ISTITUTO GIORDANO

TEST REPORT No. 371152

Customer

SAINT-GOBAIN PPC ITALIA S.p.A.

Via Ettore Romagnoli, 6 - 20146 MILANO (MI) - Italia

Item*

waterproofing membrane named "Bituver Fleximat"

Activity

hail resistance

according to standard UNI EN 13583:2012

Results

Type of support	Damaging velocity "v_d" [m/s]
soft	**33**

(*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 24 April 2020

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)

Firmato digitalmente da SARA LORENZA GIORDANO

Order:
83534

Item origin:
sampled and supplied by the customer

Identification of item received:
2020/0430 dated 20 February 2020

Activity date:
from 11 March 2020 to 12 March 2020

Activity site:
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 - 47043 Gatteo (FC) - Italy

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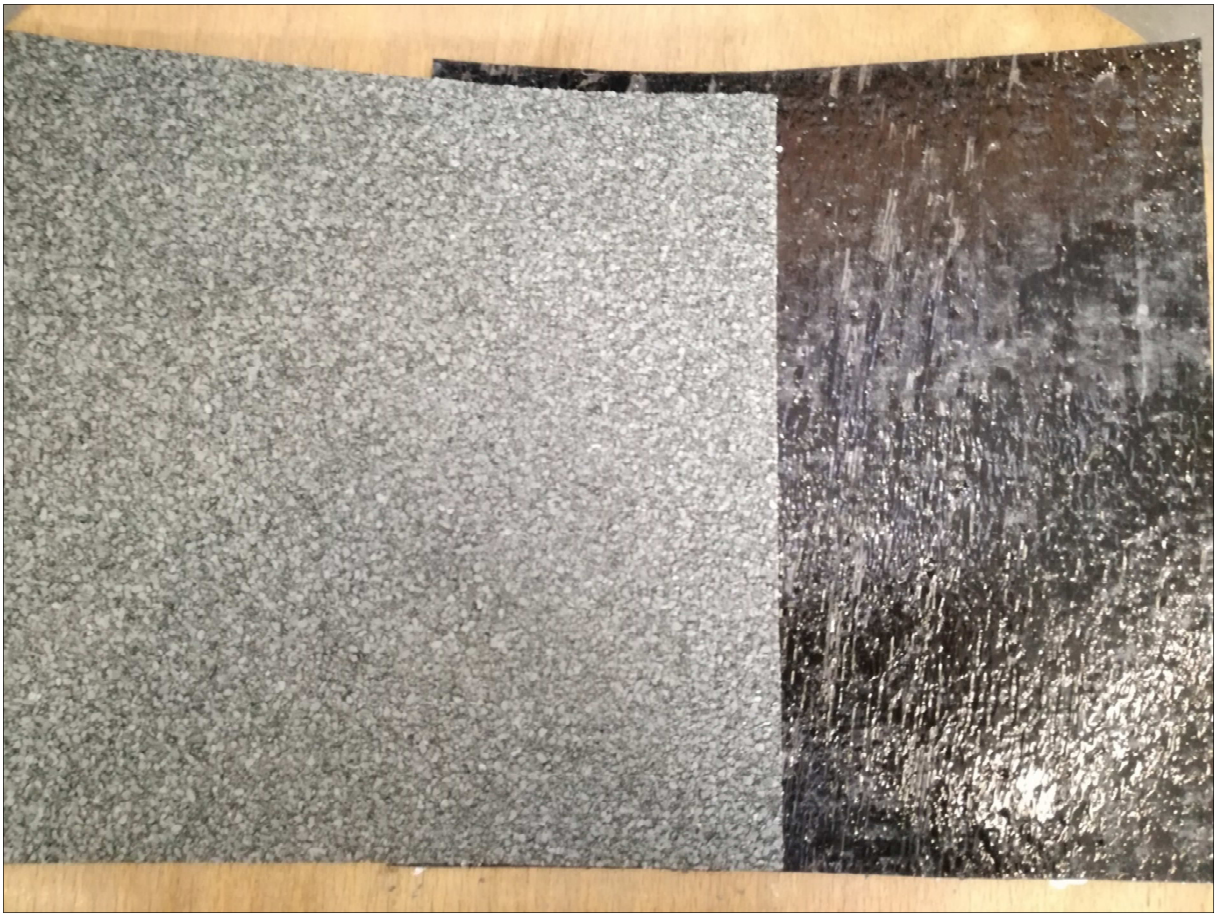
Description of item*

The item under examination consist of 5 specimens of a waterproofing membrane in elastomeric BPE compound with slate top finish, nominal size 250 mm × 250 mm each.



Photograph of a few specimens

Normative references

Standard	Title
UNI EN 13583:2012	Membrane flessibili per impermeabilizzazione - Membrane bituminose, di materiale plastico e gomma per impermeabilizzazione di coperture - Determinazione della resistenza alla grandine *(Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of hail resistance)*

(*) according to that stated by the customer, with the exception of the characteristics expressly indicated as obtained via measurement; Istituto Giordano disclaims any responsibility on the information and data provided by the customer that may influence the results

Apparatus

Description
vertical pneumatic launching drive equipped with pressurization tank, electric valves for loading and launching, manometer to control the loading pressure and photo cell device able to measure the output velocity of the ball from the launching opening
plastic balls made of polyamide (PA 6.6), diameter (40 ± 0,5) mm and mass (38,5 ± 0,5) g each, with a smooth and defect free surface
device for creating a di 0,15 bar pressure difference, to check the holes in the specimen with soapy water
steel plate, size 500 mm × 300 mm and thickness 20 mm
soft support comprising a steel plate, on which expanded polystyrene panel, size 500 mm × 250 mm, thickness 20 mm and mass 20 kg/m³, is laid
ballast steel plate, size 500 mm × 300 mm and thickness 20 mm, with a circular opening, diameter 200 mm, in the centre
soap solution

Method

Normative reference	Activity	Description	
clause 6.2 of standard UNI EN 13583:2012	Conditioning	temperature	(23 ± 2) °C
		relative humidity	(50 ± 10) %
		duration	24 h
clause 8 of standard UNI EN 13583:2012	Determining damaging velocity	the test consists in determining "v_d" defined as the damaging velocity, rounded to the next integer, which has caused perforation in maximum 1 out of 5 shots	

Environmental conditions

Temperature	(22 ± 1) °C
Relative humidity	(43 ± 5) %

Results

Support type	Specimen	Velocity [m/s]	Effect
soft	1	33,4	superficial mark on the external surface
	2	33,8	superficial mark at the point of impact
	3	33,9	superficial mark on the external surface and non-passing crack on the internal surface
	4	32,6	superficial mark on the external surface and non-passing crack on the internal surface
	5	32,1	slight superficial mark on the external surface
Average		**33,2**	//

Photograph of a specimen after testing

Findings

Support type	Damaging velocity "v_d"* [m/s]
soft	**33**

(*) According to clause 3.2 of standard UNI EN 13583:2012 the hail resistance is defined as the ball damaging velocity "V_d", rounded to the next integer in m/s, which has caused perforation in maximum 1 out of 5 shots.