



IRCCOS S.r.l.

Istituto di Ricerca e Certificazione per le Costruzioni Sostenibili

Notified Body No. 1994 in accordance with Regulation CPR (UE) No. 305/2011

TEST REPORT

Number:

1994-CPR-RP1724

Date of issue:

28 September 2018

Applicant:

**Telform New Generation S.r.l.
Via delle Mammole, 22 (Z.I.)
70123 Modugno (BA)**

Tested sample:

**2-layer glass covering made glass with argon gas between the two layers,
trade name “FLATLIGHT”
(cf. description)**

Executed tests:

Resistance to large soft body impact

Normative References:

EN 1873:2014

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The results included in the Test Report refer exclusively to the tested objects, identified in the present Test Report.

1 Description of the tested sample

The tested sample is a 2-layer glass covering made glass with argon gas between the two layers with the commercial name (as requested by the producer) “FLATLIGHT” with clear declared dimension of 130x260 cm.

Identification code of the tested sample declared by the applicant: “FLATLIGHT”.

Identification code of the tested sample declared by the laboratory: “02/2018/E/O”.

Both description and technical drawings below, referred to the tested sample, were declared and supplied by the applicant under his own responsibility

- External layer: Toughened ESG glass;
- Layers divider: Aluminium profile with Argon gas in the middle of the layers;
- Internal layer: Laminated VSG glass;
- Gaskets: Gasket (between the glass and the underlying support) made of expanded rubber in neoprene closed cells (EPDM+CR) item “X105-CL1”, Produced by Tecnomat s.p.a., Modugno, Bari (Italy);
- External frame: Aluminum profile custom-made on project by Telform New Generation s.r.l., Modugno, Bari (Italy) welded on corners.
- Sealing: Sealing between the glass and the external aluminium frame made of DOW CORNING 791 silicone sealant, with expanded polyethylene rod filling the joint.
- Nominal declared dimensions: See attached technical drawings.

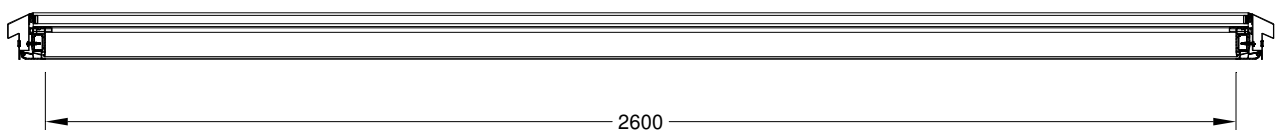
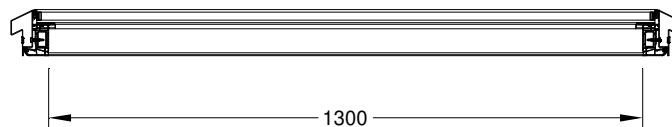


Fig. 1. Section view of the received and tested sample (declared nominal dimensions, expressed in mm)

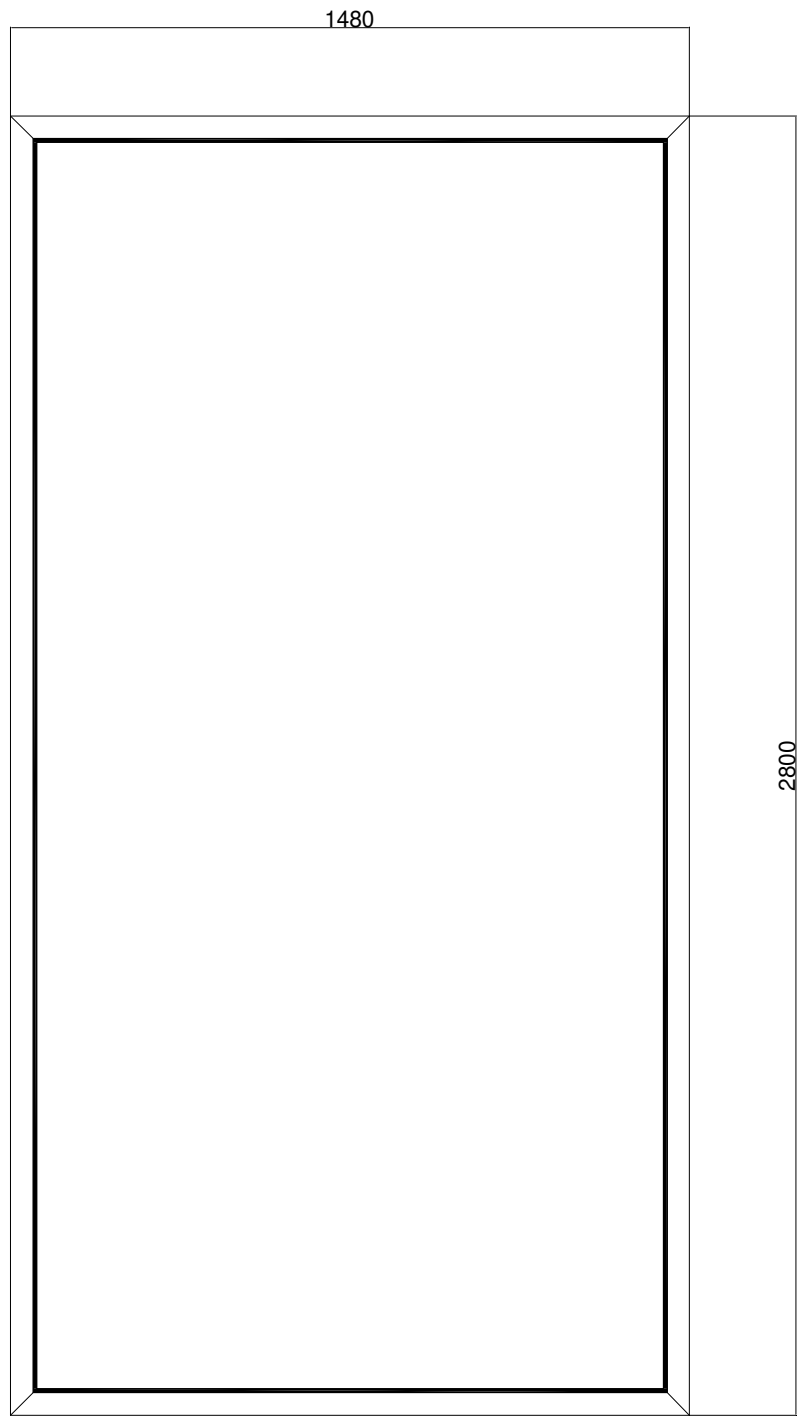


Fig. 2. Top view of the received and tested sample (declared nominal dimensions, expressed in mm)



2 Sampling procedure

The product was specifically manufactured and sampled directly by the applicant who indicated its traceability on the basis of the previously described code.

3 Sample preparation procedure

The specimen was prepared in accordance with the provisions of standard 1873:2014 (for large soft body impact test). The test sample was produced by applicant and the upstand was secured on a rigid horizontal support in accordance with the manufacturer's instruction for regular use (number and position of fixings etc.). The fixing to the substructure or to the ground was carried out in such a way that no supporting air pressure below the rooflight occurs. The applicant declared that the fixings are in accordance with installation instructions. Prior to testing the specimen was measured using a retractable measure tape.

4 Test method

The performed and described tests were carried in reference to the article. 46 of the EU Regulation CPR n. 305/2011 in the laboratory of Telform New Generation S.r.l. located in Modugno (BA), on 2018/06/29, directly by the laboratory technician Damiano Zizza of IRCCOS S.r.l. (NB1994), located in via Achille Grandi 17, Samarate (VA).

4.1 Resistance to large soft body impact

The test was performed in accordance with standard EN 1873:2014 in order to assess and to classify the large soft body impact resistance of an individual skylight when it was tested in accordance with 6.5.2.3 (EN 1873:2014).

- *Principle of test:* the test has the purpose of judging the behavior of a plastic rooflight with upstand by the impact of a large soft body (a sphero-bag of 50 kg mass). It involves the dropping without initial velocity of a defined bag on a proposed impact point at a given height. A successful test is achieved if neither the bag nor the gauge can pass through the specimen.
- *Test procedure:* In accordance with § 6.5.2.3.3 of EN 1873:2014, the test was carried out both on the largest daylight size and on the smallest one.

The equipment and procedures for the test are as follows:

- Test specimens and equipment shall be at (23 ± 4) °C;
- Secure the upstand on a rigid horizontal support in accordance with the manufacturer's instructions for regular use (number and position of fixings etc.) Carry out the fixing to the substructure or to the ground in such a way that no supporting air pressure below the rooflight occurs;
- Connect the plastic rooflight (or opening frame, if applicable) with the upstand by means of the fixings normally used by the manufacturer and in accordance with the manufacturer's instructions;
- Carry out the test with the rooflight closed;
- Suspend the bag defined in EN 596 at a height (distance between lowest point of bag and proposed impact point) of:
 - 2,40 m $\pm 1\%$ for type SB 1200,
 - 1,60 m $\pm 1\%$ for type SB 800,
 - 1,20 m $\pm 1\%$ for type SB 600,
 - 0,60 m $\pm 1\%$ for type SB 300, and
 - $(A \times 0,002)$ m $\pm 1\%$ for type SB Aabove the impact point and drop the bag without initial velocity;
- Test the impact strength at a point, which is determined to be the least favourable point, located in an area between 0,5 m and 1,0 m from the outer edge of the rooflight. If one of the two side of the rooflight is smaller than 1,0 m, carry out the test at the centre line;
- Only one test shall be carried out on each rooflight sample;
- Examine the test specimen without changing the position of the bag on minute after the impact to check whether a 300 mm diameter spherical gauge can pass through.



5 Test equipment

The equipment used to perform the tests, in accordance with EN 1873:2014 consists of:

- a rigid system to place the test sample horizontally in such a way that no supporting air pressure below the rooflight occurs;
- a coarse canvas bag having a mass of 50 ± 0.2 kg that is filled with hardened solid glass spheres of 3 ± 0.5 mm diameter and with the dimensions according to figure 1 of EN 596:
 - the dimensions of the spheroconical bag when filled are those of a volume composed of a sphere of 400 mm diameter inscribed in a cone, the top of which is located at a distance of 400 mm from the center of the sphere;
 - the bottom of the bag is strengthened by a circular piece of leather of 120 mm diameter sewn onto it;
 - the top of the bag is slightly truncated in order to make an opening of 80 mm diameter; this opening is strengthened by a leather strip sewn onto the bag, to which are fixed four equidistant rings held together by a suspension ring;
 - the coarse canvas bag has to contain a thin polyethylene bag of the same size;
- a device for hoisting the bag to give the required drop height and for instantaneously releasing of the bag.

6 Expression of results

6.1 Resistance to large soft body impact

In accordance with § 6.5.2.3.3 of standard EN 1873:2014 for the classes of resistance to large soft body impact, we considered the following table 1, that defines the threshold values for large soft body impact loads.

Types	Impact Energy J
SB 1200	1200
SB 800	800
SB 600	600
SB 300	300
SB A ^a	A ^a
^a The value of A can be selected to meet specific requirements.	

Tab. 1. Types of large soft body impact loads

The designation SB 1200, SB 800, SB 300 and SB A are representing the test impact energy in joules applied.

The test is passed for that class type, only if after the examination of the test specimen, without changing the position of the bag on minute after the impact, a 300 mm diameter spherical gauge cannot pass through it - h) § 6.5.2.3.3 of standard EN 1873:2014.



7 Test results

7.1 Pre-test measurements of sample (dimensions and surfaces)

Test specimen	Measurements	width (m)	length (m)	surface (m ²)
FLATLIGHT	Maximum rooflight dimensions including the drip	1,48	2,796	4,14
	Daylight size of the rooflight	1,3	2,6	3,38

Tab. 2. Measurements of sample

7.2 Resistance to large soft body impact test

Date of test	Temperature (°C)	Relative Humidity (%)
2018/06/29	25,0	60,0

Tab. 3. Environmental conditions

7.2.1 Impact test with large soft body

The specimen was subjected to an energy impact load equal to 1200 J, corresponding to SB 1200 type of class, suspending the bag at a **height of 2.40 m** above the impact point and then dropping the bag without initial velocity.

7.2.1.1 Remarks on results

One minute after the impact, no damage was observed and then no 300 mm diameter spherical pass.

Test specimen	One minute after the impact (dropping the bag from a height of 2.40 m)	
FLATLIGHT	Observations	No damage and no 300 mm diameter spherical pass

Tab. 4. Test results

7.2.2 Classification of the sample

The specimen, subjected to large soft impact test, was classified SB 1200.

Test specimen	width (m)	length (m)	Resistance to large soft body impact
FLATLIGHT	1,3	2,6	SB 1200

Tab. 5. Sample classification

8 Photographs of the tested samples in the experimental setup



Photo 1. Tested sample in the experimental setup for resistance to large soft body impact



Photo 2. Tested sample after the impact test

9 Limitations

This TR does not represent any evaluation of suitability for use nor any declaration of product conformity. The results refer exclusively to the tested sample.

Technical Operator

Stefano Galli



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