TOTAL Millwork
7700 Wellingford Drive Manassas, VA 20109
Phone:571-379-5500

PL-1A

LAMINATE

Project: Arlington Community High School

Project Number: 1877

Manufacturer: WILSONART
Name: CASTLE OAK
Order: 7928-38

ITEM DETAILS:
FINE VELVET TEXTURE FINISH, ON ULEF MDF CORE, PVC EDGEBANDING

TOTAL Millwork
7700 Wellingford Drive Manassas, VA 20109
Phone:571-379-5500

PL-1B

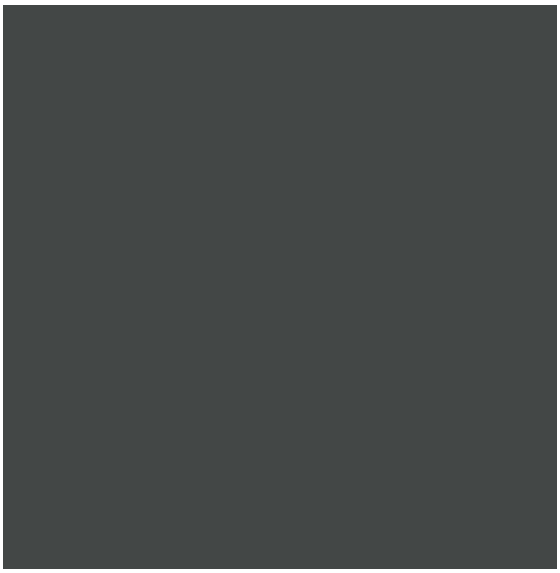
LAMINATE

Project: Arlington Community High School

Project Number: 1877

Manufacturer: WILSONART
Name: BLACK VELVET
Order: 15505-31

ITEM DETAILS:
TRACELESS FINISH, ON ULEF MDF CORE, PVC EDGEBANDING.



PL-1A
PL-1B

Wilsonart
2501 Wilsonart Drive
P.O. Box 6110
Temple, TX 76503-6110

1. Manufacturer

Wilsonart LLC
2501 Wilsonart Drive
P.O. Box 6110
Temple, Texas 76503-6110
Phone: (254) 207-7000; (800) 433-3222
Fax: (254) 207-2384
Web Site: www.wilsonart.com

2. Product Description

Recommended Uses
Wilsonart® Traceless™ Laminate, Type 138, is suitable for use on retail, office furniture, manufactured housing, hospitality, casework, countertops, and interior doors and also for architectural application on wainscoting, valances, and divider systems.

- **Type 138** Common applications are for counters, desktops, cabinet doors and drawer panels. Type 138 is intended for use on vertical and horizontal interior surfaces.

- **Type 738 Traceless™ with RE-COVER™** Common applications are suitable for use in retail, office furniture, manufactured housing, hospitality, casework, countertops, and interior doors and also for architectural application on wainscoting, valances and divider systems.

Product Composition
Decorative surface papers impregnated with resins that are pressed over kraft paper core sheets impregnated with phenolic resin. These sheets are then bonded at pressures greater than 1000 pounds per square inch at temperatures approaching 300°F (149°C). Finished sheets are trimmed, and the backs are sanded to facilitate bonding.

Due to the composition of Traceless, light scratches can be removed using a white melamine foam eraser, ex: Mr. Clean Magic Eraser.

Basic Limitations
Wilsonart® Traceless™ Laminate is for interior use only and is not recommended for direct application to plaster, concrete walls, or gypsum wallboard. It is not structural material and must be bonded to a suitable substrate. Traceless™ Laminate is a non-post formable product.

Do not subject Wilsonart® Traceless™ Laminate to extremes in humidity, temperatures higher than 275°F (135°C) for substantial periods of time, or intense, continuous, direct sunlight.

Patterns & Colors
Available in the full range of Wilsonart solid colors and woodgrains. See all patterns and colors at www.wilsonart.com. Please see actual sample before specifying.

Finish Availability
- #31 Traceless™ Finish - A smooth textured finish with moderate reflective value.
  Nominal Glossometer Reading = 2.5
  #31 finish is designated for Wilsonart® Traceless™ Laminate only.
  NOTE: Nominal Glossometer Readings are made at a 60° angle of incidence.

Standard Sheet Sizes

48" x 96"	(1219mm x 2438mm)
48" x 120"	(1219mm x 3048mm)
60" x 144"	(1524mm x 3658mm)

Thickness and Weight

Description	138
Thickness	0.039" ± 0.005" (0.99mm ± 0.13mm)
Weight per square foot	0.260#

3. Technical Data

Physical Properties of Wilsonart® Traceless™ Laminates

ISO 4586 Test	Typical Wilsonart Type 138	ISO 4586-8
Thickness	0.039" ± 0.005" (0.99mm ± 0.13mm)	0.039" ± 0.005" (1mm ± 0.12mm)
Appearance	No ABC def.	Not applicable.
Light Resistance	Slight effect	Slight effect
Cleanability (cycles)	20	20
Stain Resistance **Reagents 1-10** **Reagents 11-15**	 No effect Slight effect (Light colors)	 No effect Moderate effect
Boiling Water Resistance	No Effect	Slight Effect (Gloss) No Effect (Other Finishes)
High Temperature Resistance	No Effect	Slight Effect (Gloss) No Effect (Other Finishes)
Impact Resistance	45" (1143mm)	31.5" (800mm)
Radiant Heat Resistance	235 seconds	≥ 200 sec.
Dimensional Stability (Elevated) **Machine Direction** **Cross Direction**	 0.3% 0.7%	 0.55% (max.) 0.95% (max.)
Dimensional Stability (Ambient) **Machine Direction** **Cross Direction**	 0.3% 0.7%	 0.50% (max.) 0.90% (max.)
Surface Wear Resistance (cycles)	Meets or Exceeds 350 cycles	350 (min.)
Formability*	Not applicable	Not Applicable

Typical Fire Test Data

High-pressure laminates are subject to Flame Spread and Smoke Developed standards in structures where codes establish such conditions.

Test data to determine compliance with these codes are obtained by the Steiner Tunnel Test method of the American Society for Testing Materials (ASTM-E-84, Standard Test Method for Surface Burning Characteristics of Building Materials). Tests were conducted in accordance with test method and mounting procedure as described in paragraph X1.7.2 of the test method. This procedure is cataloged by Underwriters Laboratories, Inc. as UL 723.

Typical Flame Spread and Smoke Developed Properties

Product Type	Test Condition	Flame Spread	Smoke Developed
Type 138	Unbonded	80	60

Model Code Designations used to determine flame spread classification

Flame Spread Classification (Max. Rating)	International (IBC)	Life Safety (NFPA 101)
25	A	A
75	B	B
200	C	C

RE: Architectural Woodwork Quality Standard, 8th Edition, Version 1.0, - 2003

All Model Codes regulate the generation of smoke by interior finish material. In all cases they specify a maximum smoke development rating of 450.

Codes and Certifications

General Standards
Wilsonart® Traceless™ Laminate, type 138, conforms to the voluntary standards of the American National Standards Institute, for thickness, performance properties and appearance. Traceless™ Laminate, Type 138 meets or exceed the International Standards Organization specifications as found in ISO 4586-8, titled "High-Pressure Decorative Laminate (HPDL) – Sheets Based on Thermosetting Resins – Part I: specifications."

Specific Product Standards
The UL GREENGUARD Environmental Institute™ has awarded its UL GREENGUARD® Indoor Air Quality Certification to Wilsonart® Traceless™ Laminate. All Wilsonart® Laminate product types were tested under the stringent UL GREENGUARD Standards for low-emitting products. All UL GREENGUARD Indoor Air Quality Certified products ensure minimal impact on the indoor environment. For a copy of the certificate, visit www.greenguard.org.

All patterns meet SEFA 8-PL testing requirements.

Branded Cleaner and Sanitizer Resistance for Wilsonart® Traceless™ Laminate per ISO 4586-2 Method 31 (B)
No effect was exhibited except as noted (* or **) on the following:

1. Beckart Environmental (Stabilized Chlorine Dioxide Mixed with Water at 3000ppm)
2. Benefect® *
3. Claire® Germicidal Cleaner (Country Fresh Scent)
4. Claire® Disinfectant Spray Q (Country Fresh Scent)
5. Clean Republic – All Purpose Everyday Cleaner (Hypochlorous Acid – 0.003% Solution)
6. Clorox® Anywhere® Hard Surface Sanitizing Spray*
7. Clorox® Clean-Up (Cleaner & Bleach)
8. Clorox® Disinfecting Bleach w/6% Sodium Hypochlorite (24:1/Water:Bleach)
9. Clorox® Disinfecting Spray
10. Clorox® Disinfecting Wipes
11. Clorox Healthcare® Bleach Germicidal Cleaner *
12. Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant *
13. Clorox Healthcare® Fuzion® Cleaner Disinfectant*
14. Clorox Healthcare® VersaSure® Cleaner Disinfectant Wipes
15. Clorox® Total 360 Disinfectant Cleaner
16. Diversey™ Expose® II 256 **
17. Diversey™ Oxivir 1 *
18. Diversey™ Oxivir Tb Wipes *
19. Diversey™ Stride® Floral Neutral Cleaner
20. Diversey™ Virex® II 256 *
21. Fabuloso® Complete (Multi-Purpose Cleaner)
22. Lysol® Professional Disinfectant Spray

23. Microban® 24 Hour (Multi-Purpose Cleaner)
24. PDI Sani-Prime® Germicidal Spray
25. PDI Super Sani-Cloth® Germicidal Disposable Wipes
26. Purell® Advanced Hand Sanitizer Gel
27. Purell® Food Service Surface Sanitizer
28. Purell® Professional Surface Disinfectant
29. Purell® Healthcare Surface Disinfectant
30. Simple Green® Concentrated (All-Purpose Cleaner)
31. Spic and Span® Everyday (Antibacterial Cleaner)

Test procedure: Listed materials were placed in contact with Wilsonart® Traceless™ Laminate surface under 1" (25.4mm) diameter watch cover glass for 16 hours duration prior to evaluation for effect. The branded cleaners and sanitizers listed above were cleaned with water only.
* Causes slight change of gloss or color.
** Causes slight damage, with degree of damage proportionate to length of exposure and concentration.

Branded Cleaner and Sanitizer Resistance for Wilsonart® Traceless™ Laminate per BIFMA HCF 8.1-2014 (Section 6 / Modified)
No effect was exhibited except as noted (* or **) on the following:

1. Beckart Environmental, Inc. (Stabilized Chlorine Dioxide Mixed with Water at 3000ppm)
2. Benefect®
3. Claire® Germicidal Cleaner (Country Fresh Scent)
4. Claire® Disinfectant Spray Q (Country Fresh Scent)
5. Clean Republic – All Purpose Everyday Cleaner (Hypochlorous Acid – 0.003% Solution)
6. Clorox® Anywhere® Hard Surface Sanitizing Spray
7. Clorox® Clean-Up (Cleaner & Bleach)
8. Clorox® Disinfecting Bleach w/6% Sodium Hypochlorite (24:1/Water:Bleach)
9. Clorox® Disinfecting Spray
10. Clorox® Disinfecting Wipes
11. Clorox Healthcare® Bleach Germicidal Cleaner
12. Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant
13. Clorox Healthcare® Fuzion® Cleaner Disinfectant
14. Clorox Healthcare® VersaSure® Cleaner Disinfectant Wipes
15. Clorox® Total 360 Disinfectant Cleaner
16. Diversey™ Expose II 256
17. Diversey™ Oxivir 1
18. Diversey™ Stride® Floral Neutral Cleaner
19. Diversey™ Tb Wipes
20. Diversey™ Virex II 256
21. Fabuloso® Complete (Multi-Purpose Cleaner)
22. Lysol® Professional Disinfectant Spray
23. Microban® 24 Hour (Multi-Purpose Cleaner)
24. PDI Sani-Prime® Germicidal Spray
25. PDI Super Sani-Cloth® Germicidal Disposable Wipes
26. Purell® Advanced Hand Sanitizer Gel
27. Purell® Food Service Surface Sanitizer
28. Purell® Professional Surface Disinfectant
29. Purell® Healthcare Surface Disinfectant
30. Simple Green® Concentrated (All-Purpose Cleaner)
31. Spic and Span® Everyday (Antibacterial Cleaner)

Test procedure: Listed reagent materials were placed in contact with Wilsonart® Traceless™ Laminate surface with a one-inch square 100% cotton cloth completely saturated and covered with a 2”

(50.8mm) diameter watch cover glass for 15 minute duration. The reagents listed above were removed with clean cloth and the area was then cleaned with clean cloth and distilled water only. The surface area was allowed to dry for 1-hour prior to evaluation for effect.

* Causes slight change of gloss or color.

** Causes slight damage, with degree of damage proportionate to length of exposure and concentration.

Resistance of Furniture to UV Lights for Wilsonart® Traceless™ Laminate per BIFMA HCF 8.1-201X Section 9 (Alternate Method per ASTM G155 using ISO 4586-2.33 conditions)
Wilsonart Laminates 107,335,350 and 376 conforms to BIFMA – Healthcare Furniture Design Guidelines for Cleanability , Section 9 Resistance to Furniture to UV Lights. Wilsonart Laminates 107, 335, 350 and 376 meet or exceed the acceptance level for surface evaluation.

4. **Installation: Fabrication and Assembly Recommendations**

Fabrication should follow approved methods. Assembled pieces should meet the specifications of KCMA (Kitchen Cabinetmakers Manufacturers Association), ANSI A-161.2-1998 (revised), and "Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program" guidelines of the Architectural Woodwork Institute where applicable.

Wilsonart® Traceless™ Laminate must be bonded to a substrate of reliable quality, such as particleboard, medium density fiberboard or plywood with one A-face. High-pressure laminate, plaster, concrete and gypsum board should not be considered suitable substrates. Basic Types laminate may not be used as structural members.

Bond with adhesives and follow the techniques recommended by the adhesive manufacturer. Recommended adhesives are permanent types, such as urea and polyvinyl acetate (PVA), and contact types. Wilsonart® Adhesives are recommended for most bonding conditions.

To avoid stress cracking, do not use square-cut inside corners. All inside corners should have a minimum of 1/8" (3.175mm) radius and all edges should be routed smooth.

Drill oversized holes for screws or bolts. Screws or bolts should be slightly countersunk into the face side of a laminate-clad substrate.
Take care to ensure an appropriate acclimation between the laminate and the substrate prior to fabrication. The face and backing laminates and the substrate should be conditioned in the same environment for 48 hours before fabrication.
Recommended conditioning temperature is about 75°F (24°C). Laminates should be conditioned at 45% to 55% relative humidity.

Carbide-tipped saw and router blades should be used for cutting. High tool speed and low feed speed are advisable. Cutting blades should be kept sharp. Use a hold-down to prevent any vibration.

5. **Warranty**

6. **Maintenance**

7. **Technical Services**

For samples, literature, questions or technical assistance, please contact our toll-free Hotline at (800) 433-3222, Monday through Friday, 8 am – 5 pm, CST.

PL-1A

PL-1B

Specification Form:
Surface shall be Wilsonart® Traceless™, produced by Wilsonart LLC, Temple, Texas 76503-6110

Type: Specify 138

Surface
Color Number: _____ Color Name: _____

Edge Trim
Color Number: _____ Color Name: _____

Adhesive
Name: _____ Grade/Type: _____
Brand: Wilsonart® Adhesive

Wilsonart® Traceless™ Laminate Technical Data
Type 138
Revised: August 6, 2020

PROJECT SPECIFIC EMBODIED CARBON & LEEDv4.1 PRODUCT DATA SUBMITTAL FORM

Project Name: Arlington Community High School

Fill out the following information for EACH compliant product:

Subcontractor	Total Millwork LLC
Product Name	Wilsonart Laminates
Manufacturer Name	Wilsonart LLC
Manufacturer Location	Temple, TX
Extraction/Harvest Location	
Materials Cost (All costs associated with getting material to site. Exclude installation costs.)	27,679.00

MRc2 Environmental Product Declarations (EPDs):

Option 1: EPD	EPD Program Operator: SCS-EPD-08043	EPD/LCA Type: Product-specific LCA
Option 2: Embodied Carbon/LCA Optimization	Type of Report/Reference Document/ Verification	Choose an Item

MRc3 Sourcing of Raw Materials:

Leadership Extraction Practices:	Percent Meeting Criteria (%):
Extended Producer Responsibility Program Name	
Bio-based material (SAN standard) %	
Wood Products % FSC Certified (incl. certificate)	
Materials Reuse %	
Recycled Content	Post-Consumer: 23%
	Pre-Consumer:
Does the entire product meet local criteria?	Choose an Item

MRc4 Material Ingredient Reporting:

Option 1: Material Ingredient Reporting	Type of Reporting: Choose an Item	3rd Party Verification: Choose an Item
Option 2: Type of Optimization Report	Certification Program: Choose an Item	Does the entire product meet local criteria? Choose an Item

PROJECT SPECIFIC EMBODIED CARBON & LEEDv4.1 PRODUCT DATA SUBMITTAL FORM

Project Name: Arlington Community High School

Fill out the following information for EACH compliant product:

IEQc2 Low Emitting Materials:

Product (Check One, Enter Name) Paint and Coating ☐ Adhesive and Sealant ☐	Interior/ Exterior?	Wet-AppliedOn-Site?	General Emissions Evaluations
	Choose an Item	Choose an Item	Choose an Item

Wet-Applied Products Volume Used (L)	**VOC Content (g/l):**	**Wet-Applied Products Surface Area Used** (sq ft)

Flooring Product (Enter Name)	General Emissions Evaluations	
	Choose an Item	
Ceilings (Enter Name)	VOC Emissions Evaluation	**Healthcare/Schools ONLY:** Meets Additional Insulation Requirements
	Choose an Item	Choose an Item
Insulation (Enter Name)	VOC Emissions Evaluation	**Healthcare/Schools ONLY:** Meets Additional Insulation Requirements
	Choose an Item	Choose an Item
Wall Panels (Enter Name)	VOC Emissions Evaluation	**Healthcare/Schools ONLY:** Meets Additional Insulation Requirements
	Choose an Item	Choose an Item
Composite Wood (Enter Name)	Composite Wood Evaluation	
	Choose an Item	
Furniture (Enter Name)	Furniture Evaluation	
	Choose an Item	

PROJECT SPECIFIC EMBODIED CARBON & LEEDv4.1 PRODUCT DATA SUBMITTAL FORM

Project Name: Arlington Community High School

Additional REQUIREMENTS:

The following items have material ingredients restricted substance requirements per product **specification part 2.1A – Performance Requirements:** Aluminum Extrusions, Cold-formed Metal Framing, Resilient Flooring, Batt Insulation, Interior Paint, Drywall, Carpet Tile, Wood Doors, MDF/Plywood, ACT, Drapery/Window Treatment.

☐ **Product complies with restricted substance requirements and backup documentation provided**

Embodied Carbon Information REQUIRED for:

Concrete; steel, including structural steel, plates, decking, rebar, cold-formed metal framing; aluminum extrusions; wood; composite wood; wood doors; interior paint; gypsum board; insulation; flat glass; acoustical ceiling panels and tiles; resilient flooring; carpet; and drapery. **Bolded** items have additional requirements per specification section 018113.

☐ **Environmental Product Declaration (EPD) has been provided**
(Product specific type III are preferred, Industry wide EPDs, and product specific declarations are acceptable.)

Total Quantity of Product

Quantity Units: m3 used for concrete and wood. kg used for structural steel (all), flat glass, and aluminum. m2 used for gypsum board; acoustical ceiling panels and tiles; resilient flooring and carpet. m2 RSI used for insulation.

I, Daniel Rivera a duly authorized representative

Total Millwork LLC of hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by us, as components of the final building construction.

Furthermore, I understand that any change in such qualifications during the purchasing period will require will prior written approval from **Clark Construction Group, LLC**.

Signature:	**Date:**
Daniel Rivera Digitally signed by Daniel Rivera DN: C=UM, E=drivera@totalmillwork.com, O="Total Millwork LLC ", CN="Daniel Rivera " Date: 2025.11.21 13:53:31-05'00'	11/21/25

TOTAL
Millwork
7700 Wellingford Drive Manassas, VA 20109
Phone:571-379-5500

ARLINGTON COMMUNITY HIGH SCHOOL

JOB #: 1877

510 14th St S
Arlington VA 22202

CERTIFICATE

WILSONART LAMINATES

SECTION 06 41 16

11/5/2025

CERTIFICATE
OF COMPLIANCE

Wilsonart

Wilsonart® Laminate

1110-420
Certificate Number

31 Jan 2006 - 09 Mar 2026
Certificate Period

Certified
Status

UL 2818 - 2022 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Commercial furniture and furnishings are tested in accordance with ANSI/BIFMA M7.1-2011(R2016) and determined to comply with ANSI/BIFMA X7.1-2011(R2016) and ANSI/BIFMA e3-2019 Credit 7.6.1, 7.6.2, and 7.6.3 in a Private Office Environment. Products also determined compliant in accordance with California Department of Public Health (CDPH) Standard Method V1.2-2017 in the office environment.

Product tested in accordance with UL 2821 test method to show compliance to emission limits on UL 2818. Section 7.1 and 7.2.

GREENGUARD Gold Certification Criteria for Building Products and Interior Finishes

Criteria	CAS Number	Maximum Allowable Predicted Concentration	Units
TVOC (A)	-	0.22	mg/m^3
Formaldehyde	50-00-0	9 (7.3 ppb)	$\mu g/m^3$
Total Aldehydes (B)	-	0.043	ppm
4-Phenylcyclohexene	4994-16-5	6.5	$\mu g/m^3$
Particle Matter less than 10 µm (C)	-	20	$\mu g/m^3$
1-Methyl-2-pyrrolidinone (D)	872-50-4	160	$\mu g/m^3$
Individual VOCs (E)	-	1/2 CREL or 1/100th TLV	-

(A) Defined to be the total response of measured VOCs falling within the $C_6 – C_{16}$ range, with responses calibrated to a toluene surrogate. Maximum allowable predicted TVOC concentrations for GREENGUARD Gold (0.22 mg/m^3) fall in the range of 0.5 mg/m^3 or less, as specified in CDPH Standard Method v1.2.

(B) The sum of all measured normal aldehydes from formaldehyde through nonanal, plus benzaldehyde, individually calibrated to a compound specific standard. Heptanal through nonanal are measured via TD/GC/MS analysis and the remaining aldehydes are measured using HPLC/UV analysis.

(C) Particle emission requirement only applicable to HVAC Duct Products with exposed surface area in air streams (a forced air test with specific test method) and for wood finishing (sanding) systems.

(D) Based on the CA Prop 65 Maximum Allowable Dose Level for inhalation of 3,200 µg/day and an inhalation rate of 20 m^3/day

(E) Allowable levels for chemicals not listed are derived from the lower of 1/2 the California Office of Environmental Health Hazard Assessment (OEHHA) Chronic Reference Exposure Level (CREL) as required per the CDPH/EHLB/Standard Method v1.2 and BIFMA level credit 7.6.2 and 1/100th of the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, and Cincinnati, OH 45211-4438).

Wilsonart

VERIFIED by SCS GLOBAL SERVICES
ENVIRONMENTAL PRODUCT DECLARATION
BASED ON LCA

Declaration Owner

Wilsonart
2501 Wilsonart Drive P.O. Box 6110, Temple, TX 76503-6110
Smartline@wilsonart.com | 800-433-3222 | www.wilsonart.com

Product

High Pressure Laminate

Declared Unit

One square meter of product

EPD Number and Period of Validity

SCS-EPD-08043
EPD Valid: July 8, 2022 through July 7, 2027
Version: August 14, 2024

Product Category Rule

Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report. Version 2.0, 2021.
Part B: Requirements on the EPD for Laminates. Version 1.1, 2018.

Program Operator

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608
+1.510.452.8000 | www.SCSglobalServices.com

SCSglobal SERVICES

Declaration owner:	Wilsonart
Address:	29 Concord St. North Reading, MA 01864
Declaration Number:	SCS-EPD-08043
Declaration Validity Period:	EPD Valid July 8, 2022 through July 7, 2027
Version:	August 14, 2024
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Sid Premchandani
LCA Software and LCI database:	GaBi 2022.1
Product's Intended Application:	Residential and commercial buildings
Markets of Applicability:	North America
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Gate w/ Options
LCIA Method and Version:	15804
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒ external
LCA Reviewer:	U. U. Talaty Urvi Talaty, SCS Global Services
Product Category Rule:	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Standard 10010, Version 2.0, 2017 Institute Bauen und Umwelt e V. www.bau-umwelt.com, 2017 Part B: Requirements of the EPD for Laminates, 12.2018
PCR Review conducted by:	
Independent verification of the declaration and data, according to ISO 14025 and the PCR	☐ internal ☒ external
EPD Verifier:	U. U. Talaty Urvi Talaty, SCS Global Services
Declaration Contents:	

Disclaimers: *This EPD conforms to ISO 14025, 14040, 14044, and EN 15804+A2.*

Scope of Results Reported: *The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.*

Accuracy of Results: *Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.*

Comparability: *The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.*

1. About Wilsonart

Wilsonart is a world-leading engineered surfaces company headquartered in Austin, Texas, with operations in the Americas and Europe. We manufacture and distribute High Pressure Laminate (HPL) and Compact High Pressure Laminate (CHPL). Coordinated TFL and Edgebanding, Quartz, Solid Surface, Epoxy, and other decorative engineered surfaces that are used in a variety of applications, including furniture, countertops, worktops, and walls.

We honor the unwavering commitment of our founder, Ralph Wilson, to provide customers with industry-leading products and service. Wilsonart has a rich 65-year history serving customers with high quality products. We continue on our journey of growth with expanding our product and application offering with a keen eye on a sustainable future.

2. Product

2.1 Product Description

Recommended Uses
Wilsonart® Laminate, types 107, 335, and 350, is suitable for use on fine quality residential and commercial furniture, fixtures, and casework, and for architectural application on columns, wainscoting, valances, cornices, interior doors and divider systems.

General Purposes
(HGS) Type 107 is most frequently used for work surfaces on counters, islands, vanities, desks, and tables. Typical vertical uses include surfacing for wall panels, teller cages and the front panels of workstations, such as those in hospitals, airports, and restaurants. Type 107 is produced for both horizontal and vertical interior applications where the surface must be functional, durable, and decorative.

Vertical Surface (VGP) Type 335 is the usual choice to surface cabinet walls, doors, and drawer panels. It often appears on the vertical surfaces of desks, restaurants booths and maître d' stations, and as architectural cladding. Type 335 is intended for vertical applications where a functional, durable, decorative surface must absorb somewhat less impact than a comparable horizontal surface. VGP surfaces may be postformed to achieve radius edges.

Postforming (HGP) Type 350 adds the decorative capability of a soft edge to any typical laminate use. Common applications of postforming laminates are formed edges for counters, desktops, cabinet doors and drawer panels. Type 350 is intended for use on vertical and horizontal interior surfaces where it is necessary or desirable to roll the laminate on a simple radius over the edge of the substrate. This eliminates seams and leaves an attractive surface.

Wilsonart® HD® finishes feature Antimicrobial Protection that helps inhibit the growth of stain and odor causing bacteria, mold, and mildew on your countertop or surface. Wilsonart's Antimicrobial Protection won't wash away or wear off. Premium and Standard finishes are available with Antimicrobial Protection upon request during the ordering process.

Product Composition
Decorative surface papers impregnated with melamine or phenolic resins are pressed over Kraft paper core sheets. These sheets are then bonded at pressures greater than 1000 pounds per square inch at temperatures approaching 300°F (149°C). Finished sheets are trimmed, and the backs are sanded to facilitate bonding.

Basic Limitations
Wilsonart® Laminate is for interior use only and is not recommended for direct application to plaster, concrete walls, or gypsum wallboard. It is not structural material and must be bonded to a suitable substrate.

2.2 Application

This EPD covers all types of HPL products manufactured by Wilsonart at their facilities situated in Temple, TX and Fletcher, NC. The products are intended for use in residential and commercial buildings. This declaration covers the following Wilsonart® products:

- Wilsonart® HD® & Premium HPL

- Traceless™
- SOLICOR™ Laminate
- Markerboard
- High Wear Laminate
- Fired-Rated Laminate
- Chemsurf® Laminate

2.3 Technical Data

Typical Fire Test Data
High-pressure laminates are subject to flame spread and smoke developed standards in structures where codes establish such conditions.

Test data to determine compliance with these codes were obtained by the Steiner Tunnel Test method of the American Society for Testing Materials (ASTM-E-84, Standard Test Method for Surface Burning Characteristics of Building Materials). Tests were conducted in accordance with test method and mounting procedure as described in paragraph X1.7.2 of the test method. This procedure is cataloged by Underwriters Laboratories, Inc. as UL 723. Here is typical data for Wilsonart® Laminates, averaged from two specific tests:

Model Code Designations used to determine flame spread classification

- Flame Spread Classification (max. rating)
- International (IBC) Life Safety
- (NFPA 101): 25 A A, 75 B B ,200 C C

All Model Codes regulate the generation of smoke by interior finish material. In all cases they specify a maximum smoke development rating of 450.

General Standards
Wilsonart® Laminates, types 107, 335 and 350, conform to the voluntary standards of the American National Standards Institute, for thickness, performance properties and appearance. Wilsonart® Laminates 107,335 and 350 meet or exceed the International Standards Organization specifications as found in ISO 4586, titled "High-Pressure Decorative Laminate (HPDL) – Sheets Based on Thermosetting Resins – Part I: specifications." Wilsonart follows all applicable environmental laws wherever we do business. Wilsonart manufacturing facilities are certified and follows the ISO 45000 Health and Safety standards and the ISO 14000 Environmental Management standards.

- USGBC – LEED v4 & v4.1
- UL Greenguard Gold
- SCS Indoor Advantage Gold
- SCS Recycled content

Specific Product Standards
U.S. Federal Specification L-P 508H, April 9, 1977, "Plastic Sheets, Laminated, Decorative and Non-decorative." Spells out criteria for decorative laminates for federal installations. Wilsonart 107, 335 and 350 laminates comply.

- NSF International (NSF) #35 "Laminated Plastic for Surfacing for Food Service Equipment." All solid colors and printed patterns in Basic Types 107, 335 and 350, comply.
- U.S. Federal Register, August 9, 1984, Housing and Urban Development Mobile Home Construction and Safety Standard:
- (24CFR) 3280.203. General Purpose Type 107 and Vertical Surface Type 335 comply.

- U.S. Federal Test Method, Federal Aviation Regulation, DOT, Part 25.853, Airworthiness Standards:
- Transport Category Airplane (Interior Finish). Vertical Surface Type 335 and Postforming Type 350 comply with parts A and C.
- U.S. Federal Motor Vehicle Safety Standard (FMVSS) 302, "Flammability of Interior Materials." Basic Types 107, 335 and 350 comply.
- U.S. Military Standard MIL-P-17171E (SHIPS)/Plastic Laminate. General Purpose Type 107 complies.
- Branded Cleaner and Sanitizer Resistance for Wilsonart® Laminate per ISO 4586-2 Method 31 (B):
- Resistance of Furniture to UV Lights for Wilsonart® Laminate per BIFMA HCF 8.1-201X Section 9 (Alternate Method per ASTM G155 using ISO 4586-2.33 conditions).
- Wilsonart® Laminates 107,335,350 and 376 conforms to BIFMA – Healthcare Furniture Design
- Guidelines for Cleanability, Section 9 Resistance to Furniture to UV Lights. Wilsonart® Laminates 107, 335, 350 and 376 meet or exceed the acceptance level for surface evaluation.

Below is the link to the Technical Data sheet for the HPL that supports the above claims.
https://www.wilsonart.com/media/Technical_Resources/en/basiclaminatetechdata.pdf

2.4 Delivery Status

The study considered the environmental impacts of HPL and CHPL products. The declared unit for this analysis is one square meter ($1m^2$) of HPL.

2.5 Base Materials

Table 1 presents the primary materials included in the modeling. As per Section 2.5 of the Addendum for Adapting the IBU PCR Part B for use in North America. the product does not contain any hazardous or toxic materials that are required to be disclosed by OSHA, EPA, RCRA, OEHHA, Stockholm convention, NPRI and SEMARNAT.

As per sections 7.1, 7.2, 7.5, and 7.6 of the Addendum for Adapting the IBU PCR Part B for use in North America, methods used to measure the levels of formaldehyde, phenol, melamine, and formaldehyde emissions need to be indicated. Following are the test methods that were used to determine their levels.

- Formaldehyde: As per the Occupational Safety and Health Administration (OSHA) Method 1007, the levels of formaldehyde were found to be below the TWA limit of 0.75 ppm, and below the STEL limit of 2 ppm.
- Melamine: As per the Occupational Safety and Health Administration (OSHA) Method 32, the levels of formaldehyde were found to be below the permissible levels.
- Phenol: As per the Occupational Safety and Health Administration (OSHA) Method 32, the levels of phenol were found to be below the TWA limit of 5 ppm, and below the STEL limit of 15.6 ppm.
- Formaldehyde Emissions: The laminates analysed in this study have achieved a GREENGUARD Gold certification and have been tested as per the California Department of Public Health (CDPH) Standard Method V1.2-2017. The levels of formaldehyde emissions were found to be below the Maximum Allowable Predicted Concentration of 7.3 ppb.

For any questions related to the above methods and tests, please contact Wilsonart at https://www.wilsonart.com.

Table 1. *Material content for the HPL, per square meter and as a percent of total mass.*

Material	(kg/m^2)	Percent
Total Product	**8.97E+07**	**100%**
Phenolic resin	2.01E+07	22.434%
Kraft paper	4.62E+07	51.531%
Core paper	4.43E+04	0.048%
Deco paper	9.67E+06	10.765%
Melamine resin	1.33E+07	14.780%
Additives	4.00E+05	0.44%
Total Packaging	**6.00E-02**	**100%**
Tape	1.64E-04	0.27%
Lumber	6.04E-03	10.066%
Pallets	4.52E-02	75.320%
Cardboard	3.74E-03	6.231%
Plastic Roll	1.03E-06	0.002%
Corner protectors	1.71E-04	0.285%
Refrigerant	3.13E-07	0.001%
Slip sheet	1.80E-04	0.300%
Plate Protectors	4.46E-03	7.435%

2.6 Manufacture

The manufacturing process involves resin treating and drying, collation and assembly, pressing, sanding (only in HPL), and cutting to size:

Resin Treating and Drying: Two resins are used in the production of the Wilsonart's high pressure laminate: phenol-formaldehyde and melamine-formaldehyde resins for treating of the core papers and for treatment of the overlay and decorative papers. During the treating and drying step, papers are mechanically fed through a resin bath and then heated in an oven to cure the resin.

Resin: The phenolic and melamine resins contain around 60%-64.5% solids that is purchased by Wilsonart and then combined with dyes and additives on-site.

Collation and Assembly: During collation (of the core sheets) and assembly (of the decorative and overlay sheets) sheets of treated and untreated paper are stacked both manually and mechanically. This step is in preparation of the pressing stage.

Pressing: During pressing, the collated core and assembled decorative/overlay sheets are brought together to be pressed into the laminate product using stainless steel plates and high temperature and pressure. The output of the pressing process is the laminate product. Untreated kraft paper is used as a protective layer and a thermal barrier between the textured metal plates and the heated press platens.

Sanding: During the sanding process, sanding belts are used to remove the release resin on the outside face of the laminate. Small quantities of solvents and inks are applied to the laminate product.

Cut-to-size: Some of the countertop products are cut before shipment, but many products are shipped in their standard size to the fabricator.

2.7 Environment and Health during Manufacture

Wilsonart follows ISO standards' specific requirements for environmental, occupational health and safety, and quality management systems. Wilsonart uses these standards to enhance environmental performance, provide safe and healthy workplaces, enhance customer satisfaction and more. Wilsonart has the following:

- ISO 9001 – Quality Management System Certification
- ISO 14001 – Environnemental Management System Certificate
- Iso 45001 – Occupational Health and Safety Management System

2.8 Product Processing/Installation

An average distribution distance of 100 miles is assumed for both HPL and CHPL. However, the impacts associated with installation are considered to be outside of the system boundary of this "cradle-to-gate w/ options" LCA study.

2.9 Packaging

The product is packaged onsite before distribution. Packaging includes protective cardboard, skids, slip sheets, wooden shipping pallets, and plastic film.

2.10 Condition of Use

No special conditions of use are noted.

2.11 Environment and Health during use

No environmental or health impacts are expected due to normal use of the product

2.12 Reference Service Life

The Reference Service Life (RSL) of the wallcovering is 20-50 years, based on the manufacturers' warranty.

2.13 Extraordinary Effects

No environmental or health impacts are expected due to extraordinary effects including fire and/or water damage and product destruction.

2.14 Re-Use Phase

The products are not typically reused or recycled at end-of-life. Energy recovery at end-of-life is possible through waste incineration.

2.15 Disposal

At end-of-life, the product may be disposed of in a landfill or via incineration.

2.16 Further Information

Further information on the product can be found on the manufacturers' website at www.wilsonart.com.

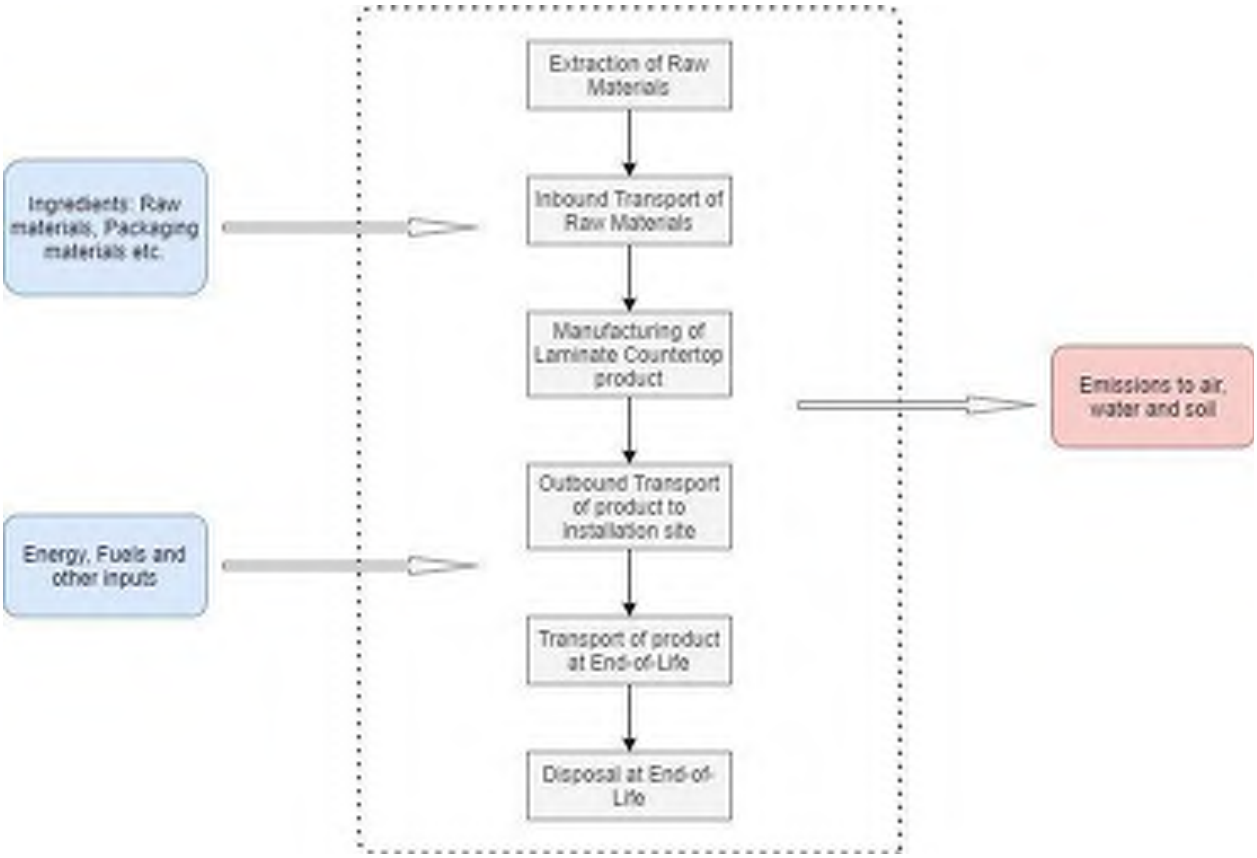
3. LCA: Calculation Rules

3.1 Declared Unit

The declared unit used in the study, as specified in the PCR, is 1 m^2 of laminate product. The reference flow for the product system is 1.07 kg/m^2.

3.2 System Boundary

The scope of the EPD is cradle-to-gate with options, including raw material extraction and processing, transportation, product manufacture, product delivery, installation, and product disposal. The life cycle phases included in the product system boundary are shown below.



3.3 Estimates and Assumptions

Proxy data were used where exact datasets were not found:

Table 2. *Dataset and data provide information*

Location	Dataset	Data Provider	Reference Year	
US	Phenolic resin (45% concentration)	Sphera	2020	Tech
EU-28	Kraft paper (EN15804 A1-A3)	Sphera	2020	Geo
US	Lactic acid (fermentative)	Sphera	2020	Tech
GLO	Thickening agent (polysaccharides derivate)	Sphera	2020	Geo/Tech
EU-28	Corrugated board excl. paper production (2018), open paper input, average composition	Sphera	2020	Geo
EU-28	Kraftliner (2018) - for use in cut-off EoL scenario cases	Sphera	2020	Geo
EU-28	Aluminium oxide mix (alumina, Al2O3)	Sphera	2020	Geo
DE	Melamine Resin (MF)	Sphera	2020	Geo
EU-28	Stainless steel sheet part	Sphera	2020	Geo
EU-28	Tetrafluoroethane (R134a) (estimate)	Sphera	2020	Geo
DE	Defoamer	Sphera	2020	Geo
DE	Precipitated silica (approximation)	Sphera	2020	Geo
US	Ethanol (96%) (hydrogenation with nitric acid)	Sphera	2020	Tech
GLO	Carbon fiber thermoplastic tape PP (oil heated)	Fraunhofer IGCV	2020	Geo

It should also be noted that life cycle impact assessment (LCIA) results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The PCR allows for the results for several inventory flows related to construction products to be reported as "other parameters". These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted considering this limitation.

3.4 Cut-off criteria

No cut-off criteria are defined for this study. This is consistent with the PCR which requires processes contributing greater than 1% of the total environmental impact indicator for each impact to be included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results.

3.5 Background Data

Primary data were provided by Willsonart for the Temple, TX and Fletcher, NC. The sources of secondary life cycle inventory (LCI) data are from the version GaBi 2021.2

Table 3. *Data sources for the HPL product system.*

Location	Dataset	Data Provider	Reference Year
PRODUCT			
US	Petroleum coke at refinery	Sphera	2017
US	Naphtha at refinery	Sphera	2017
US	Phenolic resin (45% concentration)	Sphera	2020
EU-28	Kraft paper (EN15804 A1-A3)	Sphera	2020
US	Polyethylene film (PE-LD) (Oxi)	Sphera	2020
US	Glass fibres	Sphera	2020
US	Toluene (from pyrolysis gasoline)	Sphera	2020
US	Lactic acid (fermentative)	Sphera	2020
US	Nylon (PA 6.6) - yarn	Sphera	2020
US	Titanium dioxide pigment (chloride process)	Sphera	2020
GLO	Thickening agent (polysaccharides derivate)	Sphera	2020
US	Acetone (from cumene)	Sphera	2020
EU-28	Corrugated board excl. paper production (2018), open paper input, average composition	Sphera	2020
US	Butane at refinery	Sphera	2017
EU-28	Kraftliner (2018) - for use in cut-off EoL scenario cases	Sphera	2020
EU-28	Aluminium oxide mix (alumina, Al2O3)	Sphera	2020
US	Carbon fiber (CF; PAN-based; HT) - 06	Fraunhofer IGCV	2019
DE	Melamine Resin (MF)	Sphera	2020
EU-28	Stainless steel sheet part	Sphera	2020
US	Phenol (from cumene)	Sphera	2020
US	Formaldehyde (HCHO; 100%)	Sphera	2020
US	Polyethylene glycol (PEG)	Sphera	2020
US	Polypropylene Film (PP) without additives	Sphera	2020
EU-28	Tetrafluoroethane (R134a) (estimate)	Sphera	2020
US	Cellulose	Sphera	2020
DE	Defoamer	Sphera	2020
US	Sawmill lumber softwood	Sphera	2020
US	Vat Dye	Sphera	2020
US	Wax / Paraffins at refinery	Sphera	2017

Location	Dataset	Data Provider	Reference Year
DE	Precipitated silica (approximation)	Sphera	2020
US	Ethanol (96%) (hydrogenation with nitric acid)	Sphera	2020
GLO	Carbon fiber thermoplastic tape PP (oil heated)	Fraunhofer IGCV	2020
US	Plastic waste on landfill	Sphera	2020
ENERGY			
US	Electricity grid mix – ERCT (direct)	Sphera	2018
US	Electricity grid mix – SRVC	Sphera	2018
US	Electricity grid mix (eGRID)	Sphera	2018
US	Electricity from solar thermal	Sphera	2017
US	Natural gas mix	Sphera	2017
US	Diesel mix at refinery	Sphera	2017
US	Diesel mix at filling station	Sphera	2017
US	Gasoline (regular) at refinery	Sphera	2017
TRANSPORTATION			
GLO	Bulk commodity carrier, average, ocean going	Sphera	2020
GLO	Rail transport cargo - Diesel, average train, gross tonne weight 1,000t / 726t payload capacity	Sphera	2020
US	Truck - TL/dry van (EPA SmartWay)	Sphera	2020

3.6 Data Quality

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 4. *Data quality assessment for the HPL product system.*

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	All primary data used in the model represent an average of the year 2020 operations in order to account for seasonal variations. The representative background data (mainly raw materials, energies, fuels, and construction and ancillary materials) were obtained from the GaBi database and literature, based on data availability. The results of the study are relevant for 2020, the year in which the study is conducted, and are expected to be relevant until such time as there is a significant change in the production mix, energy mix or production technologies required for Wilsonart's HPL manufacturing.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	This LCA study covers the products manufactured and sold by Wilsonart in North America. Data on material inputs, inbound and outbound transport, energy, water, waste etc. were collected from manufacturing facilities located at Temple, TX and Fletcher, NC
Technology Coverage: Specific technology or technology mix	This study assesses the potential environmental impacts of Wilsonart's HPL production from cradle-to-gate with option. Manufacturing data was gathered from two different locations that manufacture the two HPL products being analyzed in this study to ensure that the model is both geographically and technologically representative for each stage of the production process involved. US aggregated datasets of raw materials were used in this study for majority of the materials. In absence of US datasets, EU and DE datasets were used as proxies to fill the data gaps. Ancillary and process material data, such as the production of chemicals, fuels, energy, and power, were adopted as average industry mixes from the GaBi 2021 database release (http://www.gabi-software.com)
Precision:	As the majority of the relevant foreground data are measured data or calculated based on primary information sources of the owner of the technology, precision is considered to be high.

Data Quality Parameter	Data Quality Discussion
Measure of the variability of the data values for each data expressed	Seasonal were balanced out by using weighted averages. All background data are sourced from GaBi databases with the documented precision.
Completeness: Percentage of flow that is measured or estimated	Each foreground process was checked for mass balance and completeness of the emission inventory. No data were knowingly omitted. Completeness of foreground unit process data is considered to be high. All background data are sourced from GaBi databases with the documented completeness.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	**Temporal:** All primary data were collected for the year 2020. All secondary data come from the GaBi 2020 databases and are representative of the years 2011-2020. As the study intended to compare the product systems for the reference year 2020, temporal representativeness is considered to be high. **Geographical:** All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be high. **Technological:** All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be high
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	To ensure data consistency, all primary data were collected with the same level of detail, while all background data were sourced from the GaBi databases.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Reproducibility is supported as much as possible through the disclosure of input-output data, dataset choices, and modeling approaches in this report. Based on this information, any third party should be able to approximate the results of this study using the same data and modeling approaches.
Sources of the Data: Description of all primary and secondary data sources	All primary data were collected using customized data collection templates, which were sent out by email to the respective data providers in the participating companies. Upon receipt, each questionnaire was cross-checked for completeness and plausibility using mass balance, stoichiometry, as well as internal and external benchmarking. If gaps, outliers, or other inconsistencies occurred, Sphera engaged with the data provider to resolve any open issues.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	The use of proxies constitutes to limitations to technological/geographical representativeness. Proxy data were used only for ancillary materials, which contribute minimally to potential environmental impacts. This study is based on a European PCR and may not be fully representative of results based on a North American PCR. The IBU European PCR was chosen because it was more representative of the product under review. The IBU PCR covers laminates while ULE PCR covers all countertops- HPL and CHPL are laminates only and are not considered to be full countertops.

3.7 Period under review

The period of review is calendar year 2020.

3.8 Allocation

Manufacturing resource use was allocated to the products based on mass. Impacts from transportation were allocated based on the mass of material and distance transported.

3.9 Comparability

The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products

from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

4. LCA: Scenarios and additional Technical Information

Delivery and Installation stage (A4 - A5)

Distribution of the product to the point of installation assumed a transport distance of 99.4 miles (160 km) by diesel driven truck. It is assumed that packaging materials are disposed during the installation stage and are transported over a distance of 99.4 miles (160 km) by diesel driven truck. Transportation parameters for modeling are summarized in Table 5.

Table 5. *Transport parameters, per m^2 (A4)*

Parameter	Value	Unit
Transport distance (truck)	99.4	Mile
Transport distance (ship)	N/A	km
Gross mass of products transported	1.07	kg

The parameters associated with installation are shown in Table 6. Disposal rates for packaging are based on the US EPA's Advancing Sustainable Materials Management: 2018 Fact Sheet: Assessing Trends in Materials Generation and Management in the United States (US EPA, 2020) and are listed in the Table 7 below.

Table 6. *Parameters for Installation into the building (A5).*

Parameter	Value	Unit
Auxiliary materials	N/A	kg
Water consumption	N/A	kg
Other resources	N/A	m^3
Electricity consumption	N/A	kg
Other energy carriers	N/A	kWh
Material loss	N/A	kg
Output substances following waste treatment on site	N/A	kg
Dust in the air	N/A	kg

Table 7. *Disposal rates for packaging materials (A5)*

Material	Material Category	Recycling (%)	Incineration (%)	Landfilling (%)
Cardboard, corner protectors, plate protectors	Paper/paperboard	80.9%	3.7%	15.4%
Lumber, pallets	Wood	26.9%	14.3%	58.8%
Plastic roll, glass beads, slip sheet	Plastic	13.6%	16.9%	69.5%

Use stage (B1)

The scope of this study is cradle-to-gate with options and hence the impacts associated with use and maintenance are outside of the system boundary and are not included in the scope of this LCA.

Maintenance stage (B2)

The scope of this study is cradle-to-gate with options and hence the impacts associated with use and maintenance are outside of the system boundary and are not included in the scope of this LCA. The product is assumed to have a 10-year lifetime. Though it was speculated that the quantity of materials required for maintenance (predominantly water and piece of reusable dry-cloth) on a need-to-do basis were very minimal, these amounts could not be quantified into numbers, and hence the impacts of maintenance phase were excluded from this cradle-to-gate w/ options EPD.

Table 8. *Maintenance parameters (B2)*

Parameter	Value	Unit
Information on maintenance	N/A	-
Maintenance cycle	N/A	-
Water consumption	N/A	m^3
Auxiliary (mild detergent)	N/A	kg
Other resources	N/A	kg
Electricity consumption	N/A	kWh
Other energy carriers	N/A	MJ
Material Loss	N/A	kg

The declared values in module B2 can be multiplied with the RSL (in years) of the product considered.

Repair/Replacement/Refurbishment stage (B3 - B5)

Repair of the product requires only hand tools and causes no emissions or additional impacts. Product replacement and refurbishment are not relevant during the lifetime of the product.

Building operation stage (B6 – B7)

There is no operational energy or water use associated with the use of the product and the results for these stages are zero.

Disposal stage (C1 - C4)

The disposal stage includes demolition of the products (*C1*); transport of the wallcovering products to waste treatment facilities (*C2*); waste processing (*C3*); and associated emissions as the product degrades in a landfill or is burned in an incinerator (*C4*).

For the HPL product, no emissions are generated during demolition (*C1*) while no waste processing (*C3*) is required for landfill disposal. Transportation of waste materials at end-of-life (C2) is more conservative than the 20 miles assumed by the US EPA WARM model. The relevant recycling rates used for the product and product packaging are based on raw data provided by the client. For the materials not recycled, 100% go to landfill, based on calculations from data provided by client (C4).

5. LCA: Results

Impact category indicators are calculated using the EN15804+A2 characterization methods, including acidification potential, eutrophication potential, global warming potential, ozone depletion potential, and smog potential in accordance with the PCR. Biogenic carbon uptake and biomass CO_2 emissions are also included as per EN15804 requirements. Impacts reported in the tables below have been calculated as weighted averages of impacts associated with the product manufactured at Temple, TX and Fletcher, NC facilities with the production volume as the basis for averaging.

Table 9. *Life cycle phases included in the product system boundary.*

Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B1	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material extraction and processing	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x

X = include in scope | MND = Module not declared

Table 10. *Environmental Impact results according to EN 15804+A2 for the HPL product. All values are rounded to two significant digits. Results are reported per the declared unit of 1 m².*

MND = Module not declared

Environmental Impact Category	Unit	Product Stage (A1-A3)	Transport to the building site (A4)	Construc-tion and Installatio n (A5)	Decon-struction (C1)	Transport to waste process-ing (C2)	Waste Process-ing (C3)	Disposal (C4)	Reuse, Recovery, Recycling Potential (D)
Global warming potential (GWP)	[kg CO2 eq.]	1.83E+00	1.23E-02	6.71E-02	0.00E+00	1.23E-02	0.00E+00	1.10E+00	2.74E-01
		93%	1%	3%	-	1%	-	36%	14%
GWP - total	[kg CO2 eq.]	1.99E+00	1.25E-02	8.26E-02	0.00E+00	1.25E-02	0.00E+00	1.11E+00	2.74E-01
		93%	1%	4%	-	1%	-	35%	13%
GWP - fossil	[kg CO2 eq.]	3.77E+00	1.25E-02	5.25E-03	0.00E+00	1.25E-02	0.00E+00	4.60E-02	0.00E+00
		98%	0%	0%	-	0%	-	1%	0%
GWP - biogenic	[kg CO2 eq.]	-1.78E+00	6.19E-07	7.74E-02	0.00E+00	6.19E-07	0.00E+00	1.06E+00	2.74E-01
		105%	0%	-5%	-	0%	-	-166%	-16%
GWP – land use and land use change	[kg CO2 eq.]	1.55E-03	9.13E-06	1.39E-06	0.00E+00	9.13E-06	0.00E+00	1.64E-05	0.00E+00
		98%	1%	0%	-	1%	-	1%	0%
Depletion potential of the stratospheric ozone layer	[kg CFC-11 eq.]	8.93E-10	1.18E-15	-1.97E-14	0.00E+00	1.18E-15	0.00E+00	7.15E-14	0.00E+00
		100%	0%	0%	-	0%	-	0%	0%
Acidification potential (AP) of land and water	[kg SO2 eq.]	7.89E-03	2.83E-05	1.15E-05	0.00E+00	2.83E-05	0.00E+00	1.80E-04	0.00E+00
		97%	0%	0%	-	0%	-	2%	0%
AP, accumulated exceedance	[Mole of H+ eq.]	1.03E-02	4.16E-05	1.60E-05	0.00E+00	4.16E-05	0.00E+00	2.28E-04	0.00E+00
		97%	0%	0%	-	0%	-	2%	0%

Environmental Impact Category	Unit	Product Stage (A1-A3)	Transport to the building site (A4)	Construc-tion and Installatio n (A5)	Decon-struction (C1)	Transport to waste process-ing (C2)	Waste Process-ing (C3)	Disposal (C4)	Reuse, Recovery, Recycling Potential (D)
Eutrophication Potential (EP)	[kg Phosphate eq.]	1.66E-03	7.58E-06	4.56E-05	0.00E+00	7.58E-06	0.00E+00	2.88E-04	0.00E+00
		83%	0%	2%	-	0%	-	14%	0%
EP - fraction of nutrients reaching freshwater end compartment	[kg P eq.]	4.50E-05	6.61E-08	1.17E-06	0.00E+00	6.61E-08	0.00E+00	4.01E-05	0.00E+00
		52%	0%	1%	-	0%	-	46%	0%
EP - fraction of nutrients reaching marine end compartment	[kg N eq.]	3.62E-03	2.04E-05	1.36E-05	0.00E+00	2.04E-05	0.00E+00	6.15E-05	0.00E+00
		97%	1%	0%	-	1%	-	2%	0%
EP - accumulated exceedance	[Mole of N eq.]	3.53E-02	2.26E-04	6.69E-05	0.00E+00	2.26E-04	0.00E+00	6.76E-04	0.00E+00
		97%	1%	0%	-	1%	-	2%	0%
Formation potential of tropospheric ozone photochemical oxidants (POCP)	[kg Ethene eq.]	1.20E-03	-4.59E-06	1.10E-05	0.00E+00	-4.59E-06	0.00E+00	1.66E-06	0.00E+00
		100%	0%	1%	-	0%	-	0%	0%
POCP	[kg NMVOC eq.]	1.14E-02	4.59E-05	3.23E-05	0.00E+00	4.59E-05	0.00E+00	1.69E-04	0.00E+00
		98%	0%	0%	-	0%	-	1%	0%
Abiotic depletion potential for non-fossil resources	[kg Sb eq.]	1.82E-06	4.18E-09	-1.37E-10	0.00E+00	4.18E-09	0.00E+00	1.22E-08	0.00E+00
		99%	0%	0%	-	0%	-	1%	0%
Abiotic depletion potential for fossil resources	[MJ]	7.89E+01	1.71E-01	1.77E-02	0.00E+00	1.71E-01	0.00E+00	6.67E-01	0.00E+00
		99%	0%	0%	-	0%	-	1%	0%
Water (user) deprivation potential, deprivation weighted water consumption	[m^3 world equiv.]	4.19E-01	7.75E-04	1.76E-03	0.00E+00	7.75E-04	0.00E+00	2.78E-03	0.00E+00
		99%	0%	0%	-	0%	-	1%	0%

Table 11. *Environmental Impact results according to TRACI 2.1 and IPCC AR5 (Excluding biogenic carbon) for the HPL product. All values are rounded to two significant digits. Results are reported per the declared unit of 1 m^2.*
MND = Module not declared

Environmental Impact Category	Unit	Product Stage (A1-A3)	Transport to the building site (A4)	Construc-tion and Installation (A5)	Decon-struction (C1)	Transport to waste process-ing (C2)	Waste Process-ing (C3)	Disposal (C4)	Reuse, Recovery, Recycling Potential (D)
Global warming potential (IPCC 2013 AR5, GWP 100 years) (Fossil)	kg CO2 equiv.	3.81E+00	1.25E-02	4.92E-02	0.00E+00	1.25E-02	0.00E+00	4.58E-02	0.00E+00
		97%	0%	1%	-	0%	-	1%	-
Ozone Depletion Potential (stratospheric)	kg CFC 11 equiv.	1.18E-09	2.46E-17	-3.99E-16	0.00E+00	2.46E-17	0.00E+00	1.45E-15	0.00E+00
		100%	0%	0%	-	0%	-	0%	-
Acidification Potential (land and water)	kg SO2 equiv.	1.00E-02	3.86E-05	3.33E-05	0.00E+00	3.86E-05	0.00E+00	1.96E-04	0.00E+00
		97%	0%	0%	-	0%	-	2%	-
Eutrophication Potential (land and water)	kg N equiv.	1.54E-03	3.98E-06	1.54E-05	0.00E+00	3.98E-06	0.00E+00	2.85E-04	0.00E+00
		83%	0%	1%	-	0%	-	15%	-
Smog Formation Potential	kg O3 equiv.	2.07E-01	8.91E-04	3.73E-04	0.00E+00	8.91E-04	0.00E+00	3.45E-03	0.00E+00
		97%	0%	0%	-	0%	-	2%	-
Fossil Fuel Depletion	MJ surplus	1.00E+01	2.43E-02	4.67E-03	0.00E+00	2.43E-02	0.00E+00	8.70E-02	0.00E+00
		99%	0%	0%	-	0%	-	1%	-

Table 12. *Resource use results according to EN 15804+A2 for HPL product. All values are rounded to two significant digits. Results reported in MJ per the declared unit of 1 m^2 are calculated using higher heating values.*

Environmental Impact Category	Unit	Product Stage (A1-A3)	Transport to the building site (A4)	Construc-tion and Installation (A5)	Decon-struction (C1)	Transport to waste processing (C2)	Waste Processing (C3)	Disposal (C4)	Reuse, Recovery, Recycling Potential (D)
Renewable primary energy as energy carrier	[MJ]	1.67E+01	7.13E-03	-1.27E-02	0.00E+00	7.13E-03	0.00E+00	6.45E-02	0.00E+00
		100%	0%	0%	-	0%	-	0%	0%
Renewable primary energy resources as material utilization	[MJ]	2.57E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		100%	-	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	4.24E+01	7.13E-03	-1.27E-02	0.00E+00	7.13E-03	0.00E+00	6.45E-02	0.00E+00
		100%	0%	0%	-	0%	-	0%	0%
Non-renewable primary energy as energy carrier	[MJ]	7.76E+01	1.83E-01	1.77E-02	0.00E+00	1.83E-01	0.00E+00	6.88E-01	0.00E+00
		99%	0%	0%	-	0%	-	1%	0%
Non-renewable primary energy resources as material utilization	[MJ]	2.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		100%	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources	[MJ]	7.97E+01	1.83E-01	1.77E-02	0.00E+00	1.83E-01	0.00E+00	6.88E-01	0.00E+00
		99%	0%	0%	-	0%	-	1%	-
Use of Secondary Material	[kg]	3.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		100%	-	-	-	-	-	-	-
Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-	-	-	-	-	-	-	-
Use of net fresh water	[m3]	1.69E-02	2.56E-05	3.54E-05	0.00E+00	2.56E-05	0.00E+00	9.87E-05	0.00E+00
		99%	0%	0%	-	0%	-	1%	-

Table 13. *Waste Categories and Output Flows according to EN 15804+A2 for the HPL product. All values are rounded to two significant digits.*

MND = Module not declared
INA = Indicator not assessed
Neg. = Negligible

Environmental Impact Category	Unit	Product Stage (A1-A3)	Transport to the building site (A4)	Construction and Installation (A5)	Decon-structio n (C1)	Transport to waste processing (C2)	Waste Processing (C3)	Disposal (C4)	Reuse, Recovery, Recycling Potential (D)
Hazardous waste disposed	[kg]	2.44E-06	7.62E-13	4.02E-12	0.00E+00	7.62E-13	0.00E+00	2.58E-11	0.00E+00
		100%	0%	0%	-	-	-	0%	-
Non-hazardous waste disposed	[kg]	1.14E-01	1.58E-05	4.55E-02	0.00E+00	1.58E-05	0.00E+00	1.07E+00	0.00E+00
		9%	0%	4%	-	-	-	87%	-
Radioactive waste disposed	[kg]	2.00E-03	5.08E-07	-4.09E-06	0.00E+00	5.08E-07	0.00E+00	6.04E-06	0.00E+00
		100%	0%	0%	-	-	-	0%	-
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-	-	-	-	-	-	-	-
Materials for recycling	[kg]	1.33E-01	0.00E+00	3.79E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		78%	-	22%	-	-	-	-	-
Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-	-	-	-	-	-	-	-
Exported electrical energy	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-	-	-	-	-	-	-	-
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

6. LCA: Interpretation

As seen in Table 10, A1- A3 (product stage) is the primary contributor across all the environmental impact categories. Material inputs (Stage A1) is dominant in all categories, except for GWP, EP-freshwater, and POCP. Stage A3 (manufacturing, particularly electricity consumption and disposal of manufacturing waste) is the primary contributor to the overall GWP impacts, and has a significant contribution across GWP – fossil, AP, EP, EP – marine, EP – terrestrial, and POCP impact categories.
Since the disposal of product has been modeled as disposal of plastic in landfill, it is assumed that the product behaves like a plastic polymer matrix at the end of its life and the biogenic carbon stored in the paper (used as raw material) does not get released into the atmosphere within a 100-year time frame. However, it should be noted that this biogenic carbon does get released back into the atmosphere slowly and steadily and therefore a biogenic carbon content of 7.28E-01 kg C per m2 of product holds a potential of releasing 2.67E+00 kg CO2 eq back into the atmosphere, which can be expressed as a negative value of GWP – biogenic in stage C4. Stage C4 (disposal at EoL) is the primary contributor to the EP-freshwater impact category due to generation of landfill leachate.

As per EN15804, module D includes any benefits from materials leaving the product system. This also includes the potential benefits of material and energy recovery from the disposal of packaging waste. However, since the packaging material used and disposed per functional unit and therefore its subsequent benefits are relatively insignificant as

MDF - CORE

Formaldehyde Emissions Grademark Program

CERTIFICATE OF COMPLIANCE
053-MD4-2024

Composite Panel Association (TPC-1)
19465 Deerfield Ave, Suite 306, Leesburg, VA 20176; (703)-724-1128

Hereby Affirms That

ARAUCO NORTH AMERICA

985 CORINTH RD, MONCURE, NORTH CAROLINA 27559

CPA MILL # 053

Has Fulfilled the Requirements of:
EPA TSCA Title VI
40 CFR 770.18(c) *Ultra low-emitting formaldehyde resins reduced testing*

CARB ATCM 93120.3(d)
Special Provision for Manufacturers of HWPW, PB and MDF with Ultra-Low-Emitting Formaldehyde (ULEF) Resins

PRODUCT SCOPE

Product Type: **Medium Density Fiberboard**

Product/Brand Name: **Vesta ULEF MDF**

Brian T. Sause
Director – Certification and Industry Affairs

Issue date: February 16, 2024

Expiration Date of Exemption: February 16, 2026
*To verify continued compliance, visit www.CertifiedbyCPA.org;
Email certification@cpamail.org

Panolam® TFL

THERMOFUSED LAMINATES

White Melamine

Technical Bulletin

Panolam® Thermofused Laminate (TFL) product line features a wide selection of solids, woodgrains and abstract patterns selected to meet your most varied design needs. Our expansive color line gives access to hundreds of decorative papers that can be used in both high pressure laminate (HPL) and Panolam® TFL.

You can choose from a wide range of panel sizes, core thicknesses and grades to meet virtually any design, performance or budget challenge.

Product Description

Panolam® Thermofused Laminate (TFL) panels consist of a melamine resin-impregnated decorative paper thermally fused to a substrate such as industrial-grade particleboard or medium-density fiberboard (MDF). Thermal fusion takes place under heat and pressure and permanently bonds the impregnated paper to the substrate.

This process results in melamine panels with extraordinary strength and durability. Panolam® Thermofused Laminate panels are resistant to scuffs, stains, moisture, light and heat.

Panolam® TFL has a hard, long-lasting, water-resistant surface which means lower reject rates throughout your operations:

- less damage occurs at the edgebander
- the panel is more resistant to scratches and abrasions in the shop processes
- the possibility of burnishing is eliminated

Because Panolam® TFL is easy to work with:

- edges are cleaner when trimming panels and machining dadoes
- the overspray of edge glues or finishes is easily removed with solvents
- both sides of panels have finished decorative surface

Typical Uses

Panolam® TFL panels can be used for a variety of applications where design and practicality are a must. They are ideal for virtually all vertical applications and many horizontal applications, including desktop and office work surfaces. Both Panolam® TFL and Pionite® HPL combined, offer over 300 colors, which allows for the two materials to mix and match perfectly.

There are hundreds of applications for Panolam® TFL:

- Kitchen and bath cabinetry
- Office furniture
- Hospital and medical casegoods
- Restaurant furniture
- Hotel and motel furniture
- Ready-to-assemble furniture
- Casegoods and built-ins
- Euro design furniture and cabinetry
- Store displays
- Closet storage systems
- Computer Furniture

Thermofused laminate panels can be used for most applications where high-pressure laminates would be specified, including horizontal surfaces. Exceptions: high-wear surfaces (i.e. kitchen countertops and checkout counters) or applications where temperatures may exceed 275 ˚F (135 ˚C).

White Melamine

Panolam® TFL Conformance with Standards for Particleboard and MDF Substrates

The table below presents the average performance standards for particleboard and medium density fiberboard (MDF) as specified by the American National Standards Institute (ANSI).

Property	Particleboard Requirements ANSI/ A208.1-2016 (Specification Average)				Medium Density Fiberboard Requirements ANSI/ A208.2-2016 (Specification Average)			
	M-3i Board		M-2 Board		≤ 15mm or 0.591" MDF		> 15mm or 0.591" MDF	
	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric
Thickness tolerance								
panel average from specified	± 0.008"	± 0.20mm	± 0.008"	± 0.20mm	± 0.005"	± 0.125mm	± 0.005"	+_ 0.125mm
Variance from panel average	± 0.004"	± 0.10mm	± 0.004"	± 0.10mm	± 0.005"	± 0.125mm	± 0.005"	+_ 0.125mm
Modules of rupture (MOR)	2,176 psi	15.0 N/mm²	1,885 psi	13.0 N/mm²	3,130 psi	21.6 N/mm²	3,130 psi	21.6 N/mm²
Modules of elasticity (MOE)	362,600 psi	2500 N/mm²	290,100 psi	2,000 N/mm²	313,000 psi	2,160 N/mm²	313,000 psi	2,400 N/mm²
Internal bond	73 psi	0.50 N/mm²	58 psi	0.40 N/mm²	78 psi	0.54 N/mm²	78 psi	0.54 N/mm²
Hardness	500 lbs.	2,225 N	500 lbs.	2,225 N	-	-	-	-
Linear expansion	0.40% max	0.40% max	0.40% max	0.40% max	0.33% max	0.33% max	0.33% max	0.33% max
Screwholding - face	225 lbs.	1000 N	202 lbs.	900 N	222 lbs.	988 N	222 lbs.	988 N
Screwholding - edge	202 lbs.	900 N	180 lbs.	800 N	177 lbs.	787 N	177 lbs.	787 N
Formaldehyde max. emissions*	0.09 ppm	0.09 ppm	0.09 ppm	0.09 ppm	0.11 ppm**	0.11 ppm**	0.11 ppm	0.11 ppm

*CARB Phase 2 compliant or better
**Formaldehyde emissions for MDF with thickness ≤ 8mm (0.315") are maximum 0.13 ppm
Grade M-3i has an "i" for industrial to differentiate it from Grade M-3

Typical substrate performance shall equal or exceed standards set by the American National Standards Institute (ANSI) for type M-3i or M-2 board. Panolam® TFL thermally fused to western pine substrate may achieve slightly lower impact results.

Panel Sizes and Substrates

Thickness: 1/4" to 1 3/8"
Widths: 49" and 61"
Lengths: 73" to 145"

Substrates: Industrial Grade Particleboard, Medium Density Fiberboard. Fire-retardant panels and moisture-resistant panels are available. ZCore urea-formaldehyde-free particleboard with 100% recycled wood fiber is also available.

Please contact your customer service representative for details on custom sizes, thicknesses and substrates.

How to Specify

Surface shall be Panolam® Thermofused Laminate Panels.

Color Name: _____
Color Number: _____

Panel Texture: _____
Substrate Type: _____

Length: _____
Width: _____

Thickness: _____

Finish Options

Finish	Description
Cathedral	Vertical woodgrain finish with cathedrals spaced across width of sheet.
Chamois	Smooth finish.
Crystal	Fine pebble grained finish with a medium reflective value.
High Gloss	Smooth finish, with high reflective value.
Medium Gloss	Smooth finish with medium reflective value.
Natural Grain	Natural-appearing, linear woodgrain finish with low reflective value.
Polished Cathedral	Vertical woodgrain finish with cathedrals spaced across width of sheet with higher reflective value.
Satin	Smooth finish with low reflective value.
Straight Grain	Vertical woodgrain finish.
Suede	Textured finish with low reflective value.
Super Matte	Smooth, non-reflective finish.
Textural	Fine pebble grained finish with a low reflective value.
Timberline	Deeply embossed, linear woodgrain finish.
Wood Essence	Natural-appearing, linear woodgrain finish with low reflective finish.

White Melamine

Panolam® Thermofused Decorative Panels Surface Properties

Test for resistance to:	Description	Panolam® TFL Typical Performance	
	A measure of the ability of a decorative overlaid surface	Solid colors	Printed patterns
Wear	To maintain its design or color when subject to prolonged abrasive wear	700-900 cycles	125-200 cycles
Stain	To resist staining by prolonged contact with 15 common household substances	Tests 1-10: no effect Tests 11-15: no effect to slight effect	Tests 1-10: no effect Tests 11-15: no effect to slight effect
Cleanability	To be cleaned following prolonged contact with 15 common household substances (a lower value indicates better cleanability)	10	10
Light	To retain its color after prolonged exposure to a light source having a frequency range approximating sunlight through window glass	No effect to slight effect	No effect to slight effect
High Temperature	To maintain its color and surface texture when submitted to a high temperature	No effect to slight effect	No effect to slight effect
Radient Heat	To resist any damage when subjected to a radiant heat source of exposure	No effect after 80 seconds of exposure	No effect after 80 second of exposure
Boiling Water	To maintain its color and surface texture when subjected to boiling water	No effect*	No effect*

*Dark colors may show a slight effect.

Care and Maintenance

Panolam® TFL panels should be cleaned with warm water and mild soaps. Do not use bleach or cleansers, which contain abrasives, acids or alkalis. Remove stubborn stains with a non-abrasive liquid cleanser such as Soft-Scrub® or Vim® followed by a clean water rinse. Dry the melamine surface after rinsing.

Technical Specifications

Fire Test Data

Based on the Steiner Tunnel Test Method of the American Society for Testing and Materials (ASTM-E-84-97) Standard, typical results are:

Flame spread 90

Smoke developed..... 90

Formaldehyde Emissions Test Data

Panolam® TFL is manufactured using particleboard substrate panels conforming to the formaldehyde emission requirements for particleboard of the U.S.

Fabrication Standards

Cabinets constructed with Panolam® TFL panels will conform to the relevant sections of standards set by:

- Kitchen Cabinet Manufacturers Association (KCMA) (ANSI A161.1-2012). Recommended Performance and Construction Standards for Kitchens and Vanity Cabinets.
- Woodworkers Institute of California (WIC) Standards for exposed and semi-exposed surfaces of cabinet bodies.

Certifications

Panolam® TFL is manufactured using particleboard substrate panels compliant with the following standards:

- CARB Composite Wood ATCM:
  - Standard Core: CARB Phase 2
  - ZCore: CARB ULEF
- U.S. Department of Housing and Urban Development (HUD): 24CFR 3280

Soft Scrub® is a registered trademark for the Henkel Corporation of Rocky Hill, CT. Vim® is a registered trademark for Unilever Canada of Saint John, New Brunswick, E2L 3X1, Canada.

White Melamine

Delivery, Storage & Handling

- Products must be unloaded under shelter. If the unloading process is performed outdoors, products must be stored under shelter as soon as possible.
- Never store the products outdoors.
- Store panels in a dry and well ventilated area, away from production lines.
- Do not place panels directly on the floor.
- Avoid extreme temperature during the storage and at the time of use of panels.
- Control the ambient air at 21 °C (70 °F) and relative humidity between 35% and 45%.
- Allow time for panels to reach site temperature before use (minimum 1 to 2 weeks).

Limited Warranty

Subject to the limitations set forth below, Panolam expressly warrants that our products are reasonably free of defects in material and workmanship, and when properly handled and fabricated will conform, within accepted tolerances, to applicable manufacturing specifications as set forth in our technical brochure. This warranty shall extend to the original buyer for a period of twelve (12) months from the date of shipment of this product by Panolam, and shall not be assignable by the original buyer.

This warranty does not cover damage resulting from accident, misuse, alteration, abuse or lack of reasonable care. Due to the variety of uses and applications to which this product may be put, and because the manufacturer has no control over the end products fabricated, the warranty set forth above is exclusive and in lieu of all warranties, expressed or implied, in fact or by operation of law or otherwise, or arising by course of dealing or performance, custom or usage in the trade, including, without limitation, the implied warranties of fitness for a particular purpose and merchantability, and Panolam shall have no obligation or liability to any person or entity in connection with or arising from the furnishing, sale, installation or repair, use or subsequent sale of any product supplied by it.

Our maximum liability arising out of the sale of the products or their use, whether based upon warranty, contract, tort or otherwise, shall not exceed the actual payments received by us in connection therewith. In no event shall we be liable for special, incidental or consequential damages, including, but not limited to, arising hereunder or from the loss of profits, or loss of use damages, sales of the products.

Headquarters

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3/2017

TOTAL Millwork
7700 Wellingford Drive Manassas, VA 20109
Phone:571-379-5500

PL-1C

LAMINATE

Project: Arlington Community High School

Project Number: 1877

Manufacturer: PIONITE / PANOLAM
Name: WHITE ELM
Order: WE261-SD

ITEM DETAILS:
TEXTURED/SUEDE FINISH, ON ULEF MDF CORE, PVC EDGEBANDING

High Pressure Laminate

Three standard grades of Pionite® high pressure laminate are suitable for most applications:

General Purpose Type G48 is most often used in horizontal applications where high impact resistance and a durable, decorative surface is required.

Postforming Type F39 is designed for manufacturing countertops and other horizontal surfaces where the laminate may be heated and rolled over the substrate edge to eliminate seams.

Type F28 is designed for applications where impact resistance is less critical. Type F28 can also be postformed.

Product Description

High pressure laminate is manufactured in a flat press by combining decorative papers saturated in melamine resin with phenolic-impregnated kraft layers at pressures exceeding 1000 psi (6.9 MPa) and temperatures approaching 300 ˚F (150 ˚C). The panels are trimmed to size and the backs are sanded to facilitate bonding. The thickness of the laminate is determined by the number of kraft layers used. The laminating process combines the durability of melamine resins with the aesthetics of decorative papers creating a surfacing material that has been the standard for many years. Available in an integral antimicrobial finish designed to protect the decorative surface from discoloration and odors caused by a variety of microorganisms.

Product Description

Standard Nominal Sizes

Type	Thickness*	Width*	Length	Colors
G48 (in.) (mm)	0.045 ± 0.005 1.14 ± 0.13	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains
F39 (in.) (mm)	0.036 ± 0.005 0.91 ± 0.13	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains
F28 (in.) (mm)	0.028 + 0.001 - 0.004 0.71 + 0.03 - 0.10	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains

*Other widths and thicknesses available upon request.

Finish Options

Please refer to HPL Finishes Chart on the web site to confirm available finishes for this product.

Typical Uses

Pionite® standard laminate is designed for either horizontal, vertical, or postforming applications.
This laminate is seen on countertops, tables, vanities, interior doors, cabinets, contract furniture, and retail store fixtures.

Fabrication Tips

When working with Pionite® HPL, these techniques will produce a quality application.

1. Proper conditioning of the laminate, substrate, and backing sheet minimizes possible warping, shrinking, or expansion of assembled panels. Ideally, all components should be conditioned at 70 ˚F to 75 ˚F (21 ˚C to 25 ˚C) and 45 to 50 percent relative humidity for 48 hours prior to assembly.
2. Always bond laminate to a suitable substrate such as medium to high density fiberboard, particleboard, or metals. It should not be glued directly to plaster walls, gypsum wallboard, or concrete.
3. Recommended adhesives include solvent or water-based contact cement, white glue (PVA), epoxy, and hot melt glue. Consult your adhesive supplier for specific application requirements.
4. The use of a backing sheet is recommended to minimize warpage. The thickness of the backing sheet should be relatively equal to the thickness of the decorative laminate on the face of the assembly.
5. All saw blades and router bits used for cutting should be carbide tipped. Feed rate should be slow and tool speed should be high.

6. All edges of laminate should be filed smooth with file direction towards substrate to help prevent stress cracks and to minimize chipping.
7. Inside corners of cutouts for electrical outlets, sinks, etc., should have a minimum radius of 1/8" (3 mm) and be filed smooth. This reduces the likelihood of stress cracks.
8. When fasteners are required, it is advisable to first drill an oversized hole through the laminate. This reduces the likelihood of stress cracks.
9. See the Pionite® Postforming Technical Bulletin for postforming application tips.
10. All laminate is intended for interior use only, and should not be exposed to extreme humidity, continuous sunlight, or temperatures above 275 ˚F (135 ˚C) for extended periods of time.

Technical Information

Physical Properties

TEST		NEMA LD 3-2005 TEST METHOD	TYPICAL PIONITE® VALUES G48	NEMA STD. HGS	TYPICAL PIONITE® VALUES F39	NEMA STD. HGP	TYPICAL PIONITE® VALUES F28	NEMA STD. VGP
Thickness	(in.)		0.045 ± 0.005		0.036 ± 0.005		0.028 + 0.001 - 0.004	
	(mm)		1.14 ± 0.13		0.91 ± 0.13		0.71 + 0.03 - 0.10	
Appearance		3.1	Complies		Complies		Complies	
Light Resistance		3.3	Slight Effect	Slight Effect	Slight Effect	Slight Effect	Slight Effect	Slight Effect
Cleanability		3.4	13	20 (max.)	13	20 (max.)	8	20 (max.)
Stain 1 - 10			No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
Stain 11 - 15			No Effect	Moderate Effect	No Effect	Moderate Effect	No Effect	Moderate Effect
Boiling Water Resistance		3.5	No Effect	No Effect	No Effect	Slight Effect	No Effect	Slight Effect
Hight Temperature Resistance		3.6	No Effect	Slight Effect	No Effect	Slight Effect	No Effect	Slight Effect
Ball Impact Resistance	(in.)	3.8	55	50 (min.)	35	30 (min.)	30	20 (min.)
	(mm)		1397	1270 (min.)	889	762 (min.)	762	508 (min.)
Radiant Heat Resistance	(sec.)	3.10	200	125 (min.)	165	100 (min.)	155	80 (min.)
Dimensional Change		3.11						
Machine Direction	(%)		0.25	0.50 (max.)	0.40	1.1 (max.)	0.40	1.1 (max.)
Cross Direction	(%)		0.70	0.90 (max.)	0.80	1.4 max.)	0.80	1.4 (max.)
Room Temperature		3.12						
Dimensional Stability								
Machine Direction	(%)		0.15	0.5 (max.)	0.16	1.0 (max.)	0.18	1.0 (max.)
Cross Direction	(%)		0.40	0.8 (max.)	0.48	1.3 (max.)	0.37	1.3 (max.)
Wear Resistance	(cycles)	3.13	700	400 (min.)	700	400 (min.)	700	400 (min.)
Formability	(in.)	3.14	Not Applicable	Not Applicable	9/16	5/8 (min.)	7/16	1/2 (min.)
	(mm)		Not Applicable	Not Applicable	14	16 (min.)	11	13 (min.)
Blister Resistance	(sec.)	3.15	80	Not Applicable	65	55 (min.)	50	40 (min.)

Fire Test Data

High pressure decorative laminate is frequently used in installations governed by local fire codes. Burning characteristics of laminate are greatly influenced by the adhesive and substrate used. Listed below are typical flame spread index and smoke developed values for Pionite® standard grade laminate. When specifying Class I or A rated laminate, refer to Pionite® Fire Rated Technical Bulletin.

ASTM E-84/UL723

"Standard Test Method for Surface Burning Characteristics of Building Materials"

Type	Configuration	Flame Spread Index	Smoke Developed Values
G48	Unbonded	40	120
F39		40	65
F28		35	35
G48	Bonded* to	55	85
F39	Inorganic	55	105
F28	Cement Board	35	40
G48	Bonded* to 5/8"	95	95
F39	Particleboard	235	140
F28		160	160
G48	Bonded* to 5/8"	160	110
F39	Fire Rated	110	130
F28	Particleboard	80	75

*Bonded with Pioneer P19NF contact cement. All work should be designed, assembled, and installed in compliance with pertinent local fire codes.

CAN/ULC-S102M

Laminated Plastic Surface Burning Characteristics

Type	Configuration	Flame Spread Index	Smoke Developed Values
G48	Bonded* to	155	35
F39	Inorganic	45	20
F28	Cement Board	35	10

*Bonded with N® Sodium Silicate Sealer and Wonderbond® WB-104A with M-172L. All work should be designed, assembled, and installed in compliance with pertinent local fire codes.

Codes and Certifications

1. U.S. Federal Motor Vehicle Safety Standard #302 "Flammability of Interior Materials." Pionite® Type G48, F39, and F28 comply.
2. The City of New York, Dept. of Buildings, Materials and Equipment Acceptance Division approval codes are as follows:
   G48 - MEA 205-93-M
   F39 - MEA 206-93-M
   F28 - MEA 208-93-M
3. NSF-International Standard 35, "Laminated Plastics for Surfacing Food Service Equipment." Pionite® Type G48, F39, and F28 comply.
4. American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA), LD3-2005, "High- Pressure Decorative Laminate." Pionite® Type G48, F39, and F28 comply.
5. MIL-P-17171E(SH), "High Pressure Decorative Laminate." Pionite® G48 complies with Type I.
6. U.S. Federal Specification L-P-508H, "Plastic Sheet, Laminated, Decorative and Nondecorative." Pionite® Type G48, F39, and F28 comply.
7. International Organization for Standardization, ISO-4586, "Decorative High Pressure Laminates (HPL)." Pionite® Type G48, F39, and F28 comply.

Care and Maintenance

Pionite® decorative laminate provides a durable surface that is easy to maintain using ordinary care.

To maintain the laminate's lasting beauty, cleaning with a solution of warm water and liquid dishwashing detergent is all that should be required in most cases.

Stains may be removed with most non-abrasive household cleaners such as FORMULA 409®, GLASS PLUS® or WINDEX® with AMMONIA D®. Light scrubbing with a soft bristled brush may be necessary to remove stains from the depth of the structure on some textured surfaces.

If the stain persists, use a paste of baking soda and water and apply with a soft bristled brush. Light scrubbing for 10-20 strokes should remove most stains. Although baking soda is a low abrasive, excessive scrubbing or exerting too much force may damage the decorative surface, especially if it has a gloss finish.

Stubborn stains that resist any of the above cleaning methods may require the use of undiluted household bleach. Apply the bleach to the stain and let stand no longer than 1 1/2 minutes. Rinse thoroughly with warm water and wipe dry. This step may be repeated if the stain appears to be going away and the color of the laminate has not been affected. WARNING: Prolonged exposure of the laminate surface to bleach will cause discoloration.

Many commercially available products contain substances that may damage or discolor a laminate surface. ABRASIVE CLEANERS SHOULD NOT BE USED. Particular care should be used with any products labeled CAUTION or WARNING. Any questions or concerns should be referred to the product's manufacturer or call 1-877-726-6526. Do not allow harsh materials to remain in contact with the laminate surface. Examples of these are as follows:

Formula 409 is a registered trademark for The Clorox Company of Oakland, CA 94612; Glass Plus is a registered trademark for The Dow Chemical Company of Indianapolis, IN 46268-0511; Windex is a registered trademark for S.C. Johnson & Sons INC. of Racine, WI 53403-5011.

- Toilet bowl cleaners
- Chlorine bleach
- Hydrogen Peroxide
- Coffee pot cleaners
- Oven cleaners
- Hard water stain removers
- Drain cleaners
- Fruit and berry juice
- Metal cleaners and polishes
- Tub and tile cleaners

Limited Warranty

Subject to the limitations set forth below, Panolam Industries International Inc. (Panolam) expressly warrants that our products are reasonably free of defects in material and workmanship, and when properly handled and fabricated will conform, within accepted tolerances, to applicable manufacturing specifications as set forth in our technical brochure. This warranty shall extend to the original buyer for a period of twelve (12) months from the date of shipment of this product by Panolam, and shall not be assignable by the original buyer. This warranty does not cover damage resulting from accident, misuse, alteration, abuse or lack of reasonable care.

Due to the variety of uses and applications to which this product may be put, and because the manufacturer has no control over the end products fabricated, the warranty set forth above is exclusive and in lieu of all warranties, expressed or implied, in fact or by operation of law or otherwise, or arising by course of dealing or performance, custom or usage in the trade, including, without limitation, the implied warranties of fitness for a particular purpose and merchantability, and Panolam shall have no obligation or liability to any person or entity in connection with or arising from the furnishing, sale, installation or repair, use or subsequent sale of any product supplied by it.

Our maximum liability arising out of the sale of the products or their use, whether based upon warranty, contract, tort or otherwise, shall not exceed the actual payments received by us in connection therewith.
In no event shall we be liable for special, incidental or consequential damages, including, but not limited to, arising hereunder or from the loss of profits, or loss of use damages, sales of the products.

Headquarters

Panolam Industries International, Inc.
2 Corporate Drive, Suite 946
Shelton, CT 06484
1-877-726-6526
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5/2024

SAFETY DATA SHEET

SECTION I - PRODUCT AND COMPANY IDENTIFICATION

Product: **Pionite High Pressure Laminate**

Recommended Use: Used as a decorative surface for building applications

Manufacturer Information:
Pioneer Plastics Corporation
1 Pionite Road
Auburn, ME 04211
(207) 784-9111

Emergency Contact (24 hours): CHEMTREC 1-800-424-9300

SECTION II – HAZARD IDENTIFICATION

GHS Classification:	Not applicable – Non-hazardous
GHS Signal Word	Not applicable – Non-hazardous
GHS Pictograms	Not applicable – Non-hazardous
Hazard Statement	Not applicable – Non-hazardous
Precautionary Statement	May form combustible dust concentrations in air if small particles are generated during further processing, handling or by other means.

SECTION III – COMPOSITION INFORMATION

This material does not contain regulated levels of hazardous materials.

SECTION IV – FIRST AID MEASURES

Inhalation: Material does not vaporize. If exposed to dust remove to fresh air. Get medical attention if irritation persists, or if severe coughing or breathing difficulty occurs.

Eye Contact: Flush eyes with large amounts of water. Remove to fresh air. Get medical attention if irritation persists.

Skin Contact: Wash affected areas with soap and water. Get medical attention if rash or irritation persists or dermatitis occurs.

Ingestion: Rinse mouth with water. Get medical attention if irritation persists.

Recommendations for Immediate Medical Care/Special Treatment: None known.

SECTION V – FIREFIGHTING MEASURES

Extinguishing media: Water Fog, Carbon Dioxide, Dry Chemical, Chemical Foam.

Special Hazards: May form combustible dust concentrations in air if small particles are generated during further processing, handling or by other means.

Combustion of the material can release phenols, formaldehyde and oxides of nitrogen and carbon.

Recommendations on Protective Equipment: Firefighters should use appropriate personal protective equipment including self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions/Emergency Procedures: No special precautions required.
Environmental Precautions: No special precautions required.
Clean-up Procedures: No special procedures required.

SECTION VII – HANDLING AND STORAGE

Precautions to be taken in handling and storing: Store flat if possible. Avoid excessive heat or humidity.

Incompatibility (Materials to Avoid): None Known

SECTION VIII – EXPOSURE CONTROL /PERSONAL PROTECTION

OSHA Permissible Exposure Limits: None listed.

Ventilation controls: When dust is created use local ventilation where required to maintain airborne levels below OSHA PELs

Hand protection: Gloves may be worn to prevent contact with rough laminate edges.

Eye protection: Safety glasses or goggles are recommended when machining this material.

Respiratory protection: None should be required during normal operations. When dust is generated a NIOSH approved respirator may be used when exposure levels to dust are thought to be above regulated values.

Body protection: No special precautions are required. If exposed to dust wash with soap and water to remove any material from

	the skin.
Foot protection:	Safety shoes.
General Hygiene/Safety Measures:	Wear protective clothing as necessary to prevent contact. Wash soiled clothing immediately.

SECTION IX - PHYSICAL DATA

Appearance:	Rigid, solid sheet typically with brown or black core. Various thickness and surface colors/patterns.
Odor:	Odorless
Odor Threshold:	Not applicable
pH:	Not applicable
Melting Point:	Not applicable
Boiling point:	Not applicable
Flash Point:	Not applicable
Flammability:	Not applicable
Lower Explosion Limit:	Not available
Upper Explosion Limit:	Not available
Autoignition:	>450° F
Decomposition Temperature:	Not available
Vapor pressure:	Not applicable
Specific gravity:	>1
Vapor density:	Not applicable
Partition Coefficient n-octanol/water:	Not applicable
Viscosity:	Not applicable
Solubility in water (% by weight):	Insoluble
Evaporation rate (Butyl acetate = 1):	Not applicable

SECTION X – STABILITY AND REACTIVITY

Reactivity:	Stable under normal conditions of storage and use.
Chemical Stability:	Stable under normal conditions of storage and use.
Possibility of Hazardous Reactions:	None Known.
Conditions to Avoid:	Exposure to moisture. Storage at low or high temperatures.
Incompatibility (Materials to Avoid):	None Known.
Hazardous decomposition products:	Combustion of the material can release phenols, formaldehyde and oxides of nitrogen and carbon.

SECTION XI- TOXICOLOGICAL PROPERTIES

Route of Entry: Skin contact [X] Skin absorption [ ] Eye contact [X]
Inhalation [X] Ingestion [X]

EFFECTS OF ACUTE EXPOSURE:

Inhalation:	Nuisance dust generated during machining may cause irritation of the respiratory tract.
Eye Contact:	Not considered a problem under normal use. Dust may cause irritation.
Skin Contact:	Not considered a problem under normal use. Dust may cause irritation.
Skin Absorption:	Not likely to occur.
Ingestion:	Not considered a problem under normal use. Dust may cause irritation.

Toxicity:	LD_{50}: Not available LC_{50}: Not available
Irritancy:	Not available
Sensitization:	Not available
Carcinogenicity:	Not available
Reproductive toxicity:	Not available
Teratogenicity:	Not available
Mutagenicity:	Not available
Toxicologically synergistic products:	Not available

Symptoms of Exposure: No significant reaction to the product is expected.

SECTION XII – ECOLOGICAL INFO

Toxicity:	No information available.
Biodegradation and Elimination:	Not readily biodegradable.
Bioaccumulation Potential:	No information available.
Mobility:	No information available.
Additional Information:	No additional information available.

SECTION XIII – DISPOSAL CONSIDERATIONS

Waste disposal method: This product is not considered a hazardous waste under EPA Hazardous Waste Regulations 40 CFR Part 261, however, State and local requirements for waste disposal may differ and should be reviewed.
Can be landfilled or incinerated in accordance with local, provincial, state, federal regulations.
Do not discharge substance/product into sewer system.

Container disposal Dispose of in accordance with local, provincial, state, federal regulations.

SECTION XIV – TRANSPORT INFORMATION

PIN Number	Not applicable.
TDG Shipping Name	Not applicable.
TDG Hazard Class	Not applicable.
DOT Class	Not regulated.
IATA	Not regulated.
IMDG	Not regulated.

It is the responsibility of the transporting organization to follow all applicable laws, regulations, and rules relating to the transportation of the material.

SECTION XV – REGULATORY INFORMATION

NFPA Rating:	Health: 1	Flammability: 0	Reactivity: 0
HMIS Rating:	Health: 0	Flammability: 0	Reactivity: 0

OSHA (29CFR 1910.1200): See Section II of MSDS.

TSCA: All components are listed on the TSCA Inventory.

CERCLA RQ: This product contains the following chemical(s) which have reportable quantities:

None

SARA 311/312:

Immediate (Acute) Health Hazard:	No
Delayed (Chronic) Health Hazard:	No
Fire Hazard:	No
Reactive Hazard:	No
Sudden Release of Pressure Hazard:	No

SARA 313: This product does not contain chemical(s) in concentrations which should require reporting under SARA 313.

California Prop 65: Warning: Decorative laminate products contain formaldehyde, a substance known to the State of California to cause cancer. Laminates contain small amounts of residual formaldehyde that may be released in measurable quantities when stored in bulk quantities.

SECTION XVI – OTHER INFORMATION

Revision Date: 2/11/22

DISCLAIMER:

The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state, provincial and local laws and regulations. Panolam Industries makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Panolam Industries will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.