



# ROYAL CRYSTAL JOINT STOCK COMPANY

Address: Street No.8, Nhon Trach II, Nhon Phu Industrial Park, Hiep Phuoc ward, Nhon Trach district, Dong Nai province, Vietnam

## TECHNICAL DATA SHEET

<b>PHYSICAL PROPERTIES &amp; PACKAGING (SPC FLOORING – 4.5 MM / 0.3 MM)</b>	
USE	Residential
SIZE	9 1/16 x 48". (230mm x 1220 mm)
THICKNESS	4.5 mm
THICKNESS - WEAR LAYER	0.3 mm (12 mil)
PROFILE	Unilin click
FINISH	Polyurethane acrylate coating, painted bevel edge
UNDERLAYMENT	Eva Special 1.0mm
COVERAGE - CARTON	10 planks/carton (30.14 Sq.Ft. / 2.8 Sqm)
COVERAGE - PALLET	64 cartons/pallet (1,932.5 Sq.Ft. / 179.5 Sqm)
COVERAGE - CONTAINER	15 Pallets/20' container (27,060 Sq.Ft. / 2,514 Sqm)

<b>STANDARDS — MANUFACTURING &amp; USAGE (ASTM F3261)</b>			
STANDARD	DESCRIPTION	REQUIREMENTS	RESULTS
ASTM F3261	Physical Characteristics / Tolerances	Refer to Standard	Passes Requirements
ASTM F1914	Residual Indentation	Average: < 0.007% (0.18mm)	Passes Requirements
ASTM F1914	Surface integrity	No Puncture through wear layer / Delcor layer	Passes Requirements
ISO 23999	Dimensional Stability	≤ 0.2% / lineal ft. (305mm)	Passes Requirements
ISO 23999	Curling	≤ 0.080 in. (2.0mm)	Passes Requirements
ASTM F925	Chemical Resistance	No More Than Slight Change	Passes Requirements



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ASTM F1514	Resistance to Heat	Average $\Delta E \leq 8.0$	Passes Requirements
ASTM F1515	Resistance to Light	Average $\Delta E \leq 8.0$	Passes Requirements
ASTM F3261	Thickness Swell	Max 2% without Pad Max 5% with Pad	Passes Requirements
ASTM 970	Static loading without pad	$\leq 0.005$ in (0.13mm) loading 250lb/in <sup>2</sup>	Passes Requirements

### STANDARDS — SAFETY & PERFORMANCE

STANDARD	DESCRIPTION	REQUIREMENTS	RESULTS
ASTM E648	Critical Radiant Flux (Radiant Panel)	Class I: $> 0.45$ W/Sq. cm	Passes Requirements
ASTM E662	Smoke Density	Flaming & Non-Flaming $< 450$	Passes Requirements
CDPH Standard Method v1.2	VOCs/TVOCs, Formaldehyde	Refer to Standard	Passes Requirements
REACH SVHC 223	Substances of Very High Concern	Per Substance: $< 0.1\%$ weight/weight	Passes Requirements
ASTM F963	Heavy Metals	Refer to Standard (Table 1)	Passes Requirements
CPSC-CH-C1001-09.4	Phthalates	Per CPSIA4 $< 0.1\%$ per Substance	Passes Requirements
ASTM D2047	Coefficient of Friction / Slip Resistance	N/A (No Official Requirements)	$\geq 0.6$ (wet)

CHEMICAL RESISTANCE	ASTM F925-13(2020)		
Reagent	Rating (Test duration: 24 hours)		
	Surface attack	Color change	Surface dulling
White vinegar (5% acetic acid)	0	0	0
Rubbing alcohol (70% isopropyl alcohol)	0	0	0



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White mineral oil (medicinal grade)	0	0	0
Sodium hydroxide solution (5% NaOH)	0	0	0
Hydrochloric acid solution (5% HCl)	0	0	0
Sulfuric acid solution (5% H <sub>2</sub> SO <sub>4</sub> )	0	0	0
Household ammonia solution (5% NH <sub>4</sub> OH)	0	0	0
Household bleach (5.25% NaOCl)	0	0	0
Olive oil (light)	0	0	0
Kerozene (K1)	0	0	0
Unleaded gasoline (regular grade)	0	0	0
Phenol (5% active phenol)	0	0	0

According to ASTM F925-13(2020), rating 0-3 represents:

0 = no change; 1 = slight change; 2 = moderate change; 3 = severe change.

<b>STAINING RESISTANCE</b>	EN 438-2:2016		
Reagent	Rating (Test duration: 24 hours)		
	Surface attack	Color change	Surface dulling
Aceton	5	5	5
Aniline Blue	5	5	5
Ball Point Pen	5	5	5
Betadine 10%	5	5	5
Bicarbonate (sodium hydrogencarbonate)	5	5	5
Bleach 10% (Cleaning solution)	5	5	5



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Cherry soda	5	5	5
Ethyl Alcohol	5	5	5
Hematoxylin	5	5	5
Iodine	5	5	5
Lemon Eze	5	5	5
Methylen Blue	5	5	5
Permanent Marker	5	5	5
Potassium Permanganate	5	5	5
Purell	5	5	5
Neutral Cleaner: floor clean	5	5	5
Glass Cleaner	5	5	5
General Purpose Cleaner	5	5	5
Red Wine	5	5	5
Shoe polish paste Brown	5	5	5
Yellow Mustard	5	5	5
Coffee	5	5	5
Black tea	5	5	5

Rating 1-5 represents:

5 = no change; 4 = minor change; 3 = moderate change; 2 = significant change; 1 = strong change

## RESULTS OF TOXID CHEMICAL

### 1. Phthalates content

Test Method: Organic solvent extraction, analyzed by GCMS

#### Test Result:

				Test No.	T001
				Material No.	M001
Test Parameter	CAS NO	Unit	RL	Result	
Dibutyl phthalate (DBP)	84-74-2	%	0.005	n.d.	
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	n.d.	
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	n.d.	
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	n.d.	
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	n.d.	
Diisobutyl phthalate (DIBP)	84-69-5	%	0.005	n.d.	
Di-n-pentyl phthalate (DnPP)	131-18-0	%	0.005	n.d.	
Di-n-hexyl phthalate (DnHP)	84-75-3	%	0.005	n.d.	
Dicyclohexyl phthalate (DCHP)	84-61-7	%	0.005	n.d.	
Diisopentyl phthalate (DiPP)	605-50-5	%	0.005	n.d.	

**Abbreviation:** n.d. = not detected (< Reporting Limit)  
 RL = Reporting Limit  
 NA = Not Applicable  
 % = percentage

### 2. Total heavy metal content

Test Method: ASTM F963-17 (CPSC method)

#### Test Result :

				Test No.	T001
				Material No.	M001
Test Parameter	CAS NO	Unit	RL	Result	
Antimony	7440-36-0	mg/kg	10	n.d.	
Arsenic	7440-38-2	mg/kg	10	n.d.	
Barium	7440-39-3	mg/kg	10	n.d.	
Cadmium	7440-43-9	mg/kg	10	n.d.	
Chromium	7440-47-3	mg/kg	3	n.d.	
Lead	7439-92-1	mg/kg	10	n.d.	
Mercury	7439-97-6	mg/kg	0.3	n.d.	
Selenium	7782-49-2	mg/kg	10	n.d.	

**Abbreviation:** n.d. = not detected (< Reporting Limit)  
 RL = Reporting Limit  
 mg/kg = milligram per kilogram



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## 4.Vinyl Chloride

Test Method: EN ISO 6401:2008

### Test result

Test No.	Material No.	Test Parameter	Unit	RL	Test Result
T001	M001	Vinyl chloride monomer	mg/kg	1	n.d.

**Abbreviation:** n.d. = not detected (< Reporting Limit)  
 RL = Reporting Limit  
 ppm = part per million  
 mg/kg (milligram per kilogram) is equal to ppm  
 NA = not applicable

## 5. Formaldehyde

Test Method: EN ISO 14184-1:2011

### Test Result:

		Test No.	T001
		Material No.	M001
Test Parameter	Unit	RL	Result
Formaldehyde content	mg/kg	10	n.d.

**Abbreviation:** n.d. = not detected (< Reporting Limit)  
 RL = Reporting Limit  
 ppm = part per million  
 mg/kg (milligram per kilogram) is equal to ppm  
 NA = not applicable

## CERTIFICATIONS

### CERTIFICATE OF COMPLIANCE



ROYAL CRYSTAL  
JOINT STOCK  
COMPANY

See product list below

UL 2818 - 2013 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings



UL evaluated representative samples of the identified product, process or facility for the identified Standard or other requirements in accordance with the agreements and any applicable program under terms in place between UL and the Client (productivity Agreement). The Client is authorized to use the UL Mark for the identified Product, process or facility provided the certification, in accordance with the terms of the Agreement. This Certificate is valid for the identified dates unless there is non-compliance with the Agreement. This certificate is subject to modification, suspension and withdrawal by UL or SPCF at any time, at its sole discretion.

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

**Royal Crystal Joint Stock Company**  
United States

For the following product(s):

**Vinyl Tile:**  
 Stone Plastic Composite (SPC) Floor with EVA underlayment  
 Stone Plastic Composite (SPC) Floor with IXPE underlayment

**bsi.** Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that: **ROYAL CRYSTAL JOINT STOCK COMPANY**  
 Road No. 8, Nhon Trach II Industrial Park - Nhon Phu,  
 Hiep Phuoc Town, Nhon Trach District,  
 Dong Nai Province,  
 Vietnam

Holds Certificate Number: **FM 746110**  
 and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

**Manufacturing of stone plastic composite vinyl flooring.**

For and on behalf of BSI: **Chris Cheung, Head of Compliance & Risk - Asia Pacific**  
 Original Registration Date: **19/05/2021** Effective Date: **19/05/2021**  
 Latest Revision Date: **19/05/2021** Expiry Date: **18/05/2024**

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This certificate was issued electronically and remains the property of BSI and is created by the combination of a contract number and certificate number. Further information regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by contacting the organization. This certificate is valid only if produced original copies are in compliance with the requirements of the certificate. Information and Contact: BSI, 88 Market Ave., East Asia, Room 4602, Singapore 499109. Tel: +65 6396 9000. BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick Road, London W4 4AL, UK. A member of the BSI Group of Companies.



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*Address: Street No.8, Nhon Trach II, Nhon Phu Industrial Park, Hiep Phuoc ward, Nhon Trach district, Dong Nai province, Vietnam*



**RECORD OF PARTICIPATION**

**ROYAL CRYSTAL JOINT STOCK COMPANY**  
**CÔNG TY CP HOÀNG GIA PHA LÊ**  
 Road 8, Nhon Trach II Industrial Park - Nhon Phu, Hiep Phuoc Town, Nhon Trach District, Dong Nai Province, Vietnam  
 Đường Số 8, KCN Nhon Trach II - Nhon Phú, Thị Trấn Hiệp Phước, Huyện Nhon Trach, Tỉnh Đồng Nai, Việt Nam

has been assessed by Intertek as conforming to the requirements of:

**Global Security Verification**

This document verifies that the named facility has voluntarily participated in the Global Security Verification program. A comprehensive supply chain security verification of the named facility was conducted by an independent third party to determine appropriate minimum security measures, as published by the U.S. Bureau of Customs and Border Protection and other international mutually recognized supply chain security programs, as implemented and maintained throughout the facility. Specifically, this verification focused on existing processes, procedures and infrastructure related to the following areas of supply chain security:

1. Security Vision and Responsibility
2. Risk Assessment
3. Business Partner Security
4. Cybersecurity
5. Conveyance and Instruments of International Traffic Security
6. Self Security
7. Procedural Security
8. Agricultural Security
9. Physical Access Controls
10. Physical Security
11. Personnel Security
12. Education, Training and Awareness

Registration Number  
**F\_IAR\_169091\_GSV-R1**  
 Audit Date: June 28, 2023  
 Issue Date: July 5, 2023  
 Expiry Date: July 4, 2024

*Phong Sinh*  
 Phong Sinh  
 GSV Program Manager, Intertek

*Guillaume Gagnac*  
 Guillaume Gagnac  
 Global Vice President,  
 Technical Management & Quality,  
 Business Assistance, Intertek

Intertek's ISV program includes global supply chain security initiatives, including C-TPAT (Customs Trade Partnership Against Terrorism), PIP (Patterns in Protection) and AEO (Authorized Economic Operator).




**Sedex Members Ethical Trade Audit Report**  
**Version 6.1**






**CE TEST CERTIFICATE**  
 FOR PERFORMANCE CHARACTERISTICS OF CONSTRUCTION PRODUCTS FOR THE CE MARKING

FLO-22-11-21-001

**Products:** SPC Flooring Collection; (3,4 - 8,5) mm with and without DPE (L,D - 2,0) mm and EVA (L,D - 2,0) mm underlay material

**Client:** Royal Crystal Joint Stock Company  
 Dong Nai Street No. 8, Nhon Trach Industrial Zone II  
 Nhon Phu, Hiep Phuoc Town, Nhon Trach District  
 Dong Nai Province / Vietnam

**Order:** Testing and classification of selected properties according to EN 14041:2004+AC2005+AC2006

**Test report:** 2720452, 2722282

**Test results:** The above mentioned SPC Flooring Collection can be classified regarding to the tested properties according to EN 14041:2004+AC2005+AC2006 (CE-labelling) as follows:

Properties	Results	Declaration according to EN 14041:2004+AC2005+AC2006
Reaction to fire performance according to EN ISO 9239-1:2010 and EN ISO 11925-2:2020, Classification according to EN 13501-1:2018	11.1 kW/m <sup>2</sup> 457 s <sup>2</sup> max	Reaction to fire class B <sub>s1</sub> s <sup>2</sup>
- Critical heat flux - Smoke production		class D5
Sliding behaviour according to EN 131893:2003	μ = 0,38	class E1
Formaldehyde emission according to EN 717-1:2005	< LOD (96 h)	class E1
Thermal resistance according to EN 12667:2001	≤ 0,0538 (m <sup>2</sup> K)/W	≤ 0,05 (m <sup>2</sup> K)/W
Thermal conductivity according to EN 12667:2001	0,125 W/(m <sup>2</sup> K)	0,12 W/(m <sup>2</sup> K)

\* Valid on wooden or mineral subfloor in end use application, using adhesives or not.  
 LOD = Limit of Detection

Dresden, 21/11/2022

*Head of Laboratory*  
 Head of Laboratory



*Engineer in charge*  
 Engineer in charge