

ENVIRONMENTAL PRODUCT DECLARATION

FORMICA® HIGH PRESSURE LAMINATE



Formica® Brand Laminate offers a broader range of looks than ever before. Transform spaces with our modern laminates that are as beautiful as they are durable. Mix and match solids, graphic patterns and finishes.

The functional unit is 1 m² (10.76 ft²) of product for a usage of 10 years.



At Formica Corporation, we continually strive to create innovative products that support sustainable design and contribute to a healthier environment. We are committed to a long-term planning horizon that includes becoming an industry-leading environmental steward.

As the inventor of high pressure laminate, Formica Corporation has always worked to provide innovative, high quality products. Efficient use of resources is at our core, and we have taken many steps to improve our environmental footprint - from reusing the water in our presses to incorporating recycled materials into our surfacing products. As part of our new sustainability approach, Formica Corporation will publish its environmental impact data every year, as well as our targets and initiatives for the coming year.



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This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



PROGRAM OPERATOR	UL Environment 333 Pfingsten Road Northbrook, IL 60611
DECLARATION HOLDER	General Program Instructions v2.5 March 2020
DECLARATION NUMBER	4789852082.101.1
DECLARED PRODUCT	Formica® Brand Laminate
REFERENCE PCR	Residential Countertops NSF 2021
REFERENCE PCR STANDARD	<input type="checkbox"/> EN 15804 (2012) <input type="checkbox"/> ISO 21930 (2007) <input checked="" type="checkbox"/> ISO 21930 (2017)
DATE OF ISSUE	10/1/2021
PERIOD OF VALIDITY	5 Years
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications
The PCR review was conducted by:	NSF International NSF PCR Review Committee ncss@nsf.org
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 James Mellentine, Thrive ESG
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	 James Mellentine, Thrive ESG

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About Formica Corporation

Formica Corporation is a leading provider of branded, designed surfacing solutions for commercial and residential customers worldwide. As the world's largest manufacturer of High Pressure Laminate (HPL), our international network of design, manufacturing, distribution and sales operations maintains the recognition of Formica® as a global brand.

The heritage and brand reputation of Formica Corporation has been founded on quality, service and innovative product lines. We have developed an unrivaled expertise that ensures products meet the needs of their applications — as well as market demands.

At Formica Corporation, we continually strive to create innovative products that support sustainable design and contribute to a healthier environment. We are committed to a long-term planning horizon that includes becoming an industry-leading environmental steward.

Working closely with architects, designers and developers, the company is strategically positioned to offer new products and surfacing solutions that complement current design trends. Our ongoing product design and development process underscores our commitment to innovation.

In addition, we provide our homeowner customers with the surfacing materials they need, whether it's laminate countertops for a kitchen renovation, a vanity top for a bathroom remodel, DIY cabinet refacing, or countless other projects.

About Formica® Brand Laminate

Product Description

Formica® Brand Laminates are comprised of paper, melamine resin impregnated surface sheets and phenolic resin impregnated core structural components. The layers are pressed under high temperatures and pressures where polymerization and consolidation takes place. There is an extra tough, scuff and mar resistant Elite Form technology that is applied to the melamine surface prior to pressing. This provides for a stain resistant, maintenance free and easy cleaning countertop.

Formica® Brand Laminates can be used for private and residential housing, hospitals and laboratories, public buildings, railway stations, airport terminals/infrastructure, transportation, hotels, education, retail and commercial buildings, sport & recreation centers and industrial buildings. The performance properties of Formica® Brand Laminates make them suitable for use in a wide variety of interior applications such as: wall cladding, railing infill panels, furniture, tables, desks, column cladding and lab equipment, cubicles, ceilings, window sills, worktops, counter tops, wash basins, etc.

Fabricators including postforming shops apply the HPL to the surface of particleboard to make countertops using Contact or PVA adhesives. Options include various edge profiles, backsplashes, undermount or top mount drop-in sinks, hundreds of Formica® designs and many finishes. Countertops are cut to size and used in commercial and residential kitchens, break rooms, bars and restaurants.

In residential application, Formica® Brand Laminates are offered notably for thicknesses of 0.9 mm (0.035") and 0.7mm (0.027"). Assembled to a particleboard they can be used to manufacture countertops.

This study refers to countertops made from a 0.035"/0.027" average Formica® Brand Laminate bonded to a particleboard. The final countertop is 19.05mm (3/4") thick, and includes front edge and backsplash. The area weights are respectively 14.71 kg/m² for countertops with 0.035" HPL and 14.54 kg/m² for the ones with 0.027" HPL.

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Product Characteristics and performance

Formica® Brand Laminate products conform to the following characteristics:

- NSF/ANSI 35 High Pressure Decorative Laminates for Food Surfacing Equipment
- Greenguard Gold UL 2818 - 2013 Chemical Emissions for Building Materials, Finishes and Furnishings
- FSC Forest Stewardship Council®
- ANSI / NEMA STANDARDS PUBLICATION — LD3- 2005

Characteristic	Nominal value	Unit
Primary material thickness (Formica®)	0.7-0.9 (0.027-0.035)	mm (inch)
Final countertop thickness	19 (0.75)	mm (inch)
Countertop length	2,286 (7.5)	mm (feet)
Countertop width	648 (25.5)	mm (inch)
Countertop weight	14.5-14.7 (47.7-48.2)	kg/m ² (lb/ft ²)
Countertop density	743 (46)	kg/m ³ (lb/ft ³)
Use rating	Residential/Commercial	
Substrate type	Particleboard	
VOC emissions test method	CDPH Standard Method V1.2-2017	

Table 1: Product characteristics for countertops made from Formica® Brand Laminate.

Additional characteristics	Nominal value	Test Method
Appearance	Pass	ANSI/NEMA LD 3, 3.1 Appearance
Surface finish	Variable	ANSI/NEMA LD 3, 3.2 Surface Finish
Light resistance rating	Variable	ANSI/NEMA LD 3, 3.3 Light Resistance
Cleanability rating	Pass	ANSI/NEMA LD 3, 3.4 Cleanability
Stain rating	Pass	ANSI/NEMA LD 3, 3.4 Stain 1-10 ANSI/NEMA LD 3, 3.4 Stain 11-15
Boiling water resistance rating	Pass	ANSI/NEMA LD 3, 3.5 Boiling Water Resistance
High temperature resistance rating	Pass	ANSI/NEMA LD 3, 3.6 High Temperature Resistance
Scratch resistance	Pass	ANSI/NEMA LD 3, 3.7 Scratch Resistance
Ball impact resistance	Pass	ANSI/NEMA LD 3, 3.8 Ball Impact Resistance (mm or inch)
Dart impact resistance	Pass	ANSI/NEMA LD 3, 3.9 Dart Impact Resistance (mm or inch)
Radiant heat resistance	Pass	ANSI/NEMA LD 3, 3.10 Radiant Heat Resistance (Coil and Strip Methods) (sec.)
Dimension change	Pass	ANSI/NEMA LD 3, 3.11 Dimensional Change (%)
Room temperature dimensional stability	Pass	ANSI/NEMA LD 3, 3.12 Room Temperature Dimensional Stability (%)
Wear resistance	Pass	ANSI/NEMA LD 3, 3.13 Wear Resistance (cycles)
Other characteristics	GREENGUARD and GREENGUARD gold certification	

Table 2: Product performance results for Formica® Brand Laminate.

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Material composition

Formica® Brand Laminates are comprised of paper, melamine resin impregnated surface sheets and phenolic resin impregnated core structural components. The layers are pressed under high temperatures and pressures where polymerization and consolidation takes place.

Fabricators including postforming shops apply the HPL to the surface of particleboard to make countertops using adhesives. Ingredients of the final countertops are summarized in Table 3.

Material	0.035" Formica® Brand Laminates		0.027" Formica® Brand Laminates		Material Resources Type
	Amount in final product (kg/m ²)	Percent of Total (%)	Amount in final product (kg/m ²)	Percent of Total (%)	
Formica® Laminate					
Paper	0.71	5%	0.47	3%	Virgin renewable
Recycled paper	0.22	1%	0.22	1.5%	Recycled
Resin	0.30	2%	0.22	1.5%	Virgin non-renewable
Total	1.23	8%	0.91	6%	
Substrate					
Particleboard	12.23	83%	12.37	85%	Virgin renewable
Particleboard	1.25	8%	1.26	9%	Virgin non-renewable
Total	13.48	92%	13.63	94%	
Countertop					
Total	14.71	100%	14.54	100%	

Table 3: Material composition of countertops made from Formica® Brand Laminate in kilograms per functional unit and in percentage of total weight.

Countertops production

Formica® Brand Laminate products sold in North America are produced at the facilities located in the US, and in Canada. The production is weighted based on volumes from each plant for 2019. At each facility, raw materials are mixed, impregnated, cut into sheets and pressed together to form the HPLs. The sheets are then trimmed to size and sanded before being packaged for distribution.

The following study also includes data for the substrate, based on the EPD for particleboard from Roseburg Forest Products published in 2018.

Underlying Life Cycle Assessment

A cradle-to-grave life cycle assessment (LCA) was completed for this product in accordance to ISO 14040, ISO14044 and the NSF Product Category Rules for Environmental Product Declaration: *PCR for Residential Countertops*. The analysis represents the average environmental performance of Formica® Brand Laminate bonded to a particleboard substrate. The diagram below illustrates the life cycle stages included in this EPD.



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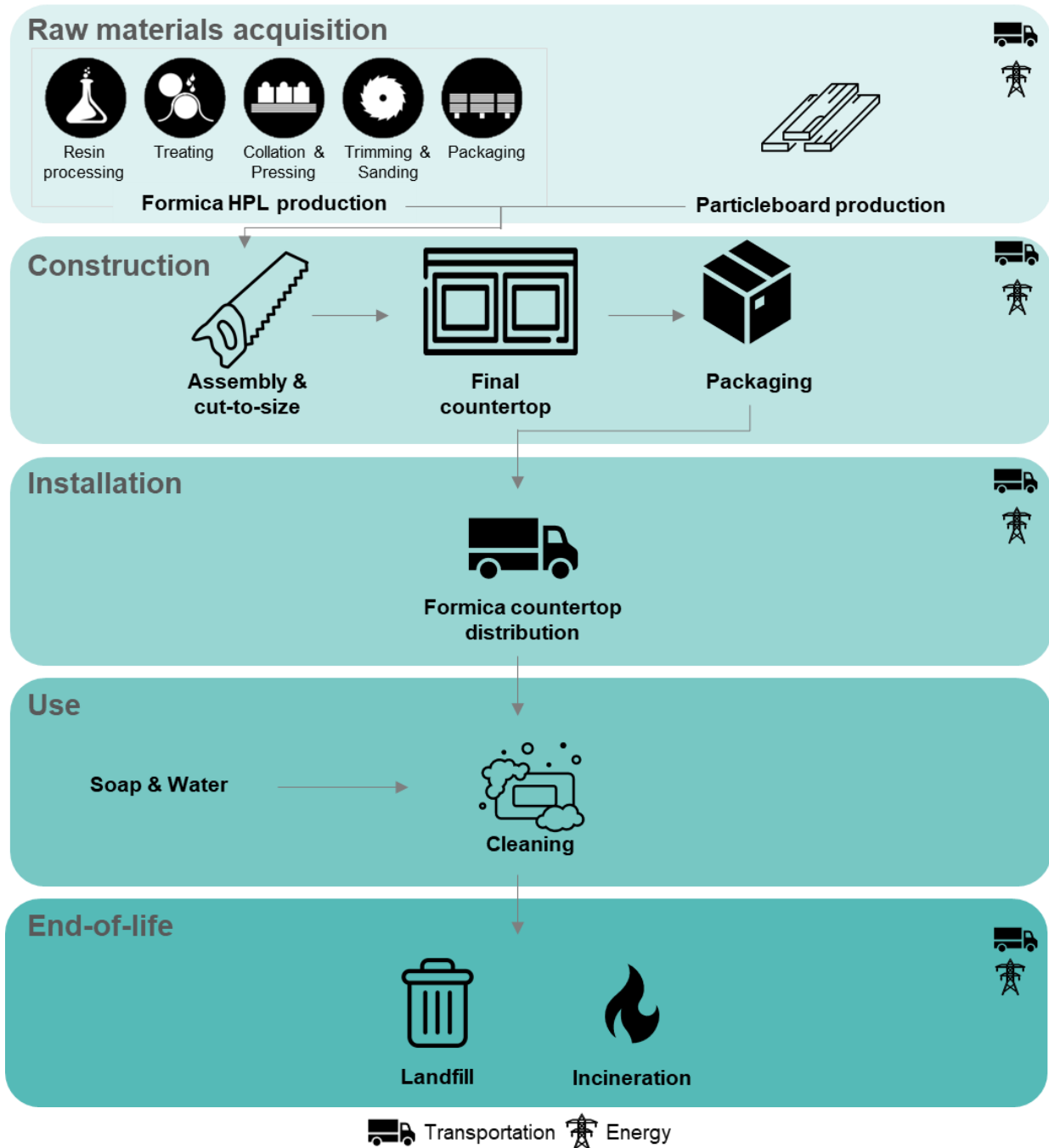


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Product life cycle flow

The diagram below represents the most significant stages in the life cycle of countertops made from Formica® Brand Laminate. This includes materials acquisition and pre-processing, construction, installation, use and end-of-life.



Transportation Energy

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Life cycle inventory

Formica® Brand Laminates are offered notably for thicknesses of 0.9 mm (0.035") and 0.7mm (0.027"). The life cycle inventory (LCI) flows for the EPD are shown in Table 4 and 5 in accordance with the requirements of the PCR.

0.035" Formica® Brand Laminates

Impact Category	Total	Material Acquisition & Pre-Processing	Construction	Installation	Use	End-of-life
Emissions to air (kg)						
Sulfur oxides (SO _x)	1.17x10⁻⁴	1.47 x10 ⁻⁵	8.10x10 ⁻⁵	3.83x10 ⁻⁶	1.55x10 ⁻⁶	1.62x10 ⁻⁵
Sulfur dioxide (SO ₂)	4.92 x10⁻²	1.69x10 ⁻²	1.00x10 ⁻²	9.98x10 ⁻³	1.16x10 ⁻³	1.12x10 ⁻²
Nitrogen oxides (NO _x)	5.63x10⁻²	2.36x10 ⁻²	8.39x10 ⁻³	1.55x10 ⁻²	1.56x10 ⁻³	7.22x10 ⁻³
Carbon dioxide, fossil (CO ₂)	2.20x10¹	6.07	3.11	4.84	3.53x10 ⁻¹	7.59
Carbon dioxide, biogenic (CO ₂)	7.05	3.29	6.84x10 ⁻¹	1.44x10 ⁻¹	1.11	1.83
Methane (CH ₄)	2.89x10⁻⁵	-4.95x10 ⁻⁶	9.10x10 ⁻⁹	3.38x10 ⁻⁵	3.12x10 ⁻⁹	3.94x10 ⁻⁹
Dinitrogen monoxide (N ₂ O)	1.99x10⁻³	2.65x10 ⁻⁴	1.16x10 ⁻³	1.43x10 ⁻⁴	2.24x10 ⁻⁴	2.07x10 ⁻⁴
Carbon monoxide, fossil (CO)	1.83x10⁻¹	1.35x10 ⁻²	1.51x10 ⁻²	4.79x10 ⁻³	9.56x10 ⁻⁴	1.49x10 ⁻¹
Carbon monoxide, biogenic (CO)	9.08x10⁻³	6.29x10 ⁻³	8,31x10 ⁻⁴	1,81x10 ⁻⁴	7,15x10 ⁻⁴	1,06x10 ⁻³
Water usage and emissions to water (kg)						
Phosphates	3.59x10⁻²	5.22x10 ⁻³	3.97x10 ⁻³	9.28x10 ⁻³	8.69x10 ⁻³	8.77x10 ⁻³
Nitrates	6.84x10⁻²	4.13x10 ⁻³	9.49x10 ⁻³	3.12x10 ⁻³	1.58x10 ⁻²	3.59x10 ⁻²
Dioxin	3.82x10⁻¹⁷	1.56x10 ⁻¹⁷	7.31x10 ⁻¹⁸	1.99x10 ⁻¹⁸	2.14x10 ⁻¹⁸	1.12x10 ⁻¹⁷
Arsenic	6.19x10⁻⁵	1.32x10 ⁻⁵	1.35x10 ⁻⁵	1.47x10 ⁻⁵	1.39x10 ⁻⁶	1.91x10 ⁻⁵
Cadmium	1.58x10⁻⁴	6.11x10 ⁻⁶	9.22x10 ⁻⁶	2.69x10 ⁻⁶	8.81x10 ⁻⁷	1.39x10 ⁻⁴
Chromium	1.84x10⁻⁵	9.43x10 ⁻⁶	6.87x10 ⁻⁶	1.24x10 ⁻⁶	6.61x10 ⁻⁷	1.64x10 ⁻⁷
Lead	8.66x10⁻³	2.31x10 ⁻³	3.12x10 ⁻⁴	4.08x10 ⁻⁵	2.42x10 ⁻⁵	5.97x10 ⁻³
Mercury	2.03x10⁻⁵	7.48x10 ⁻⁷	1.28x10 ⁻⁶	7.98x10 ⁻⁷	8.05x10 ⁻⁸	1.74x10 ⁻⁵
Water input	6.48x10¹	1.95x10 ¹	1.77x10 ¹	1.72x10 ¹	2.59	7.73
Water consumption	5.58x10¹	5.54x10 ¹	7.90x10 ⁻²	2.45x10 ⁻²	2.65x10 ⁻¹	3.22x10 ⁻²

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Energy types and usage (MJ)						
Total Non-renewable	4.92x10²	2.90x10 ²	5.96x10 ¹	1.04x10 ²	4.76	3.39x10 ¹
Non renewable, fossil	4.53x10²	2.76x10 ²	5.41x10 ¹	8.69x10 ¹	4.00	3.19x10 ¹
Non-renewable, nuclear	3.93x10¹	1.37x10 ¹	5.56	1.74x10 ¹	7.63x10 ⁻¹	1.94
Total Renewable	1.93x10²	1.72x10 ²	1.17x10 ¹	2.97	4.66	1.69
Renewable, biomass	9.18x10¹	7.31x10 ¹	1.12x10 ¹	1.41	4.59	1.44
Renewable, wind, solar, geothermal	1.01x10²	9.88x10 ¹	5.01x10 ⁻¹	1.56	7.58x10 ⁻²	2.44x10 ⁻¹
Waste management (kg)						
Incineration with energy recovery	N/A	N/A	N/A	N/A	N/A	N/A
Incineration without energy recovery	3.03	N/A	8.33x10 ⁻²	N/A	N/A	2.94
Landfill (non-hazardous waste)	1.29x10¹	7.62x10 ⁻¹	3.61x10 ⁻¹	N/A	N/A	1.18x10 ¹
Hazardous waste	3.61x10⁻²	3.61x10 ⁻²	N/A	N/A	N/A	N/A
Landfill avoidance (recycling)	2.68x10⁻²	2.68x10 ⁻²	N/A	N/A	N/A	N/A

Table 4: Life cycle inventory flows results for 1m² of countertops made from 0.035" Formica® Brand Laminate including the substrate, front-edge and backsplash, for a period of 10 years.

0.027" Formica® Brand Laminates

Impact Category	Total	Material Acquisition & Pre-Processing	Construction	Installation	Use	End-of-life
Emissions to air (kg)						
Sulfur oxides (SO _x)	1.14x10⁻⁴	1.15x10 ⁻⁵	8.10x10 ⁻⁵	3.80x10 ⁻⁶	1.55x10 ⁻⁶	1.60x10 ⁻⁵
Sulfur dioxide (SO ₂)	4.52x10⁻²	1.29x10 ⁻²	1.00x10 ⁻²	9.95x10 ⁻³	1.16x10 ⁻³	1.11x10 ⁻²
Nitrogen oxides (NO _x)	5.22x10⁻²	1.97x10 ⁻²	8.39x10 ⁻³	1.54x10 ⁻²	1.56x10 ⁻³	7.14x10 ⁻³
Carbon dioxide, fossil (CO ₂)	2.06x10	4.78	3.12	4.83	3.53x10 ⁻¹	7.50
Carbon dioxide, biogenic (CO ₂)	6.18	2.44	6.84x10 ⁻¹	1.44x10 ⁻¹	1.11	1.81
Methane (CH ₄)	3.02x10⁻⁵	-3.67x10 ⁻⁶	9.11x10 ⁻⁹	3.38x10 ⁻⁵	3.12x10 ⁻⁹	3.89x10 ⁻⁹

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Dinitrogen monoxide (N ₂ O)	1.93x10⁻³	2.02x10 ⁻⁴	1.16x10 ⁻³	1.42x10 ⁻⁴	2.24x10 ⁻⁴	2.05x10 ⁻⁴
Carbon monoxide, fossil (CO)	1.79x10⁻¹	1.07x10 ⁻²	1.51x10 ⁻²	4.75x10 ⁻³	9.56x10 ⁻⁴	1.47x10 ⁻¹
Carbon monoxide, biogenic (CO)	7.45x10⁻³	4.68x10 ⁻³	8.31x10 ⁻⁴	1.80x10 ⁻⁴	7.15x10 ⁻⁴	1.05x10 ⁻³
Water usage and emissions to water (kg)						
Phosphates	3.46x10⁻²	3.96x10 ⁻³	3.97x10 ⁻³	9.28x10 ⁻³	8.69x10 ⁻³	8.67x10 ⁻³
Nitrates	6.70x10⁻²	3.10x10 ⁻³	9.49x10 ⁻³	3.12x10 ⁻³	1.58x10 ⁻²	3.55x10 ⁻²
Dioxin	3.42x10⁻¹⁷	1.18x10 ⁻¹⁷	7.31x10 ⁻¹⁸	1.98x10 ⁻¹⁸	2.14x10 ⁻¹⁸	1.10x10 ⁻¹⁷
Arsenic	5.85x10⁻⁵	1.00x10 ⁻⁵	1.35x10 ⁻⁵	1.47x10 ⁻⁵	1.39x10 ⁻⁶	1.89x10 ⁻⁵
Cadmium	1.55x10⁻⁴	4.63x10 ⁻⁶	9.23x10 ⁻⁶	2.68x10 ⁻⁶	8.81x10 ⁻⁷	1.38x10 ⁻⁴
Chromium	1.60x10⁻⁵	7.02x10 ⁻⁶	6.87x10 ⁻⁶	1.24x10 ⁻⁶	6.61x10 ⁻⁷	1.62x10 ⁻⁷
Lead	8.00x10⁻³	1.72x10 ⁻³	3.13x10 ⁻⁴	4.07x10 ⁻⁵	2.42x10 ⁻⁵	5.90x10 ⁻³
Mercury	2.00x10⁻⁵	5.66x10 ⁻⁷	1.28x10 ⁻⁶	7.97x10 ⁻⁷	8.05x10 ⁻⁸	1.72x10 ⁻⁵
Water input	5.99x10	1.47x10	1.77x10	1.72x10	2.59	7.64
Water consumption	5.64x10¹	5.60x10 ¹	7.90x10 ⁻²	2.45x10 ⁻²	2.65x10 ⁻¹	3.18x10 ⁻²
Energy types and usage (MJ)						
Total Non-renewable	4.66x10²	2.64x10 ²	5.96x10	1.04x10 ²	4.76	3.35x10
Non renewable, fossil	4.28x10²	2.52x10 ²	5.41x10	8.66x10	4.00	3.16x10
Non-renewable, nuclear	3.78x10	1.22x10	5.56	1.74x10	7.63x10 ⁻¹	1.92
Total Renewable	1.77x10²	1.56x10 ²	1.17x10	2.97	4.66	1.67
Renewable, biomass	7.46x10	5.60x10	1.12x10	1.41	4.59	1.43
Renewable, wind, solar, geothermal	1.02x10²	9.97x10	5.01x10 ⁻¹	1.56	7.58x10 ⁻²	2.42x10 ⁻¹
Waste management (kg)						
Incineration with energy recovery	N/A	N/A	N/A	N/A	N/A	N/A
Incineration without energy recovery	2.99	N/A	8.36x10 ⁻²	N/A	N/A	2.91
Landfill (non-hazardous waste)	1.27x10	6.68x10 ⁻¹	3.62x10 ⁻¹	N/A	N/A	1.16x10
Hazardous waste	2.68x10⁻²	2.68x10 ⁻²	N/A	N/A	N/A	N/A

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Landfill avoidance (recycling)	1,99x10⁻²	1,99x10 ⁻²	N/A	N/A	N/A	N/A
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Table 5: Life cycle inventory flows results for 1m² of countertops made from 0.027” Formica® Brand Laminate including the substrate, front-edge and backsplash, for a period of 10 years.

Life Cycle impact assessment

The life cycle impact assessment (LCIA) for the EPD is conducted in accordance with the requirements of the PCR. All impact category indicators are estimated using TRACI 2.1, with the exception of global warming potential which uses Intergovernmental Panel on Climate Change (IPCC) fifth assessment report (AR5) characterization factors and biogenic carbon which is estimated using EN 15804+A2 methodology. The LCIA results are calculated using Simapro 9.1 software. Results are rounded to three significant figures.

Formica® Brand Laminates are offered notably for thicknesses of 0.9 mm (0.035”) and 0.7mm (0.027”). The Life Cycle impact assessment results for these thicknesses are presented in Table 6 and 7.

0.035” Formica® Brand Laminates

Impact Category	Units	Total	Material Acquisition & Pre-Processing	Construction	Installation	Use	End-of-life
Global Warming Potential	kg CO2 eq	44.9	18.1	4.09	6.65	0.994	15.1
Biogenic carbon	kg CO2 eq	-16.2	-27.0	0.0316	0.0186	0.178	10.6
Acidification potential	kg SO2 eq	0.151	0.0913	0.0174	0.0216	3.51x10 ⁻³	0.0175
Photochemical ozone creation potential	kg O3 eq	1.46	0.601	0.250	0.388	0.0415	0.182
Eutrophication potential	kg N eq	1.42	1.24	0.0166	0.0247	0.0309	0.103
Ozone depletion potential	kg CFC-11 eq	3.58 x10⁻⁶	1.29 x10 ⁻⁶	5.52 x10 ⁻⁷	1.01 x10 ⁻⁶	8.81 x10 ⁻⁸	6.37 x10 ⁻⁷

Table 6: LCIA results for 1m² of countertops made from 0.035” Formica® Brand Laminate including the substrate, front-edge and backsplash, for a period of 10 years.

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0.027" Formica® Brand Laminates

Impact Category	Units	Total	Material Acquisition & Pre-Processing	Construction	Installation	Use	End-of-life
Global Warming Potential	kg CO2 eq	43.1	16.5	4.09	6.63	0.994	14.9
Biogenic carbon	kg CO2 eq	-16.1	-26.8	0.0326	0.0186	0.178	10.5
Acidification potential	kg SO2 eq	0.144	0.0845	0.0174	0.0215	3.51x10 ⁻³	0.0173
Photochemical ozone creation potential	kg O3 eq	1.36	0.504	0.250	0.384	0.0415	0.179
Eutrophication potential	kg N eq	1.43	1.25	0.0166	0.0246	0.0309	0.102
Ozone depletion potential	kg CFC-11 eq	3.30 x10⁻⁶	1.02 x10 ⁻⁶	5.53 x10 ⁻⁷	1.01 x10 ⁻⁶	8.81 x10 ⁻⁸	6.29 x10 ⁻⁷

Table 7: LCIA results for 1m² of countertops made from 0.027" Formica® Brand Laminate including the substrate, front-edge and backsplash, for a period of 10 years.



Formica® Brand Laminate offers a broader range of looks than ever before. Transform spaces with our modern laminates that are as beautiful as they are durable. Mix and match solids, graphic patterns and finishes.

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Other Environmental Information



The requirements of NSF/ANSI 35 are applicable to HPDL for use as work and non-work surfaces of food service equipment on which direct contact during normal preparation or holding operations is not intended, expected, or reasonable. Applications of HPDL covered by this Standard include wait stations, service counters, and other counters used in conjunction with cutting boards or other means of preventing direct food contact with the laminate.



Formica® Brand Laminate products meet all GREENGUARD & GREENGUARD Gold requirements for indoor air quality.

The GREENGUARD Environmental Institute (GEI) Certification program helps manufacturers create, and buyers identify, products and materials that have low chemical emissions, improving the quality of air in which the products are used. The standards establish certification procedures including test methods, allowable emission levels, product sample collection, testing, as well as program application processes, toxicity limits and acceptance.



Formica® Brand Laminates contain FSC® Certified Wood (Certification code: SCS-COC-003270).

FSC is an independent, non-government, not-for-profit organization established to promote responsible forest management practices worldwide. It was created out of concern for the loss of the world's forests and failure to address deforestation. FSC forest management certification is awarded to forest managers who adopt practices that provide environmental, social and economic benefits. FSC Principles and Criteria provide a foundation for all forest management standards globally.



Formica® Brand Laminates contain up to 13% recycled content (including pre- and post-consumer) according to the ISO Standard 14021.

Pre-consumer recycled content formerly known as postindustrial content: the percentage of material in a product that is recycled from manufacturing waste. Examples include planer shavings, sawdust and trimmed materials. Rework, regrind or scrap materials capable of being reclaimed within the same process that generated them are excluded.

Post-consumer recycled content: the percentage of material in a product that is consumer waste generated by household, commercial, industrial or institutional activity.

For more information and to access all certifications and sustainability initiatives, please visit:

<https://www.formica.com/en-us/campaigns/sustainability>

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Supporting technical information

Functional unit

In accordance to the PCR the declared unit is 1 m² (10.76 ft²) of residential countertop for a period of ten (10) years in residential use. The product build-up is made from Formica® Brand Laminates 0.9mm (0.035 inches)/0.7mm (0.027 inches) assembled to a particleboard 18.15mm/18.35mm. The final countertop is 19.05mm (3/4 inches) thick and includes front edge and backsplash. The final countertop has an area weight of 14.71 kg/m² /14.54 kg/m².

Data collection for the foreground system

- **Raw Materials Acquisition:**
 - For the HPL, the foreground primary data of the manufacturing process refers to the year 2019, and represents a weighted average of the manufacturing facilities of Formica Corporation in Cincinnati, Ohio, USA and St. Jean-sur-Richelieu, Canada. Any processing of secondary materials used to produce the HPL is also included.
 - For the particleboard, the foreground data is based on the EPD of one of our stakeholder Roseburg Forest Products, published in 2018.
- **Construction:** due to the lack of primary data with North America geographical coverage, assumptions were based on primary data collected in our sister company Westag A.G, located in Germany.
- **Installation:** data from our technical services team at Formica and the EIA CBECS 2012 survey for the energy consumption of warehouses.
- **Usage & maintenance:** data from our technical services team at Formica.
- **End-of-life:** general disposition determined by US EPA in the “Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of emissions and sinks” document.
- **For all stages:** distances to the waste facility are based on the US EPA WARM model.

Allocation

- **In the foreground data:** the production of HPL occurs at the manufacturing facilities of Formica Corporation in Cincinnati, Ohio, USA and St. Jean-sur-Richelieu, Canada. The production was allocated by mass, considering the total production of the CY2019 of the two plants.
- **For waste materials:** for waste occurring at Formica, landfill was considered as the waste treatment except for the recycling of raw papers. For the waste occurring outside of Formica’s operational control, the assumption made was 80% landfill and 20% incineration.

System boundaries

According to the PCR the entire life cycle is to be covered including all industrial processes from cradle-to-grave. A description of each stage is as follows:

- **Raw material acquisition and pre-processing into a countertop pre-form:** this stage includes the extraction of materials from nature, processing required to create the raw materials used in countertop production (HPL and particleboard), and transportation of the materials to the construction stage.

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- **Countertop construction:** this stage includes processing of raw materials into the final cut-to-size countertop, auxiliary materials and energy required. This stage also includes production and inbound transport of packaging materials.
- **Installation:** this stage includes transportation from the construction facility to the retailer, storage at the retailer and from the retailer to the end-customer.
- **Use and maintenance:** use stage includes product maintenance – typically daily cleaning with tap water and soap over the 10-year timeframe. No sealing or additional maintenance is needed.
- **Maintenance and repair:** maintenance and repair of the countertop is generally insignificant so was excluded from this study.
- **Health aspects:** Formica® Brand Laminates are compliant with GreenGuard Gold standards. Roseburg particleboard fulfill the requirements of EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and California Air Resources Board (CARB) Airborne Toxic Control Measures (ATCM) 93120.
- **End of life:** the end of life stage includes the transportation to the waste facility and the waste treatment of the countertop at his end of life.

Cut-off criteria

In the assessment, all available data from production process are considered, i.e. all raw materials used, utilized thermal energy, and electric power consumption using best available LCI datasets. Thus material and energy flows contributing less than 1% of mass or energy are considered. No cut-off criteria are applied in this study.

Data quality

Inventory data quality is judged by its precision (measured, calculated or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied) and representativeness (geographical, temporal, and technological).

To cover these requirements and to ensure reliable results, first-hand manufacturing data in combination with consistent background LCA information from the Ecoinvent database 3.6. were used. The LCI datasets from the Ecoinvent database are widely distributed and used with the Simapro Software. The datasets have been used in LCA models worldwide in industrial and scientific applications in internal as well as in many critically reviewed and published studies.

Precision and completeness

- 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. All background data are sourced from Ecoinvent databases.
- Completeness: 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 Ecoinvent databases.

Consistency and reproducibility

- Consistency: To ensure data consistency, all primary data were collected with the same level of detail, while all background data were sourced from the Ecoinvent databases.
- Reproducibility: Reproducibility is supported as much as possible through the disclosure of input-output data, dataset choices, and modelling 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 modelling approaches.

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Representativeness

- Temporal: All primary data were collected for a twelve-month period (calendar year 2019). All secondary data come from the Ecoinvent database. Temporal representativeness is considered to be fair.
- Geographical: All primary and secondary data were collected specific to North America coverage whenever possible. Geographical representativeness is considered to be fair.
- Technological: All primary and secondary data were modelled to be specific to the technologies under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be good.

Software and database

The LCA model is created using the SimaPro Software (V.9.1.0.8). The Ecoinvent database (V.3.6) provides the life cycle inventory data for the raw and process materials obtained from the background system.

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