



THE Space Creator

Hanwha L&C

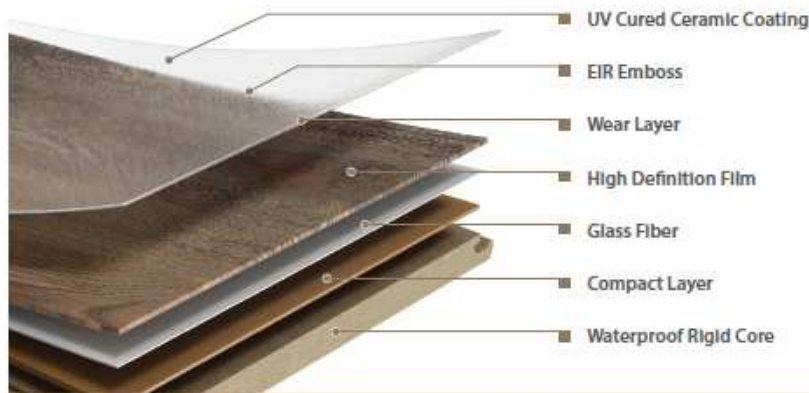
HLCC-2019-03-03











CRESCENDO

01 Structure

WPC : Water proof rigid core flooring



 Waterproof	 Easy Clean/Anti Scratch/High Durability - Special Surface Treatment (Nano Ceramic)
 Realistic wood designs with EIR emboss & High Definition Film	 Multi - Use (Light Commercial/Residential)
 Eco Friendly - No Phthalate/Heavy Metal/Formaldehyde - Natural ingredients contained - 100% Recyclable	 Perfect Dimensional Stability
	 Easy Installation - 

✓ Design : Basic 12 skus + Color matched for customers' demand



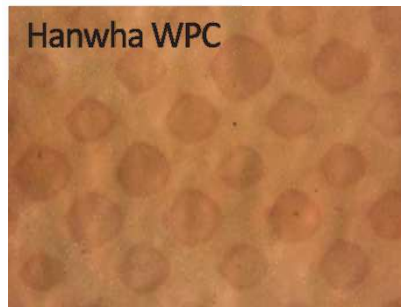
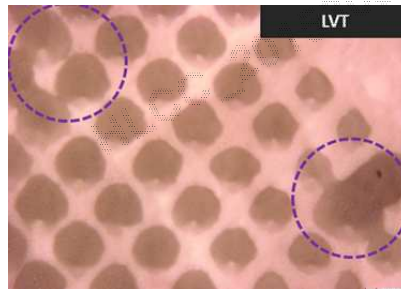
Water Resistant

- ▼ Water damaged wood & laminated flooring



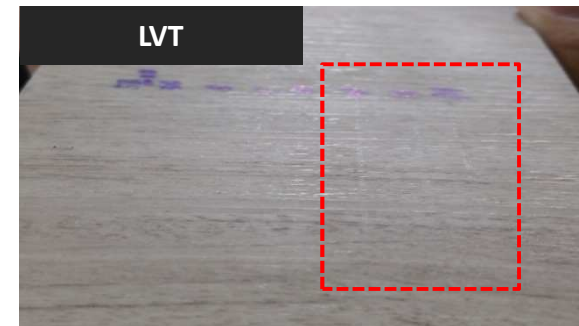
High Definition

- ▼ Pet-G transparent printing technology gives real HD design while normal LVT uses PVC film printing

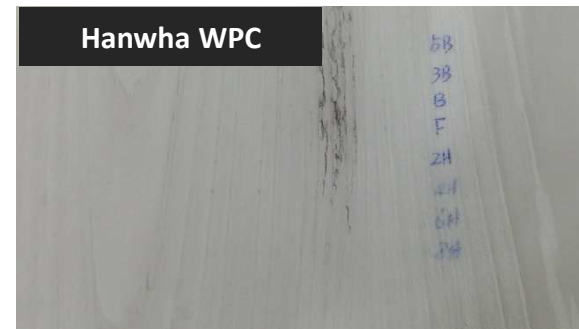


Anti Scratch

- ▼ Most enhanced technology of surface treatment offers high abrasion resistance



4H Scratch



No Scratch

03 Specification

WPC : Water proof rigid core flooring

Element	Spec	Item		Test Method
		Residential	Commercial	
Total Thickness(mm)	± 0.005" (0.13mm)	7.0	8.5	ASTM F 386
Wear Layer(mm)		0.5	0.7	
Core Density	1.1± 0.1	0.92	1.2	Market Standard
Size(Width, mm)	± 0.016"(0.41mm)	178.03	178.03	ASTM F 2421
Size(Length, mm)		1,220.05	1,220.05	
Static Load Limit	0.005"(0.13mm)	0.01	0.01	ASTM F 970
Residual Indentation	Average ≤8%	N/A	2.4%	ASTM F 1914
Large Ball Test (1,400mm)	No Change		Pass	NALFA 3.5
Abrasion Resistance	25,000 Cycle	Pass	Pass	ASTM D 4060
Resistance to Heat	Average ΔE≤8.0	Pass	Pass	ASTM F 1514
Resistance to Light	Average ΔE≤8.0	Pass	Pass	ASTM F 1515
Colorfastness to Light	Grade 4.5	Pass	Pass	AATCC 16.3
Antimicrobial Activity	≥ 99.9%	≥ 99.9%	≥ 99.9%	ASTM E 2180
Slip Resistance	≥ R9	R10	R10	DIN 51130
Resistance to Chemicals	≤ Slight change	Pass	Pass	ASTM F 925
Phthalate & Heavy Metals	No Detective	No Detective	No Detective	SGS
STC(Sound Transmission Class)	≥ 50	≥ 53	≥ 53	ASTM E413-10
IIC(Impact Insulation Class)	≥ 50	≥ 52	≥ 60	ASTM E492-09



(34540) 4F, 9, 1297beon-gil, Hanbat-daero, Dong-gu, Daejeon, Korea
Tel : 042-623-5156 Fax : 042-621-5143

TEST REPORT

APPLICANT : HANWHA L&C CORPORATION REPORT NO. : D270-15-01869
SAMPLE RECEIVED DATE : 2015-11-11
REPORT ISSUED DATE : 2015-12-02
PAGE : 1 OF 3

DESCRIPTION : ONE(1) PIECE OF SUBMITTED CUTTING SAID TO BE FLOOR COVERING.

ITEM : HYBRID LVT (1.2 %)

01. ACTIVITY OF INCORPORATED ANTIMICROBIAL AGENT IN POLYMERIC OR HYDROPHOBIC MATERIALS (ASTM E 2180 - 07) : cells/mL, PERCENT REDUCTION OF BACTERIA %

		BLANK	#1
BACTERIA 1	"0" h CONTROL	2.9 X 10 ⁶	2.9 X 10 ⁶
	AFTER 24 h	5.4 X 10 ⁶	< 10
	PERCENT REDUCTION OF BACTERIA	-	99.9
BACTERIA 2	"0" h CONTROL	4.2 X 10 ⁶	4.2 X 10 ⁶
	AFTER 24 h	1.6 X 10 ⁷	< 10
	PERCENT REDUCTION OF BACTERIA	-	99.9

NOTE) SAMPLE SURFACE AREA : (3 X 3) cm
INOCULUM VOLUME : 0.5 mL
NEUTRALIZING BROTH : 0.2 % POLYSORBATE 80
TEST BACTERIA: BACTERIA 1 - Staphylococcus aureus ATCC 8638
BACTERIA 2 - Klebsiella pneumoniae ATCC 4362
<= LESS THAN
SEE ATTACHED PHOTOS

PREPARED AND CHECKED FOR FITI

Seongkeun Jang

SEONG-KEUN, JANG
QUALITY MANAGER

AUTHORIZED BY FOR FITI

Moon Ok Noh

MOON-OK NOH
PRESIDENT

Report Verification No.: G92N-VXD3-AAA4
(You can see the authenticity of your test report through the above "Report Verification No." at FITI homepage.)

e-DOCUMENT SERVICE
The test results contained in this report are limited to results on the sample(s) that is provided by client and are not necessarily indicative or representative of the quality of the lot from which the sample(s) was taken or of all products. Results contained on this report are not based on the quality certification of sample by the FITI quality certification program unless specifically requested by the client. Further use of the results of this report is prohibited unless allowed under a separate agreement set forth in an official document that is established between the client identified on this letter and the FITI.



(34540) 대전광역시 동구 한밭대로 1297 번길 9 402 호
Tel : 042-623-5156 Fax : 042-621-5143

TEST REPORT

의뢰자 : 한화엘앤씨(주) 접수 번호 : D270-15-01631
주소 : 서울특별시 중구 을지로 5길 26(수하동, 미래에셋센터원 7, 8층) 발급 일자 : 2015-11-06
용도 : 품질관리용 쪽 번호 : 1/2
의뢰자제시시료명 : WPC LVT

2015-10-01 일자로 의뢰하신 시료에 대한 시험결과는 아래와 같습니다.

■ 시험 결과 ■

01. 곰팡이 저항성; DETERMINATION RESISTANCE OF SYNTHETIC POLYMERIC MATERIAL TO FUNGI (ASTM G 21 - 13) : 등급

	#1
	0

주) - 등급 : 0 = 자라지 못함
1 = 시편 위 10 % 이하로 자라남
2 = 시편 위 (10 ~ 30) % 이하로 자라남
3 = 시편 위 (30 ~ 60) % 이하로 자라남
4 = 시편 위 60 % 이상 자라남
- 사용공시균주 : Aspergillus niger ATCC 9642
Chaetomium globosum ATCC 6205
Penicillium pinophilum ATCC 11797
Glucadium virens ATCC 9645
Aureobasidium pullulans ATCC 15233
- 뒷장사진참조

** 시험 결과 기록 완료 **

FITI 시험연구원장



TEST REPORT

의뢰자 : 한화엘앤씨(주) 접수 번호 : D270-15-01004
주 소 : 서울특별시 중구 을지로5길 26(수하동, 미래에셋센터원 7, 8층) 발급 일자 : 2016-08-16
용 도 : 품질관리용 용 도 : 품질관리용
의뢰자제시사항명 : HAWHA (WPC) 쪽 번 호 : 1/2

2016-08-10일자로 의뢰하신 시료에 대한 시험결과를 아래와 같습니다.

시 험 항 목 시 험 결 과

(01) PBBs(POLYBROMINATED BIPHENYLS) 함량 : mg/kg

성 분	함 량	시 험 방 법	검 출 한 계
BROMOBI PHENYL	< 1	IEC 62321 Ed 1.0 : 2008	1 mg/kg
DI BROMOBI PHENYL	< 1		
TRI BROMOBI PHENYL	< 1		
TETRA BROMOBI PHENYL	< 1		
PEN TA BROMOBI PHENYL	< 1		
HEX A BROMOBI PHENYL	< 1		
HEPT A BROMOBI PHENYL	< 1		
OCT A BROMOBI PHENYL	< 1		
NON A BROMOBI PHENYL	< 1		
DEC A BROMOBI PHENYL	< 1		

주) < = 미만

<다음페이지 계속>

FITI시험연구원



* 문서 확인 번호 : 0Y5F-5A0N-APRJ *

(홈페이지 접속 후 "성정서확인" 메뉴에서 문서 확인 번호를 통해 위 정보 여부를 확인할 수 있습니다.)

접 수 번 호 : D270-15-01004

쪽 번 호 : 2/2

(02) PBDEs(POLYBROMINATED DIPHENYL ETHERS) 함량 : mg/kg

성 분	함 량	시 험 방 법	검 출 한 계
BROMODI PHENYL ETHER	< 1	IEC 62321 Ed 1.0 : 2008	1 mg/kg
DI BROMODI PHENYL ETHER	< 1		
TRI BROMODI PHENYL ETHER	< 1		
TETRA BROMODI PHENYL ETHER	< 1		
PEN TA BROMODI PHENYL ETHER	< 1		
HEX A BROMODI PHENYL ETHER	< 1		
HEPT A BROMODI PHENYL ETHER	< 1		
OCT A BROMODI PHENYL ETHER	< 1		
NON A BROMODI PHENYL ETHER	< 1		
DEC A BROMODI PHENYL ETHER	< 1		

주) < = 미만

(03) 중금속 함량 : mg/kg

성 분	함 량	시 험 방 법	검 출 한 계
카드뮴 (Cd)	< 1	IEC 62321-6 : 2013	1 mg/kg
납 (Pb)	< 10	IEC 62321-6 : 2013	10 mg/kg
수은 (Hg)	< 0.1	IEC 62321-4 : 2013	0.1 mg/kg
크롬 VI (Cr VI)	< 0.1	IEC 62321 Ed 1.0 : 2008	0.1 mg/kg

주) < = 미만



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TEST REPORT

접 수 번 호 : D270-15-01285

쪽 번 호 : 2/2

APPLICANT : HANWHA L&C CORPORATION

REPORT NO. : D270-15-01869

SAMPLE RECEIVED DATE : 2015-11-11

REPORT ISSUED DATE : 2015-12-02

PAGE : 1 OF 3

DESCRIPTION : ONE(1) PIECE OF SUBMITTED CUTTING SAID TO BE FLOOR COVERING.

ITEM : HYBRID LVT (1.2 %)

TEST CONDUCTED : AS REQUESTED BY THE APPLICANT, FOR DETAILS PLEASE SEE ATTACHED PAGES.

(01) 건축자재의 오염물질 방출량 시험 (환경부 고시 제2010-24호 : 실내공기질공정시험기준(2010))

시 험 항 목		시 험 결 과
총휘발성 유기화합물(TVOC) - EFa(mg/m ³ · h)		0.184
6개 휘발성유기화합물(6VOC) - EFa(mg/m ³ · h)	벤젠(BENZENE)	< 0.001
	톨루엔(TOLUENE)	0.003
	에틸벤젠(ETHYLBENZENE)	0.002
	자일렌(XYLENE)	0.002
	스티렌(STYRENE)	< 0.001
포름알데히드(HCHO) - EFa(mg/m ³ · h)		< 0.001
아세트알데히드(CH ₃ CHO) - EFa(mg/m ³ · h)		< 0.001

* EFa : 단위면적당 방출량(mg / m² · h)

TEST CONDUCTED

TEST RESULT

(01) PHTHALATE CONTENT (KS M 1991 : 2011) : %

DEHP(DI(2-ETHYLHEXYL)-PHTHALATE)
DINP(DI-ISO-NONYLPHTHALATE)
BBP(BENZYL BUTYL PHTHALATE)
DIDP(DI-ISO-DECYLPHTHALATE)
DNOP(DI-n-OCTYLPHTHALATE)
DBP(DIBUTYLPHTHALATE)

NOTE) DETECTION LIMIT : 0.01 %

#1

NOT DETECTED
NOT DETECTED
NOT DETECTED
NOT DETECTED
NOT DETECTED
NOT DETECTED

PREPARED AND CHECKED FOR FITI

Seongkeun Jang

SEONG-KEUN, JANG
QUALITY MANAGER

AUTHORIZED BY FOR FITI

Moonyoung No

MOON-OK NOH
PRESIDENT

· 시험 세부 사항

항목	세부사항
방출 시험 조건	온도(℃) : 25
	상대습도(%) : 50
	환기횟수(회/h) : 0.5
시험면의 면적과 시료부하량	시험면의 표면적(m ²) : 0.038 6
	시료부하량(m ² /m ²) : 2.0
공기채취	채취관 : TVOC : TENAX-TA 흡착관 HCHO : DNPH CARTRIDGE
	공기채취량(L) : TVOC : 4 HCHO : 6
	샘플방출시간(h) : 168
	방출샘플의 크기(L) : 20
측정기기	온도 · 습도 조절장치, 적산유량계, 공기채취 장비 : ADPAC SYSTEM(JAPAN)
	TVOC : ATD(PERKIN ELMER TUBOMATRIX ATD, USA) - GC/MSD(AGILENT 5973, USA)
	HCHO : HPLO(AGILENT 1100 SERIES, USA)

*) 별첨 차트 참조

SCS Global Services does hereby certify that an independent assessment has been conducted on behalf of:

Hanwha L&C Incorporated Business

#1, Janggyo-Dong, Jung-Gu, Seoul, Korea, Republic Of

For the following product(s):

WPC Hybrid Flooring:

Hanwha Hybrid Floor 5.0mm - 8.0mm

This product meets all of the necessary qualifications to be certified for the following claim:

FloorScore®

Indoor Air Quality Certified to SCS-EC10.3-2014 v3.0

Conforms to the CDPH/EHLB Standard Method v1.1-2010 (effective January 1, 2012) for the school classroom and private office parameters when modeled as Flooring.

Measured Concentration of Total Volatile Organic Compounds (TVOC): Less than/equal to 0.5 mg/m³ (in compliance with CDPH/EHLB Standard Method v1.1-2010)

Registration # SCS-FS-03894

Valid from: February 29, 2016 to February 28, 2017

SCS Global Services is currently the only certification body approved by the Resilient Floor Covering Institute (RFCI) to provide FloorScore® product certification; certified products are only listed on the SCS Green Products Guide, <http://www.scsglobalservices.com/certified-green-products-guide>.



ANSI ACCREDITED PROGRAM
PRODUCT CERTIFICATION
#0821



A handwritten signature in black ink that reads "Robert J. Hrubes".

Robert J. Hrubes, Ph.D., Executive Vice President
SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA

Item	Residential	Commercial
Total Thickness(mm)	7.0	8.5
Wear Layer(mm)	0.5	0.7
Size(Width, mm)	178	
Size(Length, mm)	1,220	
PCS/BOX	10	10
M2/BOX	2.17	2.17
SQF/BOX	23.37	23.37
BOX/PALETTE	50	50
PALETTE/20' DC	20	14
BOX/20' DC	1,000	700
M2/20' DC	2,176	1,520
SQF/20' DC	23,375	16,362

