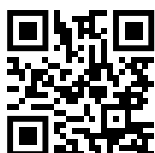




Glue Down Vinyl Flooring

TIER OPTIMA TECHNICAL DATA SHEET

VERSION: A1.0 29/06/2026



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TIER Optima Indoor Flooring

Product name	TIER Optima
Product application	Indoor Flooring
Material	SPC (Stone Polymer Composite) flooring
Material description	SPC flooring consists of a core made from a blend of PVC (Polyvinyl chloride) and minerals, accompanied by a PE (Polyethylene) wear layer. Depending on the TIER specification, it may also include an IXPE layer.

Document layout

Eva-Last strives to evaluate their products in depth and present the technical and safety information available in a manner that assists with the application thereof. If additional data or information is required, please do not hesitate to contact us at rad@eva-last.com.

In an attempt to simplify the information, similar data is loosely grouped into the categories summarised below. This document is ordered according to these categories and the applicable page number for the start of each section is captured in the table of contents.

- Material composition
- Physical properties
- Mechanical properties
- Thermal properties
- Fire reaction properties
- Weathering properties
- Surface properties

The material compositions section captures a summary of the product make-up from the Material Safety Data Sheet (MSDS). A link to the MSDS is provided for additional detail. Summaries of chemical compliance data available are also collected in this section.

The Physical properties section provides a summary of available profiles and general material properties such as density, water absorption, etc. Additional profile information can be obtained from drawings in the appropriate appendix. Where possible, material properties that can be assigned to more specific categories are moved to the relevant sections.

The Mechanical properties section captures data related to the product's reaction to various load conditions. The section is broadly assembled into the below categories. Additional profile and sectional information are Captured by the drawings in the appropriate appendix.

- Material specific mechanical properties
- Profile specific mechanical properties
- Sectional properties



Product properties such as the expansion coefficient, thermal resistance, etc. are Captured, where applicable, in the Thermal properties section.

Information regarding the product's reaction to fire is Captured in the Fire reaction properties section.

Test data relating to the acoustic performance of the product, where applicable, is summarised in the Acoustic properties section.

Information on the product's resistance to mold, termites, etc. is collected in the Biodegradation properties section.

The Surface properties section summarises information regarding the finish or texture of the product. Test data on aspects such as slip resistance (where applicable) is included in this section.

Where the products form part of a system and, as a result, utilise other components, an additional section to capture useful data regarding these components is added to the document.

Where information is not yet available, the section is simply omitted. In the cases where information can be substituted or supplemented with alternative data (based on similar compositions, etc.), an attempt to do so is made. Where this is the case, it is highlighted. Please make use of the data accordingly. Links to relevant reports can be found in Appendix A. For any additional information regarding this, please feel free to contact rad@eva-last.com.

Always ensure the product, and application thereof is suitable, rational, and compliant with any applicable regulations or standards. Wherever necessary, consult a suitably qualified professional. For information about the installation and use of the product, please see the applicable Installation Guide (IG). For additional material safety and handling information, please refer to the applicable MSDS. For any further information, please contact rad@eva-last.com.

Material composition

The table below provides a simplified breakdown of the TIER material technology composition. For a more comprehensive understanding of the material's composition, safety guidelines, and handling instructions, please refer to the TIER Optima MSDS. To determine substance compatibility or incompatibility with the product, consult the Surface Properties section and **Appendix B**.

Component	Substance	Mass (%)
Core	Polyvinyl chloride	35–45
	Calcium Carbonate	35–40
	Terephthalate plasticiser	10–15
Surface / coating system	Polyurethane-based	0.5–0.8
Processing additives and pigments	Stabilising agents, processing aids, waxes, and pigment	1.5–2.5

Material compliance

TIER Optima has been assessed with reference to available TIER material technology compliance data. The referenced SVHC assessment was completed for the TIER material formulation and is considered applicable to TIER Optima where the same raw material formulation is used without the IXPE Underlayer.

Compliance report	Result	Issue date	Compliance body	Information
SVHC	Pass	2019-08	EU REACH	Of the 205 substances evaluated, non-have been detected. SVHC concentration require detection levels of less than 0.05% of the whole product.

Volatile organic compounds (VOCs)

The VOC information below is based on testing completed on a comparable TIER flooring construction using the same TIER material technology. The tested sample included a 3.8 mm profile with a 0.3 mm wear layer and IXPE underlay, while TIER Optima uses a thinner 2.50 mm core, a 0.50 mm wear layer, and no attached IXPE underlay. Due to the shared material technology and comparable surface construction, the result is considered representative of the flooring material. Adhesive emissions are not included and should be considered separately for installed-system VOC compliance.

Compliance report	Emissions class	Information
ISO 16000 (French VOC Emissions class)	A+	Tests were conducted on 1,220 x 181 x 3.8 mm samples with a 0.3 mm Wear layer and IXPE layer. Compounds evaluated included Formaldehyde, Acetaldehyde, Toluene, Tetrachloroethylene, Xylene, and more. Concentrations were assessed against limits defined by the standard to classify emissions.

Physical properties

Profile properties

Below is a summarized table of the TIER Optima profiles. The categorization is determined by the poorest-performing trait observed in the tested profile, aligning with EU regulations. See **Appendix C** for classification details.

Profile ID	Core (mm)	Wear layer (mm)	Underlay (mm)	Total thickness (mm)	Length (mm)	Weight (kg)	Class
Optima Board	2.00	0.5	None	2.5	1 220	1.13	33 Heavy commercial application

Mechanical properties

The following mechanical properties are based on external testing completed on a comparable TIER Classic flooring profile. The tested profile used the same nominal **0.50 mm wear layer** as TIER Optima, with a **3.8 mm SPC core**. TIER Optima uses a thinner **2.50 mm SPC core** and **no attached IXPE underlay**. Results that are primarily surface dependent are considered representative of TIER Optima. Results influenced by core thickness, total thickness, impact response, indentation, adhesive bond, or subfloor support should be treated as indicative unless confirmed by product-specific testing.

Properties	Result	Requirements	Test method	Class/Notes
Wear resistance, Method A	Pass	More than 2 000 cycles	EN 13329	Class 33. Surface-dependent; considered representative where the wear layer and coating are equivalent.
Wear resistance, Method B	Pass	More than 5 000 cycles	EN 15468	Surface-dependent; considered representative where the wear layer and coating are equivalent.
Impact resistance, big ball	Pass	Drop height $\geq 1\,600$ mm	EN 13329	Indicative. May be influenced by thinner core thickness and installed support condition.
Micro-scratch resistance	-23 %	MSR-A2: 10% to 30% change in gloss	EN 16094	Surface-dependent; considered representative where the surface finish is equivalent.
Castor chair resistance	Pass	More than 25 000 cycles	EN 425	Indicative. Performance may depend on adhesive bond and subfloor condition.
Effect of furniture leg	Pass	No visible damage	EN 424, Foot type 0	Indicative. May be influenced by core thickness, adhesive bond, and subfloor condition.
Residual indentation	0.01 mm	≤ 0.20 mm	ISO 24343-1	Indicative. Indentation may vary with total thickness, adhesive bond, and subfloor support.
Swelling	0.15 %	< 18 %	ISO 24336	Considered broadly representative where the SPC core formulation is equivalent.

Thermal properties

The table below outlines typical thermal properties of the TIER Optima material.

Properties	Results		Test method	Information
Coefficient of thermal expansion (CTE)	22 x 10 ⁻⁶ mm/mm.°C		N/A	This has been assumed based on the base material of PVC.
Dimensional stability due to variation of temperature at 80°C	Average Width	0.09%	ISO 23 999	Profiles were subjected to 80 °C temperatures for 6 hours before reconditioning at 23 °C for 24 hours, before measuring final length and curling.
	Average Length	0.02%		
	Average Curling	0.03 mm		

Static electrical properties

The table below presents static electrical properties of TIER materials.

Properties	Result	Requirement	Test method	Class
Body voltage	0.4 kV	Less than 2 kV	EN 1815: 2016 Method A	Pass

Artificial Weathering

Numerous textiles and inks have the potential to undergo colour appearance alterations when subjected to prolonged exposure to direct sunlight. To assess this phenomenon, the ISO 105 B02 standard is employed. This standard involves subjecting samples to an artificial light source under controlled environmental conditions. Colourfastness is subsequently evaluated by comparing the samples' colour grades to a reference sample under standardized lighting conditions.

Properties	Result	Requirement	Test method	Class
Colour fastness	Grade 6	Grade 6	EN ISO 105 B02	Pass

Surface properties

Slip resistance

Slip resistance refers to a surface's ability to reduce the risk of slipping under defined test conditions. It is influenced by the surface material, texture, footwear, angle of incline, moisture, contaminants, and cleaning condition.

The slip resistance result below is based on external testing completed on a comparable TIER flooring surface. The tested specimen included a **0.50 mm wear layer** and IXPE underlay. TIER Optima uses the same nominal **0.50 mm wear layer**, but has a thinner SPC core and no attached IXPE underlay. Since slip resistance is primarily governed by the exposed surface finish and texture, the result is considered representative where the Optima surface finish is equivalent.

Finish	Result	Class	Requirement	Test method	Information
Oil wet ramp test (0.5 mm wear layer)	10.6°	R10	10° to 19 °	DIN 51130:2014	Tests were performed on specimens sized at 1,220 x 181 x 6.0 mm, with a 0.5 mm Wear layer and IXPE layer, under wet and oily conditions.

Stain resistance

The TIER Wear layer material can be affected by various substances. The following list of substances and solutions has been tested on TIER floorings surface for the duration listed. To ensure the longevity of the product, it is crucial to verify material compatibility when selecting chemicals that may encounter it and to clean these substances off the floor as soon as possible.

Staining agent	Duration of contact	Results of visual changes	Test method	Note
Water	10 min	5 (Rating range of 1 to 5)	EN 438-2:2016 26	No change was observed in the wear layer's surface following cleaning. The test area is visually identical to the surrounding areas after cleaning.
Acetone	10 min			
Cleaning solution	10 min			
Coffee (Approx. 80°C)	16 Hours			
Sodium hydroxide (25% solution)	10 min			
Hydrogen peroxide (30% solution)	10 min			
Carbon black suspension in paraffin oil	10 min			

Staining agent	Duration of contact	Results of visual changes	Test method	Note
Sodium hydroxide (40% NaOH)	2 Hours	0 (Rating range of 0 to 3)	EN 26987:2012	The flooring surface remained unaffected after the substance was cleaned off using running water.
Hydrogen Peroxide (30% H ₂ O ₂)	2 Hours			
Sulfuric Acid (50% H ₂ SO ₄)	2 Hours			
84 Disinfectant (Brand name of commercial disinfectant)	2 Hours			
Acetone (>95%)	2 Hours			
Ethanol (75%)	2 Hours			
Isopropyl alcohol (> 99.7%)	2 Hours			
Ethyl acetate (> 99.5%)	2 Hours			
Phenol (5% C ₆ H ₅ OH)	2 Hours			
Toluene (> 99.5%)	2 Hours			
Acetic acid (> 99.5%)	2 Hours			



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While most data have been compiled from research, case histories, experience and testing, small changes in the environment can produce marked differences in performance. The decision to use a material, and in what manner, is made at your own risk. The use of a material and method may therefore need to be modified to its intended end use and environment.

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Appendix A

Document citations



Appendix A – Document citations

Document	Section referenced	Report Number	Link
TIER MSDS	Chemical compatibility section	190801008SHF-001	Link
TIER Classic SVHC report	Chemical compatibility section	190801008SHF-001	Link
TIER Classic Commercial SVHC report	Chemical compatibility section	200326001SHF-005	Link
TIER VOC Report	Chemical compatibility section	210226009SHF-001	Link
TIER performance report	Mechanical properties section	200629009SHF-001	Link
Castor Chair test	Mechanical properties section	190801008SHF-003	Link
Slip resistance	Surface properties section	210201011SHF-001	Link
Slip resistance	Surface properties section	190801008SHF-005	Link
Stain resistance	Surface properties section	190801008SHF-002	Link



Appendix B

Chemical compatibility

Appendix B – Chemical compatibility

When maintaining and cleaning your deck, it is important to be aware of materials that may cause damage. Strong detergents, high concentration alcohols (above 75%), strong acids or alkali detergents, oxidizers, and certain chemical solvents like esters, ketones, benzene, and undiluted chlorine can be particularly harmful. These substances are not compatible with the wear layer on tier Optima flooring board. To ensure the longevity and appearance of your deck, it is crucial to prevent these materials from contacting the surface.

Below is an extensive (though not complete) list of common substances and solutions known to negatively influence the polyurethane surface of Tier Optima flooring board. It is important to check material compatibility when choosing chemicals that the product may encounter, as they may prematurely degrade the product. These may include ingredients in cleaning products, pool additives, and even oils and saps from local vegetation.

NB- Always perform a patch test using any chemicals on a small, inconspicuous area of the floor, or a floor sample before proceeding with full application.

CHEMICAL INTERACTION IMPACT CHECKLIST		
CHEMICAL COMPONENT	COMMON NAME	FOUND IN
STRONG ACIDS AND BASES		
Sulfuric Acid*	Battery acid	Battery acid, fertilizer production, drain cleaners
Ammonia, Anhydrous	Ammonia	Cleaning agents, fertilizers, refrigeration systems
Ammonium Hydroxide	Ammonia solution	Cleaning agents, water treatment, food processing
Calcium Hypochlorite	Bleaching powder	Bleach, water treatment, disinfectants
Hydrochloric Acid 37%	Muriatic acid	Cleaning agents, metal refining, food processing
Nitric Acid 10%	Aqua Fortis	Fertilizers, explosives, metal treatment
SOLVENTS AND ALCOHOLS		
Alcohol >75%*	Ethanol	Disinfectants, Hand sanitizers, cleaning agents
2-Butanone*	Methyl Ethyl Ketone (MEK)	Industrial solvent, Solvent, paint removers, coatings, adhesives
Acetone*	Acetone	Nail polish remover, solvents, cleaning agents, paint thinners
Aromatic Solvents*	Aromatic hydrocarbons	Paint, varnishes, adhesives, chemical intermediates
Benzene*	Benzene	Fuel, industrial chemicals, plastics, resins
Butyl Acetate*	Butyl Acetate	Lacquers, paints, coatings, adhesives
Butyl Aldehyde*	Butyraldehyde	Flavouring agent, fragrances, solvents, plastics
Ethyl Alcohol*	Ethyl Alcohol	Hand sanitizer, disinfectants, alcoholic beverages, fuel
Toluene*	Toluene	Paint thinner, adhesives, chemical intermediates, fuels
Xylene*	Xylene	Paint thinner, cleaning agents, solvents, rubber
Ethyl Acetate	Ethyl Acetate	Paint thinner, coatings, adhesives, cosmetics
Methyl Alcohol	Methanol	Antifreeze, solvents, fuel, formaldehyde production
Tetrahydrofuran	THF	Solvent, adhesives, coatings, pharmaceuticals
Trichloroethylene	Trichloroethylene	Dry cleaning solvent, degreasing agent, refrigerant
Turpentine	Turpentine	Paint thinner, solvent, medicinal uses, adhesives
FUELS AND OILS		
Kerosene*	Kerosene/Paraffin	Fuel, jet engines, heating, lamps
ASTM Fuel C	Test fuel	Fuel, testing purposes, calibration standards
ASTM Oil #4	Heavy fuel oil	Fuel, lubrication, hydraulic fluids



CHEMICAL INTERACTION IMPACT CHECKLIST		
CHEMICAL COMPONENT	COMMON NAME	FOUND IN
CHLORINATED COMPOUNDS		
Calcium Chloride	De-icer/Ice melt	De-icing agent, concrete acceleration, dust control, brine solution, Desiccants
Chlorinated Solvents*	Chlorinated Solvents	Cleaning agents, degreasing, paint removers
Carbon Tetrachloride	Carbon TET	Fire extinguishers, refrigerants, solvents, pesticide production
Chlorine Gas	Chlorine Gas	Disinfectants, water treatment, bleach production
Freon 22	R-22, HCFC-22	Refrigerants, air conditioning systems, blowing agents
Perchloroethylene	PERC, Tetrachlorethylene	Dry cleaning solvent, degreasing, chemical intermediates
OTHER		
Formaldehyde	Formaldehyde (gas) Formalin (Aqueous solution)	Building materials, preservatives, disinfectants, resins
Formic Acid	Methanolic acid	Preservatives, leather production, cleaning agents
Phenol	Carbolic acid	Disinfectants, resins, pharmaceuticals, plastics
Stoddard's Solvent 140°F	Mineral spirits	Cleaning agents, paint thinners, degreasing agents

*These materials have been proven to affect the product cap. Other materials are provided from a consolidation of various chemical compatibility charts.

Chemical reactions may occur between Adhesives and cleaning materials. Take care to evaluate the entire system before using a chemical cleaner.



Appendix C

ISO 10874/ EN685 Classifications

Appendix C – ISO 10874/ EN685 Classifications

The table below is provided solely for informative purposes, offering contextual information on usage area classifications as defined by ISO 10874/EN 685. Please note that we do not possess this document, and the table is sourced from another website. To ensure accuracy and currency, kindly refer to the latest version of the document on the ISO standards website.

Category	Class	Level of use	Description	Examples of use areas
Domestic	21	Moderate	Areas with low or intermittent use	Bedroom and dining room
	22	General	Areas with medium use	Childrens room, living room, and entrance hall
	23	Heavy	Areas with intense use	Kitchen living room, corridor, office, and entrance hall
Commercial	31	Moderate	Areas with low or intermittent use	Bedroom, hotel, conference room, small office
	32	General	Areas with medium traffic	Classroom, small office, hotel, boutique, conference room, doctors practice
	33	Heavy	Areas with heavy traffic	Corridor, department store, school, multi-purpose hall, open plan office, reception
Industrial	34	Very Heavy	Areas with intense use	Airport, multi-purpose hall, counter hall, and department store
	41	Moderate	Areas where work is sedentary with occasional use of light vehicles	Electronic assembly, precision engineering
	42	General	Areas where work is standing and/or with vehicular traffic	Storage room, electronic assembly
	43	Heavy	Other industrial areas	Storage room, production hall