TEST REPORT

|SQM_394_2021|

DETERMINATION OF IMPACT RESISTANCE (EN 14617-9) OF A PRODUCT NAMED "PLATIO SOLAR PAVER WITH OPAL SURFACE", OF THE COMPANY "INNOVATÍV TÉRBURKOLATFEJLESZTŐ KFT."

PLACE AND DATE OF ISSUE:	Faenza, 29/06/2021
COMPANY:	**Innovatív Térburkolatfejlesztő Kft.**
ADDRESS:	4080 Hajdúnánás, Jókai utca 64 - Hungary
TYPE OF PRODUCT:	*Paving integrated systems for external uses*
STANDARD APPLIED:	*EN 14617-9*
DATE OF RECEIPT IN LABORATORY:	03/06/2021
TESTS EXECUTED:	June 2021
TEST EXECUTED BY:	CertiMaC, Faenza

NOTE: Results contained in the present test report are exclusively referred to the samples subjected to the tests described hereafter. Moreover, this report is for the exclusive use of the Customer, within the limits set by mandatory legislation and cannot be reproduced, totally or partially (in digital or paper form), without a written approval of the Laboratory.

Test executed	Written	Approved
I.E. Marco Chiari	_Eng. Simone Bandini_	_Eng. Luca Laghi_
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1 Introduction

This test report describes:

- *Determination of impact resistance,*

executed on a kind of product sent to the CertiMaC Laboratory in Faenza, by the company Innovatív Térburkolatfejlesztő Kft (Ref. 2-a, 2-b).

Test has been executed in accordance with the standard reported in Ref. 2-c

a. Estimate: ref. n. 21098/lab on 11/02/2021.

b. Order confirmation: e-mail on 15/04/2021.

c. *EN 14617-9:2005 Agglomerated stone - Test methods - Part 9: Determination of impact resistance*

2 Test object

Test has been executed on 5 paving blocks with an integrated photovoltaic system, named:

➤ *PLATIO SOLAR PAVER WITH OPAL SURFACE*

with size approximately of 35 x 35 x 4 cm^3. The specimens were selected from a sampling sent to the laboratory by the Customer on 03/06/2021.

3 Determination of impact resistance

Five specimens were tested according to the standard at Ref. 2-c. The impact resistance is evaluated by dropping a steel ball, with defined size and weight, by progressively increased heights of 5 cm, until the breaking of the test sample. The specimen is placed in the center of a bed of sand so that the whole thickness is buried and the test surface is the only visible part [Fig. 1]. The drop height (h) is measured between the lowest point of the sphere and the impact surface.

The apparatus required by the standard of Ref. 2-c are the following:

- Steel sphere with diameter of about 63 mm;
- Guide tube along at least 120 cm and graduated at 5 cm intervals;
- Box of minimum section 40 x 40 cm^2 and no less than 30 cm high, containing a bed of dry sand at least 20 cm deep. The sand grain distribution should be in the 1 mm-1.5 mm range.

4 Results

The Ref. 2-c standard provides that the impact resistance is calculated by the following formula:

$$L = M \cdot h \cdot g$$

With:

- L = fracture work (J),
- M = sphere mass (kg) = 0,970 kg,
- h = drop height (m) of the sphere which causes the sample to break,
- g = gravity acceleration = 9,806 m /s^2.

Any damage that the fall of the steel ball has on the specimen surface must be noted, regardless of any fracture.

Figure 1 Surface of one of the specimens emerging from the bed of sand

Surface damages caused by the impact of the steel sphere are visible on the samples starting from a height of 10 cm [Figure 2], and they become more marked as the height of fall increases.

However, the actual breaking of the sample [fig.3] is recorder only for much greater drop heights [table 1].

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Figure 2 Surface damage caused by the sphere drop, before reaching the breaking height

Figure 3 Surface breaking of a sample

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Specimen	Drop height h (m)	Fracture work L (J)	Average Fracture work L (J)
1	2.50	24	
2	2.05	20	
3	2.00	19	**20**
4	2.00	19	
5	1.80	17	

Table 1 Breaking heights of the samples and relative fracture work

The values shown in table 3, albeit very high, are considerably dispersed, therefore it is advisable to rely on the minimum value rather than the average value

5   Conclusions

The average value for the fracture work obtained in the impact resistance test is equal to **20 J**.

The minimum value for the fracture work obtained in the impact resistance test is equal to **17 J**.

6   Distribution List

ENEA	Archives	1 copy
CertiMaC	Archives	1 copy
Customer	Innovatív Térburkolatfejlesztő Kft	1 copy

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