

**TEST REPORT No. 371151**

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 <sub>d</sub> " [m/s]
hard	53

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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The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

This document is the English translation of the test report No. 371151 dated 24 April 2020 issued in Italian; in case of dispute the only valid version is the Italian one. Date of translation: 27 April 2020.

The original of this document consists of an electronic document digitally signed pursuant to the applicable Italian Legislation.

**Chief Test Technician:**

Ing. Chiara Bastoni

**Head of Security and Safety Laboratory:**

Dott. Andrea Bruschi

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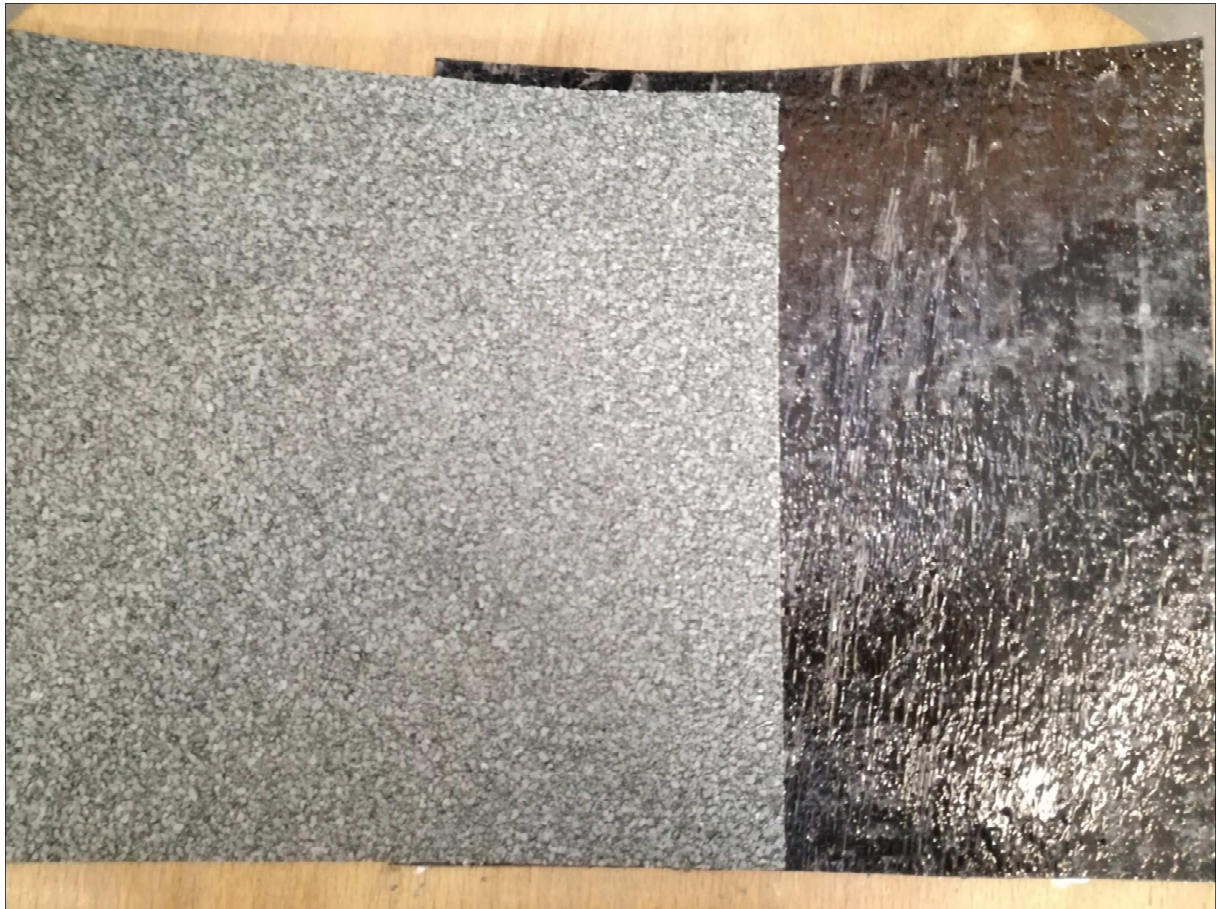
(\*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 24 April 2020

Chief Executive Officer

**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 <i>(Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of hail resistance)</i>

(\*) 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 $(40 \pm 0,5)$ mm and mass $(38,5 \pm 0,5)$ 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
hard support comprising a ground plate steel, dimensions 500 mm x300 mm and thickness 20 mm, as a support on which sandpaper 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

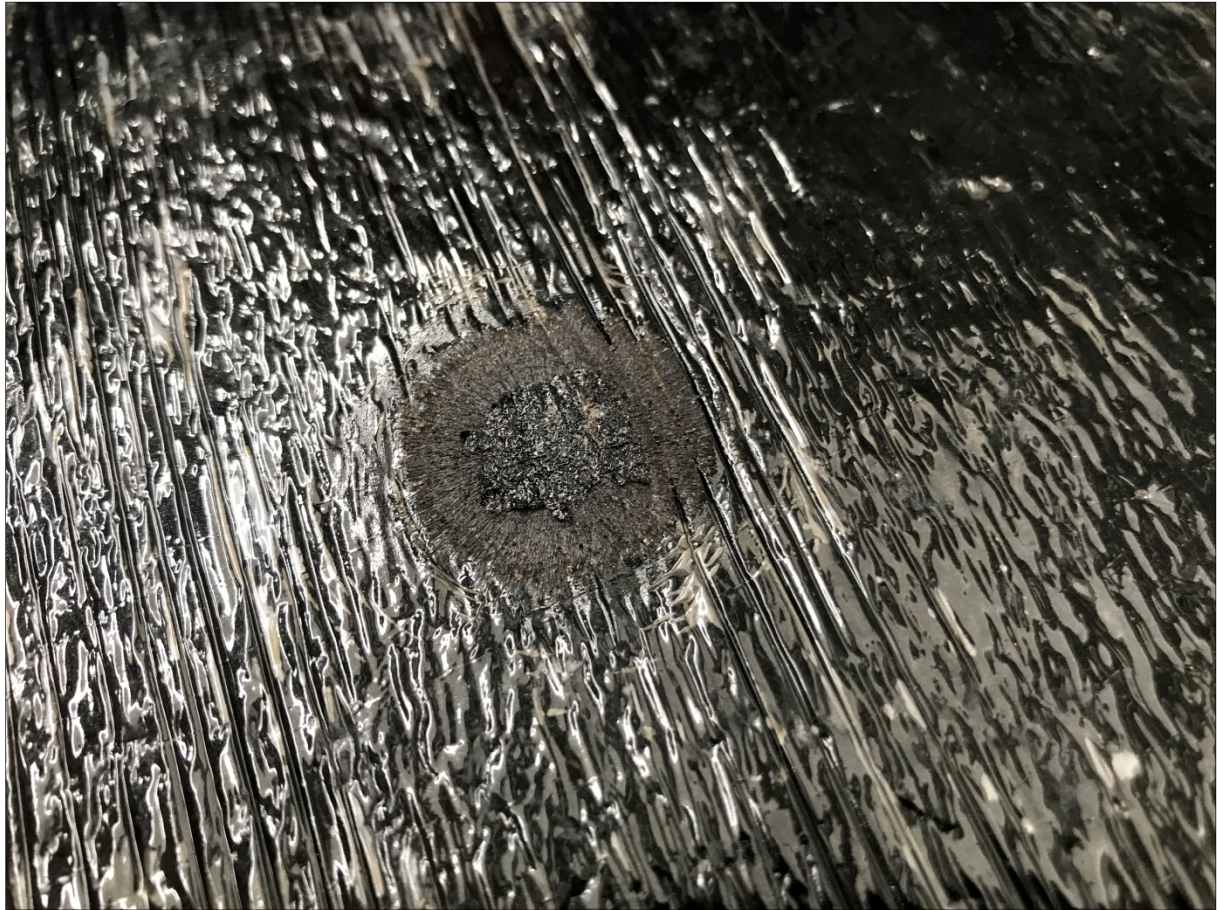
Normative reference	Activity	Description	
clause 6.2 of standard UNI EN 13583:2012	Conditioning	temperature	$(23 \pm 2)$ °C
		relative humidity	$(50 \pm 10)$ %
		duration	24 h
clause 8 of standard UNI EN 13583:2012	Determining damaging velocity	the test consists in determining “ $v_d$ ” defined as the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

## Environmental conditions

Temperature	$(22 \pm 1)$ °C
Relative humidity	$(43 \pm 5)$ %

## Results

Support type	Specimen	Velocity [m/s]	Effect
hard	1	53,3	superficial mark on the external surface
	2	53,7	superficial mark at the point of impact
	3	52,9	superficial mark on the external surface and non-passing crack on the internal surface
	4	53,2	superficial mark on the external surface and non-passing crack on the internal surface
	5	54,1	slight superficial mark on the external surface
<b>Average</b>		<b>53,4</b>	//



Photograph of a specimen after testing

**Findings**

Support type	Damaging velocity “ $v_d$ ”* [m/s]
hard	53

(\*) 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.