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Your Ref: Application Dated 09/05/2016

Our Ref: CT-30852/EC

Date: 17/05/2016

TEST REPORT

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

Page 1 of 4

Subject : Testing of Composite Wood, submitted by Milan Eco Wood Pte Ltd on 09/12/2014.

Tested For : **GREENZONE NEW CONSTRUCTION MATERIAL CO.,LTD.**
9 Tagore Lane
#02-23
Singapore 787472
Attn: Mr Chen Zhi Yun

Method of Test : Slip Resistance Test - SS 485: 2011(Annex A & B)
Oil-Wet Ramp Test - SS 485: 2011(Annex D)

Specification : SS 485: 2011 – Specification for slip resistance classification of pedestrian surface materials

Sample Reference : The details as furnished by client are as follows:
Material: Composite Wood
Country of Origin: China

Description of Sample : The following Composite Wood were received.
01 piece of 1000 x 400mm for Slip Resistance Test and Oil-Wet Ramp Test
(See photograph attached).

Results : Refer to page 2 for the results

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Results:**1) Slip Resistance Test**

Sample Reference		1000 x 400mm, Composite Wood, Country of Origin: China				
Date of Test		17/12/2014				
Test Temperature		23°C / 53% RH				
Slider Material Used		Four S Rubber (IRHD Hardness 96)				
Direction of Test (along or across)		Across the vein test direction				
Test Apparatus		Floor Friction Tester				
Moisture Condition of Surface		Dry				
Test No.		1		2		
Coefficient of Friction, μ	Average of 800mm run	0.63		0.65		
	Mean	0.64				
Classification achieved		F (Moderate to very low contribution to slipperiness)				
Test Apparatus		Pendulum Friction Tester				
Moisture Condition of Surface		Wet				
Specimen Reference		1	2	3	4	5
British Pendulum Number, BPN	Test No. 1	35	35	34	34	36
	Test No. 2	35	35	34	34	35
	Test No. 3	34	35	34	33	35
	Specimen average	35	35	34	34	35
	Sample mean	35				
Classification achieved		X (Moderate contribution to slipperiness)				

Note: Refer to Appendix A for classification.

2) Oil-Wet Ramp Test (Slip Resistance By Inclined Platform)

Sample Reference	1000 x 400mm, Composite Wood, Country of Origin: China					
Date of Test	17/12/2014					
Surface Structure	Smooth					
Test Temperature	23°C / 43% RH					
Test No.	First Person			Second Person		
	1	2	3	4	5	6
Critical Angle (°)	6.6	6.4	6.3	6.3	6.2	6.1
Average Angle (°)	6.3					

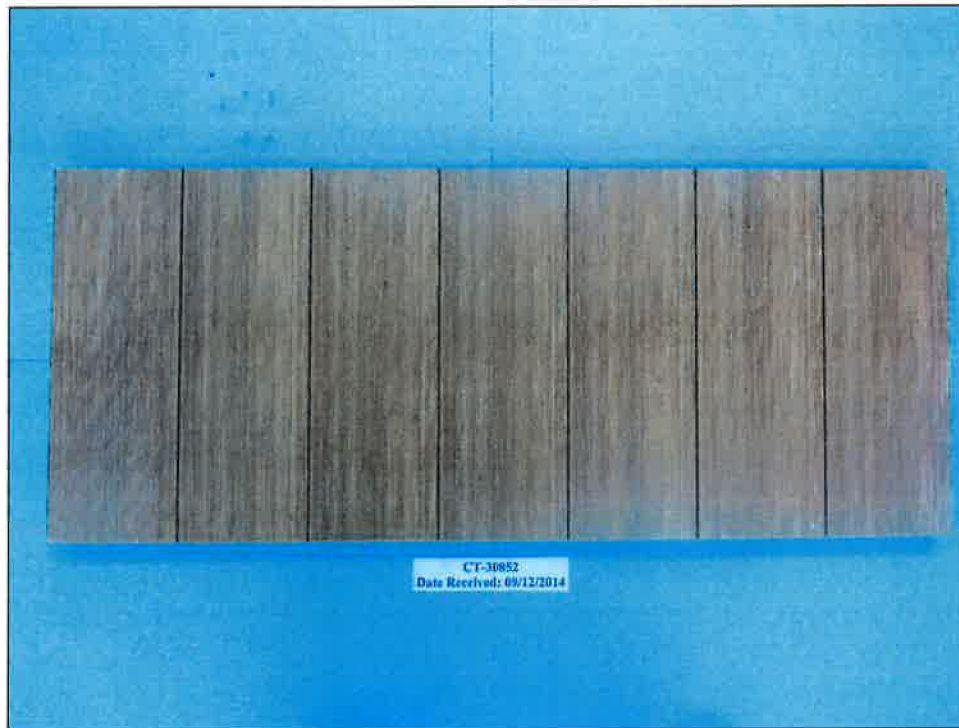
Remarks: 1) The result met R9 classification.
2) Refer to Appendix A for classification



Siva A/L Santheran
Testing Officer

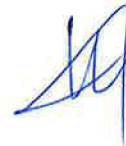


Eric Chuo
Engineer (CMTD)
Construction Technology Division



**Photograph showing 1000 x 400mm, Composite Wood, Country of Origin: China
as received on 09/12/2014.**





APPENDIX A**Classification Extracted From SS 485: 2011****Table 1: Wet pendulum test classification**

Classification	Pendulum mean BPN		Notional [†] contribution of the floor surface to the risk of slipping when wet
	Four S Rubber	TRL Rubber	
V	> 54	> 44	Very Low
W	45 to 54	40 to 44	Low
X	35 to 44	-	Moderate
Y	25 to 34	-	High
Z	< 25	-	Very High

[†] The term 'notional' has been used to highlight the need to consider all potential contributing factors to a slip incident

Table 2: Dry floor friction test classification

Classification	Floor friction tester mean value	Notional [†] contribution of the floor surface to the risk of slipping when dry
F	≥ 0.4	Moderate to very low
G	< 0.4	High to very high

[†] The term 'notional' has been used to highlight the need to consider all potential contributing factors to a slip incident

Table 3: Classification of pedestrian surface materials according to the oil wet ramp test

Classification	Angle (Degrees)
R9	6 up to less than 10
R10	10 up to less than 19
R11	19 up to less than 27
R12	27 up to less than 35
R13	≥ 35

Selection of pedestrian surface materials

It should be noted that compliance with the recommendations of this appendix will not necessarily alleviate all hazards. However, it will reduce certain pedestrian risks.

Other design considerations include the amount and type of expected traffic (vehicles, trolleys, people hurrying, elderly, disabled people with or without walking aids, and children); the product characteristics (wear resistance and cleanability) and the consequences of exposure to the types of contamination minimization); management policy and maintenance practices (types of cleaning equipment, frequency and effectiveness of cleaning); compliance with occupational, health and safety requirements; special provisions for slip hazards (guards and handrails); and alternative information sources (use of contrasting colours and warning signs).

Table 4: Pedestrian flooring selection guide – minimum pendulum or ramp recommendation for specific locations

Location	Pendulum	Ramp
External colonnade, walkways and pedestrian crossings	W	R10
External ramps	V	R11
Entry foyers hotel, office, public buildings – wet	X	R10
Entry foyers hotel, office, public buildings – dry	Z	R9
Shopping centre excluding food court	Z	R9
Internal ramps, slopes (greater than 2 degrees) – dry	X	R10
Lift lobbies other than entry foyers	Z	R9
Other shops with external entrances – entry area	X	R10
Food outlets including fast food outlets, buffet food servery areas	X	R10
Hospitals and aged care facilities – dry areas	Z	R9
Hospitals and aged care facilities – ensuites	X	A or R10
Shop and supermarket aisles except fresh food areas	Z	R9
Shop and supermarket fresh food areas	X	R10
Communal changing rooms	X	A
Swimming pool surrounds and communal shower rooms	W	B
Swimming pool ramps and stairs leading into water	V	C
Toilet facilities in offices, hotels, shopping centres	X	R10
Undercover concourse areas of sports stadium	X	R10
Accessible internal stair nosings (dry) – handrails present	X	R10
Accessible internal stair nosings (wet) – handrails present	W	B or R11
External stair nosings	W	R11

Note 1 - Appropriate measures need to be taken to exclude casual water from dry areas.

Note 2 - All floors with a wet pendulum classification of Z should have a dry floor friction of F unless normal usage dictates that the floor should have a low dry coefficient of friction, e.g dance floors

