Intertek

ENGINEERING EVALUATION

REPORT NUMBER: 160512007SHF-BP-41R1
ORIGINAL ISSUE DATE: September 23, 2016
REVISED ISSUE DATE: September 30, 2016

EVALUATION CENTER:

Intertek Testing Services Ltd., Shanghai
Plant 7, No. 6958 Daye Road, Fengxian District, Shanghai, China

RENDERED TO

Divine Hardwood Flooring Ltd. (Canda)
235075 Ryan Road, Rocky View AB T1X 0K3

PRODUCT EVALUATED: Vinyl Core
190x1210x1.5mmx0.3mm+4.0 mm
190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE
190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE

EVALUATION PROPERTY: Physical Properties
Chemical Properties
Acoustic Properties

Engineering Evaluation of Vinyl Core floor coverings for compliance with the applicable requirements of the relative criteria

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2 Introduction

Intertek is conducting an engineering evaluation for Zhangjiagang Elegant Plastics Co., Ltd on Vinyl Core floor coverings, to evaluate its physical properties, chemical properties and acoustic properties.

The evaluation is conducted to summarize the properties from the reports conducted by Intertek before.

The evaluation began May 12, 2016 and was completed September 30, 2016.

3 Product Description

Samples were submitted to Intertek directly from the client. Samples were not independently selected for testing.

The photographs of received samples were presented in Appendix A.

Product Description	Wear layer thickness	Attachment thickness	Total thickness
Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm	0.3mm	None	5.5mm
Vinyl Core 190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE	0.5mm	1.5mm	7.5mm
Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	0.5mm	1.5mm	8.5mm

According to the declaration provided by the sponsor, the product is multi-layer composite (wear layer/print film/soild virgin viny layer/glass fiber/bonded vinyl back layer/IXPE). The material and composition of the corresponding layer of these models is same, the only difference between these models is the thickness of the corresponding layer.

As part of this evaluation, Intertek has directly used the following referenced documents:

Test Reference	Remark
Test report of Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm	Report No. 160512007SHF-BP-13R1 Issued on August 29, 2016 by Intertek Testing Services Ltd., Shanghai
Test report of Vinyl Core 190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE	Report No. 160512007SHF-BP-15R1 Issued on August 23, 2016 by Intertek Testing Services Ltd., Shanghai
Test report of Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	Report No. 160512007SHF-BP-16 Issued on August 29, 2016 by Intertek Testing Services Ltd., Shanghai

4 Evaluation Method

The properties listed in the tables below come from the reports issued by Intertek before. Detailed information should be referred to initial reports.

Table 1 Physical properties based on the requirement of ASTM F1700-13a

Properties	Test Method	Minimum Requirement in ASTM F1700	Performance	Report No.
Size	ASTM F2055-10	A tolerance of ±0.4mm/305mm	Pass	160512007SHF-BP-13R1 160512007SHF-BP-15R1 160512007SHF-BP-16
Thickness	ASTM F386-11	A tolerance of ±0.13mm	Pass	
Thickness of wear layer	ASTM F410-08(2013)	Commercial, 0.5mm min	Pass[1]	
Squareness	ASTM F2055-10	≤0.25mm/305mm	Pass	
Residual indentation	ASTM F1914-07(2011)	Average ≤ 8% Max ≤ 10%	Pass	160512007SHF-BP-13R1 160512007SHF-BP-16
Resistance to Chemicals	ASTM F925-13	No more than a slight change in surface dulling, surface attack or staining	Pass	160512007SHF-BP-13R1
Resistance to Heat	ASTM F1514-03(2013)	ΔE* shall not greater than 8.0 after 7 days exposure to 70℃	Pass	
Resistance to light	ASTM F1515-15	ΔE* shall not greater than 8.0 after a 300h exposure	Pass	

Note
1. Declared by client, Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm is used as domestic floor covering.

Table 2-1 Physical properties based on other standards

Properties	Test Method	Performance	Report No.
Dimensional Stability[1]	ASTM F2199-09(2014) Modified	<0.15%	160512007SHF-BP-13R1 160512007SHF-BP-16
Static load[2]	ASTM F970-07(2011)	Applied load: 250lb Residual indentation: <0.10mm	160512007SHF-BP-13R1 160512007SHF-BP-16
Wear resistance	ASTM F510/F510M-14	Volume loss: 3.98mm³/100r	160512007SHF-BP-13R1
Wear resistance	ASTM D3389-15	Type of wheels: H-18 Load: 500g Revolutions: 1000 Mass loss: 135.5mg	160512007SHF-BP-13R1
Static Coefficient of Friction (Standard leather)	ASTM D2047-11	Dry: 0.35~0.40 Wet: 0.68~0.69	160512007SHF-BP-13R1 160512007SHF-BP-16
Abrasion resistance[3]	ASTM D4060-14	Type of wheels: CS-17 Load: 1000g Initial wear point of 0.3mm wear layer thickness: 50000 cycles	160512007SHF-BP-13R1

Note

1. Test temperature was modified from 80℃ to 60℃, other conditions were same as standard.
2. Evaluation based on the product without or removed the 1.5mm IXPE attachment.
3. The initial wear point is reached when there are areas of at least 0.60mm² wear-through in two quadrants and an area of 0.6mm² wear-through becomes visible in a third quadrant.

Table 2-2 Physical properties based on other standards

Properties	Test Method	Product Description	Performance	Report No.
Castor chair resistance	NALFA/ANSI LF-11	Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm	No visible damage after 25000 revolutions	160512007SHF-BP-13R1
Thermal conductivity and resistance	ASTM C518-15	Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	Mean temperature: 25℃ Temperature difference: 20℃ Thermal conductivity: 0.121 W/(m·K) Thermal resistance: 0.092 (m²·K)/W	160512007SHF-BP-16

Table 3 Chemical properties

Properties	Test Method	Performance	Report No.
Phthalate content test (DBP/DEHP/BBP/DINP/ DNOP/DIDP)	CPSC-CH-C1001-09.3	Not Detected. Detection limit = 0.01%	160512007SHF-BP-16
Heavy metal elements	ASTM F963-11	Not exceed the limit. Soluble Barium (Ba)/ Soluble Lead (Pb)/ Soluble Cadmium (Cd)/ Soluble Antimony (Sb)/ Soluble Selenium (Se)/ Soluble Chromium (Cr)/ Soluble Mercury (Hg) $<$5ppm Soluble Arsenic (As) $<$2.5ppm	160512007SHF-BP-16
Fungi resistance	ASTM G21-15	Rating 0, None growth	160512007SHF-BP-13R1 160512007SHF-BP-16

Table 4 Acoustic properties

Properties	Test Method	Product Description	Performance	Report No.
Impact sound insulation	ASTM E492-09 ASTM E989-12	Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm	IIC 51 (For the whole floor assembly system)	160512007SHF-BP-13R1
		Vinyl Core 190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE	IIC 56 (For the whole floor assembly system)	160512007SHF-BP-15R1
		Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	IIC 56 (For the whole floor assembly system)	160512007SHF-BP-16
Impact sound insulation improvement	ASTM E2179-09 ASTM E989-12	Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm	ΔIIC 18	160512007SHF-BP-13R1
		Vinyl Core 190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE	ΔIIC 24	160512007SHF-BP-15R1
		Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	ΔIIC 24	160512007SHF-BP-16
Airborne sound transmission loss	ASTM E90-09 ASTM E413-10	Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE	STC 50 (For the whole floor assembly system)	160512007SHF-BP-16

Note:
The whole floor assembly system consisted of 150mm thick concrete floor and the floor coverings were placed on the concrete floor.

5 Conclusion

Intertek has conducted an engineering evaluation for Zhangjiagang Elegant Plastics Co., Ltd on Vinyl Core floor coverings, to evaluate its physical properties, chemical properties and acoustic properties. The evaluation is conducted to summarize the properties from the reports conducted by Intertek.

Based on the information contained and referenced herein, the properties have been summarized and presented in section 5 of this report.

The conclusions of this engineer evaluation may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

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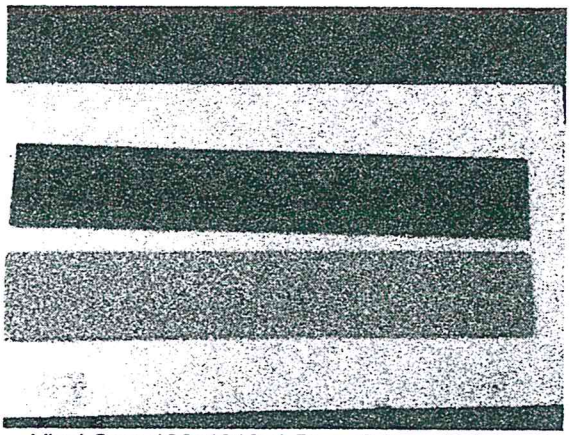
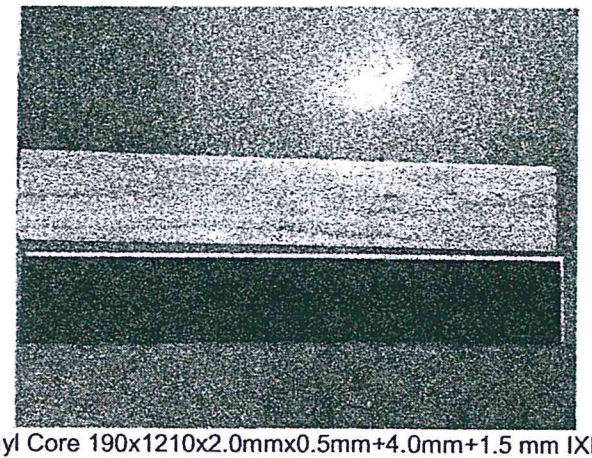
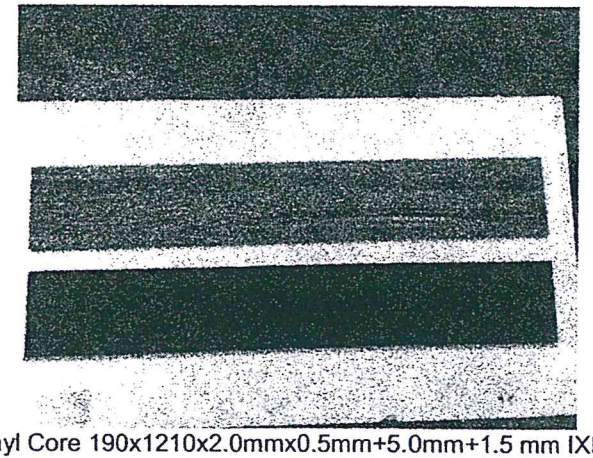
6 Appendix A: Photos



Vinyl Core 190x1210x1.5mmx0.3mm+4.0 mm



Vinyl Core 190x1210x2.0mmx0.5mm+4.0mm+1.5 mm IXPE



Vinyl Core 190x1210x2.0mmx0.5mm+5.0mm+1.5 mm IXPE

7 LAST PAGE AND REVISION SUMMARY

DATE	SUMMARY
September 23, 2016	Original
September 30, 2016	Add the test result of thermal conductivity and castor chair resistance

END OF DOCUMENT