A-7/2022

PERFORMANCE ASSESSMENT REPORT

FOR ISSUING THE NATIONAL TECHNICAL ASSESSMENT

Name of the product:	**Plastic profile made of recycled plastic JB-Green_01**
Intended area of use of the product:	**The plastic profiles are used outdoors as fence posts.**
Product range:	**Other (36)**

Manufacturer of the product: JB Pro Quality Korlátolt Felelősségű Társaság

H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10.

June 13, 2022

The Performance Assessment Report consists of 4 pages and 3 annexes.

1. DATA

1.1. The manufacturer and manufacturing site(s) of the product

1.1.1. Manufacturer of the product

In accordance with the work program No. A-7/2022, dated on 28/02/2022.

1.1.2. Manufacturing site(s) of the product

In accordance with the work program No. A-7/2022, dated on 28/02/2022.

1.2. Description of the product

In accordance with the work program No. A-7/2022, dated on 28/02/2022.

1.3. Description of the intended use of the product

In accordance with the work program No. A-7/2022, dated on 28/02/2022.

2. TECHNICAL ASSESSMENT OF PRODUCT CHARACTERISTICS

2.1. Essential characteristics and assessment of the performance of the product

2.1.1. Mechanical resistance and stability

2.1.2. Safety in case of fire

Essential characteristics	Performance	Assessment method	Origin of performance
Product code: **JB-Green_01**			
Class of reaction to fire (fire protection class)	NPD*	MSZ EN 13501-1:2019	-

* In accordance with Section 3.8 of the Fire Protection Technical Directive No. TvMI 11.3: 2022.06.13., the determination of class of reaction to fire (fire protection class) can be omitted and the NPD option (No Performance Determined) can be used.

2.1.3. Hygiene, health and environment protection

2.1.4. Safe use and accessibility

Essential characteristics	Performance	Assessment method	Origin of performance
Product code: **JB-Green_01**			
Relative dimensional change in the longitudinal direction due to heat(average value) (70 °C, 1 hour)	+0.008%	MSZ EN 479:2018	Based on laboratory Test Report No. MN-A181A-24320-2022 of ÉMI.
Impact resistance against falling mass (1000 g, 1 m) - at 23 °C - at -10 °C	no damage/ no change no damage/ no change	MSZ EN 477:2018	Based on laboratory Test Report No. MN-A181A-24320-2022 of ÉMI.
Characteristic value of bending load capacity, F 5% (support distance 220 cm)	> 2.50 kN	MSZ EN 12839:2012 B.1.1.5.	Based on laboratory Test Report No. MN-A181A-24319-2022/1 of ÉMI.
Dimensional accuracy - side width - relative curvature	+5 / -0 mm ~~> 0.20 %~~	MSZ EN 12839:2012 5.1.2.1.	Based on laboratory Test Report No. MN-A181A-24319-2022/1 of ÉMI.

2.1.5. Protection against noise

2.1.6. Energy economy and thermal protection

2.1.7. Sustainable use of natural resources

Essential characteristics	Performance	Assessment method	Origin of performance
Product code: **JB-Green_01**			
Weather resistance (UV resistance), 1000 hours of exposure - bending strength after UV aging (average value) - impact resistance (1000 g, 1 m), at 23 °C, after UV aging	no change is visible, ≥13 MPa no damage/ no change	MSZ EN 513:2018 (Method 2) MSZ EN ISO 178:2019 MSZ EN 477:2018	Based on laboratory Test Report No. MN-A181A-24319-2022/2 of ÉMI.
Aging due to heat (80 °C, 50 days) - bending strength after heat aging (average value)	no change is visible, →13 MPa	EAD 030350-00-0402 2.2.10. MSZ EN ISO 178:2019	Based on laboratory Test Report No. MN-A181A-24319-2022/2 of ÉMI.

ÉMI Non-profit Limited Liability Company for Quality Control and Innovation in Building
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Project number: MN-A181A-24320-2022 **Topic number: A-7/2022**
É1-M181X-24134-2022

TEST REPORT

Name of the product(s) and/or test:	Determination of dimensional change and impact resistance of recycled plastic profile JB-Green_01 due to heat.
Applicant:	JB Pro Quality Korlátolt Felelősségű Társaság H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10.
Name of test standard(s):	**MSZ EN 479:2018**, Hard polyvinyl chloride (PVC-U) profiles suitable for the production of windows and doors. Determination of dimensional change due to heat. **MSZ EN 477:2018**, Hard polyvinyl chloride (PVC-U) profiles suitable for the production of windows and doors. Determination of the impact resistance of the main profiles at -10 °C with a drop weight.
Place of the test:	The Central Material and Structure Testing Laboratory of ÉMI Nonprofit Kft. H-2000 Szentendre, Dózsa György út 26.

May 23, 2022

The test results only apply to the examined piece.
The Test Report may only be copied in its entirety without the written permission of the laboratory.
The report consists of 6 numbered pages.

1. DATA

1.1. Data related to the assignment

Name and address of the applicant:	JB Pro Quality Korlátolt Felelősségű Társaság H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10
Name and address of the manufacturer:	JB Pro Quality Korlátolt Felelősségű Társaság H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10
Place of production:	JB Pro Quality – Green. H-8514 Mezőlak, Petőfi Sándor utca 86.

1.2 Data related to sampling

Sampling method:	Sample submitted by the customer for testing
Date of arrival:	24/03/2022
Sample Number:	KA/1352/2022

1.3. Submitted documents

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1.4. Technical specifications and requirements

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1.5. Test standards

Test standard No.	Title of the Standard
MSZ EN 479:2018	Hard polyvinyl chloride (PVC-U) profiles suitable for the production of windows and doors. Determination of dimensional change due to heat.
MSZ EN 477:2018:	Hard polyvinyl chloride (PVC-U) profiles suitable for the production of windows and doors. Determination of the impact resistance of the main profiles at -10 °C with a drop weight.

2. TESTS

2.1. Determination of dimensional change due to heat (70 °C, 60 min)

Test method: MSZ EN 479:2018

Place of the test: The Central Material and Structure Testing Laboratory of ÉMI Nonprofit Kft.
Sample tested: 3 pieces, L = 200 mm
Circumstances of the conditioning: 23 °C; 53% RH.
Date of conditioning: May 16-17, 2022
Test conditions: 22 °C; 48% RH.
Date of the test: May 17, 2022
The test was performed by: Mr György Szabó

Name of the measuring device	*Identification number of the measuring device*	*Measuring range/accuracy of the measuring device*	*The checked condition of the measuring device*
Drying cabinet	423.	0-400 °C / 1 °C	calibrated
Digital calliper	201.2	0-200 mm / 0.01 mm	calibrated
Thermometer and hygrometer	244.3	10-50 °C / 0.1 °C 25-98% / 1%	calibrated

2.2. Determination of impact resistance (1000 g, 1 m)

- Before UV aging, under (23 °C, 52 % RH) conditions
- Before UV aging, at -10 °C
- After 1000 h of UV aging, under (23 °C, 52 % RH) conditions

Test method: MSZ EN 477:2018

Place of the test: *Circumstances of the conditioning*: The Central Material and Structure Testing Laboratory of ÉMI Nonprofit Kft.
Date of conditioning: 23 °C; 53% RH.
Sample tested: May 17-18, 2022
Test conditions: 10-10-10 profiles, L = 300 mm
Date of the test: 23 °C; 52% RH.
The test was performed by: May 18, 2022
Mr György Szabó

Name of the measuring device	*Identification number of the measuring device*	*Measuring range/accuracy of the measuring device*	*The checked condition of the measuring device*
Climate chamber	97.	-40 °C - +180 °C / 0.1 °C 10-99% / 1%	calibrated
Impacting body	480.	-	checked
Thermometer and hygrometer	244.3 305.	10-50 °C / 0.1 °C 25-98% / 1%	calibrated
Measuring tape		0-8000 mm / 1 mm	calibrated

3. RESULTS

3.1. Determination of dimensional change due to heat (R)

Sample	**L0 [mm]**	**L1 [mm]**	**ΔL [m]**	**R [%]**
1. (H)	201.96	201.82	- 0.07	- 0.035
2. (H)	201.31	201.35	+ 0.02	+ 0.010
3. (H)	201.85	202.05	+ 0.10	+ 0.049
Average (H)	**201.71**	**201.74**	**0.017**	**0.008**

(H) - longitudinal;

3.2. Determination of impact resistance (1000 g, 1 m)

Before UV aging, under (23 °C, 52 % RH) conditions

Sample	Change/damage to the sample
1	**No change**
2	**No change**
3	**No change**
4	**No change**
5	**No change**
6	**No change**
7	**No change**
8	**No change**
9	**No change**
10	

Before UV aging, at (-10 °C)

Sample	Change/damage to the sample
1	**No change**
2	**No change**
3	**No change**
4	**No change**
5	**No change**
6	**No change**
7	**No change**
8	**No change**
9	**No change**
10	

After 1000 h of UV aging, under (23 °C, 52 % RH) conditions:

Sample	Change/damage to the sample
1	**No change**
2	**No change**
3	**No change**
4	**No change**
5	**No change**
6	**No change**
7	**No change**
8	**No change**
9	**No change**
10	

4. DECLARATION OF CONFORMITY

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5. ANNEXES

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Szentendre, May 23, 2022

The report was compiled by: Ms Ágota Maga, Testing Engineer.

Checked by	Approved by:
[*Illegible signature*]	[*Illegible signature*]
Mr Zsolt Mondok	Mr Ákos Darányi
Head of Laboratory	Head of ÉMILAB

[*Stamp of ÉMI*]

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Project number: É1-M181X-24134-2022
MN-A181A-24319-2022/1

Topic number: -

TEST REPORT

Name of the product(s) and/or test:	**Fence post made of recycled plastic**
Applicant:	**JB Pro Quality Kft.** **H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10.**
Name of test standard(s):	**MSZ EN 12839:2012** **Precast concrete products. Fence elements.**
Place of the test:	**The Central Material and Structure Testing Laboratory of ÉMI Nonprofit Kft.** **H-2000 Szentendre, Dózsa György út 26.**

May 26, 2022

The test results only apply to the examined piece.
The Test Report may only be copied in its entirety without the written permission of the laboratory.
The report consists of 3 numbered pages and 0 annexes.

Date of the test: 04/04/2022

Test conditions: 23.6 °C – 40% RH

The test was performed by: Mr Zoltán Mayer, Test Technician

2.3 Name of the equipment and tools used during the tests

Name of the measuring device	*Measuring range of the measuring device (if applicable)*	*Identification number of the measuring device*	*The checked condition of the measuring device*
Digital caliper	0... 150 mm	178	calibrated
Measuring tape	0... 5000 mm	454	calibrated
Digital thermometer and hygrometer	-30... +50 °C 25... 100 %	1231	calibrated
Bending bench	0... 200 kN	1203	calibrated

3 RESULTS

3.1 Geometric dimensions and forces of ruination

Sample ord.no.	Side width (mm)	Length (mm)	Relative curvature (%)	Force of ruination (kN)	Average of forces of ruination (kN)
1	104.0	2538	0.160	4.22	4.13
2	103.5	2540	0.020	3.63	
3	103.5	2540	0.120	4.52	

4 DECLARATION OF CONFORMITY (based on MSZ EN ISO/IEC 17025 7.8.6)

The results were calculated based on the relevant test standards.
The results were evaluated in the table below according to decision rule ILAC-G8:09/2019 4.2.1-2.
w=0 □ w=U □

Product characteristics	**Result**	**Requirement**	**Requirement standard/ regulation**	**Evaluation/ classification***
-	-	-	-	-

* in case of classification, the product meets the prescribed requirements

5 ANNEXES

Szentendre, May 26, 2022

The report was compiled by: Mr Gergely Hamar, Testing Engineer.

Checked by
[*Illegible signature*]
Mr Zsolt Mondok
Head of Laboratory

Approved by:
[*Illegible signature*]
Mr Ákos Darányi
Head of ÉMILAB

[*Stamp of ÉMI*]

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Project number: É1-M181X-24134-2022
MN-A181A-24319-2022/2

Topic number: -

TEST REPORT

Name of the product(s) and/or test:	**Fence post made of recycled plastic**
Applicant:	**JB Pro Quality Kft.** **H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10.**
Name of test standard(s):	**MSZ EN ISO 178:2019** **Plastics. Determination of bending properties.** **MSZ EN ISO 1183-1:2019** **Plastics. Methods for determining the density of non-porous plastics. Part 1: Immersion, liquid pycnometer and titration methods.** **EAD 030350-00-0402** **Liquid applied roof waterproofing kits.** **MSZ EN 513:2019** **Plastics. Polyvinyl chloride- (PVC-) based profiles. Determination of weather resistance by artificial aging.**
Place of the test:	**The Central Material and Structure Testing Laboratory of ÉMI Nonprofit Kft.** **H-2000 Szentendre, Dózsa György út 26.**

May 26, 2022

The test results only apply to the examined piece.
The Test Report may only be copied in its entirety without the written permission of the laboratory.
The report consists of 5 numbered pages and 0 annexes.

1. DATA

1.1. Data related to the assignment

Name of the tested product: Fence post made of recycled plastic

Applicant: JB Pro Quality Kft.
H-9800 Vasvár, Szentmihályfalvi utca 10. 3. em 10.

Subject of the assignment: Determination of the bending properties of the test specimens made from the product without aging, after thermal aging and after UV aging, as well as measuring the density of the product.

1.2 Data related to sampling

Sampling and delivery of the samples to the laboratory were carried out by the applicant.
Arrival time of the samples: 24/03/2022
Number of arrival: KA/1352/2022
Size and quantity of the sample: 5 whole fence posts

1.3 Product description based on manufacturer data

Nominal size: 100x100x2600 mm, one end of the column is pointed

Raw material type: Recycled plastic: PE/PET chips

Product code: H260/10/210

2 TESTS

2.1 Aging procedures

2.1.1 Thermal aging

We cut out 3 boards in size of approximately 200x80x4 mm from the fence post, these were the subjects of thermal aging.
Test method: EAD 030350-00-0402 A4.8

- Temperature: 80±2 °C
- Duration: 50 days

Date of the test: 04/04/2022 – 24/05/2022

The test was performed by: Mr György Szabó, Test Technician

2.1.2 UV aging

We cut out 3 boards in size of approximately 200x80x4 mm from the fence post, these were the subjects of UV aging.
Test method: MSZ EN 513:2019 Method 2

- Cycle composition: 114 minutes of dry irradiation, 6 minutes of water spray
- UV irradiation on 340 sqm: 0.51 ± 0.02 W/(m2sqm)

- Black standard temperature: 65±3 °C
- White standard temperature: 45 -50 °C
- Relative humidity; 65±10 %
- Duration: 1000 hours

Date of the test: 01/04/2022 – 15/05/2022

The test was performed by: Mr György Szabó, Test Technician

2.2 Determination of bending properties using three-point bending

Test method: MSZ EN ISO 178:2019
- Crosshead speed: 2 mm/min

Circumstances of the conditioning: 23±2 °C, 50±10 9'o RH
In all cases, we tried to make 80x10x4 mm specimens preferred by the standard for the bending. The desired thickness was not achieved in several cases, in case of thicker samples, we used a larger support distance based on the standard.

2.2.1 Original sample

Support distance:	72 mm
Average cross section of samples:	4.5 X 12.2 mm
Conditioning:	May 17-18, 2022
Date of the test:	May 18, 2022
Test conditions:	24 °C - 48% RH
The test was performed by:	Mr György Szabó, Test Technician

2.2.2 Thermal aged sample

Support distance:	75 mm
Average cross section of samples:	4.9 x 11.0 mm
Conditioning:	May 24-25, 2022
Date of the test:	May 25, 2022
Test conditions:	24 °C - 55% RH
The test was performed by:	Mr György Szabó, Test Technician

2.2.3 UV-aged sample

Support distance:	83 mm
Average cross section of samples:	5.3 x 11.1 mm
Conditioning:	May 24-25, 2022
Date of the test:	May 25, 2022
Test conditions:	24 °C - 55% RH
The test was performed by:	Mr György Szabó, Test Technician

2.3 Density measurement

Test method:	MSZ EN ISO 1183-1:2019 Method A
Nominal size of the test pieces:	100x100x50 mm

Date of the test: 12/04/2022
Test conditions: 22 °C, 44% RH
Immersion liquid: distilled water
Immersion liquid temperature: 22 °C
The test was performed by: Mr György Szabó, Test Technician

2.4 Name of equipment and devices used during the tests

Name of the measuring device	Measuring range of the measuring device (if applicable)	Identification number of the measuring device	The checked condition of the measuring device
Digital calliper	0... 200 mm	201.2	calibrated
Digital thermometer and hygrometer	-10... +50 °C 25... 98 %	244.3	calibrated
Zwick material tester + load cell	0... 2.5 kN	222.2 41.3	calibrated calibrated
Universal tension-compression device + load cell	-0... 2 kN 30... 300 °C 340... 400 mm		
Drying cabinet	313 nm; 340 nm; 351 nm	58.1	calibrated
UV cabinet	0... 4000 g	259	Checked and adjusted with device No 259.1
UV test radiometer		259.1	calibrated
Scales		207.5	calibrated

3 RESULTS

3.1 Results of aging and bending tests

The aging procedures did not cause visible changes in the treated samples.
Being a recycled material, the individual results of the bending test could be greatly influenced by the presence and position of any inhomogeneities (holes, grains, fibres) present in the given sample.

Sample type	Bending strength [Mpa]		Deformation related to bending strength [-]		Fracture stress [Mpa]		Deformation measured at fraction [-]		Modulus of bending flexibility [Mpa]	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
Original sample	13.7	1.58	0.0247	0.0041	10.4	0.669	0.0313	0.0072	1047	121
T herm al-aged sample	15.0	1.86	0.0346	0.0076	12.7	1.468	0.0402	0.0113	945	19
UV-aged sample	14.7	1.92	0.0322	0.0055	12.3	1.987	0.0369	0.0076	1027	147

3.2 Result of the density measurement

Number of samples	1	2	3	**Average**
Density [g/cm3]	0.998	0.984	0.980	**0.987**

4 DECLARATION OF CONFORMITY (based on MSZ EN ISO/IEC 17025 7.8.6)

The results were calculated based on the relevant test standards.
The results were evaluated in the table below according to decision rule ILAC-G8:09/2019 4.2.1-2.

w=0 □
w=U □

Product characteristics	Result	Requirement	Requirement standard/ regulation	Evaluation/ classification*
-	-	-	-	-

* in case of classification, the product meets the prescribed requirements

5 ANNEXES

Szentendre, May 26, 2022

The report was compiled by: Mr Gergely Hamar, Testing Engineer.

Checked by

[*Illegible signature*]

Mr Zsolt Mondok
Head of Laboratory

Approved by:

[*Illegible signature*]

Mr Ákos Darányi
Head of ÉMILAB

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