

**IKATES, s.r.o.**  
**Laboratory for glass and building products testing**



Tolstého 186, Řetenice, 415 03 Teplice, Czech Republic

tel.: +420 417 503 093 / +420 417 502 825

e-mail: [ikates@ikates.cz](mailto:ikates@ikates.cz), [www.ikates.cz](http://www.ikates.cz)



*Testing laboratory No.1139 accredited by Czech Accreditation Institute, o.p.s.*

*accredited to ČSN EN ISO/IEC 17025:2018*

## **TEST REPORT**

**No. : 263 / 2021**

Test item : **Laminated glass - initial type tests according to ČSN EN14449**  
**- humidity test according to ČSN EN ISO 12543-4**  
**- high temperature tests according to ČSN EN ISO 12543-4**  
**- radiation test according to ČSN EN ISO 12543-4**

Client (address): JSC Intelligent Solar  
Vasario 16-osios g. 44A, LT-76291 Šiauliai; Lithuania

Producer (address): JSC Intelligent Solar  
Dvaro str. 162D Siauliai LT-76197; Lithuania

Place of test performance : IKATES, s.r.o., Teplice

Date of sample receiving : 2021-10-11

Date of test performance : 2021-10-14 to 2022-01-17

Date of issue : 2022-01-24

Number of pages : 4

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Manager of testing laboratory : Jiří Stránský



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**Normative foundations :**

ČSN EN ISO 12543-4 (2012): Glass in building – Laminated glass and laminated safety glass – Part 4 : Test methods for durability (idt ISO 12543-4:2011)

ČSN EN 14449 (2006): Glass in building – Laminated glass and laminated safety glass – Evaluation of conformity/Product standard

**Sampling :**

Following test specimens of laminated glass were used for the tests :

**6 pcs. 300 x 300 mm :**

INTEL 01 : 4 mm CLEARVISION + 3 x 0,46 mm EVA + 4 mm CLEARVISION  
Measured thickness : 8,83 – 8,89 mm

INTEL 02 : 4 mm Mat/Prismatic + 3 x 0,46 mm EVA + 4 mm CLEARVISION  
Measured thickness : 8,95 – 9,12 mm

INTEL 03 : 4 mm CLEARVISION + 4 x 0,46 mm EVA + 8 mm CLEARVISION  
Measured thickness : 13,34 – 13,49 mm

INTEL 04 : 6 mm CLEARVISION + 4 x 0,46 mm EVA + 6 mm CLEARVISION  
Measured thickness : 13,15 – 13,28 mm

INTEL 07 : 4 mm Matelux CLEARVISION + 3 x 0,46 mm EVA + 4 mm Planibel clear  
Measured thickness : 8,77 – 8,89 mm

INTEL 08 : 4 mm Matelux Bronze + 3 x 0,46 mm EVA + 4 mm Planibel clear  
Measured thickness : 8,78 – 8,84 mm

**3 pcs. 150 x 300 mm :**

INTEL 03 : 4 mm CLEARVISION + 4 x 0,46 mm EVA + 8 mm CLEARVISION

Note: film - EVA 0,46 mm, producer : TPI ALL SEASONS COMPANY LIMITED  
VISTASOLAR, Ultra-Fast cure, 521.68

glass : PLANIBEL EXTRA CLEAR, CLEARVISION 4-10 mm, Matelux Bronze,  
Matelux CLEARVISION; producer: AGC Flat Glass Europe  
Mat/Prismatic; producer : Shuco Trading GmbH



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### **Metrological provision of tests :**

Calibrated measuring gauges of testing laboratory were used during testing. Humidity test and high temperature test were carried out in climate chamber CTS with metrological traceability. For measuring and controlling of temperature was used calibrated thermometer. The radiation test was carried out using of testing equipment – radiation wall with Ultravitalux lamps. The light transmittance of samples before and after the test was measured using of spectrometer Shimadzu UV-3600 with metrological traceability. Irradiance was measured with pyranometer Kipp & Zonen CM-6B with metrological traceability, the temperature using of calibrated thermocouple.

### **Test results :**

#### **1. Humidity test (ČSN EN ISO 12543-4, art.6.3.1 – with condensation)**

Sample (3 pcs.)	state after the test
INTEL 01 – 44.3	no changes in evaluated area
INTEL 02 – 44.3	no changes in evaluated area
INTEL 03 – 48.4	no changes in evaluated area
INTEL 04 – 66.4	no changes in evaluated area
INTEL 07 – 44.3	no changes in evaluated area
INTEL 08 – 44.3	no changes in evaluated area

#### **2. High temperature test (ČSN EN ISO 12543-4, art.5.3.2 – procedure A)**

Sample (3 pcs.)	state after the test
INTEL 01 – 44.3	no changes in evaluated area
INTEL 02 – 44.3	no changes in evaluated area
INTEL 03 – 48.4	no changes in evaluated area
INTEL 04 – 66.4	no changes in evaluated area
INTEL 07 – 44.3	no changes in evaluated area
INTEL 08 – 44.3	no changes in evaluated area



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### 3. Radiation test (ČSN EN ISO 12543-4; 7.3.1)

Duration: 2000 hours; sources: 16 pcs. of OSRAM Ultravitalux 300 W

None of the tested specimens shows visually observable changes in the evaluated area.

Sample	Light transmittance before and after the test		Rel. difference (%)
	$\tau_{V1}$ (1)	$\tau_{V2}$ (1)	
INTEL 03 : 48.4	0,897	0,902	+0,6
INTEL 03 : 48.4	0,897	0,898	+0,1
INTEL 03 : 48..4	0,900	0,902	+0,2

Note: According to ČSN EN 12543-2, art. 5.3, the allowable difference is max.  $\pm 3$  % rel.

**Statement :** Test results, given in this report, apply only to the tested items as received. Test report does not replace other documents, e.g. administrative characters, issued by other bodies, according to particular regulations. The official version is in Czech language.

#### **Distribution list :**

2 x JSC Intelligent Solar

1 x Laboratory for glass and building products testing IKATES, s.r.o. (archive)

**Test results were approved by :**

**For correctness of the report is responsible :**

Michal Hnilická

end of the test report

