




# TEST REPORT

| SQM\_395\_2021 |

**DETERMINATION OF CHEMICAL RESISTANCE (UNI EN ISO 10545-13) "PLATIO SOLAR PAVER WITH OPAL SURFACE", OF THE COMPANY "INNOVATÍV TÉRBUKOLATFEJLESZTŐ KFT."**

PLACE AND DATE OF ISSUE:	Faenza, 29/06/2021
COMPANY:	<b>Innovatív Térburkolatfejlesztő Kft.</b>
ADDRESS:	4080 Hajdúnánás, Jókai utca 64 - Hungary
TYPE OF PRODUCT:	<i>Paving integrated systems for external uses</i>
STANDARD APPLIED:	EN ISO 10545-13
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
<u>_I.E. Marco Chiari_</u> 	<u>_Eng. Simone Bandini_</u> 	<u>_Eng. Luca Laghi_</u> 
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## 1 Introduction

This test report describes:

- *Determination of chemical 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).

The test has been executed according to standard on Ref. 2-c.

## 2 References

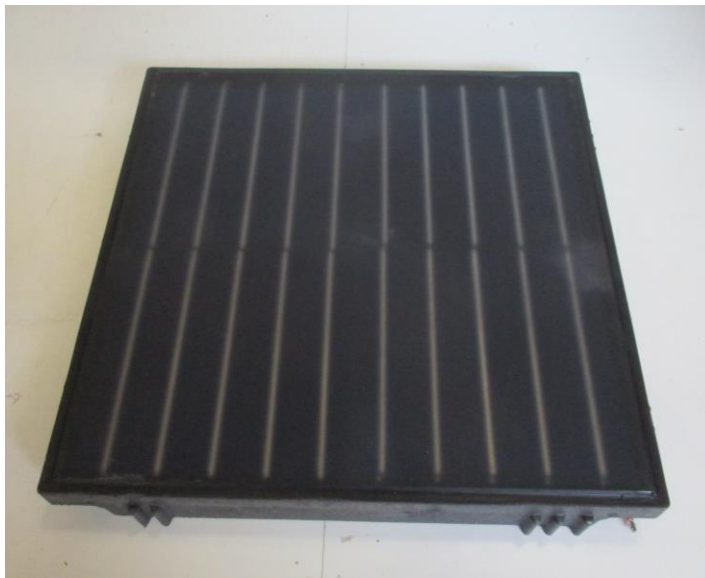
- Estimate: ref. n. 19307/lab on 22/10/2019.
- Order confirmation: e-mail on 22/10/2019.
- EN ISO 10545-13:2013. Ceramic Tiles- Part 13: Determination of chemical resistance

## 3 Test object

Test has been executed on paving blocks with an integrated photovoltaic system [fig.1], named:

- *PLATIO SOLAR PAVER WITH OPAL SURFACE*

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



**Figure 1** Platio solar paver with “OPAL” surface

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## 4 Determination of chemical resistance

For each of the 2 solutions listed below, 2 samples were tested (each in two different zones) following the procedures indicated in the standard of Ref. 2-c.

### 1. Acids and alkalis: low concentrations (L)

- Hydrochloric acid solution, 3% (v/v)
- Potassium hydroxide solutions, 30 g/l.

### 2. Acids and alkalis: high concentrations (L)

- Hydrochloric acid solution, 18% (v/v)
- Potassium hydroxide solutions, 100 g/l.

Each test solution was kept in direct contact with the surface of the specimens by using glass cylinders (diameter 20 mm) fixed to the surface of the samples and sealed below with a suitable sealant [fig. 2]. The chemical solutions, inside the cylinders, were kept in contact with the surface of the samples for 4 days. At the end of the test cylinders and chemical solutions were removed and the surface of the specimens was first cleaned with water then visually examined, in order to determine any variations on the surface of the samples.



Figure 2 Surface of a sample in contact with the chemical solutions

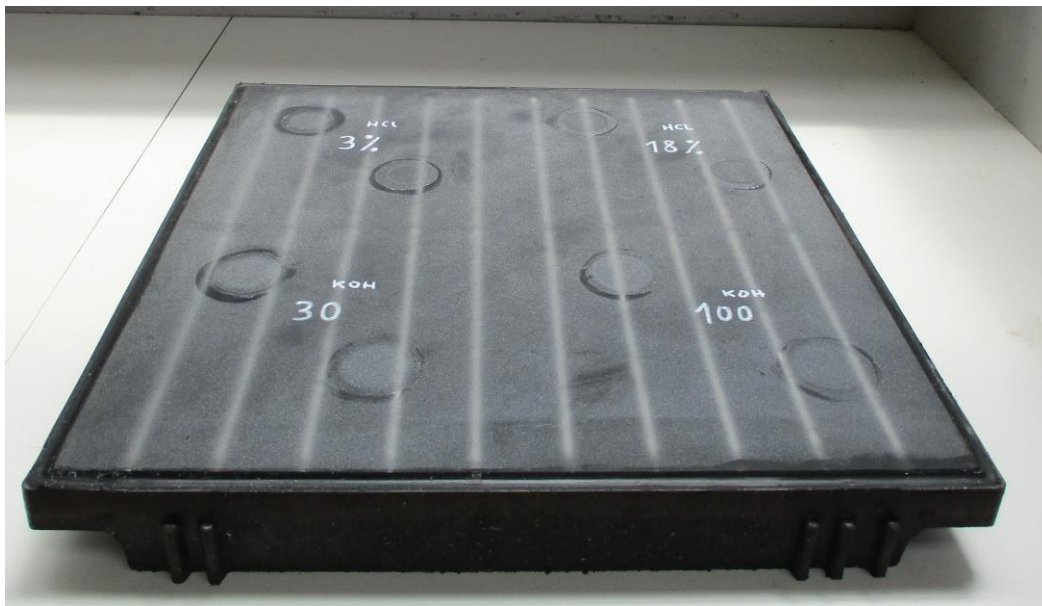
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Due to the protective surface treatment of this type of panels (OPAL), it was not possible to stick the cylinders using plasticine or other types of easily removable glues; it was therefore necessary to use a silicone sealant.

## 5 Results

Figure 3 shows the surfaces of the blocks at the end of the test.

Excluding the surface damage due to the silicone sealant, which in some way reacted with the surface of the panel (easily identifiable as a circular area), the panels do not appear to have suffered any visible surface damage due to the aggressive solution contained in the cylinders.



**Figure 2** Photo of the surface of a panel at the end of the test

Table 1 reports the results found at the end of the test.

Chemical solutions	Visual inspection of the surface	Classification
Hydrochloric acid solution, 3% (v/v)	No visible effect	<b>LA(V)</b>
Potassium hydroxide solutions, 30 g/L	No visible effect	<b>LA(V)</b>
Hydrochloric acid solution, 18% (v/v)	No visible effect	<b>HA(V)</b>
Potassium hydroxide solutions, 100 g/L	No visible effect	<b>HA(V)</b>

**Table 1** Chemical solutions and corresponding classification

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## 6 Conclusions

The surfaces of the tested panels resist the chemical attack from both the solutions tested, in both concentrations, without reporting any discernible damage on the surface.

## 7 Distribution List

<b>ENEA</b>	Archives	1 copy
<b>CertiMaC</b>	Archives	1 copy
<b>Customer</b>	Innovatív Térburkolatfejlesztő Kft	1 copy

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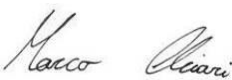


# TEST REPORT

| SQM\_396\_2021 |

**DETERMINATION OF CHEMICAL RESISTANCE (UNI EN ISO 10545-13) OF A PRODUCT NAMED "PLATIO SOLAR PAVER WITH CLEAR SURFACE", OF THE COMPANY "INNOVATÍV TÉRBUKOLATFEJLESZTŐ KFT."**

PLACE AND DATE OF ISSUE:	Faenza, 29/06/2021
COMPANY:	<b>Innovatív Térburkolatfejlesztő Kft.</b>
ADDRESS:	4080 Hajdúnánás, Jókai utca 64 - Hungary
TYPE OF PRODUCT:	<i>Paving integrated systems for external uses</i>
STANDARD APPLIED:	EN ISO 10545-13
DATE OF RECEIPT IN LABORATORY:	03/06/2021
TESTS EXECUTED:	June 2021
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## 1 Introduction

This test report describes:

- *Determination of chemical 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).

The test has been executed according to standard on Ref. 2-c.

## 2 References

- Estimate: ref. n. 19307/lab on 22/10/2019.
- Order confirmation: e-mail on 22/10/2019.
- EN ISO 10545-13:2013. Ceramic Tiles- Part 13: Determination of chemical resistance

## 3 Test object

Test has been executed on paving blocks with an integrated photovoltaic system [fig.1], named:

- *PLATIO SOLAR PAVER WITH CLEAR SURFACE*

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



**Figure 1 Platio solar paver with "CLEAR" surface**

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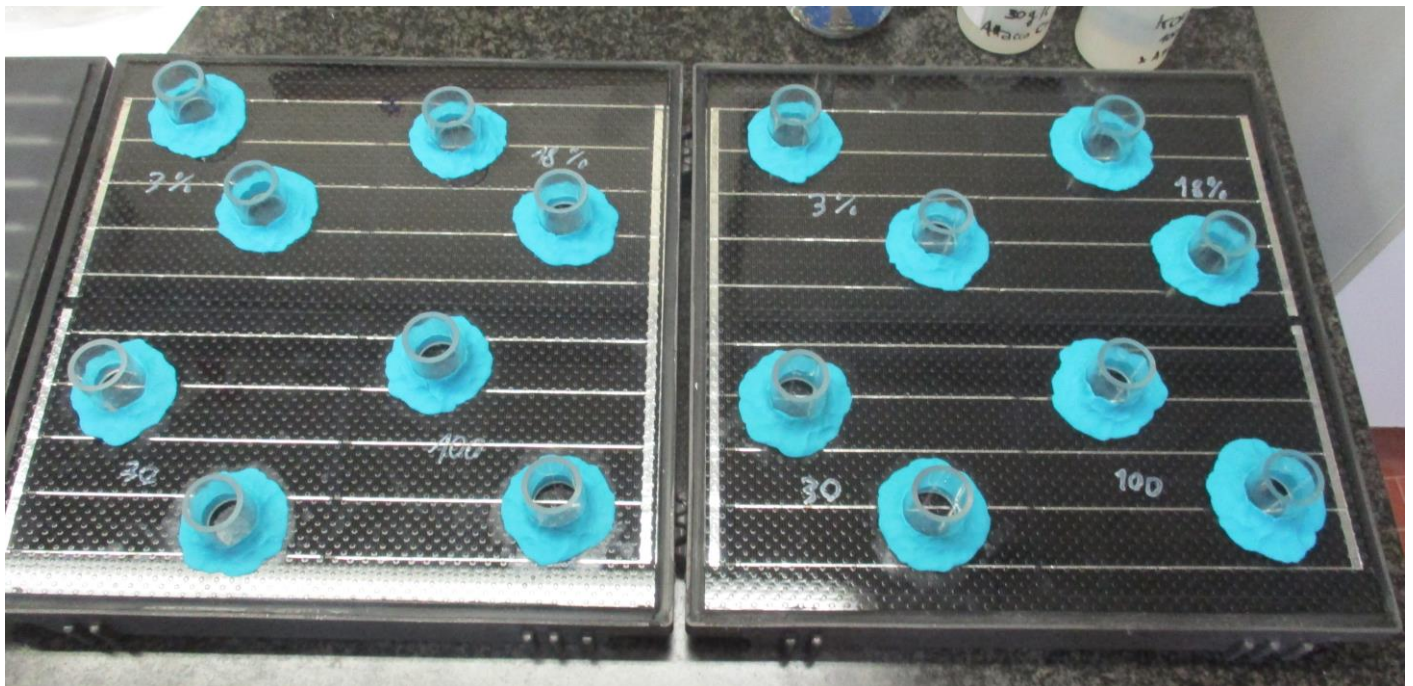
### 1. Acids and alkalis: low concentrations (L)

- **Hydrochloric acid solution, 3% (v/v)**
- **Potassium hydroxide solutions, 30 g/l.**

### 2. Acids and alkalis: high concentrations (L)

- **Hydrochloric acid solution, 18% (v/v)**
- **Potassium hydroxide solutions, 100 g/l.**

Each test solution was kept in direct contact with the surface of the specimens by using glass cylinders (diameter 20 mm) fixed to the surface of the samples and sealed below with a suitable sealant [fig. 2]. The chemical solutions, inside the cylinders, were kept in contact with the surface of the samples for 4 days. At the end of the test, cylinders and chemical solutions were removed and the surface of the specimens was first cleaned with water then visually examined, in order to determine any variations on the surface of the samples.



**Figure 2 Surface of a sample in contact with the chemical solutions**

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## 5 Results

Figure 3 shows the surfaces of the blocks at the end of the test.

the panels do not appear to have suffered any visible surface damage due to the aggressive solution contained in the cylinders.



**Figure 2 Photo of the surface of a panel at the end of the test**

Table 1 reports the results found at the end of the test.

Chemical solutions	Visual inspection of the surface	Classification
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**Table 1 Chemical solutions and corresponding classification**

## 6 Conclusions

The surfaces of the tested panels resist the chemical attack from both the solutions tested, in both concentrations, without reporting any discernible damage on the surface.

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