ZERTIFIKAT

SKZ

Z122108/16

We hereby confirm that the tested window profiles made of PVC-U, produced with formulation

PROMINANCE uPVC DRYBLEND

of producer

Prominance uPVC Profiles, Captiv Fenestration
Appanaikenpatti, Sulur
641402 Coimbatore, TAMIL NADU
INDIA

according to the results of test report no. 122108/16 dated 14 October 2016

of the accredited Testing Laboratory

SKZ - Testing GmbH
Friedrich-Bergius-Ring 22
97076 Würzburg
GERMANY

complies with the requirements regarding

Material characteristics

(Vicat-softening temperature, Flexural modulus of elasticity and Tensile impact strength)

in accordance with the standard mentioned below

DIN EN 12608-1: 2016-08, annex A

This is to confirm that the formulation tested in the aforementioned report is in conformity with the standard.
If the formulation is changed, this certificate becomes invalid and a new test must be performed.

SKZ - Testing GmbH SKZ international akkreditiert

Würzburg, 2016-10-17

i. V.

Certification Body

Das Kunststoff-Zentrum

SKZ

Test report no.: **122108/16**

Customer: Prominance uPVC Profiles, Captiv Fenestration
Appanaikenpatti, Sulur
641402 Coimbatore, TAMIL NADU
INDIA

Order: Testing of the material characteristics according to DIN EN 12608-1: 2016-08, annex A on profiles made of PVC-U for the fabrication of windows and doors

Letter of: 2016-07-21 **by:** Mr. Shan

Sample receipt: 2016-08-03

Test period: 2016-08-09 to 2016-10-10

This test report comprises 4 pages.

Würzburg, 2016-10-14
Rs/km

i. V.
Dr. Anton Zahn

International akkreditiert SKZ - Testing GmbH

i. A.
Wolfgang Ries

SKZ – Testing GmbH
Prüfung, Überwachung, Zertifizierung
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SKZform 1020 - 9/15

1. Order

By its letter of 21 July 2016 the company Prominance uPVC Profiles, Captiv Fenestration, Appanaikenpatti, Sulur, 641402 Coimbatore, TAMIL NADU, INDIA instructed the SKZ - Testing GmbH to test the material characteristics according to DIN EN 12608-1: 2016-08, annex A on profiles made of PVC-U for the fabrication of windows and doors.

2. Test material

SKZ - Testing GmbH had the following test material at their disposal on 3 August 2016:

4 x 1 m window profile sections made of PVC-U, colour white

Profile manufacturer:	Prominance uPVC Profiles, Captiv Fenestration, INDIA
Designation of system:	PROMINANCE
Designation of profile:	SASH PC62 US 04
Profile marking:	PROMINANCE PC62 US 04 21.04.16 18:21 AGRN L7
Designation of formulation:	PROMINANCE uPVC DRYBLEND
Base of stabilization:	CaZn

3. Test procedure

Testing of material characteristics was carried out according DIN EN 12608-1, window profiles made of PVC-U "Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors - Classification, requirements and test methods – Part 1: Non-coated PVC-U profiles with light coloured surfaces", edition 2016-08, annex A, item A.4.

Unless indicated otherwise, pre-testing storage and the test itself were carried out at standard conditioning atmosphere 23/50, class 1 according to DIN EN ISO 291: 2008-08.

Usually we carry out tests according to standards for which we have an accreditation. The list of all standards for which we are accredited is shown on the homepage at www.skz.de.

3.1 Vicat-softening temperature (VST)

The Vicat-softening temperature (VST) was determined according to DIN EN ISO 306: 2004-10, method B/50. The required samples were taken from the outer surface of the window profile. The mean value is based on 3 individual values.

Requirement:

The Vicat-softening temperature (VST) must be at least 75 °C on average and each individual value must be at least 73 °C.

3.2 Flexural modulus of elasticity

The flexural modulus of elasticity (E_b) was determined according to DIN EN ISO 178: 2013-09. The samples were taken from profile section by milling. The test speed was 1 mm/min, the support distance L was 48 mm (16 x sample thickness).

Requirement:

The flexural modulus of elasticity must be at least 2200 N/mm² on average and each individual value must be at least 2000 N/mm².

3.3 Tensile impact strength

The tensile impact strength test was carried out according to DIN EN ISO 8256: 2005-05 on samples of type 5. The samples were taken from the outer sight surface of the window profiles, in the direction of extrusion, by machining. The impact energy capacity of the pendulum was 50 J.

The mean value is based on 10 individual values.

Requirement:

The mean tensile impact strength must be at least 600 kJ/m² on average and each individual value must be at least 450 kJ/m².

4. Test results

4.1 Vicat-softening temperature (VST)

Vicat-softening temperature (VST) in [°C]			
Individual values			Mean value
80.5	80.7	80.7	**80.6**

Smallest individual value: 80.5 °C

4.2 Flexural modulus of elasticity

Flexural modulus of elasticity in [N/mm²]	
Mean value from min. 5 individual measurements	Standard deviation
3070	64

Smallest individual value: 3010 N/mm^2

4.3 Tensile impact strength

Tensile impact strength in [kJ/m²]		
Mean value from 10 individual measurements	Standard deviation	Fracture behaviour
934	143	ductile

Smallest individual value: 770 kJ/m^2

5. Assessment of test results

The requirements of DIN EN 12608-1: 2016-08, annex A, item A.4 concerning material characteristics on profiles made of PVC-U for the fabrication of windows and doors were fulfilled in the tested items.

Das Kunststoff-Zentrum

SKZ

SKZ - Testing GmbH · Friedrich-Bergius-Ring 22 · 97076 Würzburg

Prominance uPVC Profiles
Captiv Fenestration
Mr. Shan
Mr. Devarajan
Appanaikenpatti, Sulur
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10 November 2017 / sn

Test order no. 122109/16
Final results of the weathering fastness test according to DIN EN 12608-1: 2016-08

Dear Mr. Shan, dear Mr. Devarajan,

Please find below the following results of the final assessment of the weathering fastness test after artificial weathering of approx. **10,215** hours:

Irradiation energy: 20 GJ/m²

Artificial weathering according to (DIN) EN 513, procedure 2 (simulation of a severe climatic zone S) up to an raised irradiation dose of 20 GJ/m² in the wave length range between 300 nm and 800 nm.

1. Colourimetric assessment:

The sample colour was measured by means of a spectrophotometer of a wave length area of 360-750 nm, standard light type D65, 10° normal inspection. The colour distance ΔE^*_{ab} was determined according to DIN EN ISO 11664-4. Prior to and after artificial weathering, colour was measured at the same position on the sample to obtain reproducible results.

Please note that the colourimetric assessment of the structured foils can only be taken as a guide value.

Sample designation: **PROMINANCE PC62 US 04 21.04.16 19:25 AGRN L7**

Time of exposure	Dose of irradiation	Colour coordinates			Total colour distance
		Δ L*	Δ a*	Δ b*	Δ E^*_{ab}
1000 h	2 GJ/m²	0.5	0.1	-1.6	1.7
2000 h	4 GJ/m²	0.6	0.0	-1.3	1.4
3000 h	6 GJ/m²	0.7	0.0	-1.4	1.6
4000 h	8 GJ/m²	0.6	0.0	-1.6	1.7
5000 h	10 GJ/m²	0.6	0.0	-1.6	1.7
6000 h	12 GJ/m²	0.6	0.0	-1.6	1.7
7000 h	14 GJ/m²	0.6	0.0	-1.7	1.8
8140 h	16 GJ/m²	0.7	0.0	-1.7	1.8
9000 h	18 GJ/m²	0.7	0.0	-1.7	1.8
10215 h	20 GJ/m²	0.7	0.0	-1.8	1.9

2. Visual assessment

Visual assessment was performed according to DIN EN 20105-A02 with the grey scale.

Time of exposure	Dose of irradiation	Grey scale value		Remark
		A 02	A 03	
1000 h	2 GJ/m²	4	-	lighter
2000 h	4 GJ/m²	4 - 5	-	lighter, duller
3000 h	6 GJ/m²	4 - 5	-	lighter, duller
4000 h	8 GJ/m²	4 - 5	-	lighter, duller
5000 h	10 GJ/m²	4 - 5	-	lighter, duller
6000 h	12 GJ/m²	4	-	lighter, duller
7000 h	14 GJ/m²	4	-	lighter, duller
8140 h	16 GJ/m²	4	-	lighter, duller
9000 h	18 GJ/m²	4	-	lighter, duller
10215 h	20 GJ/m²	4	-	lighter, duller

If you have any questions, don't hesitate to contact me.

Best regards

SKZ - Testing GmbH

i. A.

Wolfgang Ries

ZERTIFIKAT

SKZ

Z122109/16

We hereby confirm that the tested window profiles made of PVC-U, produced with formulation

Prominance uPVC Dry Blend, CaZn

of producer

Prominance uPVC Profiles, Captiv Fenestration
Appanaikenpatti, Sulur
Coimbatore-641402
TAMIL NADU
INDIA

according to the results of test report no. 122109/16 dated 18 August 2017

of the accredited Testing Laboratory

SKZ - Testing GmbH
Friedrich-Bergius-Ring 22
97076 Würzburg
GERMANY

complies with the requirements regarding

Resistance to weathering for climate zone S (severe climate, raised irradiation dose equivalent of 16 GJ/m^2)

(Impact strength after artificial weathering and colour fastness)

in accordance with the standard mentioned below

DIN EN 12608-1: 2016-08

This is to confirm that the formulation tested in the aforementioned report is in conformity with the standard.
If the formulation is changed, this certificate becomes invalid and a new test must be performed.

Würzburg, 2017-08-18

SKZ - Testing GmbH SKZ international akkreditiert

i. V.

Dipl.-Ing. Helmut Zanzinger
Certification Body

Das Kunststoff-Zentrum

SKZ

Test report no.: **122109/16**

Customer:
Prominance uPVC Profiles, Captiv Fenestration
Appanaikenpatti, Sulur
641402 Coimbatore
TAMIL NADU
INDIA

Production site:
Prominance uPVC Profiles, Captiv Fenestration
Appanaikenpatti, Sulur
641402 Coimbatore
TAMIL NADU
INDIA

Order:
Testing of Resistance to artificial weathering (fastness to weathering and resistance to weathering), classification for climate zone S (severe climate) according to DIN EN 12608-1: 2016-08 "Unplasticized poly (vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors - Classification, requirements and test methods", Part 1: Non-coated PVC-U profiles with light coloured surfaces.

Artificial weathering according to DIN EN 513: 1999-10, procedure 2 (simulation of a severe climate zone S) up to a raised irradiation dose equivalent of altogether **16 GJ/m²** in the wave length range of 300 nm to 800 nm.

Letter of: 2016-07-30 **Ref:** Mr. V. Shan

Sample receipt: 2016-08-03

Test period: 2016-08-05 to 2017-08-18

This test report comprises 5 pages.

Würzburg, 2017-08-18
Rs/km

i. V. M. Heindl

Dr.-Ing. Marcus Heindl

International akkreditiert
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SKZform 1020 – 8/15

1. Order

By its letter dated 30 July 2016 the company Prominance uPVC Profiles, Captiv Fenestration, Appanaikenpatti, Sulur, 641402 Coimbatore, TAMIL NADU, INDIA instructed SKZ - Testing GmbH to test the Resistance to artificial weathering (fastness to weathering and resistance to weathering), classification for climate zone S (severe climate) according to DIN EN 12608-1: 2016-08 "Unplasticized poly (vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors - Classification, requirements and test methods", Part 1: Non-coated PVC-U profiles with light coloured surfaces. Artificial weathering was carried out according to DIN EN 513: 1999-10, procedure 2 (simulation of a severe climate zone S) up to a raised irradiation dose equivalent of altogether **16 GJ/m²** in the wave length range of 300 nm to 800 nm.

2. Test material

On 3 August 2016 SKZ - Testing GmbH received following test material:

4 x 1 m window profile sections made of PVC-U, colour white

Profile designation:	Sash PC 62 US 04
Profile classification:	class A
Profile marking:	PROMINANCE PC 62 US 04 21.04.16 19:25 AGRN L7
Formulation:	**Prominance uPVC Dry Blend**
Basis of stabilization:	**CaZn**

3. Test procedure

Following tests were performed according to DIN EN 12608-1: 2016-08, item 5.9 Resistance to weathering, climate zone S. Artificial weathering according to DIN EN 513: 1999-10, procedure 2 (simulation of a severe climate zone S) up to a raised irradiation dose equivalent of altogether **16 GJ/m²** in the wave length range of 300 nm to 800 nm.

Unless otherwise noted all tests were carried out at standard atmosphere 23/50, class 1 according to DIN EN ISO 291: 2008-08.

Usually we carry out tests according to standards for which we have an accreditation. The list of all standards for which we are accredited is shown on the homepage at www.skz.de.

3.1 Resistance to artificial weathering

Testing of Resistance to artificial weathering (fastness to weathering and resistance to weathering) was performed according to DIN EN 12608-1: 2016-08. Procedure of artificial weathering is based on the requirements according to DIN EN 513, procedure 2, simulation of a severe climate zone (S). Surface outside was irradiated. The artificial weathering was carried out up to a raised irradiation dose of altogether 16 GJ/m² in the wave length range between 300 nm to 800 nm.

Parameter of xenon device

Type of weathering device:	XENOTEST® BETA LM
Light source:	Xenon-arc source
Filter:	Terrestrial daylight simulation
Black standard temperature:	65 ± 3 °C
White standard temperature:	45 - 50 °C
Relative humidity:	65 ± 5 %
Spray cycle:	6 min water spray, 114 min dry cycle
Irradiation energy E_{UV} (300 - 400) nm:	60 ± 2 W/m²
Total irradiation dose equivalent in the wavelength range (300 - 800) nm:	**16 GJ/m²**
Exposure period:	8140 h
Start:	2016-08-08
End:	2017-08-04

3.1.1 Resistance to weathering

Testing of Resistance to weathering was carried out according to DIN EN 12608-1: 2016-08, item 5.9.2 on double notched specimen following DIN EN ISO 179-1/1fA: 2010-11, but with a residual width between notches of (3 ± 0.1) mm and with the dimensions (50 x 6 x wall thickness) mm. The test was carried out subsequent to artificial weathering on reference samples, which have been stored in the dark, as well as on weathered samples. During this test the weathered surface was subjected to tensile stress.

Requirements according to DIN EN 12608-1 (related to12 GJ/m²):

The mean value of Charpy notched impact strength at condition as delivered (unweathered) shall not drop below 55 kJ/m².

After artificial weathering Charpy notched impact strength of weathered samples shall not drop more than 40 % compared to the value of the unweathered samples.

3.1.2 Fastness to weathering

Testing of Fastness to weathering was carried out according to DIN EN 12608-1: 2016-08, item 5.9.3.

3.1.2.1 Visual assessment

Visual assessment was carried out according to ISO 4582: 2007-08 by using grey scale according to DIN EN 20105-A02: 1994-10.

3.1.2.2 Colorimetric assessment

The colorimetric assessment was carried out by a spectrophotometer in wavelength range from 360 to 750 nm, standard light type D65, gloss inclusion, 10° standard observation. The colour distance ΔE^*_{ab} was determined according to DIN EN ISO 11664-4: 2012-06.

Requirement according to DIN EN 12608-1 (related to 12 GJ/m²):

After artificial weathering colour distance ΔE^*_{ab} between unweathered and weathered samples shall not be larger than 5 and colour distance Δb^* shall not be larger than 3.

4. Test results

4.1 Resistance to artificial weathering

4.1.1 Resistance to weathering

Charpy notched impact strength

Samples corresponding to DIN EN ISO 179-1/ **1fA** (notch base radius 0.25 mm)				
reference sample (unweathered)		weathered sample		amendment
$\bar{x}$ [kJ/m²]	s	$\bar{x}$ [kJ/m²]	s	[%]
74.4	1.5	66.7	1.8	-10.4
10 x P* (10 x partial break)		10 x P* (10 x partial break)		---

$\bar{x}$ = mean value s = standard deviation

4.1.2 Fastness to weathering

4.1.1 Visual assessment

The sample reached the fastness grade **4** of the grey scale according to DIN EN 20105-A02.

Neither stains, blisters nor crack formations or anything that significant damages the appearance were observed.

4.1.2 Colorimetric assessment

Colour coordinates	Sample as supplied	Sample after weathering	Colour distance
L*	95.7	96.4	0.7
a*	-0.8	-0.8	0.0
b*	2.9	1.2	**-1.7**
Colour distance ΔE^*_{ab}			**1.8**

5. Assessment of test results

The requirements (related to an irradiation dose equivalent of 12 GJ/m²) according to DIN EN 12608-1: 2016-08 regarding Resistance to artificial weathering (fastness to weathering and resistance to weathering), classification to climate zone S (severe climate) were met after a total irradiation dose equivalent of **16 GJ/m²**.