



TEST REPORT

1. NO : CT23-009560E

2. Client

○ Name : KS-Wallcoverings

○ Address : 467-904, 8798-50, Seodongdae-ro, Janghowon-eup, Icheon-si, Gyeonggi-do, KOREA

3. Date of Test : 2023.01.20 ~ 2023.03.17

4. Use of Report : Quality Control

5. Test Sample : KS Vinyl Wallpaper

6. Test Method

(1) ASTM G 21-15(2021)e1

(3) Official method of Indoor air quality ES 02131. 1e (National Institute of Environmental Research notification 2021-94)

(5) IEC 62321-4:2013

(7) KS M 1991:2016

(9) JIS Z 2801:2012

(11) ASTM D 6329-98(2015) Mod.

(2) KS M 7305:2022

(4) IEC 62321-5:2013

(6) IEC 62321-7-2:2017 / IEC 62321-5:2013

(8) KS K 0730:2017 mod.

(10) ASTM D 6329-98(2015)

(12) KS M ISO 536:2020

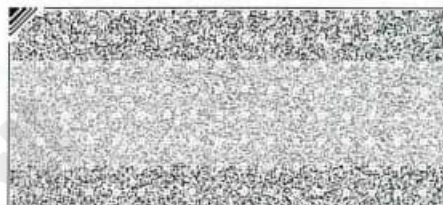
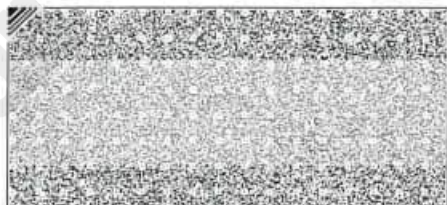
Affirmation	Tested By Name : Hye Rim Kim	Technical Manager Name : Ju Hyung Lee
1. Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. 2. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products. 3. The results of using only a portion of this report cannot be guaranteed. 4. The authenticity of this test report can be checked on KCL website(www.kcl.re.kr)		

2023.03.17

Korea Conformity Laboratories

President Jo, Yung Tae

Result Inquiry : 199, Gasan digital 1-ro, Geumcheon-gu, Seoul, Korea (82-2-2102-2776)



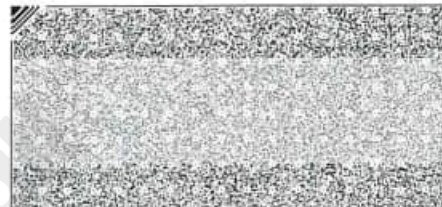
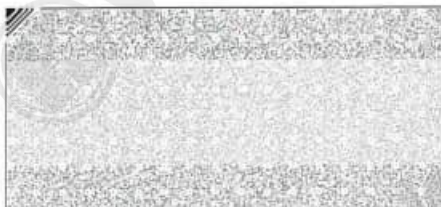
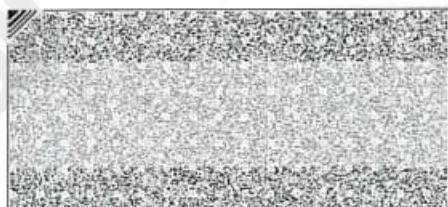
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7. Test Results

1) KS Vinyl Wallpaper

Test Item(s)	Unit	Test Method	Test Results	Remark
Fungal resistance test(after 4 weeks)	Grade	(1)	4	(29.0 ± 1.0) °C Not less than 85 % R.H.
Wet Tensile strength-M.D	N/15 mm	(2)	17.74	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Wet Tensile strength-C.D	N/15 mm	(2)	12.98	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Colour fastness to Light*	Grade	(2)	4-5	-
Colour fastness to Crocking-Dry(M.D)	Grade	(2)	4-5	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Colour fastness to Crocking-Dry(C.D)	Grade	(2)	4-5	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Colour fastness to Crocking-Wet(M.D)	Grade	(2)	4-5	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Colour fastness to Crocking-Wet(C.D)	Grade	(2)	4-5	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Hiding property	Grade	(2)	4	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Workability-M.D	-	(2)	Be free from lifting and peeling	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Workability-C.D	-	(2)	Be free from lifting and peeling	(23.0 ± 1.0) °C. (50 ± 2) % R.H.
Total Volatile Organic Compounds (TVOC)	mg/(m ² · h)	(3)	0.023	-
Toluene	mg/(m ² · h)	(3)	0.001	-
Formaldehyde	mg/(m ² · h)	(3)	N/D (MDL 0.000 5)	-
Pb	mg/kg	(4)	Not Detected (detection limit 5)	-
Cd	mg/kg	(4)	Not Detected (detection limit 0.2)	-
Hg	mg/kg	(5)	Not Detected (detection limit 1)	-
Cr ⁶⁺	mg/kg	(6)	Not Detected (detection limit 5)	-
Dibutylphthalate(DBP)	mg/kg	(7)	Not detected (detection limit 50)	-
Butylbenzylphthalate(BBP)	mg/kg	(7)	Not detected (detection limit 50)	-
Di-(2-ethylhexyl)phthalate(DEHP)	mg/kg	(7)	Not detected (detection limit 50)	-
Di-n-octylphthalate(DNOP)	mg/kg	(7)	Not detected (detection limit 50)	-
Diisodecylphthalate(DIDP)	mg/kg	(7)	Not detected (detection limit 50)	-
Di-(iso-nonyl)phthalate(DINP)	mg/kg	(7)	Not detected (detection limit 50)	-
Vinyl Chloride Monomer	mg/kg	(8)	Not detected (detection limit 0.5)	-
Anti-bacterial Test(Escherichia coli)-antibacterial activity	Log value	(9)	5.8	(35.0 ± 1.0) °C over 90 % R.H.
Anti-bacterial Test(Staphylococcus aureus)-antibacterial activity	Log value	(9)	5.9	(35.0 ± 1.0) °C over 90 % R.H.
Fungal spore number(after 4 weeks)	CFU/sample	(10)	5.9 X 10 ⁴	(29.0 ± 1.0) °C Not less than 85 % R.H.



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Anti-fungal resistance(after 4 weeks)	Log value	(11)	2.8	(29.0 ± 1.0) °C Not less than 85 % R.H.
Grammage	g/m ²	(12)	307	(23.0 ± 1.0) °C, (50 ± 2) % R.H.
Formaldehyde emission	mg/L	(2)	Not detected (Detection limit : 0.05)	-

※ N/D : not detected

※ If the result of Chromium(Cr) is less than MDL(5 mg/kg), confirmation test of Hexavalent Chromium(Cr(VI)) is not required.
In other cases, confirmation test of Hexavalent Chromium(Cr(VI)) is required.

▶ Colour fastness to Light* - FITI Testing & Research Institute from the test result.(N270-23-00052, 2023.02.09)

<ASTM G 21-15(2021)e1>

※ Test fungi

Aspergillus brasiliensis ATCC 9642

Penicillium funiculosum ATCC 11797

Chaetomium globosum ATCC 6205

Trichoderma virens ATCC 9645

Aureobasidium pullulans ATCC 15233

※ Incubation time : 4 weeks

※ Assessment of Results : 0 - None

1 - Traces of growth(less than 10 %)

2 - Light growth (10 to 30 %)

3 - Medium growth (30 to 60 %)

4 - Heavy growth (60 % to complete coverage)

<ASTM D 6329-98(2015)>

※ CFU : Colony Forming Unit

※ Test fungi : *Aspergillus brasiliensis* ATCC 9642

※ Incubation time : 4 weeks

※ Results expressed in log values according to the notification of Ministry of Land, Infrastructure and Transport in Korea
(No. 2016-1084)

※ Test bacteria : *Escherichia coli* ATCC 8739, *Staphylococcus aureus* ATCC 6538P

※ Sample : (50 ± 2) mm (within 10 mm thickness), Blank : Stomacher film : (50 ± 2) mm (within 10 mm thickness)

※ Covering film : 16 cm²

※ reaction time : 24 hours

— End of Report —

