 11664-4:2020-03

Equipment	Konica Minolta CM-36dG Spectrophotometer
Calibration by manufacture	2021-09-23, 2022-11-10
Colour space	CIELAB $L^*a^*b^*$
Observer	10°
CIE Illuminant	D65 (6504 K)
Geometry	di:8° – specular included
Spectral Range	360 to 740 nm
Wavelength Interval	10 nm
Apertures	LAV – 25.4 mm
Material	2105-1102
Preconditioning of material	– Initial state: 16 h at 23 °C and 50 % relative humidity – Weathering, every 1,000 h
Specimen geometry	– Plate, 45 mm x 89 mm (Width x Length)
Tester	Dr. Schoßig

For the determination of the color distance a comparison of the reference sample (standard) and the samples for testing will be done. Within the scope of this test report, the color distances ΔE^*_{ab} according to CIELAB 1976 and additionally according to ISO/CIE 11664-6:2014-02 CIEDE2000 (ΔE_{00}) [6] are used to evaluate the change in color. The nomenclature can be found in Table 4.

Table 4: Nomenclature according to DIN EN ISO/CIE 11664-4:2020-03

Symbols		Designation
L^*		CIELAB-Lightness
a^*		CIELAB-Coordinate
	$+a^*$	Red
	$-a^*$	Green
b^*		CIELAB-Coordinate
	$+b^*$	Yellow
	$-b^*$	Blue
$\Delta E = \Delta E^*_{ab}$		a, b Color difference CIE 1976
ΔE_{00}		Color difference according to [6]

The CM-36DG spectrophotometer (FA. KONICA MINOLTA, INC) with CM-S100W SPECTRA MAGIC NX PRO software was used for the color measurements from a weathering duration of 1,000 h. The spectrophotometer was used to measure the color of the test specimens. The color measurements on the test specimens were performed with the largest aperture with a diameter of 25.4 mm (A = 506.7 mm2) at three different locations with three measurements each, and the evaluation software gives the averaged values as the result.

Evaluation of the color fastness with the gray scale

The evaluation of the change of color according to DIN EN 20105-A02:1994-10 was carried out in the light chamber LED Color Viewing Light M 2.0 Hybrid of the company JUST NORMLICHT GMBH (Weilheim/ Teck, Germany). The irradiation is performed by the LED lamps located in the ceiling of the light chamber. The specimens to be evaluated are placed in the center of the chamber on a 45 ° specimen stand. In the following Table 5 are the test parameters.

Table 5: Test conditions for determining the color change according to DIN EN 20105-A02:1994-10

Equipment	LED Color Viewing Light M 2.0 Hybrid
Illuminated Area	65 mm x 38 mm x 36 mm (Width x Height x Length)
CIE Illuminant	D65
Light source	LED
Color temperature Set / Current	D65 – 6500 K / 6569 K
Gray scale	DIN EN 20105-A02:1994-10, including half steps
Date of first use	2021-02-11 (VI / 2182) 2022-02-25 (VQ / 2182)
Batch / Certificate of Conformity	VI / 2182 VQ / 2182
Material	2105-1102
Preconditioning of material	– Initial state: 16 h at 23 °C und 50 % relative humidity – Weathering: every 1,000 h

Results

Colorimetric evaluation and color fastness

The results of the color measurement of the initial state are shown in Table 6 and the color changes due to artificial weathering are listed in Table 7.

Table 6: Color coordinates of the initial state

Designation	Color coordinates		
	L^*	a^*	b^*
2105-1102	95.15	-0.79	-0.41

Table 7: Color change and indication of fastness number

Time of exposure	Dose of irradiation	Color coordinates			Total color distance	Fastness number
(h)	(GJ m^{-2})	ΔL^*	Δa^*	Δb^*	ΔE^*_{ab}	
1,000	2.10	0.49	-0.08	1.03	1.14	4–5
2,000	4.01	0.75	0.04	0.47	0.88	4–5
3,000	6.05	0.64	0.03	0.38	0.74	4–5
4,000	8.04	0.62	0.00	0.41	0.74	5
5,000	9.94	0.65	-0.01	0.47	0.80	4–5
6,061	12,01	0.73	-0.03	0.55	0.91	4–5
7,000	14.04	0.79	-0.04	0.58	0.98	5
8,000	15.94	0.84	-0.05	0.68	1.07	4–5 W
9,000	18.56	0.91	-0.03	0.68	1.14	4–5 W
10,101	**20.35**	**1.00**	**-0.04**	**0.77**	**1.26**	**4 Str, Br**

Abbreviations of qualitative terms (Table 2, ISO 105-A02:1993-09)

Bl	*Bluer*	***W***	*Weaker*
G	*Greener*	***Str***	*Stronger*
R	*Redder*	***D***	*Duller*
Y	*Yellower*	***Br***	*Brighter*

Reference

[1] DIN EN 513 (2019-03): Plastics – Poly(vinyl chloride) (PVC) based profiles – Determination of the resistance to artificial weathering.

[2] DIN EN 12608-1 (2020-11): Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U) zur Herstellung von Fenstern und Türen – Klassifizierung, Anforderungen und Prüfverfahren – Teil 1: Nicht beschichtete PVC-U Profile mit hellen Oberflächen.

[3] DIN EN ISO/CIE 11664-4 (2020-03): Farbmetrik – Teil 4: CIE 1976 L* a* b* Farbraum.

[4] DIN ISO 4582 (2019-03): Kunststoffe – Bestimmung der Änderung der Farbe und anderer Eigenschaften nach Bestrahlung hinter Glas, nach natürlicher oder nach künstlicher Bewitterung.

[5] DIN EN 20105-A02 (1994-10): Textilien – Farbechtheitsprüfungen – Teil A02: Graumaßstab zur Bewertung der Änderung der Farbe.

[6] ISO/CIE 11664-6 (2014-02): Colorimetry – Part 6: CIEDE2000 Colour-difference formula.

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