TEST REPORT: 7191300838-CHM23-05-LZS

Date: 12 April 2023 Tel: +65 6973 6151

Client's Ref: 5750427 Email: Jia-Yi.SEOW@tuvsud.com

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SUBJECT

Xenon-arc simulated weathering test – 11,000 hours progress report

CLIENT

KMEW Co., Ltd
13F Crystal Tower,
1-2-27 Shiromi,
Chuo-ku Osaka,
540-6013 Japan

Attn : Mr Takashi Hamahata

SAMPLE SUBMISSION DATE

19 Nov 2021

DATE TEST CONDUCTED

19 Nov 2021 – 08 Apr 2023

DESCRIPTION OF SAMPLE

One sample described as follows was submitted by the Client:

Sample Name	:	"KMEW GLASSA"
Dimension	:	150 x 75 x 10 mm
Quantity	:	3

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METHOD OF TEST

1) SS 5 : Part G9 : 2013
"Methods of Test for Paints, Varnishes and Related Materials" -
Part G9 : Artificial weathering and exposure to artificial radiation –
Exposure to filtered Xenon Arc radiation" – Method 1

Test conditions:

Apparatus used	:	Xenotest Beta LM, Xenotest 440 and Xenotest Alpha LM
Operating cycle	:	102 mins of light followed by 18 mins of light and water spray (Cycle 1)
Light source (continuous)	:	Air-cooled Xenon-arc lamps
Filter system	:	Xenochrome 300 in Suprax cylinder
UV irradiance	:	60 W/m^2 at 300 to 400 nm
Black standard temperature	:	65 ± 3^{o}C
Air temperature in test enclosure	:	38 ± 3^{o}C
Relative humidity (dry period)	:	50 ± 5%
Test duration	:	11,000 light hours

2) ISO 105-A02 :1993 (2019)
"Grey scale for assessing change in colour (including half-steps)"

Grey Scale for assessing colour change ranges from 1 to 5:
5 : No perceived difference in colour between the exposed and unexposed specimens
1 : Greatest contrast in colour between the exposed and unexposed specimens

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RESULTS

Sample Name	Assessment at	Visual Appearance after exposure to Xenon-arc Simulated Weathering Test
"KMEW GLASSA"	1,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	2,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	2,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	3,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	3,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	4,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	4,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	5,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	5,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	6,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	6,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	7,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	7,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	8,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	8,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	9,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	9,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	10,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	10,500 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4
	11,000 hours	- No cracking nor blistering - Slight colour change: darker, grey scale 4

DANIEL LEONG
CHEMIST

SEOW JIA YI
PRODUCT MANAGER
COATINGS & INDUSTRIAL CHEMICALS
CHEMICAL & MATERIALS

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APPENDIX

Sample Name : "KMEW GLASSA"

Figure 1. Reference sample

Figure 2. After exposure to 1,500 hours of Xenon-Arc Simulated Weathering Test

Figure 3. After exposure to 2,000 hours of Xenon-Arc Simulated Weathering Test

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APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 4. After exposure to 2,500 hours of Xenon-Arc Simulated Weathering Test

Figure 5. After exposure to 3,000 hours of Xenon-Arc Simulated Weathering Test

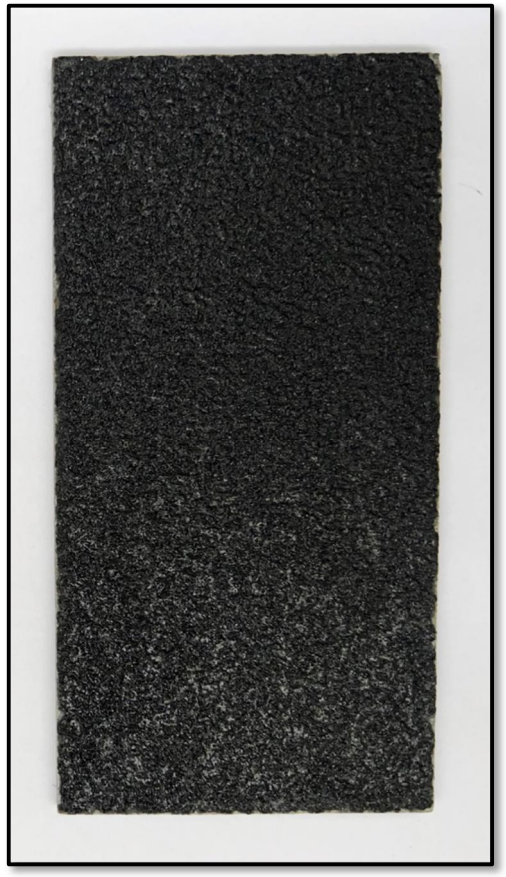

Figure 6. After exposure to 3,500 hours of Xenon-Arc Simulated Weathering Test

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APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 7. After exposure to 4,000 hours of Xenon-Arc Simulated Weathering Test

Figure 8. After exposure to 4,500 hours of Xenon-Arc Simulated Weathering Test

Figure 9. After exposure to 5,000 hours of Xenon-Arc Simulated Weathering Test

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APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 10. After exposure to 5,500 hours of Xenon-Arc Simulated Weathering Test

Figure 11. After exposure to 6,000 hours of Xenon-Arc Simulated Weathering Test

Figure 12. After exposure to 6,500 hours of Xenon-Arc Simulated Weathering Test

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APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 13. After exposure to 7,000 hours of Xenon-Arc Simulated Weathering Test

Figure 14. After exposure to 7,500 hours of Xenon-Arc Simulated Weathering Test

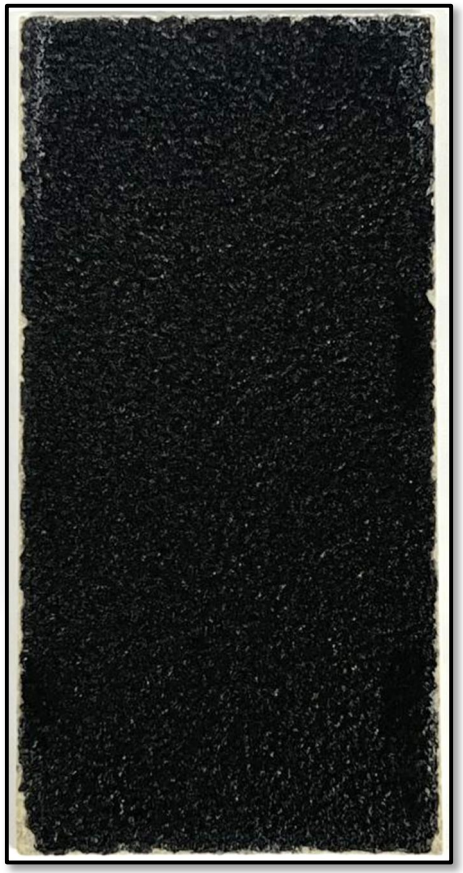

Figure 15. After exposure to 8,000 hours of Xenon-Arc Simulated Weathering Test

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APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 16. After exposure to 8,500 hours of Xenon-Arc Simulated Weathering Test

Figure 17. After exposure to 9,000 hours of Xenon-Arc Simulated Weathering Test

Figure 18. After exposure to 9,500 hours of Xenon-Arc Simulated Weathering Test

APPENDIX *(cont'd)*

Sample Name : "KMEW GLASSA"

Figure 19. After exposure to 10,000 hours of Xenon-Arc Simulated Weathering Test

Figure 20. After exposure to 10,500 hours of Xenon-Arc Simulated Weathering Test

Figure 21. After exposure to 11,000 hours of Xenon-Arc Simulated Weathering Test

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