

FloorScore®

2021 Renewal Certification Assessment

SCS Environmental Certification Services

Prepared for:

LG Hausys, Ltd.

**Polymeric, Sheet Vinyl, Vinyl Composition Tile,
and Vinyl Tile**

*Manufactured in Ulsan, Korea and Oksan, Korea; and Tianjin City,
China*

Project Work Order: # LGH-20-21

March 30, 2021



FloorScore® Renewal Certification Assessment

SCS Global Services, Environmental Certification Services completed a renewal FloorScore certification assessment of LG Hausys, Ltd.'s polymeric, sheet vinyl, vinyl composition tile, and vinyl tile products manufactured in Ulsan, Korea; Oksan, Korea; and Tianjin City, China. The lead auditor has completed a full assessment of the quality management assessment of each manufacturing site and product emissions review to determine conformance to SCS EC 10.3 – 2014 V4.0 Indoor Air Quality Performance Standard and CA 01350 (Standard Method v1.2, effective April 1, 2017). The results of the assessment are included within this assessment report.

This certification assessment has been completed in accordance with SCS' quality management system, ISO 19011 standard auditing practices, ISO/IEC 17065 and has been approved by the program manager. If there is a disagreement with the certification decision, please contact the program manager/quality manager directly.



June Acay, March 30, 2021
Lead Auditor
+1.510.229.4010 direct
jacay@scsglobalservices.com



Erik Hanba, March 30, 2021
Operations Director
+1.510.421.1540 direct
ehanba@scsglobalservices.com

EXECUTIVE SUMMARY

ASSESSMENT SCOPE

LG Hausys, Ltd.'s polymeric, sheet vinyl, vinyl composition tile, and vinyl tile assessment scope is detailed in the work order LGH-20-21.

Changes to Client certificate(s)

A change of scope was required to add and remove products shown below. A new polymeric certificate was also added to the scope through a separate Notice of Change project, detailed in work order LGH-20-15. LG Hausys will be adding new polymeric products manufactured at Ulsan, Korea under a separate assessment. As such, the associated NCR-21-01 for the failed initial test was closed. A separate scope expansion assessment will be initiated when the new polymeric products are ready to be added to LG Hausys' scope.

PRODUCT CATEGORY	CERTIFICATE NUMBER	PRODUCT LINE(S) ADDED	PRODUCT LINE(S) REMOVED
Sheet Vinyl	SCS-FS-01596	MediStudio (Comfort Type), MediStudio (Compact Type), Eternity, SIGNATURE WOOD, Aqua Marine	(Ulsan Site) CASA 2.2, Crever, Modern, Nobleart, UNStudio (Comfort Type), UNStudio (Compact Type), Woven, Woven Tile 3.5, Woven Tile 5.0
Vinyl Composition Tile	SCS-FS-03425	Grand	GR

Changes to Private Label certificate(s)

A change to the scope of the private label certificates was required to add and remove the following:

PRIVATE LABEL APPLICANT	PRIVATE LABEL PRODUCT LINE/S ADDED	PRIVATE LABEL PRODUCT LINE/S REMOVED	PRIVATE LABEL CERTIFICATE	LG HAUSYS CERTIFIED PRODUCT	LG HAUSYS CERTIFICATE
Engineered Floors LLC	Cornerstone	N/A	SCS-FS-06470	Decotile 2.5T	SCS-FS-01597
Teknoflor (merged certificate)	Forestscapes, Urbanscapes	N/A	SCS-FS-04567	Naturelife	SCS-FS-01596
Shaw Industries, Inc.	N/A	Change	SCS-FS-03048	N/A	SCS-FS-01596
Shaw Industries, Inc.	Homegrain	Homegrain 8, Homegrain 12	SCS-FS-03049	Decotile 2.0T	SCS-FS-01597
	Reston			Decotile 5.0T	
	NSP2.5207X48EX+			Deco Wood	

- Engineered Floors LLC is a new private label client and the certificate was issued after the renewal work order was created.
- Teknoflor receives private labels from LG Hausys' SCS-FS-01596 certificate, which was not included in the renewal work order.
- Shaw Industries, Inc. requested to remove "Change" from SCS-FS-03048 and rename "Homegrain 8, Homegrain 12" to "Homegrain" in SCS-FS-03049. "Reston" and "NSP2.5207X48EX+" were requested to be added to SCS-FS-03049 as well.
- The renewal work order incorrectly listed AHF's SCS-FS-06172 as a private label certificate and should have been SCS-FS-06258 (see Appendix A.2).

INDOOR AIR QUALITY CERTIFICATION SUMMARY

The following table details the conformance for products that have met FloorScore® product certification requirements. Products that have met FloorScore® certification also comply with the following criteria: USGBC LEED 2008, 2009 and v4 for Low-Emitting Materials (Flooring); Collaborative for High Performance Schools (CHPS) 2009 Criteria, EQ2.2.3; ANSI/ASHRAE/USGBC/IES Standard 189.1-2014, Section 8.4.2.3: Floor Covering Materials; BREEAM International and BREEAM UK; Green Guide for Health Care 2.2 EP 3.3 and EQ 4.3; and WELL Building Standard 4.3.a: Air.

PRODUCT CATEGORY	PRODUCT LINE(S)	QUALIFICATIONS	CERTIFICATE NUMBER	CERTIFICATION PERIOD*
Sheet Vinyl	ABC, Allroad, Aqua Marine, Biolife, Bright, Calmpasso 2.6, Calmpasso 3.2, Celestial, Collective Time Sheet, Comfort 2.6, Comfort 3.4, Comfort 3.4 EDU, Cube 2.0, Delight, DelightKid, Durable, Durable Eco, Eltrans, Eltrans Marine, EQ Floor, EQ Floor EDU, Eternity, Explorer Columbus, Inhabit, Ivywalk, Leisure 4.0, MediStudio 2.0, MediStudio 3.0, MediStudio (Comfort Type), MediStudio (Compact Type), Mediwalk, Mini, Natural Selection, Naturelife, Palace, Rexcourt, Rexcourt 2.0, Rexcourt 3.9, Rexcourt 4.5, Rexcourt 6.5, Rexcourt 8.0, S-Leum, Safedeko Metal, Safedeko Trans, Saferoad (Solid Pattern), Saferoad (Wood Pattern), Senior, Smart, SIGNATURE	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-01596	April 1, 2021 – December 31, 2021

PRODUCT CATEGORY	PRODUCT LINE(S)	QUALIFICATIONS	CERTIFICATE NUMBER	CERTIFICATION PERIOD*
	WOOD, Sports Floor Plus, Square 2.0, Square 2.4, Stone Collectio, Strong, Style, Supreme 1.8, Supreme 2.0, Supreme Eco, Terasu, Textile Collection, Trendy, Wall, Wise 2.0, Wood Collection 2.0			
Sheet Vinyl	Rexcourt, Rexcourt 2.0, Rexcourt 3.9, Rexcourt 4.5, Rexcourt 6.5 & Rexcourt 8.0, Leisure 4.0, Calmpasso 2.6, Calmpasso 3.2	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-06317	April 1, 2021 – December 31, 2021
Vinyl Tile	Acoustic Looselay, Botanic, Crossfit, Decoclick, Decolay, Decotile 2.0T, Decotile 2.5T, Decotile 3.0T, Decotile 4.0T, Decotile 5.0T, Deco Wood, Denali, Econo, Econo Plus, Fine, Grande Style, Grand Teton, Hexagon, House, Loose Lay, OA Tile (P Type), Pike's Peak, PRESTG SPC Click, PRESTG SPC Gluedown, ZEA Maru Style, Artistry Gluedown, Artistry Click	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-01597	April 1, 2021 – December 31, 2021
Vinyl Composition Tile	Gallant, Gallant Edu, Grand, Modern, OA Tile (C Type), Origin, Origin Conductive, Prairie, Space, Unite, VIP Inlaid Edu, VIP Marble, VIP Marble Origin, VIP R Inlaid, Atmosphere	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-03425	April 1, 2021 – December 31, 2021
Vinyl Tile	STATICPULSE™ ESD	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-03632	April 1, 2021 – December 31, 2021
Polymeric	Pure+	TVOC Range: 0.5 mg/m ³ or less	SCS-FS-06394	April 1, 2021 – December 31, 2021

**The issuance date of the renewal certificate has been adjusted as the certification extension expires on March 31, 2021*

PRODUCT ASSESSMENT SUMMARY

The following table indicates if a Non-Conformance Report (NCR) / Opportunity for Improvement (OFI) /New Information Request (NIR) is issued based on deficiencies found in the documentation or other supplemental information provided to meet both Standard Method v1.2 and the Quality Management System requirements. All NCRs must be closed before certification may be issued.

NCR/ OFI/ NIR- #	STANDARD REQUIREMENT	AUDITOR FINDINGS	DUE DATE	STATUS
---------------------------	-------------------------	------------------	----------	--------

NCR/ OFI/ NIR- #	STANDARD REQUIREMENT	AUDITOR FINDINGS	DUE DATE	STATUS
NIR-20-01	SCS-EC10.3-2014-Section 6.5	Copies of recent internal or external audit reports are requested from each manufacturing site to monitor the quality management system.	December 31, 2020 Extended to June 30, 2021	OPEN, due June 30, 2021 Only an internal audit for Oksan site was provided during the scope expansion to add Pure+. Please provide a copy of internal or external audit reports from Ulsan, Korea and Tianjin, China to avoid escalation to a non-conformance.
NIR-20-02	SCS-EC10.3-2014-Section 6.5	Examples of recent customer complaints are requested from each site to monitor the production control system.	December 31, 2020	Closed The client indicated that there are no customer complaints regarding VOC emissions.
NIR-20-03	SCS-EC10.3-2014-Section 5.4	LG Hausys stated in the Data Request Form that the FloorScore® logo is used on marketing collateral. An example of this logo usage is requested.	December 31, 2020	Closed. Logo usage material provided for review.
NIR-21-01	SCS-EC10.3-2014 Section A1.2	During the 2021 renewal assessment, a full quality review of Ulsan, Korea was required. There were no reported changes to quality documents however, copies of the following are requested for review to confirm continued compliance: production flow chart, internal/external audit, product variation, traceability procedure, production control procedure/customer complaint procedure.	June 30, 2021	OPEN
NIR-21-02	SCS-EC10.3-2014-Section 5.4	The logo is used appropriately in some company website links. However, the product brochure available on https://www.lghausysusa.com/flooring/for-trade/downloads.do is missing informational elements. It is recommended to be updated to the SCS-approved logo with the SCS kingfisher image and the text "Certified by SCS Global Services." In addition, new information is requested for logo usage in the new website, www.lghausys-floors.co.eu , when available.	December 31, 2021	OPEN
OFI-21-01	N/A	The ISO 9001 certificate for Ulsan, Korea expired on February 21, 2021. Although ISO 9001 is not a requirement for certification, a copy of the current certificate is recommended to be submitted for SCS records. See OFI	December 31, 2021	OPEN

NCR/ OFI/ NIR- #	STANDARD REQUIREMENT	AUDITOR FINDINGS	DUE DATE	STATUS
NCR-21-01	SCS-EC10.3-2014-Section 6.4	New polymeric flooring products (Pure+ Hetero, Pure+200, Pure+ 220) manufactured at Ulsan, Korea are being added during the 2021 renewal and require testing to confirm compliance. Pure+ 200 initial test results failed due to exceedingly high benzene emissions and require a retest.	March 22, 2021	Closed. LG Hausys will be adding the new products at a later date, under a separate assessment.

MANUFACTURING ONSITE AUDIT SUMMARY

The table below indicates the entire scope of applicable site audits, the status of site audits completed, conformance status, and rationale for site audit selection for initial and renewal years.

MANUFACTURING SITE	DATE OF LAST ONSITE AUDIT	STATUS OF NCR/NIR	AUDITOR RATIONALE
<p>Ulsan, Korea</p> <p>The following products are manufactured at this site:</p> <p>All sheet vinyl products on SCS-FS-01596</p>	<p>March 25, 2013</p> <p>Date of last full quality review: March 30, 2021</p>	None.	<p>This site underwent a full quality review during the 2021 renewal assessment. The site continues to demonstrate the ability to control production through a quality management system and manufactures products considered to be a low priority for emissions testing. Therefore, this site is also considered a low priority and does not require a renewal onsite audit at this time. The site will be re-evaluated for a renewal onsite audit in the 2025 renewal assessment.</p>
<p>Oksan, Korea</p> <p>The following products are manufactured at this site:</p> <p>All vinyl tile products on SCS-FS-01597</p> <p>All vinyl composition tile products on SCS-FS-03425</p> <p>SCS-FS-03632: STATICPULSE™ ESD</p> <p>SCS-FS-06394: Polymeric Flooring: Pure+</p>	<p>February 13, 2014</p> <p>Date of last full quality review: September 8, 2020 (during scope expansion assessment)</p>	None.	<p>This site continues to demonstrate the ability to control production through a quality management system and manufactures products considered to be a low priority for emissions testing. Therefore, the site is also considered a low priority and does not require a renewal onsite audit at this time. The site will be re-evaluated for a renewal onsite audit in the 2024 assessment.</p>
Tianjin, China	February 13, 2014	None.	This site continues to demonstrate the

MANUFACTURING SITE	DATE OF LAST ONSITE AUDIT	STATUS OF NCR/NIR	AUDITOR RATIONALE
<p>The following products are manufactured at this site:</p> <p>SCS-FS-03632: STATICPULSE™ ESD</p>	<p>Date of last full quality review: January 31, 2018</p>		<p>ability to control production through a quality management system and manufactures products considered to be a low priority for emissions testing. Therefore, the site is also considered a low priority and does not require a renewal onsite audit at this time. The site will be re-evaluated for a renewal onsite audit in the 2022 assessment.</p>

1.0 Product Categories Assessment

The following tables provide a progressive review on how products were selected to represent the emission profile for the product category, actual emissions results, and overall product certification results.

1.1 PRODUCT TESTING SAMPLE SELECTION

The following product sample selection is based on the product formulations, ingredients/materials, production processes and known production variability.

PRODUCT CATEGORY	MANUFACTURING SITE	PRODUCT LINE	SUPPORTING DOCUMENTATION	AUDITOR RATIONALE
Sheet Vinyl	Ulsan, Korea	Safedeko Trans	LG Hausys_2021_FS_Renewal DRF_auditor, Email: Re Sample Collection Procedures for LG Hausys Ltd.	LG Hausys' sheet vinyl products are considered a low priority (with a history of failed phenol emissions) and require renewal testing every two years. Safedeko Trans has demonstrated the highest range of emissions compared to the other sheet vinyl products, and is among one of the thickest available options. It is therefore recommended for testing in 2021.
Vinyl Tile	Oksan, Korea	PRESTG SPC Click		LG Hausys' vinyl tile products are considered a high priority and require renewal testing every year. PRESTG SPC Click, equivalent to the previous product line, Decotile Rigid Core Board, has demonstrated the highest emissions in the past, and is therefore considered the worst case scenario. It is recommended for testing in 2021 to monitor emissions and confirm continued compliance.

1.2 PRODUCT EMISSIONS RESULTS

The tables below summarize the product emissions history results by product category for the individual volatile organic compounds (VOCs) tested for compliance to CA Specification 01350 (Standard Method v1.2, effective April 1, 2017) private office and school classroom parameters when modeled as flooring. The highlighted row indicates the current emissions results.

1.2.1 SHEET VINYL

MANUFACTURING SITE	PRODUCT LINE	REPORT #/DATE	CREL VOCs	EF (ug/m ² -h) at 96-hrs	Private Office* Results	School Classroom** Results	TVOC Range
Ulsan, Korea	Rexcourt 6.5mm	318-003-01A-Apr0809	Phenol	119.4	PASS	PASS	-
Ulsan, Korea	Rexcourt 6.5mm	318-003-01A-Apr0809	TVOC	257	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Biolife	318-006-01A-Apr1911	Phenol	36.4	PASS	PASS	-
Ulsan, Korea	Biolife	318-006-01A-Apr1911	TVOC	59	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Rexcourt	318-007-01A-Feb0812	Phenol	311.6	FAIL	FAIL	-
Ulsan, Korea	Rexcourt	318-007-01A-Feb0812	TVOC	300	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Rexcourt	318-008-01A-Apr0412	Phenol	4.7	PASS	PASS	-
Ulsan, Korea	Rexcourt	318-008-01A-Apr0412	TVOC	0	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Naturelife™	318-009-01A-May0312	Toluene	4.4	PASS	PASS	-
Ulsan, Korea	Naturelife™	318-009-01A-May0312	TVOC	0	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Naturelife™	318-010-02A-Apr1613	Phenol	28.5	PASS	PASS	-
Ulsan, Korea	Naturelife™	318-010-02A-Apr1613	TVOC	286	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Rexcourt	318-015-01A-Dec2214	Phenol	46.00	PASS	PASS	-
Ulsan, Korea	Rexcourt	318-015-01A-Dec2214	TVOC	79.00	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Safedeko Trans	318-017-01A-Jan1017	Toluene	10.10	PASS	PASS	-
Ulsan, Korea	Safedeko Trans	318-017-01A-Jan1017	Phenol	68.10	PASS	PASS	-
Ulsan, Korea	Safedeko Trans	318-017-01A-Jan1017	TVOC	209.00	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Woven Tile 5.0	318-019-01A-Jan0818	Phenol	78.80	PASS	PASS	-
Ulsan, Korea	Woven Tile 5.0	318-019-01A-Jan0818	TVOC	502.00	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Rexcourt	318-022-01A-Jan2319	Not Detected		PASS	PASS	-
Ulsan, Korea	Rexcourt	318-022-01A-Jan2319	TVOC	0.00	-	-	0.5 mg/m ³ or less
Ulsan, Korea	Safedeko Trans	318-029-02A-Dec2220	Xylenes Mixed (o-, m-	7.70	PASS	PASS	-

			, p-)				
Ulsan, Korea	Safedeko Trans	318-029-02A-Dec2220	Phenol	29.70	PASS	PASS	-
Ulsan, Korea	Safedeko Trans	318-029-02A-Dec2220	TVOC	128.00	-	-	0.5 mg/m ³ or less

*Key modeling parameters for the private office scenario include an air flow rate of 20.7 m³/hr and flooring surface area of 11.15m².

**Key modeling parameters for the school classroom scenario include an air flow rate of 191 m³/hr and a flooring surface area of 89.2m².

The results for LG Hausys' sheet vinyl products manufactured in Ulsan, Korea demonstrate that all 35 targeted CREL VOCs listed in the Standard Method V1.2 are below 70% of the maximum allowable limits. Therefore, these products are considered **Low Priority**. Low Priority products require renewal testing every two years after initial certification. The TVOC results also demonstrate a TVOC range of 0.5 mg/m³ or less.

1.2.2 VINYL TILE

MANUFACTURING SITE	PRODUCT LINE	REPORT #/DATE	CREL VOCs	EF (ug/m2-h) at 96-hrs	Private Office* Results	School Classroom** Results	TVOC Range
Tianjin, China	LVT Click (Decotile Click)	318-012-01A-Mar1014	Formaldehyde	3.90	PASS	PASS	-
Tianjin, China	LVT Click (Decotile Click)	318-012-01A-Mar1014	Phenol	24.00	PASS	PASS	-
Tianjin, China	LVT Click (Decotile Click)	318-012-01A-Mar1014	TVOC	3.90	-	-	0.5 mg/m ³ or less
Cheongju City, Korea	DECO Tile 2.5, DECO Tile 2.5 Plus	318-014-01A-Jun2414	Toluene	22.20	PASS	PASS	-
Cheongju City, Korea	DECO Tile 2.5, DECO Tile 2.5 Plus	318-014-01A-Jun2414	Phenol	57.50	PASS	PASS	-
Cheongju City, Korea	DECO Tile 2.5, DECO Tile 2.5 Plus	318-014-01A-Jun2414	TVOC	140.00	-	-	0.5 mg/m ³ or less
Oksan, Korea	OA Tile	318-018-01A-Mar2917	Toluene	5.9	PASS	PASS	-
Oksan, Korea	OA Tile	318-018-01A-Mar2917	Phenol	79.7	PASS	PASS	-
Oksan, Korea	OA Tile	318-018-01A-Mar2917	TVOC	151	-	-	0.5 mg/m ³ or less
Tianjin, China	Decotile Rigid Core Board	318-020-01A-Feb2118	Toluene	25.1	PASS	PASS	-
Tianjin, China	Decotile Rigid Core Board	318-020-01A-Feb2118	Phenol	158.2	PASS	PASS	-
Tianjin, China	Decotile Rigid Core Board	318-020-01A-Feb2118	TVOC	234	-	-	0.5 mg/m ³ or less
Tianjin, China	Decotile Rigid Core Board	318-023-01A-Feb2019_rev	Toluene	5.00	PASS	PASS	-
Tianjin, China	Decotile Rigid Core Board	318-023-01A-Feb2019_rev	Phenol	41.00	PASS	PASS	-
Tianjin, China	Decotile Rigid Core Board	318-023-01A-Feb2019_rev	TVOC	0.00	-	-	0.5 mg/m ³ or less
Oksan, Korea	SPC	318-025-01A-Apr1620	Toluene	10.50	PASS	PASS	-
Oksan, Korea	SPC	318-025-01A-Apr1620	Phenol	29.80	PASS	PASS	-

Oksan, Korea	SPC	318-025-01A-Apr1620	TVOC	0.00	-	-	0.5 mg/m ³ or less
Oksan, Korea	PRESTG SPC Click	318-028-01A-Nov2520	Toluene	5.00	PASS	PASS	-
Oksan, Korea	PRESTG SPC Click	318-028-01A-Nov2520	Phenol	87.30	PASS	PASS	-
Oksan, Korea	PRESTG SPC Click	318-028-01A-Nov2520	TVOC	78.00	-	-	0.5 mg/m ³ or less

*Key modeling parameters for the private office scenario include an air flow rate of 20.7 m³/hr and flooring surface area of 11.15m².

**Key modeling parameters for the school classroom scenario include an air flow rate of 191 m³/hr and a flooring surface area of 89.2m².

The results for LG Hausys' vinyl tile products manufactured in Tianjin, China and Oksan, Korea demonstrate that all 35 targeted CREL VOCs listed in the Standard Method V1.2 are below 70% of the maximum allowable limits. However, due to high emissions in the 2018 test results, these products are considered **High Priority**. High Priority products require renewal testing every year after initial certification. The TVOC results also demonstrate a TVOC range of 0.5 mg/m³ or less.

1.2.3 VINYL COMPOSITION TILE

MANUFACTURING SITE	PRODUCT LINE	REPORT #/DATE	CREL VOCs	EF (ug/m ² -h) at 96-hrs	Private Office* Results	School Classroom** Results	TVOC Range
Cheongju City, Korea	Gallant GR	318-013-01A-Jun1214	Phenol	5.90	PASS	PASS	-
Cheongju City, Korea	Gallant GR	318-013-01A-Jun1214	TVOC	90.00	-	-	0.5 mg/m ³ or less
Cheongju City, Korea	Medistep Origin	318-016-01A-Mar2315	Not Detected		PASS	PASS	-
Cheongju City, Korea	Medistep Origin	318-016-01A-Mar2315	TVOC		-	-	0.5 mg/m ³ or less
Oksan, Korea	OA Tile C Type	318-021-01A-Feb2118	Toluene	4.3	PASS	PASS	-
Oksan, Korea	OA Tile C Type	318-021-01A-Feb2118	Phenol	74.5	PASS	PASS	-
Oksan, Korea	OA Tile C Type	318-021-01A-Feb2118	TVOC	0	-	-	0.5 mg/m ³ or less
Oksan, Korea	OA Tile C Type	318-026-01A-Apr2920	Not Detected		PASS	PASS	-
Oksan, Korea	OA Tile C Type	318-026-01A-Apr2920	TVOC	0	-	-	0.5 mg/m ³ or less

*Key modeling parameters for the private office scenario include an air flow rate of 20.7 m³/hr and flooring surface area of 11.15m².

**Key modeling parameters for the school classroom scenario include an air flow rate of 191 m³/hr and a flooring surface area of 89.2m².

The results for LG Hausys' vinyl composition tile products manufactured in Oksan, Korea demonstrate that all 35 targeted CREL VOCs listed in the Standard Method V1.2 are below 70% of the maximum allowable limits. Therefore, these products are considered **Low Priority**. Low Priority products require renewal testing every two years after initial certification. The TVOC results also demonstrate a TVOC range of 0.5 mg/m³ or less.

1.2.4 POLYMERIC FLOORING

MANUFACTURING SITE	PRODUCT LINE	LAB REPORT NUMBER AND DATE	CREL VOCs	EF ($\mu\text{g}/\text{m}^2$) at 96 hrs	PRIVATE OFFICE* RESULTS	SCHOOL CLASSROOM** RESULTS	TVOC RANGE
Cheongju, Korea	Pure+ Homogeneous Sheet	318-027-01A-Jul3120	Not Detected	0.00	PASS	PASS	-
Cheongju, Korea	Pure+ Homogeneous Sheet	318-027-01A-Jul3120	TVOC	0.00	-	-	0.5 mg/m³ or less

*Key modeling parameters for the private office scenario include an air flow rate of 20.7 m³/hr and flooring surface area of 11.15m².

**Key modeling parameters for the school classroom scenario include an air flow rate of 191 m³/hr and a flooring surface area of 89.2m².

The results for LG Hausys' polymeric flooring products manufactured in Oksan, Cheongju, Korea demonstrate that all 35 targeted CREL VOCs listed in the Standard Method V1.2 are not detected. Due to the inherent emissions observed in polymeric flooring, these products are considered **Low Priority**. Low Priority products require renewal testing every two years after initial certification. The TVOC results also demonstrate a TVOC range of 0.5 mg/m³ or less.

1.3 Lab Testing Requirements

The table below is a checklist of the standard requirements for product testing and report results according to CA 01350 (Standard Method v1.2) and SCS EC10.3-2014.

	REQUIREMENT	SUPPORTING DOCUMENTATION	AUDITOR KEY FINDINGS	ASSESSMENT RESULT
1	Laboratory is a qualified ISO 17025 certified laboratory. [Reference: SCS-EC10.3-2014-Section 6.3.2]	318-029-02A-Dec2220 318-028-01A-Nov2520	The samples were tested by Berkeley Analytical, an ISO 17025 certified lab.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI
2	The manufacturer has submitted results in accordance with CDPH/EHLB/Standard Method V1.2 (January 2017), [Reference: SCS-EC10.3-2014-Section 6.3.3]	318-029-02A-Dec2220 318-028-01A-Nov2520	The manufacturer submitted results in accordance with the Standard Method.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI

3	Samples for testing are selected by a SCS auditor or a person authorized by SCS. [Reference: SCS-EC10.3-2014-Section 6.2]	LG Hausys_2021_FS_Renewal DRF_auditor, Email: Re Sample Collection Procedures for LG Hausys Ltd.	The samples were selected by the auditor.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI
4	The samples are selected from a production lot that is representative of the processes and quality the manufacturer intends to present to the market. [Reference: SCS-EC10.3-2014-Section 6.2]	318-029-02A-Dec2220 Chain of Custody, page 14 318-028-01A-Nov2520 Chain of Custody, page 13	The samples were selected from a production lot that is representative of the products intended for the market.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI
5	Manufacturer has submitted their nominations for test groups and worst case models accompanied by supportive data in the form of calculations, test results, formulations, and written explanation. [Reference: SCS-EC10.3-2014-Section 6.2]	LG Hausys_2021_FS_Renewal DRF_auditor, Email: Re Sample Collection Procedures for LG Hausys Ltd.	The samples were selected based on the worst-case scenario and emissions history.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI
6	Samples submitted to the laboratory are in conformance with CDPH/EHLB/Standard Method V1.2-January 2017, Section 2. [Reference: SCS-EC10.3-2014-Section 6.2]	318-029-02A-Dec2220 Chain of Custody, page 14 318-028-01A-Nov2520 Chain of Custody, page 13	The samples submitted to the laboratory are in conformance with the Standard Method.	<input checked="" type="checkbox"/> No Issues <input type="checkbox"/> NCR <input type="checkbox"/> NIR <input type="checkbox"/> OFI

1.4 Quality Management System

The table below includes a review of the ongoing maintenance of the manufacturer's quality management system in accordance to SCS EC10.3-2014.

	REQUIREMENT	SUPPORTING DOCUMENTATION	AUDITOR KEY FINDINGS	CONFORMANCE ISSUE
1	QMS Certification Valid ISO 9001 or comparable certification was submitted (if applicable)	LG Hausys_2021_FS_Renewal DRF_auditor	The ISO 9001 certificate for Tianjin, China is valid until May 28, 2022. The ISO 9001 certificate for Oksan, Korea is valid until December 1, 2021. The ISO 9001 certificate for Ulsan, Korea expired on February 21, 2021. Although ISO 9001 is not a requirement for certification, a copy of the current certificate is recommended to be submitted for SCS records. See OFI	<input type="checkbox"/> No issue <input checked="" type="checkbox"/> OFI <input type="checkbox"/> NIR <input type="checkbox"/> NCR
2	Internal/External Audits Evidence of no outstanding NCRs were provided.	LG Hausys_2021_FS_Renewal DRF_auditor	Only an internal audit for Oksan site was provided during the recent scope expansion to add Pure+. Copies of internal or external audit reports from Ulsan, Korea and Tianjin, China are requested. See NIR	<input type="checkbox"/> No issue <input type="checkbox"/> OFI <input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR
3	Production Flow Chart [Reference: SCS-EC10.3-2014-Section 6.5]	LG Hausys_2021_FS_Renewal DRF_auditor	There are no changes to this aspect of the QMS. However, a copy of the production flow chart for the Ulsan site is requested for the full quality review. See NIR	<input type="checkbox"/> No issue <input type="checkbox"/> OFI <input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR
4	Production Variability [Reference: SCS-EC10.3-2014-Section 6.5]	LG Hausys_2021_FS_Renewal DRF_auditor	There are no changes to this aspect of the QMS. However, product variation for the Ulsan site is requested for the full quality review. See NIR	<input type="checkbox"/> No issue <input type="checkbox"/> OFI <input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR
5	Product Line Identification and Traceability	LG Hausys_2021_FS_Renewal DRF_auditor	There are no changes to this aspect of the QMS. However, a copy of the product	<input type="checkbox"/> No issue <input type="checkbox"/> OFI

	[Reference: SCS-EC10.3-2014-Section 6.5]		traceability procedure for the Ulsan site is requested for the full quality review. See NIR	<input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR
6	Production Control [Reference: SCS-EC10.3-2014-Section 6.5]	LG Hausys_2021_FS_Renewal DRF_auditor	The client indicated that there are no customer complaints regarding VOC emissions. A copy of the current production control procedure/customer complaint procedure at Ulsan, Korea is requested as part of the full quality review. See NIR	<input type="checkbox"/> No issue <input type="checkbox"/> OFI <input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR

1.5 FloorScore® Logo Review

The table below includes a review of the ongoing FloorScore® logo usage

	REQUIREMENT	SUPPORTING DOCUMENTATION	AUDITOR KEY FINDINGS	CONFORMANCE ISSUE
1	Logo Use-Website Are SCS Indoor Air Quality logos used on the company website? (If yes, provide a link to the website.)	www.lghausys.com www.lghausysusa.com/flooring www.lghausys-floors.co.uk www.lghausys-floors.co.eu(planned)	The logo is used appropriately in some company website links. However, the product brochure available on https://www.lghausysusa.com/flooring/for-trade/downloads.do is missing informational elements. It is recommended to be updated to the SCS-approved logo with the SCS kingfisher image and the text “Certified by SCS Global Services.” In addition, new information is requested for logo usage in the new website, www.lghausys-floors.co.eu , when available. See NIR	<input type="checkbox"/> No issue <input type="checkbox"/> OFI <input checked="" type="checkbox"/> NIR <input type="checkbox"/> NCR
2	Logo Use-Marketing Collateral Are SCS Indoor Air Quality logos used on “off-products” such as brochures, price lists, or leaflets? (If yes, provide a sampling of logos used on off-products.)	◆PRESTG_collection	The logo is used appropriately in this capacity.	<input checked="" type="checkbox"/> No issue <input type="checkbox"/> OFI <input type="checkbox"/> NIR <input type="checkbox"/> NCR
3	Logo Use-On Product Packaging Are SCS Indoor Air Quality logos used on products such as product packaging or labels? (If yes, provide an example of a logo used on products.)	LG Hausys_2021_FS_Renewal DRF_auditor	The client does not use the logo in this capacity.	<input checked="" type="checkbox"/> No issue <input type="checkbox"/> OFI <input type="checkbox"/> NIR <input type="checkbox"/> NCR

APPENDIX

A.1 Renewal Audit Recommendations

A.1.1 Renewal Sample Selection

The following table represents suggested sample selections for emissions testing for polymeric, sheet vinyl, vinyl composition tile, and vinyl tile. The frequency and required number of samples is dependent on the quality management systems review per manufacturing site and emissions history review completed during each renewal assessment by the auditor.

PRODUCT CATEGORY	MANUFACTURING SITE	PRODUCT LINE	Renewal YEAR	AUDITOR RATIONALE
Sheet Vinyl	Ulsan, Korea	Safedeko Trans	2023	LG Hausys' sheet vinyl products are considered a low priority and require renewal testing every two years. Safedeko Trans has demonstrated the highest range of emissions compared to the other sheet vinyl products and is among one of the thickest available options. It is therefore recommended for testing in 2023.
Vinyl Composition Tile	Oksan, Korea	OA Tile C Type	2022	LG Hausys' vinyl composition tile products are considered a low priority and require renewal testing every two years. OA Tile C Type has demonstrated the highest range of emissions compared to the other VCT products. It is therefore recommended for testing in 2022.
Vinyl Tile	Tianjin, China	STATICPULSE™ ESD	2022	LG Hausys' vinyl tile products are considered high priority in terms of emissions and require renewal testing every year. A STATICPULSE™ ESD sample from Tianjin, China is recommended for testing in 2022 to confirm continued compliance.
Polymeric	Oksan, Korea	Pure+, 2mm or Thickest available option	2022	Initial test results for Pure+ show no detectable VOCs however, due to inherent emissions observed in polymeric flooring, these products are considered Low Priority. Low Priority products require renewal testing every two years after initial certification. Pure+ is recommended for testing again in 2022 to confirm continued compliance.

A.2 Private Labels

A.2.1 Summary of Private Label Certificates

The following table summarizes privately labeled products of LG Hausys

	PRIVATE LABEL APPLICANT	PRIVATE LABEL PRODUCT LINE	PRIVATE LABEL CERTIFICATE and PRODUCT CATEGORY	LG HAUSYS CERTIFIED PRODUCT	LG HAUSYS CERTIFICATE
1	Engineered Floors LLC	Cornerstone	SCS-FS-06470: Vinyl Tile	Decotile 2.5T	SCS-FS-01597
2	Metroflor	Metroflor Commercial Sheet (Homogeneous)	SCS-FS-06197: Vinyl Tile	Origin	SCS-FS-03425
3	Metroflor, on behalf of AHF LLC (CONFIDENTIAL)	Homogeneous Vinyl Sheet: Hartco Contract, Bruce Contract, Robbins Contract	SCS-FS-06259: Vinyl Tile	Origin (via Metroflor's SCS-FS-06197)	SCS-FS-03425
4	Teknoflor (<i>merged certificate</i>)	Forestscapes, Urbanscapes	SCS-FS-04567: Sheet Vinyl	Naturelife	SCS-FS-01596
5	Teknoflor, on behalf of AHF LLC (CONFIDENTIAL)	Heterogeneous Vinyl Sheet: Hartco Contract, Bruce Contract, Robbins Contract	SCS-FS-06258: Vinyl Tile	Naturelife (via Teknoflor's SCS-FS-04567)	SCS-FS-01596
6	National Flooring Distributors	Wood Collection	SCS-FS-06202: Vinyl Tile:	Wood Collection 2.0	SCS-FS-01596
		Medistep Wall		Wall	
		Smart		Smart	
		Saferoad		Saferoad (Solid Pattern)	
7	National Flooring Distributors	Space	SCS-FS-06204: Vinyl Tile	Space	SCS-FS-03425
8	Shaw Industries, Inc.	Inhabit, Ivy Walk, Terasu Collection - Reed, Roji, Tetami	SCS-FS-03048: Sheet Vinyl	Biolife	SCS-FS-01596
		Bounce Back, Rexcourt, Soft Steps		Rexcourt	
		Barkwood II, Basstones, Brookwood+, Kit		Naturelife	

	PRIVATE LABEL APPLICANT	PRIVATE LABEL PRODUCT LINE	PRIVATE LABEL CERTIFICATE and PRODUCT CATEGORY	LG HAUSYS CERTIFIED PRODUCT	LG HAUSYS CERTIFICATE
		Bath Tones, Naturelife Wood II, Organic Hue, Organic Structure, Solid Structure			
		Constant		Collective Time Sheet	
9	Shaw Industries, Inc.	Burnished, Connection, Crete, Jegori Marbled, Uncommon Ground, Northridge Plank, Vinings	SCS-FS-03049: Vinyl Tile	Decotile 3.0T	SCS-FS-01597
		Easy Street Plank, NSP ACC LVP 4.0, Wood Mix		Decolay	
		Abide, Charted, Easy Step, Emerge, Fairmount Tile, Interval, Intricate, Letter Press, Ocean Avenue, Ocean Avenue Elite, Typeface, Urbanality		Decotile 2.5T	
		Arbor Crest, It's a Snap		Decoclick	
		Homegrain, Modernality, Personality, Reside, Thoroughly Modern		Decotile 2.0T	
		Hexagon Level		Hexagon	
		Inset, Thoughtful, Kind, Reston, Subtractive Layers Collection: Remove, Withdraw, Splitwood		Decotile 5.0T	
		Metal Collective: Molten, Oxidized		Decotile 5.0T	
		NSP ACC LVP 4.2		Decolay	
		Terrace		Terrace 2.5T is Decotile 2.5T, Terrace 5.0T is Decotile 5.0T	
		NSP2.5207X48EX+		Deco Wood	
10	Shaw Industries for Julie Industries	Static Pulse	SCS-FS-04153 Vinyl Tile	STATICPULSE™ ESD	SCS-FS-03632
11	Shaw Industries	Holistic, Vitality	SCS-FS-04197 Vinyl Composition Tile	Origin	SCS-FS-03425