Technical data sheet

1. General Information

Supplier: Evergen Technologies
Material: PiLeatha

Batch No.: PL-20260001
Date Tested: January, 2026

Test Laboratory: Mahidol University, Foundation for Industrial Development Thailand Textile Institute, Thailand Institute of Scientific and Technological Research (TISTR), Chai Watana Tannert Group Public Co.,Ltd. and TÜV SÜD Vietnam Co., Ltd. (REACH SVHC Screening)

Description	Eco-Leather from Pineapple Leaf Fiber & Natural Materials **PiLeatha** is a high-performance, plant-based leather made from pineapple leaf fiber and natural rubber. It is available in four distinctive types: **Classic** – Our original 100% plant-based formula, offering a balance of structure and flexibility, with visible natural fibers for an authentic look. **Nubuck** – A soft, velvety matte surface inspired by genuine nubuck, fully plant-based and customizable for premium finishes. **Botanica** – Naturally colored using plant-based pigments such as mangosteen, butterfly pea, and moringa, delivering flexibility and excellent colorfastness without synthetic coatings. **Luxe** – A refined, leather-like material combining natural fibers, latex, and a bio-based coating, designed for durability and high-end applications.
Raw materials	Pineapple Leaves and Natural Rubber (Thailand)
Finish	Water based coating and finish
Thickness	0.6-3.0 mm
Size	120 x 100 cm
Pattern	Classic, Nubuck and Embossed
Embossed Styles	Pebbled, Epsom, Prada, Grain wood, and Smooth
Color	Available in original (natural) shades and can be matched to Pantone colors
MOQ	1 sheet per color



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2. Mechanical Properties

Test Item	Standard	Result
Tensile Strength (MPa)	ISO 3376 ISO 13934-1	7.7 MPa 230 N
Elongation at Break (%)	ISO 3376	30.0 %
Tear Strength (N/mm)	ISO 3377-1 ASTM D624 die C ISO 13937-1	30.08 N/mm 76.03 N/mm 26 N
Resistance to flex cracking	Chai Watana Tannert Group method	>21,500 cycles, no changes
Adhesion of Finish	ISO 11644	13.45 N/cm min Peel through the crust
Abrasion Resistance	ISO 12947-2: 2016	>40,000 cycles

Remark(s): Test conducted by Foundation for Industrial Development, Thailand Textile Institute and Chai Watana Tannert Group Public Co.,Ltd.

3. Durability & Aging

Test Item	Standard	Result
Color Fastness to watching	ISO 11640:1993	Dry: Grey scale 5 Wet: Grey scale 4/5
	AATCC TM 61:2013	4.5: Slight color change / slight staining
Color Fastness to light	ISO 105-B02:2014	>5: No color change / no staining
Color Fastness to water spotting	ISO 15700:1998	4-5: Slight color change / slight staining
Color Fastness to rubbing	ISO 150-X12:2016(E)	Dry staining: No color change / no staining Wet staining: Slight color change / slight staining
Ultimate aerobic biodegradability	ISO 14855-1:2012	37°C: up to 99.18% (49 days) 58°C: up to 80.24% (49 days)

Remark(s): Test conducted by Foundation for Industrial Development, Thailand Textile Institute and Thailand Institute of Scientific and Technological Research (TISTR)

4. Safety, Compliance & Sustainability

Test Item	Standard	Result
REACH SVHC Screening	Regulation (EC) No. 1907/2006 (REACH), ECHA Candidate List (253 substances)	Not detected
Migration of certain elements	EN 71-3:2019 - Safety of Toys, Part 3: Migration of Certain Elements	Passed - Compliant with Category III migration limits for all 19 regulated elements. Aluminium (Al): 33.4 mg/kg; Antimony (Sb): Not detected; Arsenic (As): Not detected; Barium (Ba): <10.0 mg/kg; Boron (B): Not detected; Cadmium (Cd): Not detected; Cobalt (Co): Not detected; Copper (Cu): Not detected; Lead (Pb): Not detected; Manganese (Mn): 53.7 mg/kg; Mercury (Hg): Not detected; Nickel (Ni): Not detected; Selenium (Se): Not detected; Strontium (Sr): <10 mg/kg; Tin (Sn): Not detected; Organic Tin: Not detected; Zinc (Zn): 764.6 mg/kg; Chromium III (Cr III): 0.64 mg/kg; Chromium VI (Cr VI): Not detected.

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4. Safety Tests (Continued)

Test Item	Standard	Result
Formaldehyde content	ISO 17226-2: 2019	Not detected
pH	ISO 3071:2020(E)	6.3
Antibacterial activity value	ATCC 6538 ATCC 4352	*Staphylococcus aureus* 4.6 (Strong) *Klebsiella pneumonia* 6.3 (Strong)
Carbon Footprint of Circular Economy Product (CE-CFP)	TGO CFP and CE-CFP certification	13.3 kgCO_2e/kg Recycled material content: 44.5%
Biobased Content	USDA BioPreferred® Program / ASTM D6866	Certification in progress Biobased content testing and USDA BioPreferred® certification application are underway.
Harmful Substances	OEKO-TEX® STANDARD 100, Product Class I - Products for Babies	Certification in progress Testing for harmful substances and OEKO-TEX® STANDARD 100, Product Class I certification application are underway.

Remark(s): Test conducted by Foundation for Industrial Development, Thailand Textile Institute and TÜV SÜD Vietnam Co., Ltd. (REACH SVHC Screening). Carbon Footprint of Product (CFP) and Circular Economy Carbon Footprint (CE-CFP) certifications have been granted under TGO schemes. USDA BioPreferred® and OEKO-TEX® STANDARD 100 certification applications are currently in progress.

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5. Care & Maintenance

Category	Information
General Information	PiLeatha is a durable bio-based material made from pineapple leaf fibers and natural rubber. Designed for everyday use, it combines performance, aesthetics, and sustainability while requiring minimal maintenance to preserve its appearance and functionality.
General Care	- Clean regularly using a soft cloth lightly dampened with water. - Remove dust and surface dirt promptly to maintain appearance. - Do not use abrasive cleaners, solvents, bleach, waxes, leather conditioners, or harsh chemicals. - Allow the material to air dry naturally after cleaning or exposure to moisture. - PiLeatha does not require specialized leather care products typically used for animal leather..
Collection-Specific Care	**Classic** – Features a balanced combination of durability, flexibility, and everyday water resistance through its natural rubber composition. Suitable for daily use and can be cleaned easily with a soft damp cloth. If exposed to moisture, simply wipe dry and allow to air dry naturally. **Botanica** – Features a more natural and organic appearance while maintaining resistance to everyday moisture and light splashes. Clean gently with a damp cloth and remove spills promptly to preserve its natural aesthetic. **Nubuck** – Features a softly buffed surface that creates a natural suede-like touch. Due to its more open surface texture, moisture may adhere to or penetrate the surface more readily than other PiLeatha collections. Avoid prolonged exposure to water. If wet, gently blot with a clean cloth and allow to dry naturally. Avoid aggressive rubbing while the surface is wet. **Luxe** – Features an enhanced surface coating that provides the highest level of water and stain resistance within the PiLeatha collection. Water and light spills typically remain on the surface and can be wiped away easily. Routine cleaning with a soft damp cloth is generally sufficient.
Stain and Dirt Management	- Wipe spills immediately using a clean, soft cloth. - For light stains, gently clean using water or a mild soap solution. - Avoid aggressive rubbing, scrubbing, or abrasive cleaning tools. - Prompt cleaning helps maintain the appearance and longevity of the material.
Water and Moisture	- Water resistance varies depending on the collection and surface finish. - Classic and Botanica provide resistance to everyday moisture, splashes, and light water exposure through their natural rubber composition. - Luxe offers the highest level of water and stain resistance due to its enhanced surface coating. - Nubuck may absorb or retain moisture more readily due to its buffed surface texture. - All PiLeatha collections are designed to dry quickly after exposure to moisture and generally do not retain permanent water marks when properly dried. - If the material becomes wet, gently remove excess moisture and allow it to air dry naturally at room temperature.
Environmental Considerations	- Avoid prolonged exposure to direct sunlight, excessive heat, or high humidity. - Store in a cool, dry environment when not in use. - Protect the surface from abrasive particles such as sand, dust, or grit that may cause surface wear over time. - Avoid prolonged contact with strongly colored substances that may cause staining.
Material Characteristics	• Minor variations in color, texture, grain, and surface appearance are natural characteristics of bio-based materials. • These variations contribute to the unique character of each PiLeatha sheet and should not be considered defects. • Surface appearance may evolve naturally over time depending on usage conditions and environmental exposure.

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6. Conclusion

PiLeatha is a high-performance bio-based material made from pineapple leaf fibers and natural rubber, combining durability, functionality, and sustainability in a versatile material solution. Each collection is engineered to deliver distinct aesthetic and performance characteristics, from the natural tactile appeal of Botanica and Nubuck to the enhanced water and stain resistance of Luxe. With routine care and proper handling, PiLeatha maintains its appearance and performance while serving as a responsible alternative for fashion, accessories, and lifestyle applications.

In addition to its mechanical strength and durability, PiLeatha has demonstrated performance against key product safety, compliance, and sustainability requirements. REACH SVHC screening of 253 substances and formaldehyde testing showed no substances detected. The material also passed EN 71-3:2019 testing for the migration of certain elements, meeting the applicable limits for Category III - Scraped-off Materials. Biodegradability testing in accordance with ISO 14855-1:2012 achieved up to 99.18% at 37°C and up to 80.24% at 58°C after 49 days.

For PiLeatha (100 × 120 cm, 1.0 mm), the certified Carbon Footprint of Product (CFP) and Circular Economy Carbon Footprint (CE-CFP) result under TGO schemes is 13.3 kgCO_2e/kg. The CE-CFP assessment also reports 44.5% recycled material content. USDA BioPreferred® certification, based on ASTM D6866 biobased-content testing, and OEKO-TEX® STANDARD 100, Product Class I certification are currently in progress. Through continuous innovation and independent validation, PiLeatha provides brands and manufacturers with a high-performance material solution for a more circular and sustainable future.

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