

# HYUNDAI L&C CO., LTD.

## TEST REPORT

### SCOPE OF WORK

REPORT OF HANEX SOLID SURFACES TILES TESTED IN ACCORDANCE WITH THE FOLLOWING:

- ASTM G155-13, *STANDARD PRACTICE FOR OPERATING XENON ARC LIGHT APPARATUS FOR EXPOSURE OF NON-METALLIC MATERIALS*
- ASTM D523-14, *STANDARD TEST METHOD FOR SPECULAR GLOSS*
- ASTM D2244-16, *STANDARD PRACTICE FOR CALCULATION OF COLOR TOLERANCES AND COLOR DIFFERENCES FROM INSTRUMENTALLY MEASURED COLOR COORDINATES*

### REPORT NUMBER

103932999COQ-001

### TEST DATE(S)

04/30/19 – 06/11/19

**ISSUE DATE**      **[REVISED DATE]**

06/21/19          09/18/19

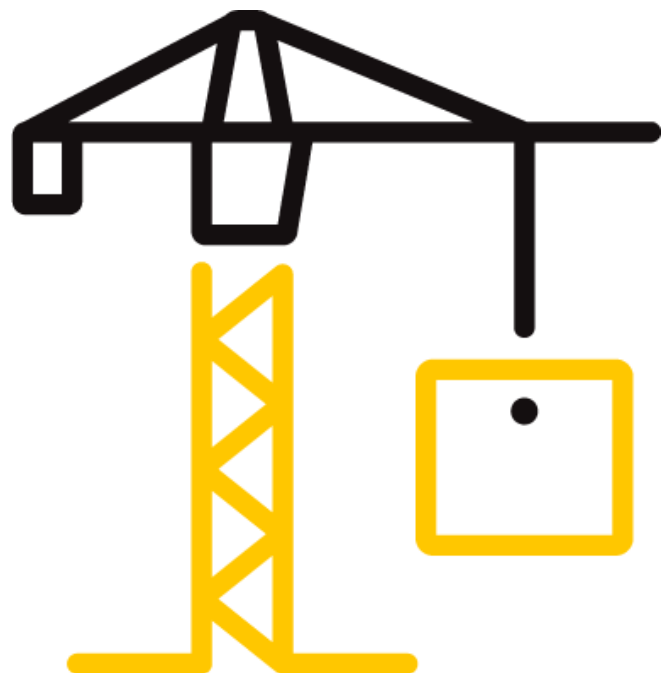
### PAGES

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### DOCUMENT CONTROL NUMBER

GFT-OP-10c (AUGUST 27, 2018)

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## TEST REPORT FOR HYUNDAI L&C CO., LTD.

Report No.: 103932999COQ-001

Date: 09/18/19

### REPORT ISSUED TO

**HYUNDAI L&C CO., LTD.**

37

Buganggeumho-ro

Bugang-myeon

Sejong-si

South Korea


### SECTION 1


#### SCOPE

Intertek Building & Construction (B&C) was contracted by Hyundai L&C CO., LTD, 37, Buganggeumho-ro, Bugang-myeon, Sejong-si, South Korea, to perform testing in accordance with ASTM G155-13, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*, ASTM D523-14(2018), *Standard Test Method For Specular Gloss*, and ASTM D2244-16, *Standard Practice for Calculation of Color Tolerances And Color Differences From Instrumentally Measured Color Coordinates*, on their tile samples. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

<b>COMPLETED BY:</b>	Frank Gadea-Lopez
<b>TITLE:</b>	Technician – Building & Construction
<b>SIGNATURE:</b>	
<b>DATE:</b>	09/18/19

<b>REVIEWED BY:</b>	Baldeep Sandhu
<b>TITLE:</b>	Manager – Building & Construction
<b>SIGNATURE:</b>	
<b>DATE:</b>	09/18/19

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**SECTION 2****SUMMARY OF TEST RESULTS****TABLE 1. ASTM G155-13 TEST RESULTS**

DESCRIPTION	EXPOSURE	OBSERVATIONS / RESULTS
Hanex Solid Surfaces Tiles	1000 Hours	No Visual change

**TABLE 2. ASTM D523/TEST RESULTS**

DESCRIPTION	$\Delta G$	$\Delta E$
Hanex Solid Surfaces Tiles	0.4	0.57

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### SECTION 3

#### TEST METHOD

The specimen was evaluated in accordance with the following:

**ASTM G155-13**, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*

**ASTM D523-14(2018)**, *Standard Test Method For Specular Gloss*

**ASTM D2244-16**, *Standard Practice for Calculation of Color Tolerances And Color Differences From Instrumentally Measured Color Coordinates*

### SECTION 4

#### MATERIAL SOURCE/INSTALLATION

The client submitted eight (8) samples to the Evaluation Center on April 20, 2019 (Coquitlam ID# VAN1904201111-001). The samples were received in good condition and were suitable for testing. The samples were not independently selected for testing.

### SECTION 5

#### EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
P60612	Q-Lab QUV Weatherometer	QUV/SE/120	12/14/19
P60610	T&D Temperature and Humidity Logger	TR-72Ui	04/09/20
P60616	BYK Spectrophotometer	Spectro-Guide 45/0 Gloss	02/20/20

### SECTION 6

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Frank Gadea-Lopez	Intertek B&C
Chris Chang	Intertek B&C

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**SECTION 7****CONDITIONING**

Before testing, the test specimen materials were held in standard laboratory conditions for at least 24 hours at a temperature of  $23 \pm 2^{\circ}\text{C}$  and relative humidity of  $50 \pm 5\%$ .

**UV EXPOSURE**

Accelerated weathering was tested in accordance with ASTM G155-13, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*. Three (3) of the samples were subjected to 1000 hours of xenon arc light and the other matching five (5) samples were kept as a control. The exposure cycle consisted of 102 minutes of light only, followed by 18 minutes of light and water spray. Visual examination of the specimens was conducted upon completion of the 1000 hours exposure to detect for any evidence of surface changes when compared to the control specimens.

**COLOR MEASUREMENTS**

Color measurements were conducted in accordance with ASTM D2244-16, *Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates*. Upon completion of the UV exposure, test specimens were measured for color using a BYK Spectro-Guide 45/0 meter ( $D65/10^{\circ}$ ). Exposed samples were measured and compared with control samples.  $\Delta E$  values were recorded and reported.

**GLOSS MEASUREMENTS**

Gloss measurements were conducted in accordance with ASTM D523-14(2018), *Standard Test Method for Specular Gloss*. Upon completion of the UV exposure, test specimens were measured for gloss using a BYK Spectro-Guide 45/0 meter with  $60^{\circ}$  geometry. Exposed samples were measured and compared with control samples. Specular gloss  $\Delta G$  results were recorded and reported.

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### SECTION 8

#### TEST SPECIMEN DESCRIPTION

The samples were identified as Hanex Solid Surfaces tiles. The tiles measured approximately 3 in. x 6 in.

### SECTION 9

#### CONCLUSION

The Intertek South Korea Hanex Solid Surfaces tiles identified and evaluated in this report have been tested per ASTM G155-13, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*, ASTM D523-14(2018), *Standard Test Method For Specular Gloss*, and ASTM D2244-16, *Standard Practice for Calculation of Color Tolerances And Color Differences From Instrumentally Measured Color Coordinates*. Results are presented in Section 2 of this test report.

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### SECTION 10

#### REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	06/21/19	N/A	Original Report Issue
1	06/24/19	1-2	Name changed to Hyundai L&C CO., LTD.
2	09/18/19	All	Added color/gloss results and procedure