

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

SetSCO Services Pte Ltd
18 Teban Gardens Crescent
Singapore 608925
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D
Date: 06/08/2018

Your Ref.: -

Our Ref.: CT-8500004261/SL/B1

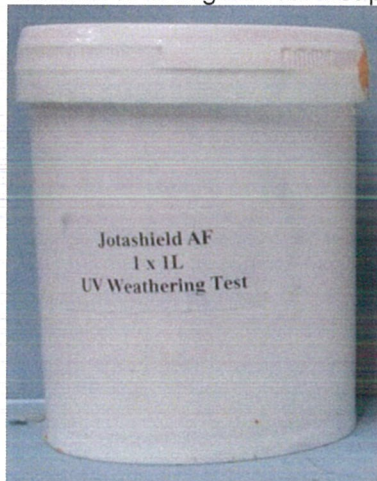
Page 1 of 2

Subject : Determination of durability by UV Accelerated Weathering on "Jotashield AntiFade Colours" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
Lot 7, Persiaran Perusahaan, Seksyen 23
P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "JOTASHIELD AF" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


Teo Seng Lee
Testing Officer


Shirley Lim Suidi
Executive Engineer (CMTD)
Construction Technology Division

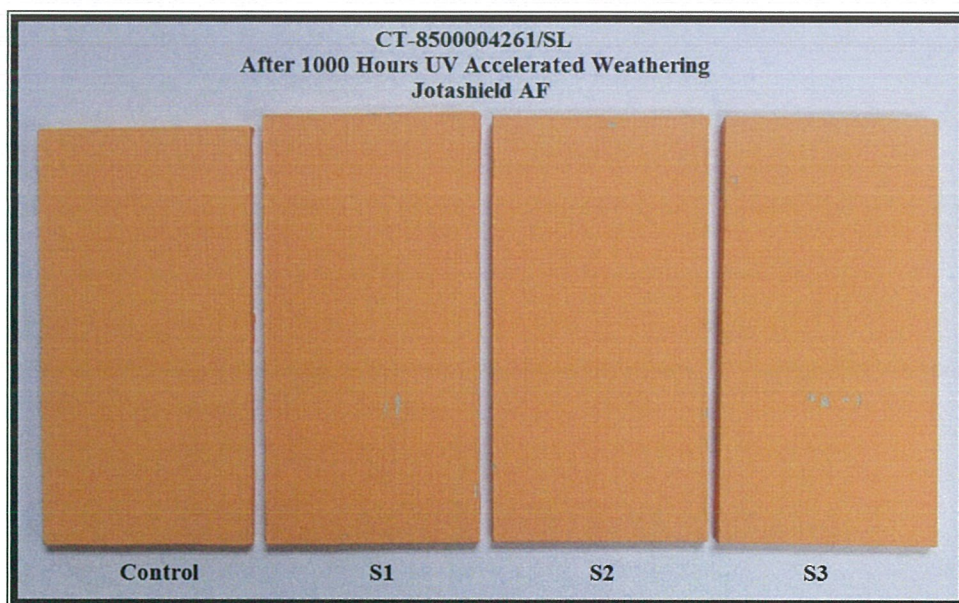
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Results:
1) UV Accelerated Weathering

Sample Reference		Jotashield AntiFade Colours		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		1000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		03/07/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 1000 hours Exposure	Date of Inspection	03/07/2018		
	Colour Change, ΔEab	1.25	1.23	1.24
	Average Colour Change, ΔEab	1.24		
	Grey Scale	4.5	4.5	4.5
	Average Grey Scale	4.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated “Jotashield AntiFade Colours” Panel S1, S2 and S3 after 1000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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Your Ref.: -

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Date: 24/08/2018

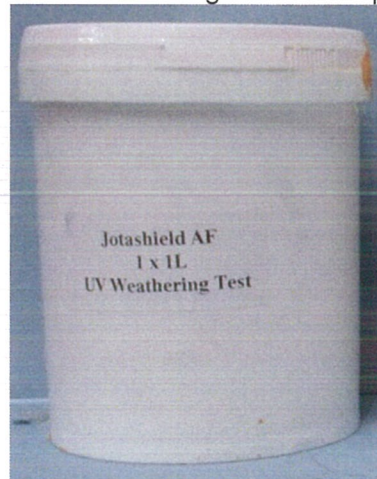
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Method of Test : ASTM G154 : 2016

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Results : Refer to Page 2.


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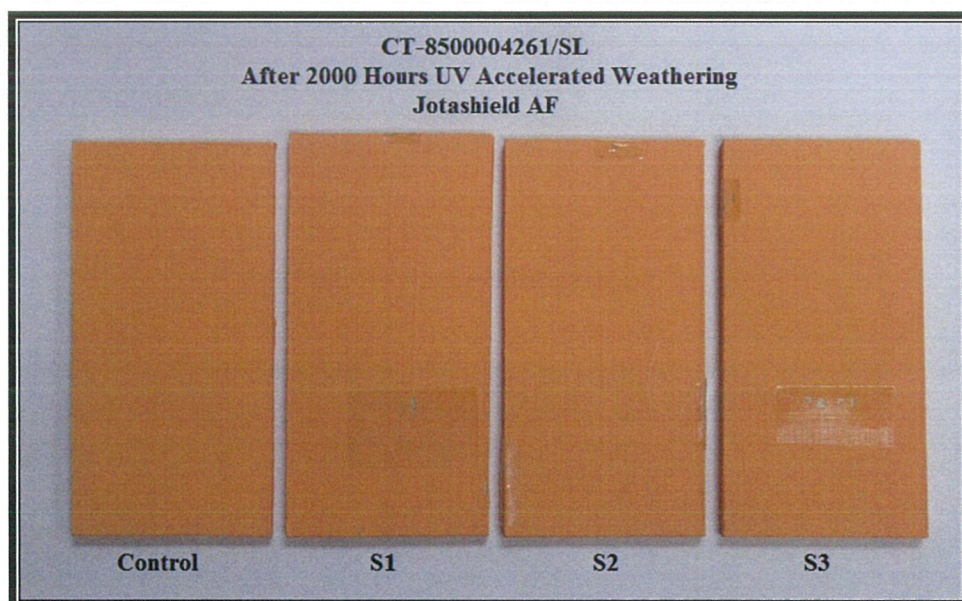
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Results:
1) UV Accelerated Weathering

Sample Reference		JOTASHIELD AF		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		2000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		14/08/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 2000 hours Exposure	Date of Inspection	14/08/2018		
	Colour Change, ΔEab	1.40	1.61	1.49
	Average Colour Change, ΔEab	1.50		
	Grey Scale	4.5	4.5	4.5
	Average Grey Scale	4.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "JOTASHIELD AF" Panel S1, S2 and S3 after 2000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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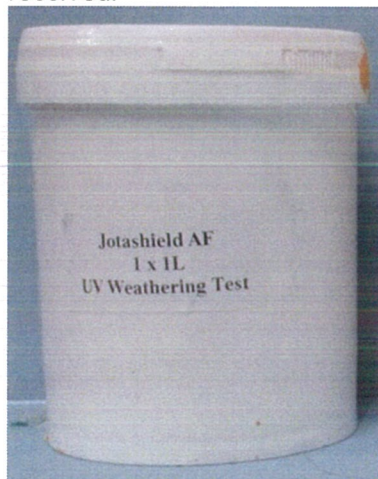
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Subject : Determination of durability by UV Accelerated Weathering on "JOTASHIELD Antifade Colours" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
Lot 7, Persiaran Perusahaan, Seksyen 23
P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "JOTASHIELD Antifade Colours" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


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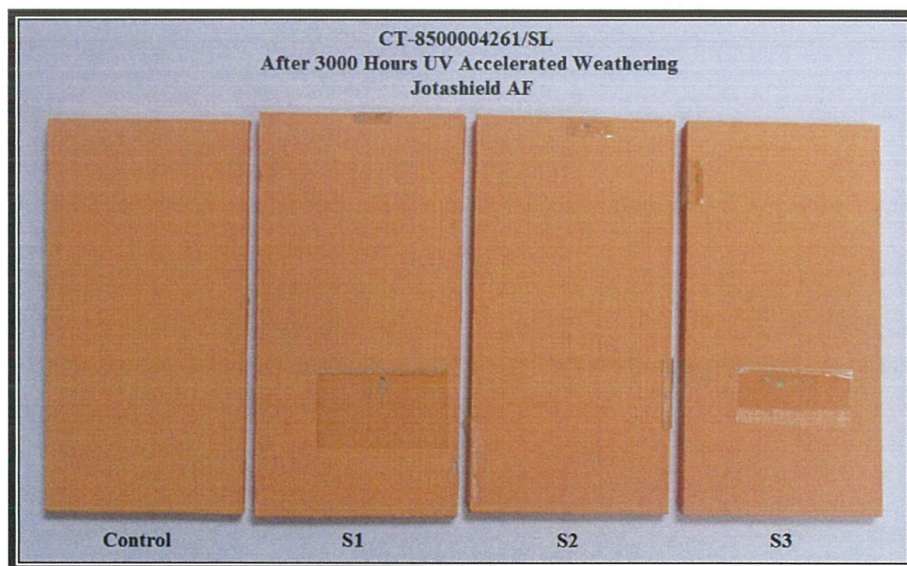
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Results:
1) UV Accelerated Weathering

Sample Reference		JOTASHIELD Antifade Colours		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		3000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		25/09/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 3000 hours Exposure	Date of Inspection	25/09/2018		
	Colour Change, ΔEab	2.52	2.52	2.51
	Average Colour Change, ΔEab	2.52		
	Grey Scale	4.0	4.0	4.0
	Average Grey Scale	4.0		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "JOTASHIELD Antifade Colours" Panel S1, S2 and S3 after 3000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

Signature

Signature

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Our Ref.: CT-8500004261/SL/B2

Date: 06/08/2018

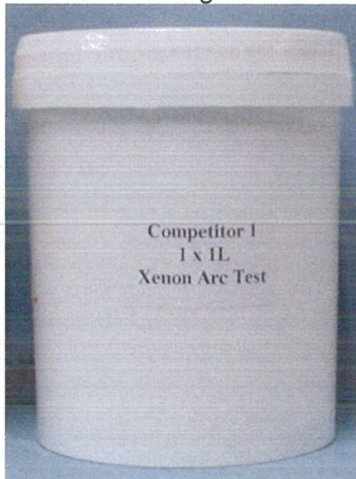
Page 1 of 2

Subject : Determination of durability by UV Accelerated Weathering on "COMPETITOR 1" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
Lot 7, Persiaran Perusahaan, Seksyen 23
P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 1" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


Teo Seng Lee
Testing Officer


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Construction Technology Division

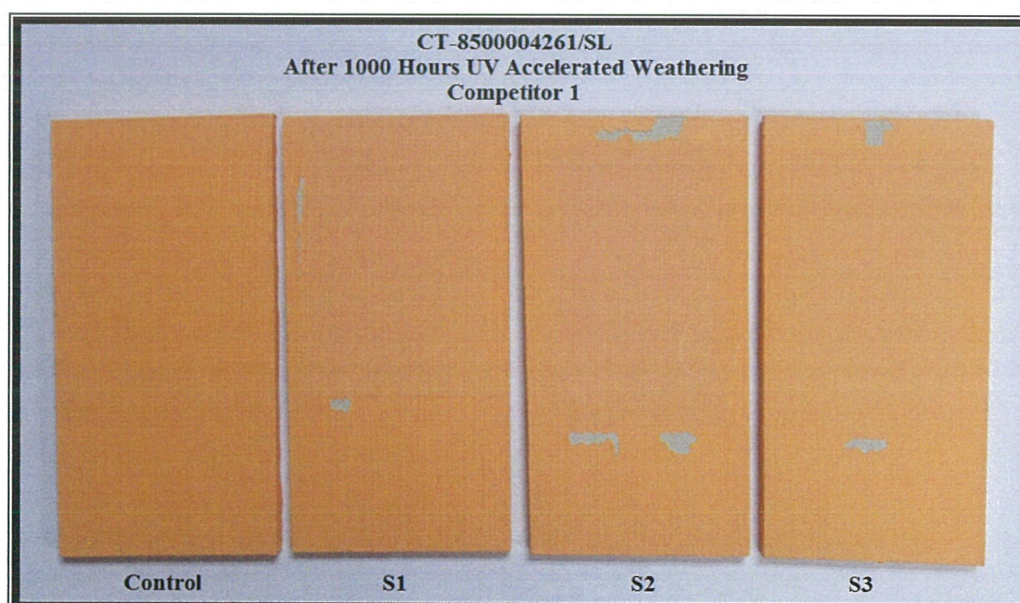
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Results:
1) UV Accelerated Weathering

Sample Reference		COMPETITOR 1		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		1000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		03/07/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 1000 hours Exposure	Date of Inspection	03/07/2018		
	Colour Change, ΔEab	8.11	11.42	7.94
	Average Colour Change, ΔEab	9.16		
	Grey Scale	2.5	2.0	2.5
	Average Grey Scale	2.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "COMPETITOR 1" Panel S1, S2 and S3 after 1000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

Signature

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Your Ref.: -

Our Ref.: CT-8500004261/SL/B2-2

Date: 24/08/2018

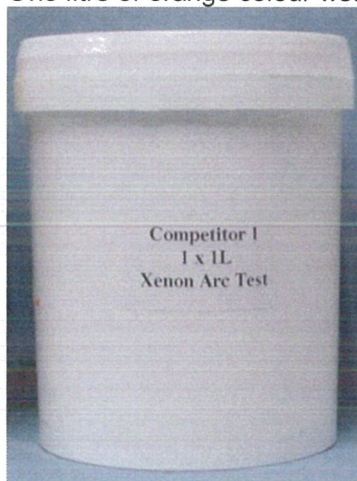
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P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 1" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


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1) UV Accelerated Weathering

Sample Reference		COMPETITOR 1		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		2000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		14/08/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 2000 hours Exposure	Date of Inspection	14/08/2018		
	Colour Change, ΔEab	13.08	15.90	13.15
	Average Colour Change, ΔEab	14.04		
	Grey Scale	2.0	1.5	2.0
	Average Grey Scale	2.0		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "COMPETITOR 1" Panel S1, S2 and S3 after 2000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

lu

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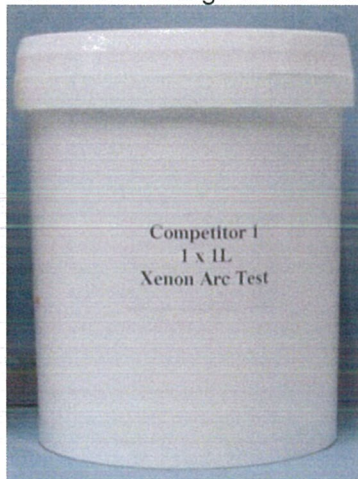
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Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 1" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


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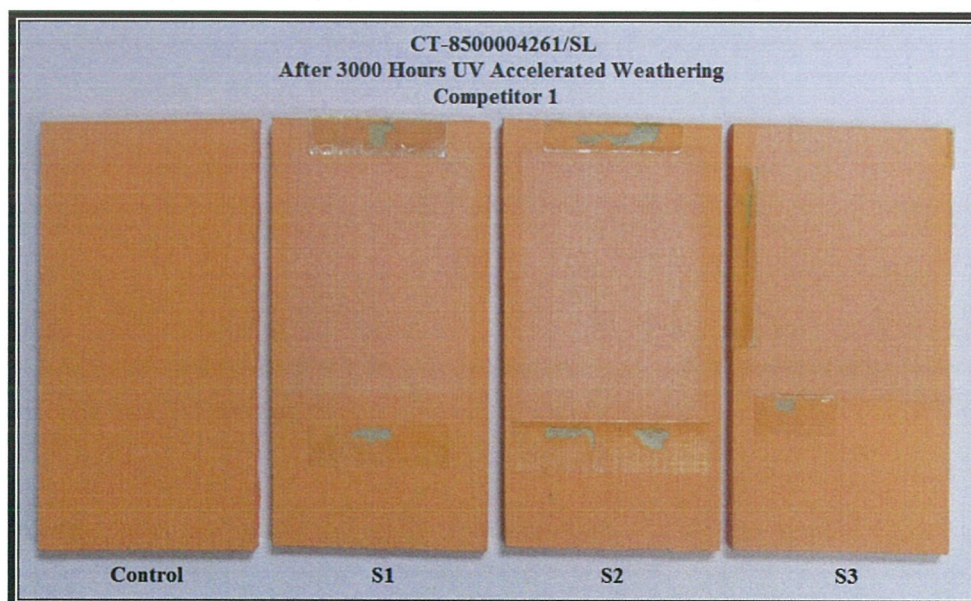
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Results:
1) UV Accelerated Weathering

Sample Reference		COMPETITOR 1		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		3000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		25/09/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 3000 hours Exposure	Date of Inspection	25/09/2018		
	Colour Change, ΔEab	18.42	21.32	17.81
	Average Colour Change, ΔEab	19.18		
	Grey Scale	1.5	1.0	1.5
	Average Grey Scale	1.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "COMPETITOR 1" Panel S1, S2 and S3 after 3000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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Date: 06/08/2018

Page 1 of 2

Subject : Determination of durability by UV Accelerated Weathering on "COMPETITOR 1" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
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P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 2" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


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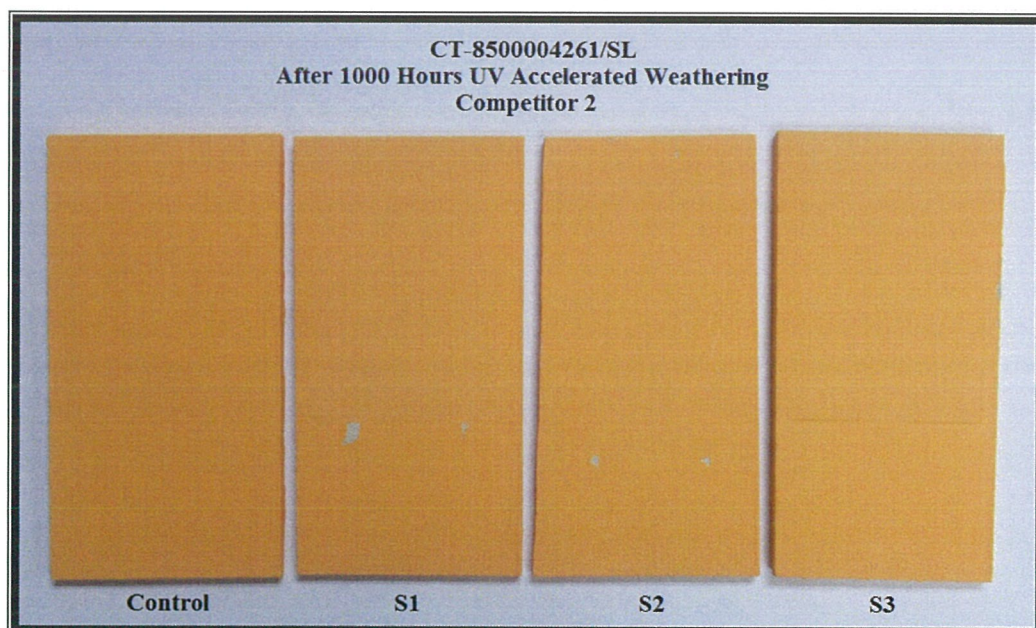
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Results:
1) UV Accelerated Weathering

Sample Reference		COMPETITOR 2		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		1000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		03/07/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 1000 hours Exposure	Date of Inspection	03/07/2018		
	Colour Change, ΔEab	4.80	4.34	4.75
	Average Colour Change, ΔEab	4.63		
	Grey Scale	3.5	4.0	3.5
	Average Grey Scale	3.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "COMPETITOR 2" Panel S1, S2 and S3 after 1000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

Setesco Services Pte Ltd
18 Teban Gardens Crescent
Singapore 608925
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setesco.com
Business Reg. No. 196900269D

Your Ref.: -

Our Ref.: CT-8500004261/SL/B3-2

Date: 24/08/2018

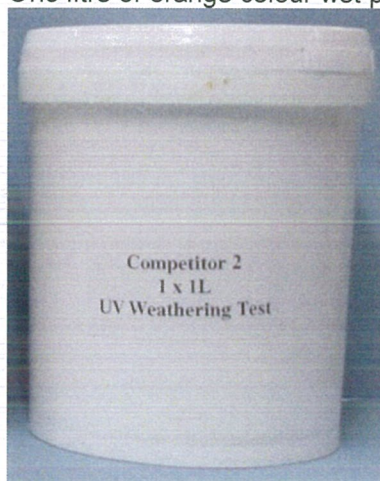
Page 1 of 2

Subject : Determination of durability by UV Accelerated Weathering on "COMPETITOR 2" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
Lot 7, Persiaran Perusahaan, Seksyen 23
P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 2" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


Teo Seng Lee
Testing Officer


Shirley Lim Suidi
Executive Engineer (CMTD)
Construction Technology Division

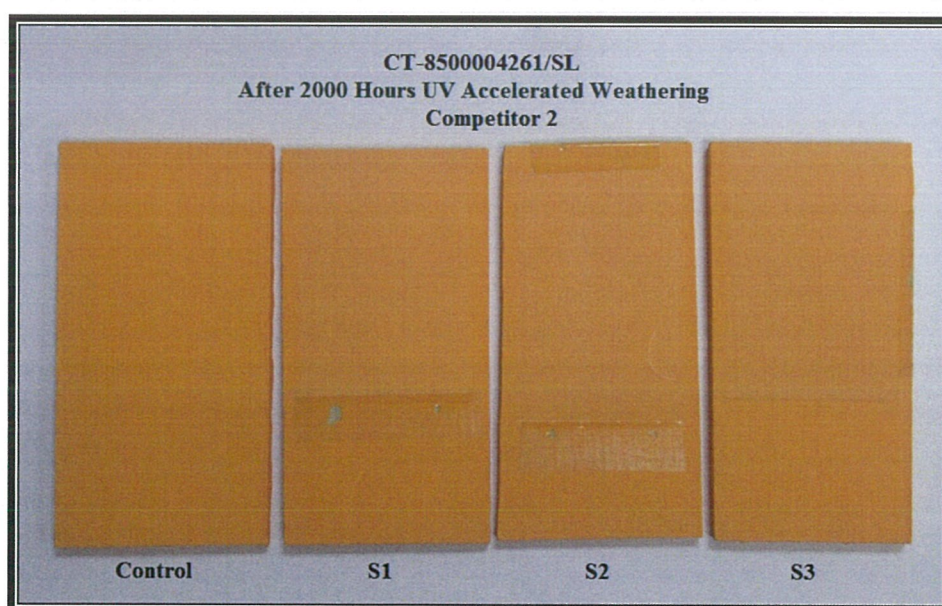
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Results:
1) UV Accelerated Weathering

Sample Reference		COMPETITOR 2		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		2000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		14/08/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 2000 hours Exposure	Date of Inspection	14/08/2018		
	Colour Change, ΔEab	9.19	9.76	8.71
	Average Colour Change, ΔEab	9.22		
	Grey Scale	2.5	2.5	2.5
	Average Grey Scale	2.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated “COMPETITOR 2” Panel S1, S2 and S3 after 2000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

SetSCO Services Pte Ltd
18 Teban Gardens Crescent
Singapore 608925
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Your Ref.: -

Our Ref.: CT-8500004261/SL/B3-3

Date: 16/10/2018

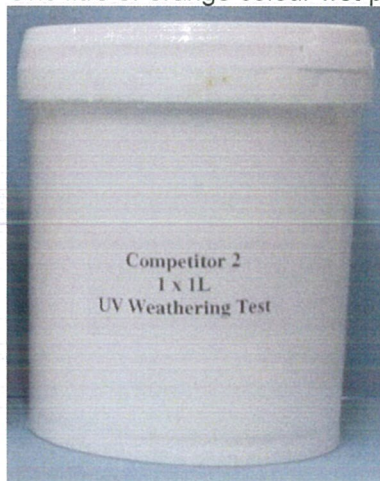
Page 1 of 2

Subject : Determination of durability by UV Accelerated Weathering on "COMPETITOR 2" paint sample submitted by Jotun Paints (Malaysia) Sdn Bhd on 03/04/2018.

Tested For : **JOTUN PAINTS (MALAYSIA) SDN BHD**
Lot 7, Persiaran Perusahaan, Seksyen 23
P.O. Box 7050, 40700 Shah Alam
Selangor Darul Ehsan, Malaysia
Attn: Mr. Ooi Hun Wei

Method of Test : ASTM G154 : 2016

Description of Sample : One litre of orange colour wet paint labelled "COMPETITOR 2" was received.



Sample Preparation : Sample was coated by brush to cement panels of 150 mm x 70 mm at coverage of 125 – 130 g/m² per coat. Total of 2 coats. The coated panels were left to dry for at least a week prior test.

Results : Refer to Page 2.


Teo Seng Lee
Testing Officer


Shirley Lim Suidi
Executive Engineer (CMTD)
Construction Technology Division

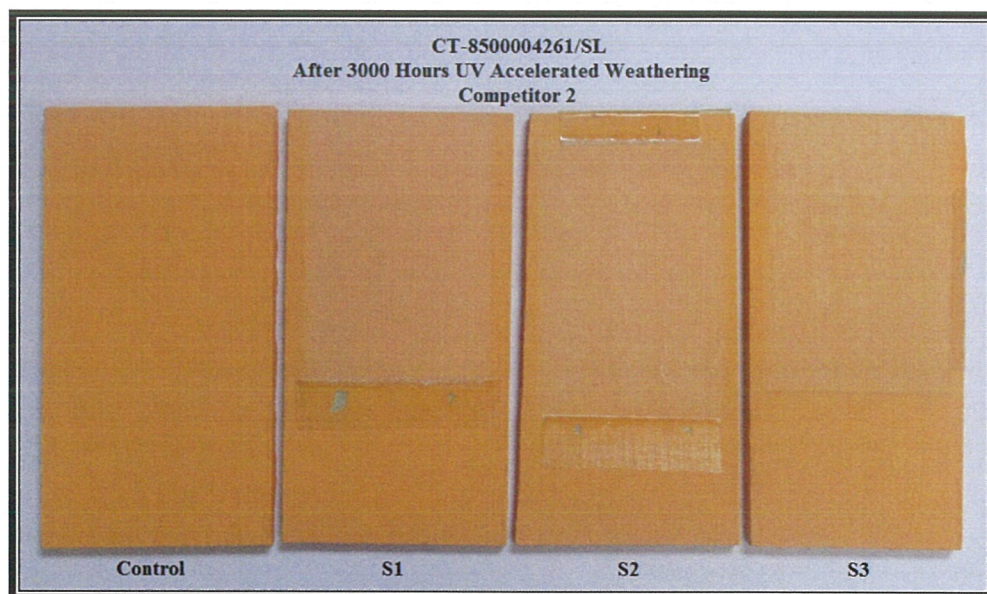
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Results:
1) UV Accelerated Weathering

Sample Reference		COMPETITOR 2		
Specimen Reference		S1	S2	S3
Test Conditions		8 hr UV at 60±3°C (Black Panel Temperature) and 4 hr condensation at 50±3°C		
Total Exposure Duration		3000 hours		
Light Source		UVA-340		
Irradiance		0.89 W/m ² /nm		
Date of Test Commencement		22/05/2018		
Date of Test Completion		25/09/2018		
Before Test	Date of Inspection	22/05/2018		
	Type of Grey Scale	ISO 105 Part A05		
	Visual Observation	No defects	No defects	No defects
After 3000 hours Exposure	Date of Inspection	25/09/2018		
	Colour Change, ΔEab	16.16	19.09	16.71
	Average Colour Change, ΔEab	17.32		
	Grey Scale	1.5	1.5	1.5
	Average Grey Scale	1.5		
	Visual Observation	No cracking, blistering and checking	No cracking, blistering and checking	No cracking, blistering and checking

Note: 1) Grey Scale 5 denotes mild or no discoloration; Grey Scale 1 denotes severe discoloration



Photograph 1: Coated "COMPETITOR 2" Panel S1, S2 and S3 after 3000 hours exposure to UV accelerated weathering compared to the Control panel which is kept in the dark as reference.

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