UIIBOARD®

ENVIRONMENTAL DATA SHEET



MEDIUM DENSITY FIBERBOARD (MDF)

Our MDF is a medium density fiberboard that meets California Air Resource Board (CARB) requirements as well as those of the US EPA TSCA Title VI. This product is FSC[®] (Forest Stewardchip Council[®]) certified for its chain of custody by Preferred by Nature and ECC[™] certified (Eco-Certified Composite) by the Composite Panel Association (CPA). It is made using 100% pre-consumer recycled and recovered wood fiber. Uniboard's MDF is available in a wide array of melamine colors.

VALIDATED ECO-DECLARATION

PRODUCT SPECIFICATIONS

References

Medium Density Fiberboard (MDF) laminated or not laminated

Final manufacturing location

Mont-Laurier, Quebec J9L 3W3 Sayabec, Quebec G0J 3K0 Val-d'Or, Quebec J9P 5G6 CANADA

Composition

Wood fibers, MUF resin, water, wax, scavenger and melamine-cellulose.

ATTRIBUTES

Recycled content Pre-consumer: 81.4% - 83.7% Post-consumer: 0%

Sourcing of raw materials

Data collection from suppliers has been conducted for the products components aligned with each specific environmental analysis.

Certified Wood

NC-COC-002726

Rapidly renewable materials

ENVIRONMENTAL IMPACTS

Life Cycle Assessment

Reference service life

Product's carbon footprint

Environmental Product Declaration

Industry-wide (generic) EPD, Type III, ISO 14025:2006 December 2018 to November 2023 The EPD excludes the laminated product.

INGREDIENTS AND EMISSIONS

Declaration of chemical ingredients	100 ppm
. loaidi i	HPD® version 2.3 Product Declaration® 22 to October 2025
Emissions test	-
VOC	-
Formaldehyde	≤ 0.11 ppm

Others TSCA Title VI compliant

TECHNICAL PERFORMANCES

Performance tests ANSI A208.2-2022/ASTM E84

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT

ISO 14001 Certification

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Extended Product Responsibility (Take Back Program)

Corporate Sustainability Report (CSR: GRI, ISO 26000, BNQ 21000 or others)

CERTIFICATION(S) & CONFORMITIES





Uniboard Canada Inc. is a leading North American manufacturer of engineered wood products, with installed capacity of over 660 million square feet of raw particleboard, high-density and medium-density fiberboard, of wich over 50% is converted into value-added TFL.

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MEDIUM DENSITY FIBERBOARD (MDF)



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for Building Design + Construction (BD+C)

New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouse and Distribution Centers, Hospitality and Healthcare.

LEED® v4 requirements for Interior Design + Construction (ID+C)

Commercial Interiors, Retail and Hospitality.

MATE	RIALS AND RESOURCES		PRODUCT CONTRIBUTIONS
MR	Building Product Disclosure and Optimization — Environmental Product Declaration (EPD)Option 1: Environmental Product Declaration (1 point)The product contributes to this credit due to the availability of an industry-wide (generic) EPD (Type III) and is valued as one half (1/2) of a product out of the 20 needed for the purposes of credit achievement.	Contribute	ENVIRONMENTAL IMPACTS Industry-wide (generic) Type III EPD compliant to ISO 14025:2006 The EPD excludes the laminated product.
MR	 Building Product Disclosure and Optimization Sourcing of Raw Materials Option 2: Leadership extraction practices (1 point) Requirements - Use products that meet at least one of the responsible extraction criteria: Recycled content, Wood products Certification, Bio-based materials, Extended producer responsibility. 	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 81.4% - 83.7% FSC®- Certified (When specified)
MR	 Building Product Disclosure and Optimization Material Ingredients Option 1: Material ingredients reporting (1 point) The product contributes to this credit due to the availability of Health Product Declarations[®]. They are valued as 1 whole product out of the 20 needed for the purposes of credit achievement. 	Contribute	INGREDIENTS AND EMISSIONS HPD® version 2.3 Health Product Declaration®
INDO	DR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS
EQ	 Low-Emitting Materials Option 1: Product category calculation (1-3 points) Number of points is dependent on the LEED® rating system and the number of compliant categories. For the Composite Wood category, 100% of composite wood not covered by other categories must meet the Composite Wood Evaluation. 	Does not contribute	INGREDIENTS AND EMISSIONS While the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, it is not NAF or ULEF compliant.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-04 Period of validity: 2022/08 to 2023/08 ©Copyright 2016 Vertima inc.



MEDIUM DENSITY FIBERBOARD (MDF)



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for homes

Applies to single family homes, multi-family (one to three stories), or multi-family (four to six stories). Includes homes and multifamily low-rise and multi-family mid-rise.

MATE	RIALS AND RESOURCES	PRODUCT CONTRIBUTIONS	
MR Prere- quisite	Certified Tropical Wood All wood in the building must be nontropical, reused or reclaimed, or certified by the Forest Stewardship Council, or USGBC-approved equivalent. For the purposes of this prerequisite, a tree species is considered tropical if it is grown in a location that lies between the Tropic of Cancer and the Tropic of Capricorn.	Contribute	ATTRIBUTES The product does not contain any tropical wood.
MR	Environmentally preferable products Option 2 : Environmentally preferable products (1 point) The product contains at least 25% postconsumer or 50% preconsumer content. Wood products must be Forest Stewardship Council (FSC) Certified, or USGBC- approved equivalent.	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 81.4% - 83.7% FSC®- Certified (100%) (When specified)
INDOC	OR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS
	Low-Emitting Materials (0.5-3 points)		INGREDIENTS AND EMISSIONS
EQ	At least 90% of all materials in each category must comply with the California Department of Public Health Standard Method V1.1–2010, using CA Section 01350, Appendix B, New Single-Family Residence Scenario. Composite wood products must be constructed from materials documented to have low formaldehyde emissions that meet the California Air Resources Board requirements for ultra-low-emitting formaldehyde (ULEF) resins or no-added formaldehyde based resins (NAF).	Does not contribute	The product was not tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method (CDPH) v1.1-2010. Also, while the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, it is not NAF or ULEF compliant.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-04 Period of validity: 2022/08 to 2023/08 @Copyright 2016 Vertima inc.



Uniboard®

ENVIRONMENTAL DATA SHEET



NU GREEN 2[®] PARTICLEBOARD

NU Green 2[®] Particleboard is a ULEF (Ultra-Low Emission Formaldehyde) raw particleboard. This new product is FSC[®] certified (Forest Steward Council[®]) for is chain of custody by Preferred by Nature and ECC[™] certified (Eco-Certifies Composite) by the Composite Panel Association (CPA). It is made using 100% pre-consumer recycled or recovered wook fiber. Uniboard's NU Green 2[®] Particleboard is available in a wide array of melamine colors.

VALIDATED ECO-DECLARATION

PRODUCT SPECIFICATIONS

References

NU Green 2[®] Particleboard laminated or not laminated

Final manufacturing location

Sayabec, Quebec G0J 3K0 CANADA

Composition

Wood particles, MUF resin, water, scavenger, catalyst and melamine-cellulose.

ATTRIBUTES

Recycled content Pre-consumer: 82.9% - 85.6% Post-consumer: 0 %

Sourcing of raw materials Data collection from suppliers has been conducted for the products components aligned with each specific environmental analysis.

Certified Wood NC-COC-002726

Rapidly renewable materials

Biobased materials

ENVIRONMENTAL IMPACTS

Life Cycle Assessment

Reference service life

Product's carbon footprint

Environmental Product Declaration
Industry-wide (generic) EPD,
Type III, ISO 14025:2006 December 2018
to November 2023
The EPD excludes the laminated product.

INGREDIENTS AND EMISSIONS

Declaration of chemical ingredients	100 ppm
	HPD® version 2.3 th Product Declaration® r 2022 to October 2025
Emissions test	-
VOC	-
Formaldehyde	≤ 0.04 ppm
Others Form	TSCA Title VI compliant Ultra-Low Emission aldehgyde (ULEF) Certified

TECHNICAL PERFORMANCES

Performance tests ANSI A208.1-2022/ASTM E84

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT

ISO 14001 Certification

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Extended Product Responsibility (Take Back Program)

Corporate Sustainability Report (CSR: GRI, ISO 26000, BNQ 21000 or others)

CERTIFICATION(S) & CONFORMITIES





Uniboard Canada Inc. is a leading North American manufacturer of engineered wood products, with installed capacity of over 660 million square feet of raw particleboard, high-density and medium-density fiberboard, of wich over 50% is converted into value-added TFL.

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NU GREEN 2[®] PARTICLEBOARD



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for Building Design + Construction (BD+C)

New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouse and Distribution Centers, Hospitality and Healthcare.

LEED® v4 requirements for Interior Design + Construction (ID+C)

Commercial Interiors, Retail and Hospitality.

MATE	RIALS AND RESOURCES		PRODUCT CONTRIBUTIONS
MR	Building Product Disclosure and Optimization — Environmental Product Declaration (EPD)Option 1: Environmental Product Declaration (1 point)The product contributes to this credit due to the availability of an industry-wide (generic) EPD (Type III) and is valued as one half (1/2) of a product out of the 20 needed for the purposes of credit achievement.	Contribute	ENVIRONMENTAL IMPACTS Industry-wide (generic) Type III EPD compliant to ISO 14025:2006 The EPD excludes the laminated product.
MR	 Building Product Disclosure and Optimization Sourcing of Raw Materials Option 2: Leadership extraction practices (1 point) Requirements - Use products that meet at least one of the responsible extraction criteria: Recycled content, Wood products Certification, Bio-based materials, Extended producer responsibility. 	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 83.7% - 86.5% FSC®- Certified (When specified)
MR	 Building Product Disclosure and Optimization Material Ingredients Option 1: Material ingredients reporting (1 point) The product contributes to this credit due to the availability of Health Product Declarations[®]. They are valued as 1 whole product out of the 20 needed for the purposes of credit achievement. 	Contribute	INGREDIENTS AND EMISSIONS HPD® version 2.3 Health Product Declaration®
INDOC	OR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS
EQ	 Low-Emitting Materials Option 1: Product category calculation (1-3 points) Number of points is dependent on the LEED® rating system and the number of compliant categories. For the Composite Wood category, 100% of composite wood not covered by other categories must meet the Composite Wood Evaluation. 	Contribute	INGREDIENTS AND EMISSIONS The wood composite product is ULEF certified and meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-02 Period of validity: 2022/08 to 2023/08 ©Copyright 2016 Vertima inc.



NU GREEN 2[®] PARTICLEBOARD



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for homes

Applies to single family homes, multi-family (one to three stories), or multi-family (four to six stories). Includes homes and multifamily low-rise and multi-family mid-rise.

MATE	RIALS AND RESOURCES	PRODUCT CONTRIBUTIONS	
MR Prere- quisite	Certified Tropical Wood All wood in the building must be nontropical, reused or reclaimed, or certified by the Forest Stewardship Council, or USGBC-approved equivalent. For the purposes of this prerequisite, a tree species is considered tropical if it is grown in a location that lies between the Tropic of Cancer and the Tropic of Capricorn.	Contribute	ATTRIBUTES The product does not contain any tropical wood.
MR	Environmentally preferable products Option 2 : Environmentally preferable products (1 point) The product contains at least 25% postconsumer or 50% preconsumer content. Wood products must be Forest Stewardship Council (FSC) Certified, or USGBC- approved equivalent.	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 81.4% - 83.7% FSC®- Certified (100%) (When specified)
INDO	DR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS
EQ	Low-Emitting Materials (0.5-3 points) At least 90% of all materials in each category must comply with the California Department of Public Health Standard Method V1.1–2010, using CA Section 01350, Appendix B, New Single-Family Residence Scenario. Composite wood products must be constructed from materials documented to have low formaldehyde emissions that meet the California Air Resources Board requirements for ultra-low-emitting formaldehyde (ULEF) resins or no-added formaldehyde based resins (NAF).	Does not contribute	INGREDIENTS AND EMISSIONS The product was not tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method (CDPH) v1.1-2010. However, the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, and is ULEF compliant.

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UIIBOARD®

ENVIRONMENTAL DATA SHEET



PARTICLEBOARD

Uniboard's particleboard stands out from the competition, thanks to its specially bonded, top-quality wood fibers, its smooth surface and exceptional machining ease, making it the ideal choice for commercial and residential applications. Manufactured at our state-of-the-art facilities across North America, Uniboard's particleboard is the perfect choice for designers, architects and manufacturers.

VALIDATED ECO-DECLARATION

PRODUCT SPECIFICATIONS

References Particleboard laminated or not laminated

Final manufacturing location Sayabec, Quebec G0J 3K0 Val-d'Or, Quebec J9P 5G6 CANADA

Composition Wood particles, resin, water, scavenger, catalyst, wax and melamine-cellulose.

ATTRIBUTES

Recycled content Pre-consumer: 83.7% - 86.5% Post-consumer: 0%

Sourcing of raw materials Data collection from suppliers has been conducted for the products components aligned with each specific environmental analysis.

Certified Wood	NC-COC-002726
Rapidly renewable materials	-
Biobased materials	-

ENVIRONMENTAL IMPACTS

Life Cycle Assessment

Reference service life

Product's carbon footprint

Environmental Product Declaration

Industry-wide (generic) EPD, Type III, ISO 14025:2006 December 2018 to November 2023 The EPD excludes the laminated product.

INGREDIENTS AND EMISSIONS

Declaration of	100 ppm
chemical ingredients	100 ppm

Type of declarationHPD® version 2.3Health Product Declaration®October 2022 to October 2025

Emissions test	-
VOC	-
Formaldehyde	≤ 0.09 ppm
Others	TSCA Title VI compliant

TECHNICAL PERFORMANCES

Performance tests ANSI A208.1-2022/ASTM E84

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT

ISO 14001 Certification

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Extended Product Responsibility (Take Back Program)

Corporate Sustainability Report (CSR: GRI, ISO 26000, BNQ 21000 or others)

CERTIFICATION(S) & CONFORMITIES



Uniboard Canada Inc. is a leading North American manufacturer of engineered wood products, with installed capacity of over 660 million square feet of raw particleboard, high-density and medium-density fiberboard, of wich over 50% is converted into value-added TFL.

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PARTICULBOARD



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for Building Design + Construction (BD+C)

New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouse and Distribution Centers, Hospitality and Healthcare.

LEED® v4 requirements for Interior Design + Construction (ID+C)

Commercial Interiors, Retail and Hospitality.

MATERIALS AND RESOURCES		PRODUCT CONTRIBUTIONS	
MR	Building Product Disclosure and Optimization 	Contribute	ENVIRONMENTAL IMPACTS Industry-wide (generic) Type III EPD compliant to ISO 14025:2006 The EPD excludes the laminated product.
MR	Building Product Disclosure and Optimization— Sourcing of Raw MaterialsOption 2: Leadership extraction practices (1 point)Requirements - Use products that meet at least one of the responsible extraction criteria:Recycled content, Wood products Certification, Bio-based materials, Extended producer responsibility.	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 83.7% - 86.5% FSC®- Certified (When specified)
MR	 Building Product Disclosure and Optimization Material Ingredients Option 1: Material ingredients reporting (1 point) The product contributes to this credit due to the availability of Health Product Declarations[®]. They are valued as 1 whole product out of the 20 needed for the purposes of credit achievement. 	Contribute	INGREDIENTS AND EMISSIONS HPD® version 2.3 Health Product Declaration®
INDOC	OR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS
EQ	 Low-Emitting Materials Option 1: Product category calculation (1-3 points) Number of points is dependent on the LEED® rating system and the number of compliant categories. For the Composite Wood category, 100% of composite wood not covered by other categories must meet the Composite Wood Evaluation. 	Does not contribute	INGREDIENTS AND EMISSIONS While the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, it is not NAF or ULEF compliant.

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PARTICULBOARD



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for homes

Applies to single family homes, multi-family (one to three stories), or multi-family (four to six stories). Includes homes and multifamily low-rise and multi-family mid-rise.

MATE	RIALS AND RESOURCES	PRODUCT CONTRIBUTIONS	
MR Prerequisite	Certified Tropical Wood All wood in the building must be nontropical, reused or reclaimed, or certified by the Forest Stewardship Council, or USGBC-approved equivalent. For the purposes of this prerequisite, a tree species is considered tropical if it is grown in a location that lies between the Tropic of Cancer and the Tropic of Capricorn.	Contribute	ATTRIBUTES The product does not contain any tropical wood.
MR	Environmentally preferable products Option 2 : Environmentally preferable products (1 point) The product contains at least 25% postconsumer or 50% preconsumer content. Wood products must be Forest Stewardship Council (FSC) Certified, or USGBC- approved equivalent.	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 83.7% - 86.5% FSC®- Certified (100%) (When specified)
INDOOR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS	
EQ	Low-Emitting Materials (0.5-3 points) At least 90% of all materials in each category must comply with the California Department of Public Health Standard Method V1.1–2010, using CA Section 01350, Appendix B, New Single-Family Residence Scenario. Composite wood products must be constructed from materials documented to have low formaldehyde emissions that meet the California Air Resources Board requirements for ultra-low-emitting formaldehyde (ULEF) resins or no-added formaldehyde based resins (NAF).	Does not contribute	INGREDIENTS AND EMISSIONS The product was not tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method (CDPH) v1.1-2010. Also, while the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, it is not NAF or ULEF compliant.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-04 Period of validity: 2022/08 to 2023/08 @Copyright 2016 Vertima inc.



UNIBOARD®

ENVIRONMENTAL DATA SHEET



NU GREEN MR50[®] MDF

NU Green MR50[®] MDF No Added Formaldehyde (NAF) medium density fiberboards is the most ecofriendly moisture resistant solution. This green, high-quality, versatile MDF is FSC[®] (Forest Stewardchip Council®) certified for its chain of custody by Preferred by Nature and an Eco-Certified Composite[™] (ECC) by the composite Panel Association (CPA). It contains 100% of recycled and recovered wood fiber (pre-consumer). NU Green MR50[®] MDF is available in a wide array of melamine colours.

VALIDATED ECO-DECLARATION

PRODUCT SPECIFICATIONS

References

NU Green MR50[®] Medium Density Fiberboard (MDF) laminated or not laminated

Final manufacturing location

Mont-Laurier, Quebec J9L 3W3 Sayabec, Quebec G0J 3K0 Val-d'Or, Quebec J9P 5G6 CANADA

Composition

Wood fibers, diisocyanate resin, water, wax and melamine-cellulose

ATTRIBUTES

Recycled content Pre-consumer: 89.0% - 91.5% Post-consumer: 0%

Sourcing of raw materials

Data collection from suppliers has been conducted for the products components aligned with each specific environmental analysis.

Certified Wood	NC-COC-002726

Rapidly renewable materials

ENVIRONMENTAL IMPACTS

Life Cycle Assessment

Reference service life

Product's carbon footprint

Environmental Product Declaration Industry-wide (generic) EPD,

Type III, ISO 14025:2006 December 2018 to November 2023 The EPD excludes the laminated product.

INGREDIENTS AND EMISSIONS

Declaration of chemical ingredients	100 ppm
Type of declaration	HPD [®] version 2.3
	Product Declaration [®] 022 to October 2025

Emissions test	-
VOC	-
Formaldehyde	≤ 0.04 ppm
Others	TSCA Title VI compliant No-added Formaldehyde (NAF) Certified

TECHNICAL PERFORMANCES

Performance tests ANSI A208.2-2022/ASTM E84

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT

ISO 14001 Certification

Extended Product Responsibility (Take Back Program)

Corporate Sustainability Report (CSR: GRI, ISO 26000, BNQ 21000 or others)

CERTIFICATION(S) & CONFORMITIES

TSCA





Uniboard Canada Inc. is a leading North American manufacturer of engineered wood products, with installed capacity of over 660 million square feet of raw particleboard, high-density and mediumdensity fiberboard, of wich over 50% is converted into value-added TFL.

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NU GREEN MR50[®] MDF



PRODUCT CONTRIBUTION SUMMARY

LEED[®] v4 requirements for Building Design + Construction (BD+C) New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouse and Distribution Centers, Hospitality and Healthcare. LEED[®] v4 requirements for Interior Design + Construction (ID+C) Commercial Interiors, Retail and Hospitality. MATERIALS AND RESOURCES **PRODUCT CONTRIBUTIONS Building Product Disclosure and Optimization** - Environmental Product Declaration (EPD) **ENVIRONMENTAL IMPACTS Option 1: Environmental Product Declaration (1 point)** MR Industry-wide (generic) Type III EPD Contribute compliant to ISO 14025:2006 The product contributes to this credit due to the availability of an industry-wide The EPD excludes the laminated product. (generic) EPD (Type III) and is valued as one half (1/2) of a product out of the 20 needed for the purposes of credit achievement. **Building Product Disclosure and Optimization** Sourcing of Raw Materials **ATTRIBUTES** MR **Option 2: Leadership extraction practices (1 point) Recycled Content:** Contribute Pre-consumer: 89.0% - 91.5% Requirements - Use products that meet at least one of the responsible extraction criteria: FSC®- Certified (When specified) Recycled content, Wood products Certification, Bio-based materials, Extended producer responsibility. **Building Product Disclosure and Optimization** Material Ingredients INGREDIENTS AND EMISSIONS Option 1: Material ingredients reporting (1 point) MR Contribute HPD® version 2.3 The product contributes to this credit due to the availability of Health Product Health Product Declaration® Declarations[®]. They are valued as 1 whole product out of the 20 needed for the purposes of credit achievement. INDOOR ENVIRONMENTAL QUALITY **PRODUCT CONTRIBUTIONS** Low-Emitting Materials Option 1: Product category calculation (1-3 points) INGREDIENTS AND EMISSIONS EQ Number of points is dependent on the LEED® rating system and the number The wood composite product is NAF certifi ed Contribute of compliant categories. and meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements. For the Composite Wood category, 100% of composite wood not covered by other categories must meet the Composite Wood Evaluation.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-05 Period of validity: 2022/08 to 2023/08 @Copyright 2016 Vertima inc.



NU GREEN MR50® MDF



PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for homes

Applies to single family homes, multi-family (one to three stories), or multi-family (four to six stories). Includes homes and multifamily low-rise and multi-family mid-rise.

MATE	RIALS AND RESOURCES		PRODUCT CONTRIBUTIONS
MR Prere- quisite	Certified Tropical Wood All wood in the building must be nontropical, reused or reclaimed, or certified by the Forest Stewardship Council, or USGBC-approved equivalent. For the purposes of this prerequisite, a tree species is considered tropical if it is grown in a location that lies between the Tropic of Cancer and the Tropic of Capricorn.	Contribute	ATTRIBUTES The product does not contain any tropical wood.
MR	Environmentally preferable products Option 2 : Environmentally preferable products (1 point) The product contains at least 25% postconsumer or 50% preconsumer content. Wood products must be Forest Stewardship Council (FSC) Certified, or USGBC- approved equivalent.	Contribute	ATTRIBUTES Recycled Content: Pre-consumer: 89.0% - 91.5% FSC®- Certified (100%) (When specified)
INDOOR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS	
EQ	Low-Emitting Materials (0.5-3 points) At least 90% of all materials in each category must comply with the California Department of Public Health Standard Method V1.1–2010, using CA Section 01350, Appendix B, New Single-Family Residence Scenario. Composite wood products must be constructed from materials documented to have low formaldehyde emissions that meet the California Air Resources Board requirements for ultra-low-emitting formaldehyde (ULEF) resins or no-added formaldehyde based resins (NAF).	Ne contribute pas	INGREDIENTS AND EMISSIONS The product was not tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method (CDPH) v1.1-2010. However, the wood composite product meets the TSCA Title VI and/or CARB Phase 2 formaldehyde emissions requirements, and is NAF compliant.

The data included in this Environmental Data Sheet has been provided by the client and the suppliers, who are responsible for its veracity and its integrity. Vertima follows a rigorous protocol, including an on-site audit of the factory, an audit of the manufacturer's supply chain documentation, and the analysis and validation of all supporting documents. However, Vertima cannot be held responsible for false or misleading information that may cause any loss or damage suffered, caused in all or in part, by errors and omissions relative to the collection, m compilation and/or interpretation of data. Validated Eco-Declaration: VED16-1068-05 Period of validity: 2022/08 to 2023/08 @Copyright 2016 Vertima inc.



Medium Density Fiberboard (MDF) by Uniboard Canada Inc.

Health Product Declaration v2.3 created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 31114

CLASSIFICATION: 06 42 00 Wood Paneling

PRODUCT DESCRIPTION: This HPD covers all available dimensions, thicknesses and laminate options for MDF by Uniboard®. Medium density fiberboard (MDF) is a composite panel product composed primarily of cellulosic fibers and a bonding system cured under heat and pressure.

Section 1: Summary

CONTENT INVENTORY

- Inventory Reporting Format
- Nested Materials Method
 Basic Method

Threshold Disclosed Per

Material

- O Product
- Threshold Level • 100 ppm • 1,000 ppm • Per GHS SDS • Other

Residuals/Impurities Evaluation Completed in 6 of 6 Materials

Explanation(s) provided for Residuals/Impurities? • Yes • No

Nested Method / Product Threshold

For all contents above the threshold, the	manufacturer has:
Characterized	O Yes O No
Provided weight and role.	
Screened	O Yes O No
Provided screening results using HPDC-a	approved
methods.	
Identified	O Yes 🖸 No
Provided name and CAS RN or other ider	ntifier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

NESTED MATERIAL | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY

GREENSCREEN SCORE | HAZARD TYPE

WOOD [WOOD FIBER] MELAMINE UREA FORMALDEHYDE RESIN [UNDISCLOSED LT-UNK | UNDISCLOSED BM-4 *UNDISCLOSED* BM-1 | CAN | END | SKI | MUL | MAM | GEN | AQU | EYE | PHY] WATER [WATER BM-4] MELAMINE CELLULOSE [UNDISCLOSED NoGS UNDISCLOSED LT-UNK | UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK UNDISCLOSED LT-1 | CAN | END | MAM UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED LT-1 | END | DEV | EYE | MAM | SKI UNDISCLOSED LT-UNK UNDISCLOSED BM-4] SCAVENGER [UREA LT-UNK | EYE] WAX [SLACK WAX (PETROLEUM) LT-1 | CAN | MUL | DEV]

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

VOC Content data is not applicable for this product category.

Number of Greenscreen BM-4/BM3 contents ... 4

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... LT-1, LT-P1, BM-1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

Special Conditions applied: [BiologicalMaterial]

HPD prepared using a Nested Materials Inventory with a product threshold at 100 ppm. The content inventory includes ranges to encompass both MDF with and without melamine lamiates. MDF contain materials with Special Conditions (biological material and polymers) as per the HPDC. Reporting of Biological materials was done according to HPDC Guidelines. Guidelines for reporting polymers are still under development by HPDC and the manufacturers will update the HPD accordingly once these guidelines get published. Substances present in MDF, as well as known residuals and impurities, have been disclosed at 100 ppm. More details about how residuals and impurities were considered available in the appropriate sections.

CERTIFICATIONS AND COMPLIANCE See Section 3 for additional listings.

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable

Sustainable forestry: FSC Certification - Chain of Custody (COC) Formaldehyde emissions: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Phase 2

Multi-attribute: CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1. Pre-checked for LEED v4.1 Option 1.

Third Party Verified? • Yes

PREPARER: Vertima VERIFIER: VERIFICATION #: SCREENING DATE: 2023-01-24 PUBLISHED DATE: 2023-01-24 EXPIRY DATE: 2026-01-24

No

This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- Basic Inventory method with Product-level threshold.
- Nested Material Inventory method with Product-level threshold
- Nested Material Inventory method with individual Material-level thresholds

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

PRODUCT THRESHOLD: 100	RESIDUALS AND IMPUI Yes	RITIES EVALUATIO	N COMPLETED:	MATEI Chips	RIAL TYPE: Woo	od Dust, Fiber or
ESIDUALS AND IMPURITIES	S NOTES: No residuals or impu	rities suspected to	be present in woo	d fiber.		
THER MATERIAL NOTES: W	leight percentage may vary as	this HPD covers m	ultiple products, i.e	e. with or v	without laminate	9.
WOOD FIBER					ID	: Biological Materi
HAZARD DATA SOURCE:	HPDC Special Conditions Poli	су				
%: 100.0000 Green	Screen: Not Required	RC: PreC	NANO: No	MATE	RIAL ROLE: Stru	ucture component
HAZARD TYPE	AGENCY AND LIST T	TLES	WARNINGS			
	Hazard Screening	is not applicable t	o this Special Cond	dition		
BIOLOGICAL MATERIALS	CATEGORY: Tree-based mate	rials				
INGREDIENT DESCRIPTIO	N: 9004-34-6					
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I	TES: Pre-Consumer Recycled in proverting processes of primary bagasse.	wood products. E	xamples of this cat	egory incl	lude planer shav	vings, plytrim,
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic	TES: Pre-Consumer Recycled in poverting processes of primary bagasse. provide information on allergens cides, and other potential haza	wood products. E s, hyper-accumulat rds or sources of h	xamples of this cat	egory incl	lude planer shav any toxic substa	vings, plytrim, ances during norm
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic	TES: Pre-Consumer Recycled in onverting processes of primary bagasse. rovide information on allergense bides, and other potential hazar PEHYDE %: 8.3000 - 8.5 ppm RESIDUALS All	wood products. E s, hyper-accumulat rds or sources of h	xamples of this cat	luction of	lude planer shav any toxic substa n certain biolog MATERIAL TY	vings, plytrim, ances during norm
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic MELAMINE UREA FORMALD RESIN PRODUCT THRESHOLD: 100 RESIDUALS AND IMPURITIES mpurities were present in the	TES: Pre-Consumer Recycled in ponverting processes of primary bagasse. provide information on allergene cides, and other potential hazar DEHYDE %: 8.3000 - 8.5	v wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sul os, known or poter	xamples of this cat ion of metals, proc azards which may ALUATION COMPI	Legory incluction of be found i	lude planer shav any toxic substa n certain biolog MATERIAL TY Material technical/scient	vings, plytrim, ances during norm ical materials. 'PE: Polymeric
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic RELAMINE UREA FORMALD RESIN RODUCT THRESHOLD: 100 RESIDUALS AND IMPURITIES inpurities were present in the prmaldehyde (50-00-0), melan	TES: Pre-Consumer Recycled in onverting processes of primary bagasse. rovide information on allergens sides, and other potential hazar DEHYDE %: 8.3000 - 8.5 ppm RESIDUALS AI Yes S NOTES: Supplier declared re ir products. According to Phar	v wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sul os, known or poter 3-6).	xamples of this cat tion of metals, proc azards which may ALUATION COMPI ostance list, and, b ntial residual for MU	Legory incluction of be found i	any toxic substa n certain biolog MATERIAL TY Material technical/scient prmaldehyde ba	vings, plytrim, ances during norm ical materials. 'PE: Polymeric tific knowledge, no ised, are
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic ELAMINE UREA FORMALD ESIN RODUCT THRESHOLD: 100 ESIDUALS AND IMPURITIES inpurities were present in the prmaldehyde (50-00-0), melan THER MATERIAL NOTES: W	TES: Pre-Consumer Recycled in onverting processes of primary bagasse. rovide information on allergens tides, and other potential hazar PEHYDE %: 8.3000 - 8.5 ppm RESIDUALS AI Yes S NOTES: Supplier declared re- ir products. According to Phar mine (108-78-1) and urea (57-1 /eight percentage may vary as	v wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sul os, known or poter 3-6).	xamples of this cat tion of metals, proc azards which may ALUATION COMPI ostance list, and, b ntial residual for MU	Legory incluction of be found i	any toxic substa n certain biolog MATERIAL TY Material technical/scient prmaldehyde ba	vings, plytrim, ances during norm ical materials. 'PE: Polymeric tific knowledge, no used, are e, this material has
MATERIAL CONTENT NOT from manufacturing and co sawdust, fines, chips and I This disclosure does not p metabolic activities, pestic MELAMINE UREA FORMALD RESIN PRODUCT THRESHOLD: 100 RESIDUALS AND IMPURITIES mpurities were present in the ormaldehyde (50-00-0), melar DTHER MATERIAL NOTES: W nultiple recipies. The compose	TES: Pre-Consumer Recycled in onverting processes of primary bagasse. rovide information on allergens sides, and other potential hazar PEHYDE %: 8.3000 - 8.5 ppm RESIDUALS All Yes S NOTES: Supplier declared re- ir products. According to Phar- mine (108-78-1) and urea (57-1 /eight percentage may vary as	wood products. E s, hyper-accumulat rds or sources of ha 5000 ND IMPURITIES EV siduals listed in sul os, known or poter 3-6). this HPD covers m ntial.	xamples of this cat tion of metals, proc azards which may ALUATION COMPI ostance list, and, b ntial residual for MU ultiple products, i.e	Legory incluction of be found i LeTED:	any toxic substa n certain biolog MATERIAL TY Material technical/scient ormaldehyde ba without laminate	vings, plytrim, ances during norm ical materials. 'PE: Polymeric tific knowledge, no used, are

LIST NAME AND SOURCE	WARNINGS
EC - CEPA DSL	Persistent
LIST NAME AND SOURCE	NOTIFICATION
Perkins+Will (P+W)	P&W - Precautionary List
	Precautionary list of substances recommended for avoidance
International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
	Red List substances to avoid in Living Building
	EC - CEPA DSL LIST NAME AND SOURCE Perkins+Will (P+W)

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of different MUF resin and to keep exact product recipes confidential.

UNDISCLOSED				ID: (Jndisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:05:15	
%: 31.0000 - 36.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE: Dil	uent
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Priority H	azard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Cor (EU EC)	nmission	EU - REACH Exe	emptions	
			Exempted from safety	REACH Annex IV listing due to	o intrinsic

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of different MUF resin and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:05:16
%: Impurity/Residual	GreenScreen: BM-1	RC: None	NANO: No	SUBSTANCE ROLE: Impurity/Residual
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	US CDC - Occupational Carcino	gens	Occupational Ca	arcinogen
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
CAN	EU - REACH Annex XVII CMRs		•	egory 2 - Substances which should be ney are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate	egory 1B - Presumed Carcinogen based nce
SKI	МАК		Sensitizing Sub	stance Sh - Danger of skin sensitization

MUL	ChemSec - SIN List	CMR - Carcinogen, Mutagen &/or Reproductive Toxicant
MUL	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters
CAN	US EPA - IRIS Carcinogens	(1986) Group B1 - Probable human Carcinogen
CAN	IARC	Group 1 - Agent is Carcinogenic to humans
CAN	CA EPA - Prop 65	Carcinogen
CAN	US NIH - Report on Carcinogens	Known to be a human Carcinogen
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
МАМ	US EPA - EPCRA Extremely Hazardous Substances	Extremely Hazardous Substances
CAN	GHS - Japan	H350 - May cause cancer [Carcinogenicity - Category 1A]
CAN	GHS - Australia	H350i - May cause cancer by inhalation [Carcinogenicity - Category 1A or 1B]
CAN	GHS - Korea	H350 - May cause cancer [Carcinogenicity - Category 1]
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H350 - May cause cancer [Carcinogenicity - Category 1A or 1B]
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
MAM	EU - GHS (H-Statements) Annex 6 Table 3-1	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
МАМ	EU - GHS (H-Statements) Annex 6 Table 3-1	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
MAM	EU - GHS (H-Statements) Annex 6 Table 3-1	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
GEN	EU - GHS (H-Statements) Annex 6 Table 3-1	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
GEN	GHS - Japan	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Australia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - Korea	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1]
AQU	GHS - Japan	H401 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]

МАМ	GHS - Korea	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
GEN	EU - Annex VI CMRs	Mutagen - Category 2
МАМ	GHS - Japan	H311 - Toxic in contact with skin [Acute Toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H300 - Fatal if swallowed [Acute toxicity (oral) - Category 1 or 2]
МАМ	GHS - Malaysia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
SKI	GHS - Malaysia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
EYE	GHS - Malaysia	H318 - Causes serious eye damage [Serious eye damage/eye irritation - Category 1]
МАМ	GHS - Australia	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	GHS - Australia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 2]
РНҮ	GHS - Korea	H220 - Extremely flammable gas [Flammable gases - Category 1]
РНҮ	Québec CSST - WHMIS 1988	Class B1 - Flammable gases
МАМ	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: gas) - Category 2]
РНҮ	GHS - Japan	H220 - Extremely flammable gas [Flammable gases - Category 1]
CAN	GHS - Malaysia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
AQU	GHS - Australia	H401 - Aquatic Acute 2 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Footwear, Apparel & Jewelry Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Antimicrobials
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary.

WATER

%: 4.9000 - 5.0000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: No MATERIAL TYPE: Other: Natural resource

RESIDUALS AND IMPURITIES NOTES: No data collected regarding this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate. Standard water is used (municipal).

%: 100.0000 GreenScreen: BM-4 RC: None NANO: No SUBSTANCE ROLE: Humed to the second se	
None found No warnings found on HPD Priority Haza ADDITIONAL LISTINGS LIST NAME AND SOURCE NOTIFICATION EXEMPT European Union / European Commission (EU EC) EU - REACH Exemptions Exempted from REACH Annex IV listing due to interpreted from R	rd List
ADDITIONAL LISTINGS LIST NAME AND SOURCE NOTIFICATION EXEMPT European Union / European Commission (EU EC) EU - REACH Exemptions Exempted from REACH Annex IV listing due to interview of the second se	rd List
EXEMPT European Union / European Commission (EU EC) Exempted from REACH Annex IV listing due to interview of the second s	
(EU EC) Exempted from REACH Annex IV listing due to interview of the second sec	
Exempted from REACH Annex IV listing due to int	
	trinsic
SUBSTANCE NOTES: See materials notes for details.	

MELAMINE CELLULOSE

%: 0.0000 - 2.8000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities are below the reporting threshold.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers. The composition of this material is confidential.

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:05:15	
%: 0.0000 - 65.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE:	Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Pri	ority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List ective April 1, 2022	of Materials &
			Red List substar Challenge V4.0 p	nces to avoid in Living E projects	Building

UNDISCLOSED

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:05:17
%: 0.0000 - 65.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
	EC - CEPA DSL		Persistent	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substa Challenge V4.0	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:05:15	
%: 21.0000 - 55.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROI	LE: Carrier
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Pri	ority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Con	nmission	EU - REACH Exe	emptions	
	(EU EC)		Exempted from safety	REACH Annex IV listing	due to intrinsic

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:05:16
%: 0.0000 - 35.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - New Zealand		Skin sensitisatio	n category 1

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:05:16
%: 0.0000 - 35.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard List
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	nary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building

UNDISCLOSED				П	D: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCI	REENING DATE:	2023-01-24 9:05:17	
%: 0.0000 - 25.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE:	Opacifier

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	US CDC - Occupational Carcinogens	Occupational Carcinogen
CAN	CA EPA - Prop 65	Carcinogen - specific to chemical form or exposure route
CAN	IARC	Group 2B - Possibly carcinogenic to humans - inhaled from occupational sources
CAN	МАК	Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
CAN	GHS - Japan	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
POSITIVE LIST	US Environmental Protection Agency (US EPA)	US EPA - DfE Safer Chemicals Ingredients list (SCIL)
		Colorants - Green Circle (Verified Low Concern)
	tance is undisclosed as it is proprietary. Weight and to keep exact product recipes confidentia	interval is used to account for the use of melamine
UNDISCLOSED		ID: Undisclosed
HAZARD DATA SOURCE: Pharo	s Chemical and Materials Library HAZARD S	CREENING DATE: 2023-01-24 9:05:18
%: 0.0000 - 15.0000	GreenScreen: BM-4 RC: None	NANO: No SUBSTANCE ROLE: Solvent
HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Commission (EU EC)	EU - REACH Exemptions

Exempted from REACH Annex IV listing due to intrinsic

safety

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:05:18
%: 0.0000 - 3.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Plasticizer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
EYE	GHS - New Zealand		Eye irritation cat	egory 2
MAM	GHS - New Zealand		Acute inhalation	toxicity category 3
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	ses of Problematic Chemicals
			Bisphenols and	Phthalates
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	ses of Problematic Chemicals
			Some Solvents	
RESTRICTED LIST	International Living Future Instit	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCI	REENING DATE:	2023-01-24 9:05:19	
%: 0.0000 - 2.5000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	: Plasticizer

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
DEV	CA EPA - Prop 65	Developmental toxicity
DEV	US NIH - Reproductive & Developmental Monographs	Clear Evidence of Adverse Effects - Developmental Toxicity
EYE	GHS - New Zealand	Eye irritation category 2
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents

AZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:05:19
6: 0.0000 - 2.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lists
			NOTIFICATION	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE			
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		No	listings found on Additional Hazard Lists
None found	LIST NAME AND SOURCE	is proprietary		listings found on Additional Hazard Lists
None found		is proprietary		listings found on Additional Hazard Lists ID: Undisclose
None found SUBSTANCE NOTES: Tr			<i>'</i> .	
None found SUBSTANCE NOTES: Tr	is material is a polymer in the product and		<i>'</i> .	ID: Undisclose

 ADDITIONAL LISTINGS
 LIST NAME AND SOURCE
 NOTIFICATION

 EXEMPT
 European Union / European Commission (EU EC)
 EU - REACH Exemptions

 Exempted from REACH Annex IV listing due to intrinsic safety
 Exempted from REACH Annex IV listing due to intrinsic

SUBSTANCE NOTES: This material is part of the polymer and is proprietary.

SCAVENGER

%: 2.2000 - 2.3000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Animal-Based Material

RESIDUALS AND IMPURITIES NOTES: Residuals are below the reporting threshold, while there are no impurities present in this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material has multiple suppliers. This product is on the US FDA's GRAS (GENERALLY REGARDED AS SAFE) list.

JREA				ID: 57 -
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:05:18
%: 98.5000 - 100.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Scavenger
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
EYE	GHS - New Zealand		Eye irritation cat	regory 2
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Green Science Policy Institute (G	3SPI)	GSPI - Six Class	ses of Problematic Chemicals
			Antimicrobials	

WAX

%: 0.4000 - 0.5000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Suppliers declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product; however, no such tests are performed on their product. According to Pharos, known or potential residuals for slack wax (64742-61-6) is paraffin (8002-74-2) and paraffin oil (8012-95-1).

OTHER MATERIAL NOTES: Slack wax is used as water repellant. Data Source for TSCA Definition 2018: A complex combination of hydrocarbons obtained from a petroleum fraction by solvent crystallization (solvent dewaxing) or as a distillation fraction from a very waxy crude. It consists predominantly of saturated straight and branched chain hydrocarbons having carbon numbers predominantly greater than C20.

IAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:05:18
6: 100.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Water resistance
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	EU - REACH Annex XVII CMRs		-	egory 2 - Substances which should be ney are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate	egory 1B - Presumed Carcinogen base nce
MUL	ChemSec - SIN List		CMR - Carcinog Toxicant	jen, Mutagen &/or Reproductive
MUL	German FEA - Substances Haza Waters	rdous to	Class 3 - Severe	e Hazard to Waters
CAN	GHS - Australia		H350 - May cau 1A or 1B]	se cancer [Carcinogenicity - Category
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1	H350 - May cau 1A or 1B]	se cancer [Carcinogenicity - Category
DEV	GHS - Australia			ted of damaging the unborn child oxicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	

SUBSTANCE NOTES: See materials notes for details.

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Section 01350/C	CHPS) - Not applicable
CERTIFYING PARTY: Self-declared APPLICABLE FACILITIES: All facilities	ISSUE DATE: 2022-09-27 EXPIRY DATE:	CERTIFIER OR LAB: n/a
CERTIFICATE URL:		

CERTIFICATION AND COMPLIANCE NOTES: According to LEED v4, emissions and content requirements for Composite Wood are to follow the Composite Wood Evaluation which states: "Composite wood, as defined by the California Air Resources Board, Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. "

SUSTAINABLE FORESTRY	FSC Certification - Chain of Custod	y (COC)
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Uniboard Canada INc Multi- Site CERTIFICATE URL: https://info.fsc.org	ISSUE DATE: 2007-11-06 EXPIRY DATE: 2027-12-01	CERTIFIER OR LAB: Preferred by Nature
CERTIFICATION AND COMPLIANCE NOTES: Certificate	registration code NC-COC-002726, NC-C	W-002726
FORMALDEHYDE EMISSIONS	EPA TSCA Title VI (40 CFR 770), CAN/0 Composite Wood ATCM CA 93120 Pha	-
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Mont-Laurier, Quebec, Canada, J9L 3W3 CERTIFICATE URL:	ISSUE DATE: 2019-03-25 EXPIRY DATE:	CERTIFIER OR LAB: https://www.compositepanel.org/testing- certification/certification-programs/
CERTIFICATION AND COMPLIANCE NOTES: Fulfills The California Air Resources Board (CARB) Airborne Toxic Co		CFR 770), CAN/CSA-0160-16, ANSI A208.2 and
MULTI-ATTRIBUTE	CPA 4-19 Eco-Certified Composite	(ECC) - Value Added Certification
CERTIFYING PARTY: Second Party APPLICABLE FACILITIES: Mont-Laurier, Quebec, Canada, J9L 3W3 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	ISSUE DATE: 2019-01-22 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association
CEDTIEICATION AND COMPLIANCE NOTES: Carbon Ea	stariate Locally Sourced Fiber: Decycled	Papavarad or Past Consumar Fiber Contents

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or Post-Consumer Fiber Content; Sustainable Use of Wood Fiber; Responsible Wood Sourcing.

🛨 Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

All of Uniboard's product documentation and certificats are available on line at https://www.uniboard.com/en/documentation-center.

MANUFACTURER INFORMATION

MANUFACTURER: Uniboard Canada Inc. ADDRESS: 5555, Ernest Cormier Street Laval Quebec H7C 2S9, Canada WEBSITE: www.uniboard.com

CONTACT NAME: Pierre Martin TITLE: Technology and Innovation Director PHONE: 450.664.6000 EMAIL: pierre.martin@uniboard.com

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity CAN Cancer DEV Developmental toxicity END Endocrine activity EYE Eye irritation/corrosivity GEN Gene mutation GLO Global warming LAN Land toxicity MAM Mammalian/systemic/organ toxicity MUL Multiple NEU Neurotoxicity NF Not found on Priority Hazard Lists OZO Ozone depletion PBT Persistent, bioaccumulative, and toxic PHY Physical hazard (flammable or reactive) REP Reproductive RES Respiratory sensitization SKI Skin sensitization/irritation/corrosivity UNK Unknown

LT-P1 List Translator Possible 1 (Possible Benchmark-1) LT-1 List Translator 1 (Likely Benchmark-1) LT-UNK List Translator Benchmark Unknown NoGS No GreenScreen.

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content PostC Post-consumer recycled content UNK Inclusion of recycled content is unknown None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material Nested Method / Product Threshold Substances listed within each material per threshold indicated per product Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology Third Party Verified Verification by independent certifier approved by HPDC Preparer Third party preparer, if not self-prepared by manufacturer Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- a method for the assessment of exposure or risk associated with product handling or use,
- a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD standard noted.

NU Green 2® Particleboard by Uniboard Canada Inc.

HPD UNIQUE IDENTIFIER: 31112

CLASSIFICATION: 06 42 00 Wood Paneling

PRODUCT DESCRIPTION: This HPD covers all available dimensions, thicknesses and laminate options for NU Green 2® Particleboard by Uniboard®. Uniboard®. Uniboard®. Uniboard®. Uniboard® Particleboard is primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces of particles, as distinguished from fibers, bonded together with a bonding system cured under heat and pressure, and contains additives. Ultra-Low Emission Formaldehyde (ULEF) panels.

Section 1: Summary

CONTENT INVENTORY

- Inventory Reporting Format
- Nested Materials Method
 Basic Method
- _____

Threshold Disclosed Per

O Material

O Product

Residuals/Impurities Evaluation Completed in 7 of 7 Materials Explanation(s) provided for Residuals/Impurities?

• Yes O No

Nested Method / Product Threshold

For all contents above the threshold, the	e manufacturer has:
Characterized	O Yes O No
Provided weight and role.	
Screened	O Yes O No
Provided screening results using HPDC-	approved
methods.	
Identified	O Yes O No
Provided name and CAS RN or other ide	entifier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

Threshold Level

• 100 ppm

O Other

C 1,000 ppm

O Per GHS SDS

NESTED MATERIAL | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY

GREENSCREEN SCORE | HAZARD TYPE

WOOD [WOOD FIBER] MELAMINE-UREA-FORMALDEHYDE (MUF) [UNDISCLOSED LT-UNK | UNDISCLOSED BM-4 *UNDISCLOSED* BM-1 | CAN | END | SKI | MUL | MAM | GEN | AQU | EYE | PHY] WATER [WATER BM-4] MELAMINE-CELLULOSE [UNDISCLOSED NoGS UNDISCLOSED LT-UNK | UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK UNDISCLOSED LT-1 | CAN | END | MAM UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED LT-1 | END | DEV | EYE | MAM | SKI UNDISCLOSED LT-UNK UNDISCLOSED BM-4] SCAVENGER [UREA LT-UNK | EYE] WAX [SLACK WAX (PETROLEUM) LT-1 | CAN | MUL | DEV] CATALYST [AMMONIUM SULFATE LT-P1 | END]

VOLATILE ORGANIC COMPOUND (VOC) CONTENT VOC Content data is not applicable for this product category.

Number of Greenscreen BM-4/BM3 contents ... 4

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... LT-1, LT-P1, BM-1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

Special Conditions applied: [BiologicalMaterial]

HPD prepared using a Nested Materials Inventory with a product threshold at 100 ppm. The content inventory includes ranges to encompass both NU Green 2® Particleboard with and without melamine lamiates. NU Green 2® Particleboard contain materials with Special Conditions (biological material and polymers) as per the HPDC. Reporting of Biological materials was done according to HPDC Guidelines. Guidelines for reporting polymers are still under development by HPDC and the manufacturers will update the HPD accordingly once these guidelines get published. Substances present in NU Green 2® Particleboard, as well as known residuals and impurities, have been disclosed at 100 ppm. More details about how residuals and impurities were considered available in the appropriate sections.

CERTIFICATIONS AND COMPLIANCE See Section 3 for additional listings.

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable

Sustainable forestry: FSC Certification - Chain of Custody (COC) Formaldehyde emissions: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Ultra Low-Emitting Formaldehyde (ULEF)

Multi-attribute: CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1. Pre-checked for LEED v4.1 Option 1.

Health Product Declaration v2.3 created via: HPDC Online Builder

Third Party Verified?

O Yes ⊙ No PREPARER: Vertima VERIFIER: VERIFICATION #: SCREENING DATE: 2023-01-24 PUBLISHED DATE: 2023-01-24 EXPIRY DATE: 2026-01-24 This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- Basic Inventory method with Product-level threshold.
- Nested Material Inventory method with Product-level threshold
- Nested Material Inventory method with individual Material-level thresholds

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

PRODUCT THRESHOLD: 100	RESIDUALS AND IMPUR	RITIES EVALUATIO	N COMPLETED:	MATERIAL TYF Chips	PE: Wood Dust, Fiber or
RESIDUALS AND IMPURITIES N	IOTES: No residuals or impu	rities suspected to	be present in woo	d fiber.	
THER MATERIAL NOTES: Wei	ght percentage may vary as	this HPD covers m	ultiple products, i.e	. with or without la	aminate.
WOOD FIBER					ID: Biological Materi
HAZARD DATA SOURCE: HP	DC Special Conditions Poli	су			
%: 100.0000 GreenSc	creen: Not Required	RC: PreC	NANO: No	MATERIAL RO	LE: Structure component
HAZARD TYPE	AGENCY AND LIST TI	TLES	WARNINGS		
	Hazard Screening	is not applicable t	o this Special Cond	ition	
BIOLOGICAL MATERIALS CA	ATEGORY: Tree-based mate	rials			
INGREDIENT DESCRIPTION:	9004-34-6				
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov	verting processes of primary gasse.	wood products. E	xamples of this cat	egory include plar	ner shavings, plytrim,
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide	verting processes of primary gasse. vide information on allergens es, and other potential hazar	wood products. E s, hyper-accumulat rds or sources of h	xamples of this cat tion of metals, prod	egory include plar uction of any toxic	ner shavings, plytrim, c substances during norm
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide	verting processes of primary gasse. vide information on allergens es, and other potential hazar HYDE %: 7.3000 - 7.6	wood products. E s, hyper-accumulat rds or sources of h	xamples of this cat tion of metals, prod	egory include plar uction of any toxic be found in certain	ner shavings, plytrim, c substances during norm n biological materials.
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide IELAMINE-UREA-FORMALDER MUF) RODUCT THRESHOLD: 100 pp ESIDUALS AND IMPURITIES N npurities present in their product	werting processes of primary gasse. vide information on allergenses, and other potential hazar HYDE %: 7.3000 - 7.6 om RESIDUALS All Yes IOTES: Supplier declared reacts. According to Pharos, kr	v wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sul	xamples of this cat ion of metals, prod azards which may b /ALUATION COMPI	egory include plan uction of any toxic be found in certain ETED: MATEF Materia acked by technica	ner shavings, plytrim, c substances during norm n biological materials. RIAL TYPE: Polymeric al
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide MELAMINE-UREA-FORMALDER MUF) RODUCT THRESHOLD: 100 pp RESIDUALS AND IMPURITIES N npurities present in their produc 0-0), melamine (108-78-1) and u	werting processes of primary gasse. vide information on allergens es, and other potential hazar HYDE %: 7.3000 - 7.6 pm RESIDUALS All Yes IOTES: Supplier declared rest cts. According to Pharos, kr urea (57-13-6). ght percentage may vary as	wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sub nown or potential re this HPD covers m	xamples of this cat tion of metals, prod azards which may b /ALUATION COMPI ostance list, and, b esidual for MUF, Ur	egory include plar uction of any toxic be found in certain ETED: MATEF Materia acked by technica ea formaldehyde b	ner shavings, plytrim, c substances during norm n biological materials. RIAL TYPE: Polymeric al Il/scientific knowledge, no pased, are formaldehyde (
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide MELAMINE-UREA-FORMALDER MUF) PRODUCT THRESHOLD: 100 pp RESIDUALS AND IMPURITIES N mpurities present in their produc 0-0), melamine (108-78-1) and u	werting processes of primary gasse. vide information on allergens es, and other potential hazar HYDE %: 7.3000 - 7.6 pm RESIDUALS All Yes IOTES: Supplier declared rest cts. According to Pharos, kr urea (57-13-6). ght percentage may vary as	wood products. E s, hyper-accumulat rds or sources of h 5000 ND IMPURITIES EV siduals listed in sub nown or potential re this HPD covers m	xamples of this cat tion of metals, prod azards which may b /ALUATION COMPI ostance list, and, b esidual for MUF, Ur	egory include plar uction of any toxic be found in certain ETED: MATEF Materia acked by technica ea formaldehyde b	her shavings, plytrim, c substances during norm n biological materials. RIAL TYPE: Polymeric al Il/scientific knowledge, no pased, are formaldehyde (aminate, this material has
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide MELAMINE-UREA-FORMALDER MUF) PRODUCT THRESHOLD: 100 pp RESIDUALS AND IMPURITIES N mpurities present in their product 00-0), melamine (108-78-1) and u DTHER MATERIAL NOTES: Weig nultiple receipies. The composit	werting processes of primary gasse. vide information on allergens es, and other potential hazar HYDE %: 7.3000 - 7.6 om RESIDUALS All Yes IOTES: Supplier declared rest cts. According to Pharos, kr urea (57-13-6). ght percentage may vary as tion of this product is confid	wood products. E s, hyper-accumulat rds or sources of ha 5000 ND IMPURITIES EV siduals listed in sub nown or potential re this HPD covers m ential.	xamples of this cat tion of metals, prod azards which may b /ALUATION COMPI ostance list, and, b esidual for MUF, Ur	egory include plan uction of any toxic be found in certain ETED: MATEF Materia acked by technica ea formaldehyde b with or without la	her shavings, plytrim, c substances during norm n biological materials. RIAL TYPE: Polymeric al Il/scientific knowledge, no pased, are formaldehyde (aminate, this material has ID: Undisclose

LIST NAME AND SOURCE	WARNINGS
EC - CEPA DSL	Persistent
LIST NAME AND SOURCE	NOTIFICATION
Perkins+Will (P+W)	P&W - Precautionary List
	Precautionary list of substances recommended for avoidance
International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
	EC - CEPA DSL LIST NAME AND SOURCE Perkins+Will (P+W)

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of different MUF resin and to keep exact product recipes confidential.

UNDISCLOSED				II	D: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:03:32	
%: 31.0000 - 36.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE:	Diluent
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Priority	y Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Con (EU EC)	nmission	EU - REACH Exe	emptions	
			Exempted from safety	REACH Annex IV listing du	e to intrinsic

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of different MUF resin and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:03:33
%: Impurity/Residual	GreenScreen: BM-1	RC: None	NANO: No	SUBSTANCE ROLE: Impurity/Residual
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	US CDC - Occupational Carcino	gens	Occupational Ca	arcinogen
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
CAN	EU - REACH Annex XVII CMRs		•	egory 2 - Substances which should be ney are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate	egory 1B - Presumed Carcinogen based nce
SKI	МАК		Sensitizing Sub	stance Sh - Danger of skin sensitization

MUL	ChemSec - SIN List	CMR - Carcinogen, Mutagen &/or Reproductive Toxicant
MUL	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters
CAN	US EPA - IRIS Carcinogens	(1986) Group B1 - Probable human Carcinogen
CAN	IARC	Group 1 - Agent is Carcinogenic to humans
CAN	CA EPA - Prop 65	Carcinogen
CAN	US NIH - Report on Carcinogens	Known to be a human Carcinogen
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
МАМ	US EPA - EPCRA Extremely Hazardous Substances	Extremely Hazardous Substances
CAN	GHS - Japan	H350 - May cause cancer [Carcinogenicity - Category 1A]
CAN	GHS - Australia	H350i - May cause cancer by inhalation [Carcinogenicity - Category 1A or 1B]
CAN	GHS - Korea	H350 - May cause cancer [Carcinogenicity - Category 1]
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H350 - May cause cancer [Carcinogenicity - Category 1A or 1B]
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
МАМ	EU - GHS (H-Statements) Annex 6 Table 3-1	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
МАМ	EU - GHS (H-Statements) Annex 6 Table 3-1	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	EU - GHS (H-Statements) Annex 6 Table 3-1	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
GEN	EU - GHS (H-Statements) Annex 6 Table 3-1	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
GEN	GHS - Japan	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Australia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - Korea	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1]
AQU	GHS - Japan	H401 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]

МАМ	GHS - Korea	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
GEN	EU - Annex VI CMRs	Mutagen - Category 2
МАМ	GHS - Japan	H311 - Toxic in contact with skin [Acute Toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H300 - Fatal if swallowed [Acute toxicity (oral) - Category 1 or 2]
МАМ	GHS - Malaysia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
SKI	GHS - Malaysia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
EYE	GHS - Malaysia	H318 - Causes serious eye damage [Serious eye damage/eye irritation - Category 1]
МАМ	GHS - Australia	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	GHS - Australia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 2]
РНҮ	GHS - Korea	H220 - Extremely flammable gas [Flammable gases - Category 1]
РНҮ	Québec CSST - WHMIS 1988	Class B1 - Flammable gases
МАМ	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: gas) - Category 2]
РНҮ	GHS - Japan	H220 - Extremely flammable gas [Flammable gases - Category 1]
CAN	GHS - Malaysia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
AQU	GHS - Australia	H401 - Aquatic Acute 2 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Footwear, Apparel & Jewelry Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Antimicrobials
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary.

WATER

%: 5.4000 - 5.6000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: No MATERIAL TYPE: Other: Natural resource

RESIDUALS AND IMPURITIES NOTES: No data collected regarding this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate. Standard water is used (municipal).

WATER					ID: 7732-18-5
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:03:33	
%: 100.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE RC	DLE: Humectant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD I	Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Con (EU EC)	nmission	EU - REACH Exe	emptions	
			Exempted from safety	REACH Annex IV listi	ng due to intrinsic
SUBSTANCE NOTES: Se	e materials notes for details.				

MELAMINE-CELLULOSE

%: 0.0000 - 3.2000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities are below the reporting threshold.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers. The composition of this material is confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:03:32
%: 0.0000 - 65.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	o o	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:03:34
%: 0.0000 - 65.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
	EC - CEPA DSL		Persistent	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Instit	ute (ILFI)	o o	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substa Challenge V4.0	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:03:33	
%: 21.0000 - 55.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE RO	LE: Carrier
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Pr	iority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Con	nmission	EU - REACH Exe	emptions	
	(EU EC)		Exempted from safety	REACH Annex IV listing	g due to intrinsic

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:03:34
%: 0.0000 - 35.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - New Zealand		Skin sensitisatio	n category 1

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:03:34
%: 0.0000 - 35.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer specie
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warı	nings found on HPD Priority Hazard Lis
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautio	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institu	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substa Challenge V4.0 r	nces to avoid in Living Building proiects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCR	EENING DATE:	2023-01-24 9:03:35	
%: 0.0000 - 25.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROL	E: Opacifier

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	US CDC - Occupational Carcino	ogens Occupational Carcinogen
CAN	CA EPA - Prop 65	Carcinogen - specific to chemical form or exposure route
CAN	IARC	Group 2B - Possibly carcinogenic to humans - inhaled from occupational sources
CAN	МАК	Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value
END	TEDX - Potential Endocrine Dis	sruptors Potential Endocrine Disruptor
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
CAN	EU - GHS (H-Statements) Annex	ex 6 Table 3-1 H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
CAN	GHS - Japan	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Cradle to Cradle Products Innov Institute (C2CPII)	ovation C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
POSITIVE LIST	US Environmental Protection Ag	gency (US US EPA - DfE Safer Chemicals Ingredients list (SCIL)
	EPA)	Colorants - Green Circle (Verified Low Concern)
	ibstance is undisclosed as it is proprietiers and to keep exact product recipe	ietary. Weight interval is used to account for the use of melamine es confidential.
UNDISCLOSED		ID: Undisclosed
HAZARD DATA SOURCE: Pha	aros Chemical and Materials Library	HAZARD SCREENING DATE: 2023-01-24 9:03:35
%: 0.0000 - 15.0000	GreenScreen: BM-4	RC: None NANO: No SUBSTANCE ROLE: Solvent
HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Co (EU EC)	
		Exempted from REACH Annex IV listing due to intrinsic safety

safety

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:03:35
%: 0.0000 - 3.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Plasticizer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
EYE	GHS - New Zealand		Eye irritation cat	egory 2
MAM	GHS - New Zealand		Acute inhalation	toxicity category 3
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	es of Problematic Chemicals
			Bisphenols and	Phthalates
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	es of Problematic Chemicals
			Some Solvents	
RESTRICTED LIST	International Living Future Instit	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCI	REENING DATE:	2023-01-24 9:03:36	
%: 0.0000 - 2.5000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	: Plasticizer

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
DEV	CA EPA - Prop 65	Developmental toxicity
DEV	US NIH - Reproductive & Developmental Monographs	Clear Evidence of Adverse Effects - Developmental Toxicity
EYE	GHS - New Zealand	Eye irritation category 2
МАМ	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
МАМ	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents

JNDISCLOSED				ID:	Undisclosed
AZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:03:36	
⁄o: 0.0000 - 2.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polym	er species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Priority F	lazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
None found			No	listings found on Additional H	lazard Lists
SUBSTANCE NOTES: Th	is material is a polymer in the product and	is proprietary	<i>.</i>		
	is material is a polymer in the product and	is proprietary	ι.	ID.	
SUBSTANCE NOTES: Th	is material is a polymer in the product and	is proprietary	Ι.	ID:	Undisclosed
INDISCLOSED	is material is a polymer in the product and Pharos Chemical and Materials Library			ID: 2023-01-24 9:03:37	Undisclosed
INDISCLOSED					
JNDISCLOSED	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:03:37	

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Commission (EU EC)	EU - REACH Exemptions
		Exempted from REACH Annex IV listing due to intrinsic safety

SUBSTANCE NOTES: This material is part of the polymer and is proprietary.

SCAVENGER

%: 0.7000 - 0.8000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Animal-Based Material

RESIDUALS AND IMPURITIES NOTES: Residuals are below the reporting threshold, while there are no impurities present in this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material has multiple suppliers. This product is on the US FDA's GRAS (GENERALLY REGARDED AS SAFE) list.

UREA				ID:
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:03:36
%: 98.5000 - 100.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Scaveng
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
EYE	GHS - New Zealand		Eye irritation cat	egory 2
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Green Science Policy Institute (G	SPI)	GSPI - Six Class	es of Problematic Chemicals
			Antimicrobials	

WAX

%: 0.3000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Suppliers declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product; however, no such tests were performed on their product. According to Pharos, known or potential residuals for slack wax (64742-61-6) is paraffin (8002-74-2) and paraffin oil (8012-95-1).

OTHER MATERIAL NOTES: Slack wax is used as water repellant. Data Source for TSCA Definition 2018: A complex combination of hydrocarbons obtained from a petroleum fraction by solvent crystallization (solvent dewaxing) or as a distillation fraction from a very waxy crude. It consists predominantly of saturated straight and branched chain hydrocarbons having carbon numbers predominantly greater than C20.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:03:36
%: 100.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Water resistance
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	EU - REACH Annex XVII CMRs		-	egory 2 - Substances which should be ney are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate	egory 1B - Presumed Carcinogen base nce
MUL	ChemSec - SIN List	ChemSec - SIN List CMR - Carcinogen, Mutagen &/c Toxicant		en, Mutagen &/or Reproductive
MUL	German FEA - Substances Haza Waters	rdous to	Class 3 - Severe Hazard to Waters	
CAN	GHS - Australia		H350 - May cau 1A or 1B]	se cancer [Carcinogenicity - Category
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1	H350 - May cau 1A or 1B]	se cancer [Carcinogenicity - Category
DEV	GHS - Australia			ted of damaging the unborn child oxicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard Lis

SUBSTANCE NOTES: See materials notes for details.

CATALYST %: 0.1000 PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Other: Inorganic sulfate salt

RESIDUALS AND IMPURITIES NOTES: The supplier declared, backed by technical/scientific knowledge, that no impurities or residuals were present in their product.

OTHER MATERIAL NOTES: Some substances fall below the reportable thershold, and are not reported in the content inventory.

AMMONIUM SULFATE				ID: 7783-20)-2
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:03:37	
%: 98.0000 - 99.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Catalyst	
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
RESTRICTED LIST	Cradle to Cradle Products Innov Institute (C2CPII)	ation	010 0000000	Product Standard Restricted (RSL) - Effective July 1, 2022	
			Biological and E	invironmentally Released Materials	
RESTRICTED LIST	Green Science Policy Institute (C	GSPI)	GSPI - Six Class	ses of Problematic Chemicals	
			Antimicrobials		

SUBSTANCE NOTES: See materials notes for details.

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Sectio	CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable		
CERTIFYING PARTY: Self-declared	ISSUE DATE: 2022-09-27 EXPIRY DATE:	CERTIFIER OR LAB: n/a		
CERTIFICATE URL:	EALITE DATE.			

CERTIFICATION AND COMPLIANCE NOTES: According to LEED v4, emissions and content requirements for Composite Wood are to follow the Composite Wood Evaluation which states: "Composite wood, as defined by the California Air Resources Board, Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. "

SUSTAINABLE FORESTRY	FSC Certification - Chain of Custody	(COC)		
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Uniboard Canada Inc Multi- Site CERTIFICATE URL: https://info.fsc.org	ISSUE DATE: 2007-11-06 EXPIRY DATE: 2027-12-01	CERTIFIER OR LAB: Preferred by Nature		
CERTIFICATION AND COMPLIANCE NOTES: Certificate re	esgistration code NC-COC-002726 NC-C	W-002726		
FORMALDEHYDE EMISSIONS EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Ultra Low-Emitting Formaldehyde (ULEF)				
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Sayabec, Quebec, Canada, G0J 3K0 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	ISSUE DATE: 2019-03-21 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association		
CERTIFICATION AND COMPLIANCE NOTES: Fulfills The F	Requirements Of: EPA TSCA Title VI (40 C	CFR 770), CAN/CSA-0160- 16, ANSI A208.1 and		

California Air Resources Board (CARB) Airborne Toxic Control Measures (ATCM) 93120. State of California Air Resources Board Executive Order N-18-035 (https://www.arb.ca.gov/toxics/compwood/naf_ulef/listofnaf_ulef.htm).

MULTI-ATTRIBUTE	CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification			
CERTIFYING PARTY: Second Party	ISSUE DATE: 2019-03-05	CERTIFIER OR LAB: Composite		
APPLICABLE FACILITIES: Sayabec, Quebec, Canada,	EXPIRY DATE:	Panel Association		
G0J 3K0				
CERTIFICATE URL:				
https://www.compositepanel.org/testing-				
certification/certification-programs/				

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or Post-Consumer Fiber Content; Sustainable Use of Wood Fiber; Responsible Wood Sourcing.

🛨 Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

All of Uniboard's product documentation and certificats are available on line at https://www.uniboard.com/en/documentation-center

MANUFACTURER INFORMATION

MANUFACTURER: Uniboard Canada Inc. ADDRESS: 5555, Ernest Cormier Street Laval Quebec H7C 2S9, Canada WEBSITE: www.uniboard.com

CONTACT NAME: Pierre Martin TITLE: Technology and Innovation Director PHONE: 450.664.6000 EMAIL: pierre.martin@uniboard.com

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity CAN Cancer DEV Developmental toxicity END Endocrine activity EYE Eye irritation/corrosivity GEN Gene mutation GLO Global warming LAN Land toxicity MAM Mammalian/systemic/organ toxicity MUL Multiple NEU Neurotoxicity NF Not found on Priority Hazard Lists OZO Ozone depletion PBT Persistent, bioaccumulative, and toxic PHY Physical hazard (flammable or reactive) REP Reproductive RES Respiratory sensitization SKI Skin sensitization/irritation/corrosivity UNK Unknown

LT-P1 List Translator Possible 1 (Possible Benchmark-1) LT-1 List Translator 1 (Likely Benchmark-1) LT-UNK List Translator Benchmark Unknown NoGS No GreenScreen.

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content PostC Post-consumer recycled content UNK Inclusion of recycled content is unknown None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material Nested Method / Product Threshold Substances listed within each material per threshold indicated per product Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology Third Party Verified Verification by independent certifier approved by HPDC Preparer Third party preparer, if not self-prepared by manufacturer Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- a method for the assessment of exposure or risk associated with product handling or use,
- a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD standard noted.

NU Green® FR MDF by Uniboard Canada Inc.

Health Product Declaration v2.3 created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 31116

CLASSIFICATION: 06 42 00 Wood Paneling

PRODUCT DESCRIPTION: This HPD covers all available dimensions, thicknesses and laminate options for NU Green® FR MDF by Uniboard®. NU Green® FR MDF is a Fire-Resistant Medium Density Fiberboard. NU Green® FR MDF is primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces of particles, as distinguished from fibers, bonded together with a bonding system cured under heat and pressure, and contains additives. No-Added Formaldehyde (NAF) panels.

Section 1: Summary

CONTENT INVENTORY

- Inventory Reporting Format
- Nested Materials Method
 Basic Method
- _____
- Threshold Disclosed Per
- O Material
- O Product

Residuals/Impurities Evaluation Completed in 6 of 6 Materials Explanation(s) provided

for Residuals/Impurities?

Nested Method / Product Threshold

For all contents above the threshold, the ma	
Characterized	⊙ Yes ⊖ No
Provided weight and role.	
Screened	O Yes O No
Provided screening results using HPDC-app	roved
methods.	
Identified	O Yes O No
Provided name and CAS RN or other identifi	ier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

Threshold Level

• 100 ppm

O Other

C 1,000 ppm

O Per GHS SDS

NESTED MATERIAL | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY

GREENSCREEN SCORE | HAZARD TYPE

WOOD [WOOD FIBER] FLAME RETARDANT [WATER NoGS UNDISCLOSED LT-UNK | EYE UNDISCLOSED LT-UNK UNDISCLOSED LT-UNK UNDISCLOSED LT-UNK] WATER [WATER BM-4] DIISOCYANATE RESIN [POLYMERIC MDI (PMDI) LT-UNK | CAN | RES | EYE | SKI | MAM METHYLENE BISPHENYL DIISOCYANATE (PURE MDI) LT-UNK | CAN | RES | SKI | EYE | MAM DIPHENYLMETHANE DIISOCYANATE (MDI) - NON ISOMER SPECIFIC LT-UNK | SKI | EYE | CAN | MAM 4,4'-MDI DIMER LT-UNK | SKI | EYE | MAM | CAN ISOCYANIC ACID, POLYMETHYLENEPOLYPHENYLENE ESTER, POLYMER WITH _-HYDRO-_-HYDROXYPOLY(OXY-1,2-ETHANEDIYL) LT-P1 | SKI | MAM] MELAMINE CELLULOSE [UNDISCLOSED NoGS UNDISCLOSED LT-UNK UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK UNDISCLOSED LT-1 | CAN | END | MAM UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED LT-1 | END | DEV | EYE | MAM | SKI UNDISCLOSED LT-UNK UNDISCLOSED BM-4] WAX [SLACK WAX (PETROLEUM) LT-1 | CAN | MUL | DEV]

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

VOC Content data is not applicable for this product category.

Number of Greenscreen BM-4/BM3 contents ... 3

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... LT-1, LT-P1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

Special Conditions applied: [BiologicalMaterial]

HPD prepared using a Nested Materials Inventory with a product threshold at 100 ppm. The content inventory includes ranges to encompass both NU Green® FR MDF with and without melamine lamiates. Nu Green® FR MDF contain materials with Special Conditions (biological material and polymers) as per the HPDC. Reporting of Biological materials was done according to HPDC Guidelines. Guidelines for reporting polymers are still under development by HPDC and the manufacturers will update the HPD accordingly once these guidelines get published. Substances present in NU Green® FR MDF panels, as well as known residuals and impurities, have been disclosed at 100 ppm. More details about how residuals and impurities were considered available in the appropriate sections.

CERTIFICATIONS AND COMPLIANCE See Section 3 for additional listings.

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable

Sustainable forestry: FSC Certification - Chain of Custody (COC) Formaldehyde emissions: EPA TSCA Title VI (40 CRF 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 No-Added Formaldehyde (NAF)

Multi-attribute: CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1. Pre-checked for LEED v4.1 Option 1.

Third Party Verified?

O Yes ⊙ No PREPARER: Vertima VERIFIER: VERIFICATION #: SCREENING DATE: 2023-01-24 PUBLISHED DATE: 2023-01-24 EXPIRY DATE: 2026-01-24 This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- Basic Inventory method with Product-level threshold.
- Nested Material Inventory method with Product-level threshold
- Nested Material Inventory method with individual Material-level thresholds

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

PRODUCT THRESHOLD: 100	RESIDUALS AND IMPURITIES EV Yes	ALUATION COMPLETED:	MATERIAL TYPE: Wood Chips	d Dust, Fiber or
RESIDUALS AND IMPURITIES N	OTES: No residuals or impurities sus	pected to be present in wo	ood fiber.	
	ght percentage may vary as this HPD			
		,		
WOOD FIBER			ID:	Biological Materi
HAZARD DATA SOURCE: HPI	DC Special Conditions Policy			
%: 100.0000 GreenScr	reen: Not Required RC:	PreC NANO: No	MATERIAL ROLE: Strue	cture component
HAZARD TYPE	AGENCY AND LIST TITLES	WARNING	S	
	Hazard Screening is not ap	plicable to this Special Co	ndition	
BIOLOGICAL MATERIALS CA	TEGORY: Tree-based materials			
INGREDIENT DESCRIPTION:	9004-34-6			
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov	Pre-Consumer Recycled includes fiverences fiverences for the second seco	oducts. Examples of this c ccumulation of metals, pro	ategory include planer shavi	ngs, plytrim, nces during norm
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov	B: Pre-Consumer Recycled includes fi verting processes of primary wood pro gasse. vide information on allergens, hyper-a	oducts. Examples of this c ccumulation of metals, pro	ategory include planer shavi	ngs, plytrim, nces during norm
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide	B: Pre-Consumer Recycled includes fi verting processes of primary wood pro gasse. vide information on allergens, hyper-a	oducts. Examples of this c ccumulation of metals, pro	ategory include planer shavi	ngs, plytrim, nces during norm
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide	8: Pre-Consumer Recycled includes fi verting processes of primary wood pro gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000	oducts. Examples of this c ccumulation of metals, pro rces of hazards which ma	ategory include planer shavi oduction of any toxic substar y be found in certain biologic	ngs, plytrim, nces during norm cal materials.
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp	8: Pre-Consumer Recycled includes fi verting processes of primary wood pro gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000	ccumulation of metals, pro rces of hazards which ma	ategory include planer shavi oduction of any toxic substar y be found in certain biologic D: Yes MATERIAL TYP	ngs, plytrim, nces during norm cal materials. E: Other: Inorgan
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp ESIDUALS AND IMPURITIES Not eventory Threshold	8: Pre-Consumer Recycled includes fil verting processes of primary wood pro gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES	oducts. Examples of this c ccumulation of metals, pro irces of hazards which ma EVALUATION COMPLETE residuals or impurities are	ategory include planer shavi oduction of any toxic substan y be found in certain biologic D: Yes MATERIAL TYP known or expected to be pr	ngs, plytrim, nces during norm cal materials. E: Other: Inorgan resent at or above
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp RESIDUALS AND IMPURITIES No inventory Threshold	8: Pre-Consumer Recycled includes fil verting processes of primary wood pro- gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES OTES: The supplier declared that no	oducts. Examples of this c ccumulation of metals, pro irces of hazards which ma EVALUATION COMPLETE residuals or impurities are	ategory include planer shavi oduction of any toxic substan y be found in certain biologic D: Yes MATERIAL TYP known or expected to be pr	ings, plytrim, nces during norm cal materials. E: Other: Inorgani resent at or above
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp ESIDUALS AND IMPURITIES Not inventory Threshold	8: Pre-Consumer Recycled includes fil verting processes of primary wood pro- gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES OTES: The supplier declared that no	oducts. Examples of this c ccumulation of metals, pro irces of hazards which ma EVALUATION COMPLETE residuals or impurities are	ategory include planer shavi oduction of any toxic substan y be found in certain biologic D: Yes MATERIAL TYP known or expected to be pr	ngs, plytrim, nces during norm cal materials. E: Other: Inorgani esent at or above
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp ESIDUALS AND IMPURITIES No iventory Threshold THER MATERIAL NOTES: Weig WATER	8: Pre-Consumer Recycled includes fil verting processes of primary wood pro- gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES OTES: The supplier declared that no	ccumulation of metals, pro rccs of hazards which mat EVALUATION COMPLETE residuals or impurities are covers multiple products,	ategory include planer shavi oduction of any toxic substar y be found in certain biologic D: Yes MATERIAL TYP known or expected to be pr i.e. with or without laminate.	ngs, plytrim, nces during norm cal materials. E: Other: Inorgani esent at or above
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide LAME RETARDANT RODUCT THRESHOLD: 100 pp ESIDUALS AND IMPURITIES No iventory Threshold THER MATERIAL NOTES: Weig WATER	8: Pre-Consumer Recycled includes fil rerting processes of primary wood pro- gasse. vide information on allergens, hyper-a es, and other potential hazards or sou %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES OTES: The supplier declared that no ght percentage may vary as this HPD	ccumulation of metals, pro rccs of hazards which mat EVALUATION COMPLETE residuals or impurities are covers multiple products,	ategory include planer shavi oduction of any toxic substan y be found in certain biologic D: Yes MATERIAL TYP known or expected to be pr i.e. with or without laminate. DATE: 2023-01-24 9:17:15	ings, plytrim, nces during norm cal materials. E: Other: Inorgani esent at or above ID: 7782-18
MATERIAL CONTENT NOTES from manufacturing and conv sawdust, fines, chips and bag This disclosure does not prov metabolic activities, pesticide ELAME RETARDANT PRODUCT THRESHOLD: 100 pp RESIDUALS AND IMPURITIES No nventory Threshold DTHER MATERIAL NOTES: Weig WATER HAZARD DATA SOURCE: Pha	Pre-Consumer Recycled includes fil rerting processes of primary wood pro- gasse. vide information on allergens, hyper-a- es, and other potential hazards or sour %: 14.1000 - 14.5000 m RESIDUALS AND IMPURITIES OTES: The supplier declared that no ght percentage may vary as this HPD aros Chemical and Materials Library	EVALUATION COMPLETE residuals or impurities are covers multiple products,	ategory include planer shavi oduction of any toxic substance y be found in certain biologic D: Yes MATERIAL TYP known or expected to be provided to be pro	ings, plytrim, nces during norm cal materials. E: Other: Inorgani esent at or above ID: 7782-18

LIST NAME AND SOURCE

NOTIFICATION

No listings found on Additional Hazard Lists

ID: Undisclosed

None found

UNDISCLOSED

SUBSTANCE NOTES: The water comes from re-used rainwater.

UNDISCLOSED				ID: Undisclose
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:16
%: 30.0000 - 30.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Flame retardant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
EYE	GHS - New Zealand		Eye irritation cat	egory 2
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Cradle to Cradle Products Innov Institute (C2CPII)	ation		Product Standard Restricted (RSL) - Effective July 1, 2022
			Biological and E	nvironmentally Released Materials
SUBSTANCE NOTES: T	his substance is undisclosed as it is confide	ential.		
UNDISCLOSED				ID: Undisclos
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:17
%: 10.0000 - 15.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Flame retardant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard List
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard List
SUBSTANCE NOTES: T	his substance is undisclosed as it is confide	ential.		
UNDISCLOSED				ID: Undisclos
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:17:17
%: 10.0000 - 15.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Flame retardant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard List
	LIST NAME AND SOURCE		NOTIFICATION	

SUBSTANCE NOTES: This substance is undisclosed as it is confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:17:18
%: 5.0000 - 10.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Flame retardant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No war	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard Lists

SUBSTANCE NOTES: This substance is undisclosed as it is confidential.

WATER

%: 4.0000 - 4.1000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: No MATERIAL TYPE: Other: Natural resource RESIDUALS AND IMPURITIES NOTES: No data collected regarding this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products. Standard water is used (municipal)

WATER					ID: 7732-18-5
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:17:16	
%: 100.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE:	Humectant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Prior	rity Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Cor	nmission	EU - REACH Exe	emptions	
	(EU EC)		Exempted from safety	REACH Annex IV listing o	due to intrinsic

SUBSTANCE NOTES: See materials notes for details.

DIISOCYANATE RESIN

%: 3.7000 - 3.8000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Supplier A has reported impurities and they are listed in the material composition. Supplier B declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products and this material has multiple suppliers.

POLYMERIC MDI (PMDI)

HAZARD DATA SOURCE: P	Pharos Chemical and Materials Library	HAZARD SCREENING DATE: 2023-01-24 9:17:16		
%: 30.0000 - 70.0000	GreenScreen: LT-UNK	RC: None NANO: No SUBSTANCE ROLE: Binder		
HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS		
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels		
RES	МАК	Sensitizing Substance Sah - Danger of airway & skin sensitization		
EYE	GHS - New Zealand	Eye irritation category 2		
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]		
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]		
МАМ	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]		
МАМ	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1		
МАМ	GHS - New Zealand	Acute inhalation toxicity category 2		
МАМ	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects		
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]		
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]		
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION		
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List		
		Precautionary list of substances recommended for avoidance		
SUBSTANCE NOTES: Weight interval is used to cover recipe from multiple suppliers and keep exact recipe confidential.				

METHYLENE BISPHENYL DIISOCYANATE (PURE MDI) ID: 101-68-6					
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:17:17	
%: 30.0000 - 45.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: M	onomer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
CAN	МАК		Carcinogen Gro Iow risk under N	up 4 - Non-genotoxic carcin /IAK/BAT levels	ogen with
RES	МАК		Sensitizing Subs	stance Sah - Danger of airwa	ay & skin
SKI	EU - GHS (H-Statements) Annex	6 Table 3-1	H315 - Causes s Category 2]	skin irritation [Skin corrosion	/irritation -

EYE	EU - GHS (H-Statements) Annex 6 Table 3-1	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
SKI	GHS - New Zealand	Skin irritation category 2
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
CAN	GHS - New Zealand	Carcinogenicity category 2
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
MAM	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]
МАМ	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - New Zealand	Skin sensitisation category 1
MAM	GHS - New Zealand	Acute inhalation toxicity category 2
EYE	GHS - Korea	H319 - Causes serious eye irritation [Serious eye damage/irritation - Category 2]
SKI	GHS - Korea	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
MAM	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
МАМ	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: gas) - Category 2]
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]
МАМ	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: dust, mist) - Category 2]
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
MAM	GHS - Korea	H335 - May cause respiratory irritation [Specific target organ toxicity - Single exposure - Category 3]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Formulated Consumer Products
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance

SUBSTANCE NOTES: Weight interval is used to cover recipe from multiple suppliers and keep exact recipe confidential.

DIPHENYLMETHANE DIISOC [*] SPECIFIC	YANATE (MDI) - NON ISOMER				ID: 26447-40-5
HAZARD DATA SOURCE: Ph	aros Chemical and Materials Library	HAZARD SCRE	ENING DATE:	2023-01-24 9:17:18	
%: 0.0000 - 7.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE:	Monomer

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	EU - GHS (H-Statements) Annex 6 Table 3-1	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
SKI	GHS - New Zealand	Skin irritation category 2
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
CAN	GHS - New Zealand	Carcinogenicity category 2
MAM	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - New Zealand	Skin sensitisation category 1
МАМ	GHS - New Zealand	Acute inhalation toxicity category 2
MAM	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]
MAM	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: dust, mist) - Category 2]
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
SUBSTANCE NOTES: Weight in	nterval is used to cover recipe from multiple supp	liers and keep exact recipe confidential.

4,4'-MDI DIMER					ID: 17589-24-1
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCF	REENING DATE:	2023-01-24 9:17:18	
%: Impurity/Residual	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Impu	urity/Residual

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS		
SKI	GHS - Australia	H315 - Causes skin irrit Category 2]	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]	
EYE	GHS - Australia	H319 - Causes serious damage/eye irritation -	eye irritation [Serious eye Category 2A]	
МАМ	GHS - Australia		to organs through prolonged or ecific target organ toxicity - ttegory 1]	
MAM	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]		
CAN	GHS - Australia	H351 - Suspected of ca Category 2]	using cancer [Carcinogenicity -	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION		
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary Lis	st	
SUBSTANCE NOTES: See m	aterials notes for details.	Precautionary list of sub avoidance	ostances recommended for	
	HYLENEPOLYPHENYLENE ESTER,		Distances recommended for ID: 57636-09-	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO ETHANEDIYL)	HYLENEPOLYPHENYLENE ESTER,	avoidance	ID: 57636-09-	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO ETHANEDIYL) HAZARD DATA SOURCE: Ph	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2-	avoidance	ID: 57636-09- 01-24 9:17:18	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO ETHANEDIYL)	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2-	avoidance	ID: 57636-09-	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO THANEDIYL) HAZARD DATA SOURCE: Ph 6: Impurity/Residual HAZARD TYPE	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2- aros Chemical and Materials Library GreenScreen: LT-P1	avoidance HAZARD SCREENING DATE: 2023-0 RC: None NANO: No SUBST WARNINGS	ID: 57636-09- 01-24 9:17:18	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO ETHANEDIYL) HAZARD DATA SOURCE: Ph %: Impurity/Residual	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2- aaros Chemical and Materials Library GreenScreen: LT-P1 LIST NAME AND SOURCE	avoidance HAZARD SCREENING DATE: 2023-0 RC: None NANO: No SUBST WARNINGS H315 - Causes skin irrit: Category 2]	ID: 57636-09- 01-24 9:17:18 FANCE ROLE: Impurity/Residual	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO THANEDIYL) AZARD DATA SOURCE: Ph 6: Impurity/Residual HAZARD TYPE SKI MAM	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2- maros Chemical and Materials Library GreenScreen: LT-P1 LIST NAME AND SOURCE GHS - Australia	avoidance HAZARD SCREENING DATE: 2023-0 RC: None NANO: No SUBST WARNINGS H315 - Causes skin irrit Category 2] H330 - Fatal if inhaled [/	ID: 57636-09- 01-24 9:17:18 TANCE ROLE: Impurity/Residual ation [Skin corrosion/irritation -	
SOCYANIC ACID, POLYMET POLYMER WITHHYDRO ETHANEDIYL) HAZARD DATA SOURCE: Ph %: Impurity/Residual HAZARD TYPE SKI	HYLENEPOLYPHENYLENE ESTER, HYDROXYPOLY(OXY-1,2- aaros Chemical and Materials Library GreenScreen: LT-P1 LIST NAME AND SOURCE GHS - Australia GHS - Australia	Avoidance HAZARD SCREENING DATE: 2023-0 RC: None NANO: No SUBST WARNINGS H315 - Causes skin irrit Category 2] H330 - Fatal if inhaled [Category 1 or 2] NOTIFICATION	ID: 57636-09- 01-24 9:17:18 TANCE ROLE: Impurity/Residual ation [Skin corrosion/irritation -	

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities are below the reporting threshold.

%: 0.0000 - 2.8000

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers. The composition of this material is confidential.

MELAMINE CELLULOSE

RESTRICTED LIST	International Living Future Institu	ute (ILFI)	Living Building C	Challenge 4.0 - Red List of Materials &
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No warr	nings found on HPD Priority Hazard Lists
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
%: 0.0000 - 65.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:20

Chemicals - Effective April 1, 2022 Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:19
%: 0.0000 - 65.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
	EC - CEPA DSL		Persistent	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substa Challenge V4.0	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED				ID: <mark>U</mark> n	disclose
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:20	
%: 21.0000 - 55.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Carri	er
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Priority Haz	ard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Con (EU EC)	nmission	EU - REACH Exe	emptions	
			Exempted from safety	REACH Annex IV listing due to i	ntrinsic

UNDISCLOSED

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:17:21
%: 0.0000 - 35.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - New Zealand		Skin sensitisatio	on category 1
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:19
%: 0.0000 - 35.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No war	nings found on HPD Priority Hazard List
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautio	onary List
			Precautionary li avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substa Challenge V4.0	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED

ID: Undisclosed

HAZARD DATA SOURCE:	Pharos Chemical and Materials Libra	ry HAZARD SO	CREENING DATE:	2023-01-24 9:17:20
%: 0.0000 - 25.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Opacifier
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	US CDC - Occupational Carc	inogens	Occupational Ca	rcinogen
CAN	CA EPA - Prop 65		Carcinogen - spe route	ecific to chemical form or exposure
CAN	IARC		Group 2B - Poss from occupation	ibly carcinogenic to humans - inhaled al sources
CAN	МАК		-	ip 3A - Evidence of carcinogenic effects to establish MAK/BAT value
END	TEDX - Potential Endocrine E	Disruptors	Potential Endocr	ine Disruptor
CAN	МАК		Carcinogen Grou low risk under M	ıp 4 - Non-genotoxic carcinogen with AK/BAT levels
CAN	EU - GHS (H-Statements) An	nex 6 Table 3-1	H351 - Suspecte Category 2]	d of causing cancer [Carcinogenicity -
CAN	GHS - Japan		H351 - Suspecte Category 2]	d of causing cancer [Carcinogenicity -
MAM	GHS - Japan		repeated exposu	amage to organs through prolonged or re [Specific target organs/systemic repeated exposure - Category 1]
CAN	EU - Annex VI CMRs		Carcinogen Cate	gory 2 - Suspected human Carcinogen
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Cradle to Cradle Products In Institute (C2CPII)	novation		Product Standard Restricted (RSL) - Effective July 1, 2022
			Cosmetics & Per	sonal Care Products
POSITIVE LIST	US Environmental Protection EPA)	Agency (US	US EPA - DfE Sa	fer Chemicals Ingredients list (SCIL)
			Colorants - Gree	n Circle (Verified Low Concern)

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:17:20	
%: 0.0000 - 15.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROL	E: Solvent
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Price	ority Hazard Lists

EXEMPT

European Union / European Commission (EU EC)

EU - REACH Exemptions

Exempted from REACH Annex IV listing due to intrinsic safety

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

ID: Undisclosed

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCREEN	VING DATE:	2023-01-24 9:17:21
%: 0.0000 - 3.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Plasticizer
HAZARD TYPE	LIST NAME AND SOURCE	WAF	RNINGS	
END	TEDX - Potential Endocrine Disr	ptors Pote	ential Endoc	rine Disruptor
EYE	GHS - New Zealand	Eye	irritation cat	tegory 2
MAM	GHS - New Zealand	Acut	te inhalation	n toxicity category 3
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOT	TIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)	P&W	V - Precautio	onary List
			cautionary lis idance	st of substances recommended for
RESTRICTED LIST	Green Science Policy Institute (SPI) GSP	ଧ - Six Class	ses of Problematic Chemicals
		Bisp	phenols and	Phthalates
RESTRICTED LIST	Green Science Policy Institute (SPI) GSP	기 - Six Class	ses of Problematic Chemicals
		Som	ne Solvents	
RESTRICTED LIST	International Living Future Instit			Challenge 4.0 - Red List of Materials & ective April 1, 2022
		Red Chal	List substa	nces to avoid in Living Building

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:17:21	
%: 0.0000 - 2.5000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	E: Plasticizer

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
DEV	CA EPA - Prop 65	Developmental toxicity
DEV	US NIH - Reproductive & Developmental Monographs	Clear Evidence of Adverse Effects - Developmental Toxicity
EYE	GHS - New Zealand	Eye irritation category 2
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents

UNDISCLOSED				ID: Undisclo
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:17:19
%: 0.0000 - 2.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer specie
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warı	nings found on HPD Priority Hazard Lis
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard Lis
SUBSTANCE NOTES: T	nis material is a polymer in the product and	is proprietary	·.	
SUBSTANCE NOTES: T	his material is a polymer in the product and	is proprietary	' .	
SUBSTANCE NOTES: T	his material is a polymer in the product and	is proprietary		ID: Undisclo
UNDISCLOSED	his material is a polymer in the product and Pharos Chemical and Materials Library			ID: Undisclo 2023-01-24 9:17:20
UNDISCLOSED				
UNDISCLOSED HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:17:20

 ADDITIONAL LISTINGS
 LIST NAME AND SOURCE
 NOTIFICATION

 EXEMPT
 European Union / European Commission (EU EC)
 EU - REACH Exemptions

 Exempted from REACH Annex IV listing due to intrinsic safety
 Exempted from REACH Annex IV listing due to intrinsic

 SUBSTANCE NOTES: this material is part of the polymer and is proprietary.
 Substance Notes is part of the polymer and is proprietary.

WAX	%: 0.7000 - 0.8000	
PRODUCT THRESHOLD: 100 ppm	RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes	MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Suppliers declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product; however, no such tests are performed on their product. According to Pharos, known or potential residuals for slack wax (64742-61-6) is paraffin (8002-74-2) and paraffin oil (8012-95-1).

OTHER MATERIAL NOTES: Slack wax is used as water repellant. Data Source for TSCA Definition 2018: A complex combination of hydrocarbons obtained from a petroleum fraction by solvent crystallization (solvent dewaxing) or as a distillation fraction from a very waxy crude. It consists predominantly of saturated straight and branched chain hydrocarbons having carbon numbers predominantly greater than C20.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:17:21
%: 100.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Water resistance
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	EU - REACH Annex XVII CMRs		-	egory 2 - Substances which should be ley are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate on animal evider	egory 1B - Presumed Carcinogen based
MUL	ChemSec - SIN List		CMR - Carcinog Toxicant	en, Mutagen &/or Reproductive
MUL	German FEA - Substances Haza Waters	rdous to	Class 3 - Severe	Hazard to Waters
CAN	GHS - Australia		H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1	H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category
DEV	GHS - Australia			ted of damaging the unborn child oxicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard List

SUBSTANCE NOTES: See material notes for details.

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Sectio	CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable		
CERTIFYING PARTY: Self-declared APPLICABLE FACILITIES: All facilities	ISSUE DATE: 2022-09-27 EXPIRY DATE:	CERTIFIER OR LAB: n/a		
CERTIFICATE URL:				

CERTIFICATION AND COMPLIANCE NOTES: According to LEED v4, emissions and content requirements for Composite Wood are to follow the Composite Wood Evaluation which states: "Composite wood, as defined by the California Air Resources Board, Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. "

SUSTAINABLE FORESTRY	FSC Certification - Chain of Custody (COC)			
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Uiboard Canada INc Multi- Site CERTIFICATE URL: https://info.fsc.org	ISSUE DATE: 2007-11-06 EXPIRY DATE: 2027-12-01	CERTIFIER OR LAB: Preferred by Nature		
CERTIFICATION AND COMPLIANCE NOTES: Certificate registration code NC-COC-002726, NC-CW-002726				
FORMALDEHYDE EMISSIONS	EPA TSCA Title VI (40 CRF 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 No-Added Formaldehyde (NAF)			
CERTIFYING PARTY: Third Party	ISSUE DATE: 2019-03-25	CERTIFIER OR LAB: Composite		
APPLICABLE FACILITIES: Mont-Laurier, Quebec, Canada J9L 2W3 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	EXPIRY DATE:	Panel Association		

MULTI-ATTRIBUTE	CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification		
CERTIFYING PARTY: Second Party	ISSUE DATE: 2019-05-30	CERTIFIER OR LAB: Composite	
APPLICABLE FACILITIES: Mont-Laurier, Quebec,	EXPIRY DATE:	Panel Association	
Canada, J9L 3W3			
CERTIFICATE URL:			
https://www.compositepanel.org/testing-			
certification/certification-programs/			

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or Post-Consumer Fiber Content; Sustainable Use of Wood Fiber; Responsible Wood Sourcing.

🛨 Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

All of Uniboard's product documentation and certificats are available on line at https://www.uniboard.com/en/documentation-center.

MANUFACTURER INFORMATION

MANUFACTURER: Uniboard Canada Inc. ADDRESS: 5555, Ernest Cormier Street Laval Quebec H7C 2S9, Canada WEBSITE: www.uniboard.com

CONTACT NAME: Pierre Martin TITLE: Technology and Innovation Director PHONE: 450.664.6000 EMAIL: pierre.martin@uniboard.com

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity CAN Cancer DEV Developmental toxicity END Endocrine activity EYE Eye irritation/corrosivity GEN Gene mutation GLO Global warming LAN Land toxicity MAM Mammalian/systemic/organ toxicity MUL Multiple NEU Neurotoxicity NF Not found on Priority Hazard Lists OZO Ozone depletion PBT Persistent, bioaccumulative, and toxic PHY Physical hazard (flammable or reactive) REP Reproductive RES Respiratory sensitization SKI Skin sensitization/irritation/corrosivity UNK Unknown

LT-P1 List Translator Possible 1 (Possible Benchmark-1) LT-1 List Translator 1 (Likely Benchmark-1) LT-UNK List Translator Benchmark Unknown NoGS No GreenScreen.

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content PostC Post-consumer recycled content UNK Inclusion of recycled content is unknown None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material Nested Method / Product Threshold Substances listed within each material per threshold indicated per product Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology Third Party Verified Verification by independent certifier approved by HPDC Preparer Third party preparer, if not self-prepared by manufacturer Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- a method for the assessment of exposure or risk associated with product handling or use,
- a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD standard noted.

NU Green MR50® MDF by Uniboard Canada Inc.

Health Product Declaration v2.3 created via: HPDC Online Builder

Nested Method / Product Threshold

HPD UNIQUE IDENTIFIER: 31113

CLASSIFICATION: 06 42 00 Wood Paneling

PRODUCT DESCRIPTION: This HPD covers all available dimensions, thicknesses and laminate options for NU Green MR50® MDF by Uniboard®. NU Green MR50® medium density fiberboard (MDF) is a composite panel product composed primarily of cellulosic fibers and a bonding system cured under heat and pressure. No-Added Formaldehyde (NAF) panels.

Section 1: Summary

CONTENT INVENTORY

Inventory Reporting Threshold Level **Residuals/Impurities Evaluation** For all contents above the threshold, the manufacturer has: Format Characterized • Yes O No • 100 ppm Completed in 5 of 5 Materials Nested Materials Method C 1,000 ppm Provided weight and role. Explanation(s) provided C Basic Method O Per GHS SDS Screened ⊙ Yes ○ No for Residuals/Impurities? O Other Provided screening results using HPDC-approved **Threshold Disclosed Per** ⊙ Yes ○ No methods. O Material Identified ○ Yes ⊙ No • Product Provided name and CAS RN or other identifier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

NESTED MATERIAL | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY

GREENSCREEN SCORE | HAZARD TYPE

WOOD [WOOD FIBER] WATER [WATER BM-4] DIISOCYANATE RESIN [POLYMERIC MDI (PMDI) LT-UNK | CAN | RES | EYE | SKI | MAM METHYLENE BISPHENYL DIISOCYANATE (PURE MDI) LT-UNK | CAN | RES | SKI | EYE | MAM DIPHENYLMETHANE DIISOCYANATE (MDI) - NON ISOMER SPECIFIC LT-UNK | SKI | EYE | CAN | MAM *ISOCYANIC ACID, POLYMETHYLENEPOLYPHENYLENE ESTER, POLYMER WITH _-HYDRO-_-HYDROXYPOLY(OXY-1,2-ETHANEDIYL)* LT-P1 | SKI | MAM 4,4'-MDI DIMER LT-UNK | SKI | EYE | MAM | CAN] MELAMINE-CELLULOSE [UNDISCLOSED NoGS UNDISCLOSED LT-UNK | UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK UNDISCLOSED LT-P1 | SKI UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED LT-1 | END | DEV | EYE | MAM | SKI UNDISCLOSED LT-UNK UNDISCLOSED BM-4] WAX [SLACK WAX (PETROLEUM) LT-1 CAN | MUL | DEV]

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

VOC Content data is not applicable for this product category.

Number of Greenscreen BM-4/BM3 contents ... 3

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... LT-1, LT-P1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

Special Conditions applied: [BiologicalMaterial]

HPD prepared using a Nested Materials Inventory with a product threshold at 100 ppm. The content inventory includes ranges to encompass both NU Green MR50® MDF with and without melamine lamiates. NU Green MR50® MDF contain materials with Special Conditions (biological material and polymers) as per the HPDC. Reporting of Biological materials was done according to HPDC Guidelines. Guidelines for reporting polymers are still under development by HPDC and the manufacturers will update the HPD accordingly once these guidelines get published. Substances present in NU Green MR50® MDF, as well as known residuals and impurities, have been disclosed at 100 ppm. More details about how residuals and impurities were considered available in the appropriate sections.

CERTIFICATIONS AND COMPLIANCE See Section 3 for additional listings.

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable

Sustainable forestry: FSC Certification - Chain of Custody (COC) Formaldehyde emissions: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 No-Added Formaldehyde (NAF)

Multi-attribute: CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1.

Third Party Verified? O Yes O No PREPARER: Vertima VERIFIER: VERIFICATION #: SCREENING DATE: 2023-01-24 PUBLISHED DATE: 2023-01-24 EXPIRY DATE: 2026-01-24 This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- Basic Inventory method with Product-level threshold.
- Nested Material Inventory method with Product-level threshold
- Nested Material Inventory method with individual Material-level thresholds

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

WOOD	%: 89.0000 - 91.5000			
PRODUCT THRESHOLD: 10 ppm	0 RESIDUALS AND IMPU Yes	JRITIES EVALUATIO	N COMPLETED:	MATERIAL TYPE: Wood Dust, Fiber or Chips
RESIDUALS AND IMPURITI	ES NOTES: No residuals or imp	ourities suspected to	be present in woo	d fiber.
OTHER MATERIAL NOTES:	Weight percentage may vary a	s this HPD covers m	ultiple products, i.e	e. with or without laminate.
WOOD FIBER				ID: Biological Materia
HAZARD DATA SOURCE:	HPDC Special Conditions Po	licy		
%: 100.0000 Gree	nScreen: Not Required	RC: PreC	NANO: No	MATERIAL ROLE: Structure component
HAZARD TYPE	AGENCY AND LIST	TITLES	WARNINGS	
	Hazard Screenin	g is not applicable t	o this Special Cond	dition
BIOLOGICAL MATERIAL	S CATEGORY: Tree-based mat	terials		
INGREDIENT DESCRIPT	ON: 9004-34-6			
from manufacturing and sawdust, fines, chips and	converting processes of primat bagasse.	ry wood products. E	xamples of this cat	gs and cuttings, generated as a by-product tegory include planer shavings, plytrim,
				luction of any toxic substances during norma be found in certain biological materials.

WATER

%: 4.7000 - 4.8000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: No MATERIAL TYPE: Other: Natural resource

RESIDUALS AND IMPURITIES NOTES: No data collected regarding this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate. Standard water is used (municipal).

			WATER
REENING DATE:	HAZARD SC	Pharos Chemical and Materials Library	HAZARD DATA SOURCE:
NANO: No	RC: None	GreenScreen: BM-4	%: 100.0000
WARNINGS		LIST NAME AND SOURCE	HAZARD TYPE
No warr			None found
NOTIFICATION		LIST NAME AND SOURCE	ADDITIONAL LISTINGS
EU - REACH Exe	nmission		EXEMPT
Exempted from I safety		(====)	
n	NANO: No WARNINGS No war NOTIFICATION EU - REACH Ex Exempted from	RC: None NANO: No WARNINGS No war NOTIFICATION nmission EU - REACH Ex Exempted from	LIST NAME AND SOURCE WARNINGS No war LIST NAME AND SOURCE NOTIFICATION European Union / European Commission (EU EC) Exempted from

materials notes for details.

DIISOCYANATE RESIN %: 3.1000 - 3.2000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Supplier A has reported impurities and they are listed in the material composition. Supplier B declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers.

POLYMERIC MDI (PMDI)				ID: 901	6-87-9
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCRE	ENING DATE:	2023-01-24 9:04:23	
%: 30.0000 - 70.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Binder	

1

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
RES	МАК	Sensitizing Substance Sah - Danger of airway & skin sensitization
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
MAM	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
МАМ	GHS - New Zealand	Acute inhalation toxicity category 2
MAM	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
SUBSTANCE NOTES: Weight		nultiple suppliers and keep exact recipe confidential.
		10:101-68-5
HAZARD DATA SOURCE: Ph		ID: 101-68-8 HAZARD SCREENING DATE: 2023-01-24 9:04:24
		ID: 101-68-8 HAZARD SCREENING DATE: 2023-01-24 9:04:24 RC: None NANO: No SUBSTANCE ROLE: Monomer
	aros Chemical and Materials Library	HAZARD SCREENING DATE: 2023-01-24 9:04:24
%: 30.0000 - 45.0000	aros Chemical and Materials Library GreenScreen: LT-UNK	HAZARD SCREENING DATE: 2023-01-24 9:04:24 RC: None NANO: No SUBSTANCE ROLE: Monomer
%: 30.0000 - 45.0000 HAZARD TYPE	aros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	HAZARD SCREENING DATE: 2023-01-24 9:04:24 RC: None NANO: No SUBSTANCE ROLE: Monomer WARNINGS Carcinogen Group 4 - Non-genotoxic carcinogen with
%: 30.0000 - 45.0000 HAZARD TYPE CAN	aros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE MAK	HAZARD SCREENING DATE: 2023-01-24 9:04:24 RC: None NANO: No SUBSTANCE ROLE: Monomer WARNINGS VARNINGS Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels Sensitizing Substance Sah - Danger of airway & skin sensitization

CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
SKI	GHS - New Zealand	Skin irritation category 2
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
CAN	GHS - New Zealand	Carcinogenicity category 2
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
МАМ	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]
МАМ	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
МАМ	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - New Zealand	Skin sensitisation category 1
MAM	GHS - New Zealand	Acute inhalation toxicity category 2
EYE	GHS - Korea	H319 - Causes serious eye irritation [Serious eye damage/irritation - Category 2]
SKI	GHS - Korea	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
MAM	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
MAM	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: gas) - Category 2]
MAM	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]
MAM	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: dust, mist) - Category 2]
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
МАМ	GHS - Korea	H335 - May cause respiratory irritation [Specific target organ toxicity - Single exposure - Category 3]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Formulated Consumer Products
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance

SUBSTANCE NOTES: Weight interval is used to cover recipe from multiple suppliers and keep exact recipe confidential.

DIPHENYLMETHANE DIISOC SPECIFIC	YANATE (MDI) - NON ISOMER				ID: 26447-40-5
HAZARD DATA SOURCE: P	naros Chemical and Materials Library	HAZARD SCRE	ENING DATE:	2023-01-24 9:04:24	
%: 0.0000 - 7.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE:	Monomer

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS		
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]		
EYE	EU - GHS (H-Statements) Annex 6 Table 3-1	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]		
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]		
SKI	GHS - New Zealand	Skin irritation category 2		
EYE	GHS - New Zealand	Eye irritation category 2		
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]		
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]		
CAN	GHS - New Zealand	Carcinogenicity category 2		
MAM	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]		
МАМ	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1		
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen		
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]		
SKI	GHS - New Zealand	Skin sensitisation category 1		
MAM	GHS - New Zealand	Acute inhalation toxicity category 2		
MAM	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]		
MAM	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: dust, mist) - Category 2]		
CAN	GHS - Australia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]		
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION		
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List		
		Precautionary list of substances recommended for avoidance		
SUBSTANCE NOTES: Weight	interval is used to cover recipe from multiple supp	pliers and keep exact recipe confidential.		
ISOCYANIC ACID, POLYMETHYLENEPOLYPHENYLENE ESTER, ID: 57636-09-6 POLYMER WITHHYDROHYDROXYPOLY(OXY-1,2- ETHANEDIYL)				
HAZARD DATA SOURCE: Pharos Chemical and Materials Library HAZARD SCREENING DATE: 2023-01-24 9:04:24				

%: Impurity/Residual	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Impurity/Residual
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - Australia		H315 - Causes Category 2]	s skin irritation [Skin corrosion/irritation -
МАМ	GHS - Australia		H330 - Fatal if Category 1 or	inhaled [Acute toxicity (inhalation) - 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	N
None found			Ν	lo listings found on Additional Hazard Lists

SUBSTANCE NOTES: See material notes for details.

4,4'-MDI DIMER

ID: 17589-24-1

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:04:25
%: Impurity/Residual	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Impurity/Residual
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - Australia		H315 - Causes s Category 2]	skin irritation [Skin corrosion/irritation -
EYE	GHS - Australia			serious eye irritation [Serious eye tation - Category 2A]
МАМ	GHS - Australia		repeated expos	damage to organs through prolonged or ure [Specific target organ toxicity - ure - Category 1]
MAM	GHS - Australia		H330 - Fatal if ir Category 1 or 2]	nhaled [Acute toxicity (inhalation) -
CAN	GHS - Australia		H351 - Suspecte Category 2]	ed of causing cancer [Carcinogenicity -
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautio	onary List
			Precautionary lis avoidance	st of substances recommended for

SUBSTANCE NOTES: See material notes for details.

MELAMINE-CELLULOSE

%: 0.0000 - 2.8000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes

MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities are below the reporting threshold.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers. The composition of this material is confidential.

UNDISCLOSED

ID: Undisclosed

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:04:25
%: 0.0000 - 65.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No wan	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:04:24
%: 0.0000 - 65.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
	EC - CEPA DSL		Persistent	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:04:25
%: 21.0000 - 55.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Carrier
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
EXEMPT	European Union / European Cor (EU EC)	nmission	EU - REACH Exe	emptions
			Exempted from safety	REACH Annex IV listing due to intrinsic

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:04:26
%: 0.0000 - 35.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - New Zealand		Skin sensitisatio	n category 1
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	0 0	Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

			ID: Undisclose
Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:04:26
GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
LIST NAME AND SOURCE		WARNINGS	
		No warr	nings found on HPD Priority Hazard Lists
LIST NAME AND SOURCE		NOTIFICATION	
Perkins+Will (P+W)		P&W - Precautic	onary List
		Precautionary lis avoidance	st of substances recommended for
International Living Future Institu	ıte (ILFI)	o o	Challenge 4.0 - Red List of Materials & ective April 1, 2022
		Red List substar Challenge V4.0 p	nces to avoid in Living Building projects
	LIST NAME AND SOURCE LIST NAME AND SOURCE Perkins+Will (P+W)	GreenScreen: LT-UNK RC: None LIST NAME AND SOURCE LIST NAME AND SOURCE	GreenScreen: LT-UNK RC: None NANO: No LIST NAME AND SOURCE WARNINGS No war No LIST NAME AND SOURCE NOTIFICATION Perkins+Will (P+W) P&W - Precautionary lia avoidance International Living Future Institute (ILFI) Living Building O Chemicals - Effect Red List substate Red List substate

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of melamine cellulose from multiple suppliers and to keep exact product recipes confidential.

UNDISCLOSED

ID: Undisclosed

HAZARD DATA SOURCE: Ph	naros Chemical and Materials Libra	ry HAZARD S	CREENING DATE:	2023-01-24 9:04:26		
%: 0.0000 - 25.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Opacifier		
HAZARD TYPE	LIST NAME AND SOURCE	LIST NAME AND SOURCE		WARNINGS		
CAN	US CDC - Occupational Carc	US CDC - Occupational Carcinogens		rcinogen		
CAN	CA EPA - Prop 65	CA EPA - Prop 65		cific to chemical form or exposure		
CAN	IARC		Group 2B - Possi from occupationa	bly carcinogenic to humans - inhaled al sources		
CAN	МАК		-	p 3A - Evidence of carcinogenic effec to establish MAK/BAT value		
END	TEDX - Potential Endocrine D	Disruptors	Potential Endocri	ne Disruptor		
CAN	МАК		Carcinogen Grou low risk under M/	p 4 - Non-genotoxic carcinogen with AK/BAT levels		
CAN	EU - GHS (H-Statements) Ani	nex 6 Table 3-1	H351 - Suspected Category 2]	d of causing cancer [Carcinogenicity ·		
CAN	GHS - Japan	GHS - Japan		d of causing cancer [Carcinogenicity		
МАМ	GHS - Japan	GHS - Japan		H372 - Causes damage to organs through prolonged o repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]		
CAN	EU - Annex VI CMRs		Carcinogen Category 2 - Suspected human Carcinogen			
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION			
RESTRICTED LIST	Cradle to Cradle Products In Institute (C2CPII)	novation		Product Standard Restricted RSL) - Effective July 1, 2022		
			Cosmetics & Pers	sonal Care Products		
POSITIVE LIST	US Environmental Protection EPA)	Agency (US	US EPA - DfE Saf	er Chemicals Ingredients list (SCIL)		
			Colorants - Greer	n Circle (Verified Low Concern)		
	ubstance is undisclosed as it is prop liers and to keep exact product reci			ccount for the use of melamine ID: Undisclo		
HAZARD DATA SOURCE: Ph	naros Chemical and Materials Libra	ry HAZARD S	CREENING DATE:	2023-01-24 9:04:27		
%: 0.0000 - 15.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE: Solvent		
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS			
None found			No warni	ings found on HPD Priority Hazard Lis		
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION			
EXEMPT	European Union / European ((EU EC)	Commission	EU - REACH Exer	mptions		
	()		Exempted from F safety	REACH Annex IV listing due to intrinsion		

UNDISCLOSED				ID: Undisclose
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:04:27
%: 0.0000 - 3.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Plasticizer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
END	TEDX - Potential Endocrine Disr	uptors	Potential Endocr	rine Disruptor
EYE	GHS - New Zealand		Eye irritation cat	egory 2
MAM	GHS - New Zealand	Acute inhalation toxicity category 3		toxicity category 3
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION		
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List		nary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	Green Science Policy Institute (C	GSPI)	GSPI - Six Class	es of Problematic Chemicals
			Bisphenols and	Phthalates
RESTRICTED LIST	Green Science Policy Institute (C	GSPI)	GSPI - Six Classes of Problematic Chemicals	
			Some Solvents	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & active April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:04:28	
%: 0.0000 - 2.5000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	: Plasticizer

HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
END	TEDX - Potential Endocrine Disr	TEDX - Potential Endocrine Disruptors		Potential Endocrine Disruptor	
DEV	CA EPA - Prop 65	CA EPA - Prop 65		Developmental toxicity	
DEV	US NIH - Reproductive & Develo Monographs	US NIH - Reproductive & Developmental Monographs		Clear Evidence of Adverse Effects - Developmental Toxicity	
EYE	GHS - New Zealand		Eye irritation cat	tegory 2	
MAM	GHS - New Zealand		Specific target of category 1	organ toxicity - repeated exposure	
МАМ	GHS - Japan	H370 - Causes damage to organs organs/systemic toxicity following Category 1]		damage to organs [Specific target c toxicity following single exposure -	
SKI	GHS - Japan		H315 - Causes s Category 2]	skin irritation [Skin corrosion / irritation -	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
RESTRICTED LIST	Green Science Policy Institute (C	SPI)	GSPI - Six Class	ses of Problematic Chemicals	
			Some Solvents		
	substance is undisclosed as it is proprie pliers and to keep exact product recipes			account for the use of melamine	
cellulose from multiple supp		confidential		ID: Undisclose	
cellulose from multiple supp	bliers and to keep exact product recipes	confidential		ID: Undisclose	
cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: P	bliers and to keep exact product recipes	HAZARD S	CREENING DATE:	ID: Undisclose 2023-01-24 9:04:26	
Cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000	haros Chemical and Materials Library GreenScreen: LT-UNK	HAZARD S	CREENING DATE: NANO: No WARNINGS	ID: Undisclose 2023-01-24 9:04:26	
Cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE	haros Chemical and Materials Library GreenScreen: LT-UNK	HAZARD S	CREENING DATE: NANO: No WARNINGS	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species	
Cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE None found	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	HAZARD S	CREENING DATE: NANO: No WARNINGS No warn	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species	
cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	HAZARD S	CREENING DATE: NANO: No WARNINGS No warn NOTIFICATION No	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species nings found on HPD Priority Hazard List	
cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	HAZARD S	CREENING DATE: NANO: No WARNINGS No warn NOTIFICATION No	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species nings found on HPD Priority Hazard List	
cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This r	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	is proprietar	CREENING DATE: NANO: No WARNINGS No warn NOTIFICATION No	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species nings found on HPD Priority Hazard List listings found on Additional Hazard List	
cellulose from multiple supp UNDISCLOSED HAZARD DATA SOURCE: PI %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This r	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE LIST NAME AND SOURCE	is proprietar	CREENING DATE: NANO: No WARNINGS No warn NOTIFICATION No	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species nings found on HPD Priority Hazard List listings found on Additional Hazard List	
Cellulose from multiple support UNDISCLOSED HAZARD DATA SOURCE: PH %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This r UNDISCLOSED HAZARD DATA SOURCE: PH	haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE LIST NAME AND SOURCE	AZARD SC None	CREENING DATE: NANO: No WARNINGS No warn NOTIFICATION No	ID: Undisclose 2023-01-24 9:04:26 SUBSTANCE ROLE: Polymer species nings found on HPD Priority Hazard List listings found on Additional Hazard List ID: Undisclose 2023-01-24 9:04:27	

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Commission (EU EC)	EU - REACH Exemptions
		Exempted from REACH Annex IV listing due to intrinsic safety
SUBSTANCE NOTES: This mate	rial is part of the polymer and is proprietary.	
WAX	%: 0.5000	

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Suppliers declared, backed by technicla/scientific knowledge, that no residuals or impurities were present in their product; however, no such tests were performed on their product. According to Pharos, known or potential residuals for slack wax (64742-61-6) is paraffin (8002-74-2) and paraffin oil (8012-95-1).

OTHER MATERIAL NOTES: Slack wax is used as water repellant. Data Source for TSCA Definition 2018: A complex combination of hydrocarbons obtained from a petroleum fraction by solvent crystallization (solvent dewaxing) or as a distillation fraction from a very waxy crude. It consists predominantly of saturated straight and branched chain hydrocarbons having carbon numbers predominantly greater than C20.

SLACK WAX (PETROLEUM)

ID: 64742-61-6

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:04:28	
%: 100.0000	GreenScreen: LT-1	RC: PreC	NANO: No	SUBSTANCE ROLE: Water resistance	
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
CAN	EU - REACH Annex XVII CMRs	Carcinogen Category 2 - Substances wh regarded as if they are Carcinogenic to r			
CAN	EU - Annex VI CMRs		Carcinogen Category 1B - Presumed Carcinogen on animal evidence		
MUL	ChemSec - SIN List	CMR - Carcinogen, Mutagen &/or Reproductiv		en, Mutagen &/or Reproductive	
MUL	German FEA - Substances Haza Waters	German FEA - Substances Hazardous to Waters		Class 3 - Severe Hazard to Waters	
CAN	GHS - Australia		H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category	
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1	H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category	
DEV	GHS - Australia	GHS - Australia		ted of damaging the unborn child oxicity - Category 2]	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
None found			No	listings found on Additional Hazard Lists	

SUBSTANCE NOTES: See materials notes for details.

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Sectio	CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable		
CERTIFYING PARTY: Self-declared	ISSUE DATE: 2022-09-27	CERTIFIER OR LAB: n/a		
APPLICABLE FACILITIES: All facilities CERTIFICATE URL:	EXPIRY DATE:			

CERTIFICATION AND COMPLIANCE NOTES: According to LEED v4, emissions and content requirements for Composite Wood are to follow the Composite Wood Evaluation which states: "Composite wood, as defined by the California Air Resources Board, Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. "

SUSTAINABLE FORESTRY	FSC Certification - Chain of Custody (COC)				
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Uniboard Canada Inc Multi- Site CERTIFICATE URL: https://info.fsc.org	ISSUE DATE: 2007-11-06 EXPIRY DATE: 2027-12-01	CERTIFIER OR LAB: Preferred by Nature			
CERTIFICATION AND COMPLIANCE NOTES: Certificate r	egistration code NC-COC-002726, NC-C	E-002726			
FORMALDEHYDE EMISSIONS EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 No-Added Formaldehyde (NAF)					
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Mont-Laurier, Quebec, Canada, J9L 3W3	ISSUE DATE: 2019-03-25 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association			

CERTIFICATE URL:

https://www.compositepanel.org/testingcertification/certification-programs/

CERTIFICATION AND COMPLIANCE NOTES: Fulfills The Requirements Of: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160- 16, ANSI A208.2 and California Air Resources Board (CARB) Airborne Toxic Control Measures (ATCM) 93120. State of California Air Resources Board Executive Order N-18-118 (https://www.arb.ca.gov/toxics/compwood/naf_ulef/listofnaf_ulef.htm).

MULTI-ATTRIBUTE	CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification			
CERTIFYING PARTY: Second Party	ISSUE DATE: 2019-01-22	CERTIFIER OR LAB: Composite		
APPLICABLE FACILITIES: Mont-Laurier, Quebec,	EXPIRY DATE:	Panel Association		
Canada, J9L 3W3				
CERTIFICATE URL:				
https://www.compositepanel.org/testing-				
certification/certification-programs/				

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or Post-Consumer Fiber Content; Sustainable Use of Wood Fiber; Responsible Wood Sourcing.

🛨 Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

All of Uniboard's product documentation and certificats are available on line at https://www.uniboard.com/en/documentation-center

MANUFACTURER INFORMATION

MANUFACTURER: Uniboard Canada Inc. ADDRESS: 5555, Ernest Cormier Street Laval Quebec H7C 2S9, Canada WEBSITE: www.uniboard.com

CONTACT NAME: Pierre Martin TITLE: Technology and Innovation Director PHONE: 450.664.6000 EMAIL: pierre.martin@uniboard.com

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity CAN Cancer DEV Developmental toxicity END Endocrine activity EYE Eye irritation/corrosivity GEN Gene mutation GLO Global warming LAN Land toxicity MAM Mammalian/systemic/organ toxicity MUL Multiple NEU Neurotoxicity NF Not found on Priority Hazard Lists OZO Ozone depletion PBT Persistent, bioaccumulative, and toxic PHY Physical hazard (flammable or reactive) REP Reproductive RES Respiratory sensitization SKI Skin sensitization/irritation/corrosivity UNK Unknown

LT-P1 List Translator Possible 1 (Possible Benchmark-1) LT-1 List Translator 1 (Likely Benchmark-1) LT-UNK List Translator Benchmark Unknown NoGS No GreenScreen.

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content PostC Post-consumer recycled content UNK Inclusion of recycled content is unknown None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material Nested Method / Product Threshold Substances listed within each material per threshold indicated per product Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology Third Party Verified Verification by independent certifier approved by HPDC Preparer Third party preparer, if not self-prepared by manufacturer Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- a method for the assessment of exposure or risk associated with product handling or use,
- a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD standard noted.

Particleboard by Uniboard Canada Inc.

Health Product Declaration v2.3 created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 31115

CLASSIFICATION: 06 42 00 Wood Paneling

PRODUCT DESCRIPTION: This HPD covers all available dimensions, thicknesses and laminate options for Particleboard by Uniboard®.

Particleboard is primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces of particles, as distinguished from fibers, bonded together with a bonding system cured under heat and pressure, and contains additives.

Section 1: Summary

CONTENT INVENTORY

• Product

Inventory Reporting Threshold Level **Residuals/Impurities Evaluation** Format • 100 ppm Completed in 7 of 7 Materials Nested Materials Method C 1,000 ppm Explanation(s) provided O Basic Method O Per GHS SDS for Residuals/Impurities? O Other **Threshold Disclosed Per** ⊙ Yes ○ No O Material

Nested Method / Product Threshold

For all contents above the threshold, the mai	nufacturer has:
Characterized	• Yes O No
Provided weight and role.	
Screened	• Yes O No
Provided screening results using HPDC-appl	roved
methods.	
Identified	OYes O No
Provided name and CAS RN or other identified	er.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

NESTED MATERIAL | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY

GREENSCREEN SCORE | HAZARD TYPE

WOOD [WOOD FIBER] UREA FORMALDEHYDE RESIN [UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK | EYE UNDISCLOSED LT-UNK | UNDISCLOSED BM-4 *UNDISCLOSED* BM-1 | CAN | END | SKI | MUL | MAM | GEN | AQU | EYE | PHY] WATER [WATER BM-4] MELAMINE CELLULOSE [UNDISCLOSED NoGS UNDISCLOSED LT-UNK | UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK | UNDISCLOSED NoGS UNDISCLOSED LT-P1 | SKI UNDISCLOSED LT-UNK UNDISCLOSED LT-1 | CAN | END | MAM UNDISCLOSED BM-4 UNDISCLOSED LT-P1 | END | EYE | MAM UNDISCLOSED LT-1 | END | DEV | EYE | MAM | SKI UNDISCLOSED LT-UNK UNDISCLOSED BM-4] SCAVENGER [UREA LT-UNK | EYE] WAX [SLACK WAX (PETROLEUM) LT-1 | CAN | MUL | DEV] CATALYST [AMMONIUM SULFATE LT-P1 | END]

VOLATILE ORGANIC COMPOUND (VOC) CONTENT VOC Content data is not applicable for this product category.

Number of Greenscreen BM-4/BM3 contents ... 4

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... LT-1, LT-P1, BM-1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

Special Conditions applied: [BiologicalMaterial]

HPD prepared using a Nested Materials Inventory with a product threshold at 100 ppm. The content inventory includes ranges to encompass both Particleboard with and without melamine lamiates. Particleboard contain materials with Special Conditions (biological material and polymers) as per the HPDC. Reporting of Biological materials was done according to HPDC Guidelines. Guidelines for reporting polymers are still under development by HPDC and the manufacturers will update the HPD accordingly once these guidelines get published. Substances present in Particleboard panels, as well as known residuals and impurities, have been disclosed at 100 ppm. More details about how residuals and impurities were considered available in the appropriate sections.

CERTIFICATIONS AND COMPLIANCE See Section 3 for additional listings.

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable

Sustainable forestry: FSC Certification - Chain of Custody (COC) Formaldehyde emissions: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Phase 2

Formaldehyde emissions: EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Phase 2

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1. Pre-checked for LEED v4.1 Option 1. Third Party Verified?

O Yes ⊙ No PREPARER: Vertima VERIFIER: VERIFICATION #: SCREENING DATE: 2023-01-24 PUBLISHED DATE: 2023-01-24 EXPIRY DATE: 2026-01-24 This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- Basic Inventory method with Product-level threshold.
- Nested Material Inventory method with Product-level threshold
- Nested Material Inventory method with individual Material-level thresholds

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

WOOD	%: 83.7000 - 86.500	00			
PRODUCT THRESHOLD: ppm	: 100 RESIDUALS AND IN Yes	IPURITIES EVALUATIC	N COMPLETED:	MATERIAL TYPE: Wood Du Chips	st, Fiber or
RESIDUALS AND IMPUR	ITIES NOTES: No residuals or	impurities suspected to	be present in woo	d fiber.	
OTHER MATERIAL NOTE	ES: Weight percentage may var	y as this HPD covers m	ultiple products, i.e	e. with or without laminate.	
WOOD FIBER				ID: Biol	ogical Materia
HAZARD DATA SOURC	E: HPDC Special Conditions	Policy			
%: 100.0000 G	areenScreen: Not Required	RC: PreC	NANO: No	MATERIAL ROLE: Structure	e component
HAZARD TYPE	AGENCY AND LIS	ST TITLES	WARNINGS		
	Hazard Scree	ening is not applicable t	o this Special Cond	dition	
BIOLOGICAL MATER	IALS CATEGORY: Tree-based	materials			
INGREDIENT DESCRI	PTION: 9004-34-6				
	not provide information on aller pesticides, and other potential h			-	-
JREA FORMALDEHYDE	RESIN %: 7.6000 - 7.900	0			
PRODUCT THRESHOLD:	100 ppm RESIDUALS AND	IMPURITIES EVALUAT	ION COMPLETED:	Yes MATERIAL TYPE: Poly	ymeric Materia
based, is formaldehyde (TITIES NOTES: According to Ph 50-00-0). According to the sup a anticipated to be present in t	plier and based on their	r technical/scientifi		
DTHER MATERIAL NOTE his product is confidenti	ES: Weight percentage may var al.	y as this HPD covers m	ultiple products, i.e	e. with or without laminate. The	composition of
UNDISCLOSED				Ι	D: Undisclosed
	CE: Pharos Chemical and Mat	terials Library HAZA	RD SCREENING DA	TE: 2023-01-24 9:06:27	D: Undisclose

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
SKI	GHS - New Zealand	Skin sensitisation category 1
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	International Living Future Institute (ILFI)	-

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of interchangeable resin in the product and to keep exact product recipe confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:28
%: 15.0000 - 40.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Stabilizer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
EYE	GHS - New Zealand		Eye irritation cat	tegory 2
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	ses of Problematic Chemicals
			Antimicrobials	

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of interchangeable resin in the product and to keep exact product recipe confidential.

UNDISCLOSED				ID: L	Indisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:06:27	
%: 0.0000 - 40.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Bin	lder
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
	EC - CEPA DSL		Persistent		

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of interchangeable resin in the product and to keep exact product recipe confidential.

UNDISCLOSED				ID	: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	CREENING DATE:	2023-01-24 9:06:29	
%: 25.0000 - 35.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE:	Diluent
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Priority	Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
EXEMPT	European Union / European Cor (EU EC)	nmission	EU - REACH Exe	emptions	
			Exempted from safety	REACH Annex IV listing due	e to intrinsic

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary. Weight interval is used to account for the use of interchangeable resin in the product and to keep exact product recipe confidential.

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:29
%: Impurity/Residual	GreenScreen: BM-1	RC: None	NANO: No	SUBSTANCE ROLE: Impurity/Residual
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	US CDC - Occupational Carcino	gens	Occupational Ca	arcinogen
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
CAN	EU - REACH Annex XVII CMRs		0	egory 2 - Substances which should be ney are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate	egory 1B - Presumed Carcinogen based nce
SKI	МАК		Sensitizing Subs	stance Sh - Danger of skin sensitization

MUL	ChemSec - SIN List	CMR - Carcinogen, Mutagen &/or Reproductive Toxicant
MUL	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters
CAN	US EPA - IRIS Carcinogens	(1986) Group B1 - Probable human Carcinogen
CAN	IARC	Group 1 - Agent is Carcinogenic to humans
CAN	CA EPA - Prop 65	Carcinogen
CAN	US NIH - Report on Carcinogens	Known to be a human Carcinogen
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
MAM	US EPA - EPCRA Extremely Hazardous Substances	Extremely Hazardous Substances
CAN	GHS - Japan	H350 - May cause cancer [Carcinogenicity - Category 1A]
CAN	GHS - Australia	H350i - May cause cancer by inhalation [Carcinogenicity - Category 1A or 1B]
CAN	GHS - Korea	H350 - May cause cancer [Carcinogenicity - Category 1]
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H350 - May cause cancer [Carcinogenicity - Category 1A or 1B]
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
МАМ	EU - GHS (H-Statements) Annex 6 Table 3-1	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
MAM	EU - GHS (H-Statements) Annex 6 Table 3-1	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
MAM	EU - GHS (H-Statements) Annex 6 Table 3-1	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
GEN	EU - GHS (H-Statements) Annex 6 Table 3-1	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
GEN	GHS - Japan	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
МАМ	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Australia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - Korea	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1]
AQU	GHS - Japan	H401 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]

МАМ	GHS - Korea	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
GEN	EU - Annex VI CMRs	Mutagen - Category 2
МАМ	GHS - Japan	H311 - Toxic in contact with skin [Acute Toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H300 - Fatal if swallowed [Acute toxicity (oral) - Category 1 or 2]
МАМ	GHS - Malaysia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Malaysia	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
SKI	GHS - Malaysia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
EYE	GHS - Malaysia	H318 - Causes serious eye damage [Serious eye damage/eye irritation - Category 1]
МАМ	GHS - Australia	H301 - Toxic if swallowed [Acute toxicity (oral) - Category 3]
МАМ	GHS - Australia	H311 - Toxic in contact with skin [Acute toxicity (dermal) - Category 3]
МАМ	GHS - Korea	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 2]
РНҮ	GHS - Korea	H220 - Extremely flammable gas [Flammable gases - Category 1]
РНҮ	Québec CSST - WHMIS 1988	Class B1 - Flammable gases
МАМ	GHS - Japan	H330 - Fatal if inhaled [Acute toxicity (inhalation: gas) - Category 2]
РНҮ	GHS - Japan	H220 - Extremely flammable gas [Flammable gases - Category 1]
CAN	GHS - Malaysia	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
AQU	GHS - Australia	H401 - Aquatic Acute 2 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]
МАМ	GHS - Australia	H330 - Fatal if inhaled [Acute toxicity (inhalation) - Category 1 or 2]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List
		Precautionary list of substances recommended for avoidance
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Footwear, Apparel & Jewelry Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Antimicrobials
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes of Problematic Chemicals
		Some Solvents
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
		Red List substances to avoid in Living Building Challenge V4.0 projects

SUBSTANCE NOTES: This substance is undisclosed as it is proprietary.

WATER

%: 4.5000 - 4.6000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: No MATERIAL TYPE: Other: Natural resource

RESIDUALS AND IMPURITIES NOTES: No data collected regarding this material.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate. Standard water is used (municipal).

ID.	770		
11.1.	11.5	/- 12	5-0
			~ ~

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:27
%: 100.0000	GreenScreen: BM-4	RC: None	NANO: No	SUBSTANCE ROLE: Humectant
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
EXEMPT	European Union / European Cor (EU EC)	nmission	EU - REACH Exe	emptions
	(,		Exempted from safety	REACH Annex IV listing due to intrinsic

SUBSTANCE NOTES: See materials notes for details.

WATER

 MELAMINE CELLULOSE
 %: 0.0000 - 3.2000

 PRODUCT THRESHOLD: 100 ppm
 RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes
 MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Residuals and impurities are below the reporting threshold.

OTHER MATERIAL NOTES: Weight percentage may vary as this HPD covers multiple products, i.e. with or without laminate, and this material comes from multiple suppliers. The composition of this material is confidential.

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:06:29	
%: 0.0000 - 65.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: PC	olymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
None found			No warr	nings found on HPD Prior	rity Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
RESTRICTED LIST	International Living Future Institution	ute (ILFI)	a a	Challenge 4.0 - Red List c ective April 1, 2022	of Materials &
			Red List substar Challenge V4.0 p	nces to avoid in Living Bu projects	uilding

UNDISCLOSED				ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCF	REENING DATE:	2023-01-24 9:06:28
%: 0.0000 - 65.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species

		Red List substances to avoid in Living Building Challenge V4.0 projects
RESTRICTED LIST	International Living Future Institute (ILFI)	Living Building Challenge 4.0 - Red List of Materials & Chemicals - Effective April 1, 2022
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
	EC - CEPA DSL	Persistent
HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS

UNDISCLOSED

ID: Undisclosed

	Pharos Chemical and Materials Library			2023-01-24 9:06:29
HAZAND DATA SOUNCE.		HAZAND S	ALLINING DATE.	2023-01-24 9.00.29
%: 21.0000 - 55.0000	GreenScreen: NoGS	RC: None	NANO: No	SUBSTANCE ROLE: Carrier
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
EXEMPT	European Union / European Con	nmission	EU - REACH Exe	emptions
	(EU EC)		Exempted from safety	REACH Annex IV listing due to intrinsic

UNDISCLOSED				ID: Undisclos
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:30
%: 0.0000 - 35.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
SKI	GHS - New Zealand		Skin sensitisatio	n category 1
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institu	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED				ID: Undisclos
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:30
%: 0.0000 - 35.0000	GreenScreen: LT-UNK	RC: None	NANO: No	SUBSTANCE ROLE: Polymer species
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
None found			No warr	nings found on HPD Priority Hazard Lis
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautic	onary List
			Precautionary lis avoidance	st of substances recommended for
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & ective April 1, 2022
			Red List substar Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE: Pha	aros Chemical and Materials Library	HAZARD SCRE	EENING DATE:	2023-01-24 9:06:30	
%: 0.0000 - 25.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	: Opacifier

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	US CDC - Occupational Carcino	ogens Occupational Carcinogen
CAN	CA EPA - Prop 65	Carcinogen - specific to chemical form or exposure route
CAN	IARC	Group 2B - Possibly carcinogenic to humans - inhaled from occupational sources
CAN	МАК	Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value
END	TEDX - Potential Endocrine Disr	ruptors Potential Endocrine Disruptor
CAN	МАК	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1 H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
CAN	GHS - Japan	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
МАМ	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
CAN	EU - Annex VI CMRs	Carcinogen Category 2 - Suspected human Carcinogen
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION vation C2C Certified v4 Product Standard Restricted
RESTRICTED LIST	Institute (C2CPII)	Substances List (RSL) - Effective July 1, 2022
		Cosmetics & Personal Care Products
POSITIVE LIST	US Environmental Protection Ag EPA)	gency (US US EPA - DfE Safer Chemicals Ingredients list (SCIL) Colorants - Green Circle (Verified Low Concern)
	is substance is undisclosed as it is proprie Ippliers and to keep exact product recipes	etary. Weight interval is used to account for the use of melamine s confidential.
UNDISCLOSED		ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SCREENING DATE: 2023-01-24 9:06:31
%: 0.0000 - 15.0000	GreenScreen: BM-4	RC: None NANO: No SUBSTANCE ROLE: Solvent
HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists
ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Cor	mmission EU - REACH Exemptions
	(EU EC)	Exempted from REACH Annex IV listing due to intrinsic

UNDISCLOSED				ID: Undisclose
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:06:32
%: 0.0000 - 3.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Plasticizer
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
END	TEDX - Potential Endocrine Disr	uptors	Potential Endocr	rine Disruptor
EYE	GHS - New Zealand		Eye irritation cate	egory 2
MAM	GHS - New Zealand		Acute inhalation	toxicity category 3
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Perkins+Will (P+W)		P&W - Precautio	nary List
			Precautionary lis avoidance	t of substances recommended for
RESTRICTED LIST	Green Science Policy Institute (C	SPI)	GSPI - Six Class	es of Problematic Chemicals
			Bisphenols and I	Phthalates
RESTRICTED LIST	Green Science Policy Institute (C	SPI)	GSPI - Six Class	es of Problematic Chemicals
			Some Solvents	
RESTRICTED LIST	International Living Future Institution	ute (ILFI)		Challenge 4.0 - Red List of Materials & ctive April 1, 2022
			Red List substan Challenge V4.0 p	nces to avoid in Living Building projects

UNDISCLOSED					ID: Undisclosed
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SC	REENING DATE:	2023-01-24 9:06:32	
%: 0.0000 - 2.5000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE	: Plasticizer

HAZARD TYPE				
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor
DEV	CA EPA - Prop 65		Developmental t	oxicity
DEV	US NIH - Reproductive & Develo Monographs	pmental	Clear Evidence of Toxicity	of Adverse Effects - Developmental
EYE	GHS - New Zealand		Eye irritation cat	egory 2
MAM	GHS - New Zealand		Specific target o category 1	organ toxicity - repeated exposure
MAM	GHS - Japan			lamage to organs [Specific target toxicity following single exposure -
SKI	GHS - Japan		H315 - Causes s Category 2]	skin irritation [Skin corrosion / irritation -
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
RESTRICTED LIST	Green Science Policy Institute (iSPI)	GSPI - Six Class	ses of Problematic Chemicals
			Some Solvents	
	ubstance is undisclosed as it is proprie liers and to keep exact product recipes			account for the use of melamine
cellulose from multiple supp		confidential.		ID: Undisclose
cellulose from multiple supp	liers and to keep exact product recipes	confidential.		ID: Undisclose
cellulose from multiple suppl JNDISCLOSED HAZARD DATA SOURCE: Ph	liers and to keep exact product recipes	confidential. HAZARD S(CREENING DATE:	ID: Undisclosed 2023-01-24 9:06:30
Cellulose from multiple suppl JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK	confidential. HAZARD S(CREENING DATE: NANO: No WARNINGS	ID: Undisclosed 2023-01-24 9:06:30
Cellulose from multiple suppl JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK	confidential. HAZARD S(CREENING DATE: NANO: No WARNINGS	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species
Cellulose from multiple suppl JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	confidential. HAZARD S(CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species
Cellulose from multiple supplet JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	confidential. HAZARD SC RC: None	CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION No	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species
Cellulose from multiple supplet JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	confidential. HAZARD SC RC: None	CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION No	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species
Cellulose from multiple supplet JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This m JNDISCLOSED	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE	confidential. HAZARD SC RC: None	CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION No	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species hings found on HPD Priority Hazard Lists listings found on Additional Hazard Lists ID: Undisclosed
Cellulose from multiple supplet JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This m JNDISCLOSED	liers and to keep exact product recipes haros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE LIST NAME AND SOURCE haterial is a polymer in the product and	confidential. HAZARD SC RC: None	CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION No	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species hings found on HPD Priority Hazard Lists listings found on Additional Hazard Lists ID: Undisclosed
Cellulose from multiple supplet JNDISCLOSED HAZARD DATA SOURCE: Ph %: 0.0000 - 2.0000 HAZARD TYPE None found ADDITIONAL LISTINGS None found SUBSTANCE NOTES: This m JNDISCLOSED	aaros Chemical and Materials Library GreenScreen: LT-UNK LIST NAME AND SOURCE LIST NAME AND SOURCE	confidential. HAZARD SC RC: None is proprietary	CREENING DATE: NANO: No WARNINGS No warr NOTIFICATION No	ID: Undisclosed 2023-01-24 9:06:30 SUBSTANCE ROLE: Polymer species hings found on HPD Priority Hazard Lists listings found on Additional Hazard Lists ID: Undisclosed 2023-01-24 9:06:31

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFI	CATION	
EXEMPT	European Union / European Cor (EU EC)	nmission EU - RE	ACH Exemptions	
		Exempt safety	ed from REACH Annex IV	/ listing due to intrinsic
SUBSTANCE NOTES: This ma	aterial is part of the polymer and is pro	prietary.		
SCAVENGER	%: 0.5000 - 0.6000			
PRODUCT THRESHOLD: 100 pp	m RESIDUALS AND IMPURITIES EV	ALUATION COMPLETI	D: Yes MATERIAL TY	PE: Animal-Based Material
RESIDUALS AND IMPURITIES NO	OTES: Residuals are below the report	ng threshold, while the	ere are no impurities pres	ent in this material.
OTHER MATERIAL NOTES: Weig has multiple suppliers. This produ	ht percentage may vary as this HPD of the tip on the US EDA's CRAS (CENER			ninate, and this material
UREA	UCLIS ON THE US FDA'S GRAS (GENER	ALLY REGARDED AS	SAFE) list.	ID: 57-13-6
UREA	aros Chemical and Materials Library			
UREA		HAZARD SCREENIN	G DATE: 2023-01-24 9:0	
UREA HAZARD DATA SOURCE: Pha	aros Chemical and Materials Library	HAZARD SCREENIN	G DATE: 2023-01-24 9:0 O: No SUBSTANC	6:31
UREA HAZARD DATA SOURCE: Pha %: 98.5000 - 100.0000	aros Chemical and Materials Library GreenScreen: LT-UNK	HAZARD SCREENING RC: None NAM WARNI	G DATE: 2023-01-24 9:0 O: No SUBSTANC	6:31
UREA HAZARD DATA SOURCE: Pha %: 98.5000 - 100.0000 HAZARD TYPE	GreenScreen: LT-UNK	HAZARD SCREENING RC: None NAM WARNI	G DATE: 2023-01-24 9:0 O: No SUBSTANC NGS ation category 2	6:31
UREA HAZARD DATA SOURCE: Pha %: 98.5000 - 100.0000 HAZARD TYPE EYE	GreenScreen: LT-UNK LIST NAME AND SOURCE GHS - New Zealand	HAZARD SCREENING RC: None NAM WARNI Eye irrit NOTIFIC	G DATE: 2023-01-24 9:0 O: No SUBSTANC NGS ation category 2	6:31 E ROLE: Scavenger
UREA HAZARD DATA SOURCE: Pha %: 98.5000 - 100.0000 HAZARD TYPE EYE ADDITIONAL LISTINGS	GreenScreen: LT-UNK LIST NAME AND SOURCE GHS - New Zealand LIST NAME AND SOURCE	HAZARD SCREENING RC: None NAM WARNI Eye irrit NOTIFIC	G DATE: 2023-01-24 9:0 O: No SUBSTANC NGS ation category 2 CATION Six Classes of Problemat	6:31 E ROLE: Scavenger

WAX

%: 0.3000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: Suppliers declared, backed by technical/scientific knowledge, that no residuals or impurities were present in their product; however, no such tests were performed on their product. According to Pharos, known or potential residuals for slack wax (64742-61-6) is paraffin (8002-74-2) and paraffin oil (8012-95-1).

OTHER MATERIAL NOTES: Slack wax is used as water repellant. Data Source for TSCA Definition 2018: A complex combination of hydrocarbons obtained from a petroleum fraction by solvent crystallization (solvent dewaxing) or as a distillation fraction from a very waxy crude. It consists predominantly of saturated straight and branched chain hydrocarbons having carbon numbers predominantly greater than C20.

HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD SO	CREENING DATE:	2023-01-24 9:06:32
%: 100.0000	GreenScreen: LT-1	RC: None	NANO: No	SUBSTANCE ROLE: Water resistanc
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS	
CAN	EU - REACH Annex XVII CMRs		-	egory 2 - Substances which should be ey are Carcinogenic to man
CAN	EU - Annex VI CMRs		Carcinogen Cate on animal evider	egory 1B - Presumed Carcinogen base
MUL	ChemSec - SIN List		CMR - Carcinogo Toxicant	en, Mutagen &/or Reproductive
MUL	German FEA - Substances Haza Waters	rdous to	Class 3 - Severe	Hazard to Waters
CAN	GHS - Australia		H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category
CAN	EU - GHS (H-Statements) Annex	6 Table 3-1	H350 - May caus 1A or 1B]	se cancer [Carcinogenicity - Category
DEV	GHS - Australia			ted of damaging the unborn child exicity - Category 2]
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION	
None found			No	listings found on Additional Hazard Lis

SUBSTANCE NOTES: See materials notes for details.

CATALYST	%: 0.1000	
PRODUCT THRESHOLD: 100 ppm	RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes	MATERIAL TYPE: Other: Inorganic sulfate salt

RESIDUALS AND IMPURITIES NOTES: The supplier declared, backed by technical/scientific knowledge, that no impurities or residuals were present in their product.

OTHER MATERIAL NOTES: Some substances fall below the reportable thershold, and are not reported in the content inventory.

AMMONIUM SULFATE				IC	D: 7783-20-2
HAZARD DATA SOURCE:	Pharos Chemical and Materials Library	HAZARD S	CREENING DATE:	2023-01-24 9:06:33	
%: 98.0000 - 99.0000	GreenScreen: LT-P1	RC: None	NANO: No	SUBSTANCE ROLE: Cat	alyst
HAZARD TYPE	LIST NAME AND SOURCE		WARNINGS		
END	TEDX - Potential Endocrine Disr	uptors	Potential Endoc	rine Disruptor	
ADDITIONAL LISTINGS	LIST NAME AND SOURCE		NOTIFICATION		
RESTRICTED LIST	Cradle to Cradle Products Innov Institute (C2CPII)	vation	020 0000000	Product Standard Restricted (RSL) - Effective July 1, 2022	
			Biological and E	nvironmentally Released Mate	erials
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Class	es of Problematic Chemicals	
			Antimicrobials		

SUBSTANCE NOTES: See materials notes for details.

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS	CDPH Standard Method V1.2 (Section 01350/CHPS) - Not applicable	
CERTIFYING PARTY: Self-declared APPLICABLE FACILITIES: All facilities CERTIFICATE URL:	ISSUE DATE: 2022-09-27 EXPIRY DATE:	CERTIFIER OR LAB: n/a
CERTIFICATION AND COMPLIANCE NOTES: According to Composite Wood Evaluation which states: "Composite woo Reduce Formaldehyde Emissions from Composite Wood P meet the California Air Resources Board ATCM for formald formaldehyde resins. "	od, as defined by the California Air Resources Boa roducts Regulation, must be documented to have	ard, Airborne Toxic Measure to low formaldehyde emissions that
SUSTAINABLE FORESTRY	FSC Certification - Chain of Custody (COC)	
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Uniboard Candada Inc Multi- Site CERTIFICATE URL: https://info.fsc.org/	ISSUE DATE: 2007-11-06 EXPIRY DATE: 2027-12-01	CERTIFIER OR LAB: Preferred by Nature
CERTIFICATION AND COMPLIANCE NOTES: Certificate re-	gistration code NC-COC-002726 NC-CW-002726	
FORMALDEHYDE EMISSIONS	EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Phase 2	
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Sayabec, Quebec, Canada, G0J 3K0 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	ISSUE DATE: 2019-03-21 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association
CERTIFICATION AND COMPLIANCE NOTES: Fulfills The R California Air Resources Board (CARB) Airborne Toxic Con		CAN/CSA-0160- 16, ANSI A208.1 and
FORMALDEHYDE EMISSIONS	EPA TSCA Title VI (40 CFR 770), CAN/CSA-0160-16, ANSI A208.1 and CARB Composite Wood ATCM CA 93120 Phase 2	
CERTIFYING PARTY: Third Party APPLICABLE FACILITIES: Val d'Or, Quebec, Canada, J9P 5G6 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	ISSUE DATE: 2019-04-30 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association
CERTIFICATION AND COMPLIANCE NOTES: Fulfills The R California Air Resources Board (CARB) Airborne Toxic Con		CAN/CSA-0160- 16, ANSI A208.1 and
MULTI-ATTRIBUTE	CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification	
CERTIFYING PARTY: Second Party APPLICABLE FACILITIES: Val d'Or, Quebec, Canada, J9P 5G6 CERTIFICATE URL: https://www.compositepanel.org/testing- certification/certification-programs/	ISSUE DATE: 2019-01-22 EXPIRY DATE:	CERTIFIER OR LAB: Composite Panel Association

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or ost-Consumer Fiber Content; Sutainable Use of Wood Fiber; Responsible Wood Sourcing.

MUI	.TI-AT	TRIBL	JTF .

CPA 4-19 Eco-Certified Composite (ECC) - Value Added Certification

CERTIFYING PARTY: Second Party APPLICABLE FACILITIES: Sayabec, Quebec, Canada, G0J 3K0 CERTIFICATE URL: ISSUE DATE: 2019-03-05 EXPIRY DATE: CERTIFIER OR LAB: Composite Panel Association

CERTIFICATE URL: https://www.compositepanel.org/testingcertification/certification-programs/

CERTIFICATION AND COMPLIANCE NOTES: Carbon Footprint; Locally Sourced Fiber; Recycled, Recovered or Post-Consumer Fiber Content; Sustainable Use of Wood Fiber; Responsible Wood Sourcing.

😑 Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

All of Uniboard's product documentation and certificats are available on line at https://www.uniboard.com/en/documentation-center

MANUFACTURER INFORMATION

MANUFACTURER: Uniboard Canada Inc. ADDRESS: 5555, Ernest Cormier Street Laval Quebec H7C 2S9, Canada WEBSITE: www.uniboard.com

CONTACT NAME: Pierre Martin TITLE: Technology and Innovation Director PHONE: 450.664.6000 EMAIL: pierre.martin@uniboard.com

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity CAN Cancer DEV Developmental toxicity END Endocrine activity EYE Eye irritation/corrosivity GEN Gene mutation GLO Global warming LAN Land toxicity MAM Mammalian/systemic/organ toxicity MUL Multiple NEU Neurotoxicity NF Not found on Priority Hazard Lists OZO Ozone depletion PBT Persistent, bioaccumulative, and toxic PHY Physical hazard (flammable or reactive) REP Reproductive RES Respiratory sensitization SKI Skin sensitization/irritation/corrosivity UNK Unknown

LT-P1 List Translator Possible 1 (Possible Benchmark-1) LT-1 List Translator 1 (Likely Benchmark-1) LT-UNK List Translator Benchmark Unknown NoGS No GreenScreen.

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content PostC Post-consumer recycled content UNK Inclusion of recycled content is unknown None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material Nested Method / Product Threshold Substances listed within each material per threshold indicated per product Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology Third Party Verified Verification by independent certifier approved by HPDC Preparer Third party preparer, if not self-prepared by manufacturer Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- a method for the assessment of exposure or risk associated with product handling or use,
- a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

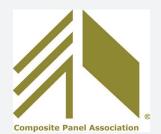
The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and for compliance with the HPD standard noted.

Environmental Product Declaration

MEDIUM DENSITY FIBERBOARD



Medium Density Fiberboard (MDF) is a composite panel product used for composite furniture, kitchen cabinets, molding, and laminate floors.



The Composite Panel Association is pleased to present this Environmental Product Declaration (EPD) for Medium Density Fiberboard (MDF). This EPD was developed in compliance with ISO 14025 and ISO 21930 and has been verified under UL Environment's EPD program.

The EPD includes Life Cycle Assessment (LCA) results for all processes up to the point that MDF is packaged and ready for shipment at the manufacturing gate. The life cycle of MDF includes the production of wood residues that are a coproduct of lumber milling. The cradle-to-gate product system thus includes forest management, logging, transportation of logs to lumber mills, sawing, transportation of wood residues to MDF plants, and MDF production.

Please follow our sustainability initiatives at: www.compositepanel.org/cpa-green/



ENVIRONMENTAL PRODUCT DECLARATION





North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

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. <u>Exclusions</u>: 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. <u>Accuracy of Results</u>: 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. <u>Comparability</u>: 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.

	10 Engineering		
PROGRAM OPERATOR	UL Environment		
DECLARATION HOLDER	Composite Panel Association		
DECLARATION NUMBER	4788663642.101.1		
DECLARED PRODUCT	North American Medium Density Fiberboard		
REFERENCE PCR	FPInnovations PCR for North American Structural and Architectural Wood Products, v.2.0 2015		
	□ EN 15804 (2012)		
REFERENCE PCR STANDARD	⊠ ISO 21930 (2007)		
STANDARD	□ ISO 21930 (2017)		
DATE OF ISSUE	December 31, 2018		
PERIOD OF VALIDITY	5 Years		
	Product definition and information about building physics		
	Information about basic material and the material's origin		
	Description of the product's manufacture		
CONTENTS OF THE DECLARATION	Indication of product processing		
	Information about the in-use conditions		
	Life cycle assessment results		
	Testing results and verifications		
The PCR review was conducted by:		FPInnovations	
		PCR Peer Review Panel	
		Chair: Thomas P. Gloria,	
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories		Grant R. Martin	
		Grant R. Martin, UL Environment	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:		Jourse h. Hellert.	
		James Mellentine, Ramboll	



Environment

ENVIRONMENTAL PRODUCT DECLARATION



Environment

North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Description of Industry and Product

Description of North American MDF Industry

The North American composite panel industry is a major contributor to both the United States and Canada economies. MDF is a composite panel that is valued for its homogeneity that allows precision millwork and finishing. These properties have caused MDF to be widely used to manufacture furniture, kitchen cabinets, doors, and moulding. MDF is also widely regarded as a sustainable material because it utilizes wood residues from other manufacturing processes that might otherwise be wasted. In 2016, total North American production of MDF was over four million m³, with three million m³ from United States facilities and Canada producing an additional one million m³.

Manufacturers of MDF in North American are members of the Composite Panel Association, Leesburg, Virginia. Nine MDF facilities contributed production data from the United States and Canada (Table 1) for this EPD with a combined production of 1.8 million m³, or 45% of total industry production.

Table 1: Participating Facilities				
Manufacturer	City, State/Province	Country		
Arauco North America	Eugene, Oregon	United States		
Arauco North America	Malvern, Alaska	United States		
Arauco North America	Moncure, North Carolina	United States		
Arauco North America	Sault Ste. Marie, Ontario	Canada		
Arauco North America	St. Stephen, New Brunswick	Canada		
Uniboard Inc.	Mont-Laurier, Quebec	Canada		
West Fraser/ Ranger Board	Blue Ridge, Alberta	Canada		
West Fraser/WestPine	Quesnel, British Columbia	Canada		
Weyerhaeuser NR	Columbia Falls, Montana	United States		



According to ISO 14025 and ISO 21930:2007

Description of MDF Product

The product profile presented in this EPD is for a declared unit of 1 cubic meter of MDF. MDF is manufactured from wood residues that are generated as a coproduct of lumber milling. The cradle-to-gate product system thus includes forest management, logging, transportation of logs to lumber mills, sawing, transportation of wood residues to MDF plants, MDF production, and packaging for shipment.

One cubic meter of average North American MDF weighs 782.41 kg, excluding the variable moisture content. The product composition is presented below and represents the weighted average of the various resin types that are used by different manufacturers:

- Wood residues: 702.31 oven dry kg (89.77%)
- Urea formaldehyde (UF) resin: 58.13 kg (7.43%)
- Melamine urea formaldehyde (MUF) resin: 8.59 kg (1.10%)
- Urea: 5.46 kg (0.70%)
- Polymeric diphenyl methane diisocyanate (PMDI) Resin: 2.88 kg (0.37%)
- Ammonium Sulfate: 0.10 kg (0.01%)
- Ammonium Chloride: 0.18 kg (0.02%)
- Slack wax: 4.75 kg (0.61%)

This EPD is based on LCA studies that considered the entire range of MDF product sizes and functions. The results are presented for the metric unit of measure, 1 cubic meter, which is equal to 565 square feet (3/4" thickness).







According to ISO 14025 and ISO 21930:2007

Business-to-Business Industry Average EPDs

Business-to-business EPD's are those that focus on the life cycle up to the point that the product has been manufactured and is ready for shipment, the portion of the life cycle referred to as cradle-to-gate. This EPD includes the cradle-to-gate processes as shown in Figure 1 and in more detail in Figure 2.

Type III environmental product declarations intended for business-toconsumer communication shall be available to the consumer at the point of purchase. This Type III environmental declaration is developed according to ISO 21930 and 14025 for particleboard. This EPD reports environmental impacts based on established life cycle impact assessment methods. The reported environmental impacts are estimates, and their level of accuracy may differ for a particular product line and reported impact. LCAs do not generally address site-specific environmental issues of related to resource extraction or toxic effects of products on human health. Unreported environmental impacts include (but are not limited to) factors attributable to human health, land use change and habitat destruction. Forest certification systems and government regulations address some of these issues. EPDs do not report product environmental performance against any benchmark.

EPDs from different programs may not be comparable. This EPD represents an average performance, in such cases where an EPD declares an average performance for a number of products (i.e., a weighted average based on volume of production that represents the technology, process and energy sources used).

De	Description of the System Boundary (x : included in LCA; mnd: module not declared)																	
Product			Constru Install		Use						End-of-life			Benefits Beyond the System				
Raw Material supply	Transport	Manufacturing	Transport	Construction/Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	х	X	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd

Figure 1: Description of the System Boundary

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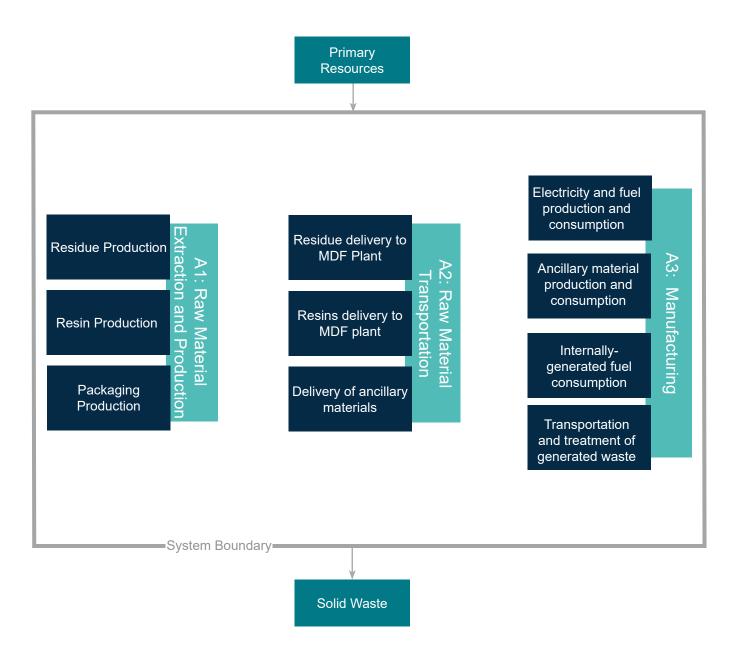


North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Cradle-to-Gate Life Cycle of MDF

Figure 2: Cradle-to-gate product system for MDF







According to ISO 14025 and ISO 21930:2007

Methodology of Underlying LCA

Declared Unit

The declared unit in this EPD is 1 cubic meter (m³) of MDF. This is equivalent to 565 square feet (3/4" thickness). The average density of North American MDF including resins and excluding moisture content is 782.41 oven dry kg/m³. MDF produced in North America is understood to have some moisture in the product, while the oven dry unit of measure contains neither free moisture (moisture in cell cavities) nor bound moisture (moisture in cell walls).

System Boundaries

The system boundary begins with regeneration in the forest and ends with the MDF product (Figure 1 and Figure 2). The system boundary includes forest operations (A1), which may include site preparation and planting seedlings, fertilization and thinning, final harvest, residue production, and resin production. Transportation of all resources and materials (A2) to the MDF facility and MDF production (A3) are also included in the product system. The MDF production complex was modeled as a single unit process. The study recognized twelve steps (A3) necessary to make MDF. Excluded from the system boundaries are fixed capital equipment and facilities, transportation of employees, land use, delivery of MDF to construction site, construction, maintenance, use, and final disposal.

Cut-off Rules

Environment

The cut-off criteria for flows to be considered within the system boundary are as follows:

- Mass if a flow is less than 1% of the cumulative mass of the model flows it may be excluded, provided its environmental relevance is minor.
- Energy if a flow is less than 1% of the cumulative energy of the system model it may be excluded, provided its environmental relevance is minor.
- Environmental relevance if a flow meets the above two criteria, but is determined (via secondary data analysis) to contribute 2% or more to the selected impact categories of the products underlying the EPD, based on a sensitivity analysis, it is included within the system boundary.





According to ISO 14025 and ISO 21930:2007

Data Quality

Precision and Completeness

Three cradle-to-gate life cycle stages (A1: Raw material extraction and production, A2: Transportation, and A3: MDF manufacturing) were checked for data completeness including all input elements such as raw and ancillary materials input, energy input, transportation scenarios, water consumption, and outputs such as products and coproducts, emissions to air, water, land, and final waste disposals. All input and output data were found to be complete and no significant data gaps were identified.

Consistency and Reproducibility

To ensure consistency, only primary data provided by the mill participants were used to model gate-to-gate processes (A3). All other secondary upstream data were consistently applied across MDF system boundary. At various points in the study (data collection and modeling) a quality and consistency check were performed. The quality check process included a review of the precision and completeness of the collected primary data (e.g. mass and energy balance were performed), applicability of LCI datasets used, general model structure, and results plausibility. The data was found to be within acceptable ranges compared to internally and publicly available information.

Temporal Coverage

Primary data collected from the manufacturing facilities for their operational activities related to the product processes of interest are representative for the year 2016 (reference year). Additional data necessary to model base material production and energy use, etc. was adapted from various secondary databases (CORRIM datasets, USLCI-TS, and ecoinvent)

Geographical Coverage

The geographical coverage for this study is based on United States and Canada system boundaries for all processes and products. Whenever North American background data was not readily available, European data (adjusted for North American system boundaries) was used as a proxy.

Allocation

Allocation is the method used to partition the environmental load of a process when several products or functions share the same process. MDF is the only valuable output from the manufacturing facility and thus no allocation was applied to A3-product manufacturing.

The wood fiber raw material input is a product of multiple output processes, namely the milling of lumber in the different source regions. In these cases, mass allocation data for fibers was conservatively chosen. Wood fibers are a lower value coproduct than the primary product, lumber, and thus the impacts are higher for fibers in a mass allocation profile. Further, mass allocation data was available for all of the regions participating in this study.





Environment

North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Life Cycle Assessment Results

The life cycle impact assessment (LCIA) establishes links between the life cycle inventory results and potential environmental impacts. In the LCIA, results are calculated for impact category indicators such as global warming potential and smog potential. These impact category indicator results provide general, but quantifiable, indications of potential environmental impacts. The various impact category indicators and means of characterizing the impacts are summarized in Table 2 below. Environmental impacts are determined using the TRACI 2.1 method. These five impact categories are reported consistently with the requirements of the PCR.

Table 2: Impact	Table 2: Impact Assessment Categories									
Impact Categor	y Indicators	Characterization Model								
Global Warming Potential		Calculates global warming potential of all greenhouse gasses that are recognized by the IPCC. The characterization model scales substances that include methane and nitrous oxide to the common unit of kg CO_2 equivalents.								
Ozone Depletion Potential	6	Calculates potential impact of all substances that contribute to stratospheric ozone depletion. The characterization model scales substances that include CFC's, HCFC's, chlorine, and bromine to the common unit of kg CFC-11 equivalents.								
Acidification Potential		Calculates potential impacts of all substances that contribute to terrestrial acidification potential. The characterization model scales substances that include sulfur oxides, nitrogen oxides, and ammonia to the common unit of kg SO ₂ equivalents.								
Smog Potential	a sub-	Calculates potential impacts of all substances that contribute to photochemical smog potential. The characterization model scales substances that include nitrogen oxides and volatile organic compounds to the common unit of kg O_3 equivalents.								
Eutrophication Potential		Calculates potential impacts of all substances that contribute to eutrophication potential. The characterization model scales sub- stances that include nitrates and phosphates to the common unit of kg N equivalents.								





According to ISO 14025 and ISO 21930:2007

Cradle-to-Gate Impact Assessment Results

The impact assessment results are shown in Table 3 on the following page. This LCIA does not make value judgments about the impact indicators, meaning that no single indicator is given more or less value than any of the others. All are presented as equals. Additionally, each impact indicator value is stated in units that are not comparable to others. Some variation exists between the two underlying data sets and is a result of differences in regional energy mixes, particularly the sources of electricity, as well as differences in production practices and efficiencies.

The results presented in Table 3 on the following page indicate the potential impacts caused by the cradle-to-gate production of MDF. The LCA includes all water withdrawals without netting out non-consumptive use. As a result, the weighted average overstates total water consumption and is therefore conservative.







North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Table 3: Cradle-to-Gate Im	pact Assessment	t Results - 1m³ N	orth American MD	F	
Impact category indicator	Unit	Total	A1	A2	A3
Global warming potential	kg CO ₂ eq.	759.15	319.69	9.44	430.02
Acidification potential	kg SO₂eq.	5.52	2.66	0.11	2.74
Eutrophication potential	kg N eq.	3.42	0.54	0.01	2.87
Ozone depletion potential	kg CFC-11 eq.	5.81E-05	3.76E-05	4.00E-10	2.04E-05
Smog potential	kg O ₃ eq.	69.63	33.22	2.80	33.61
Total primary energy consumption	Unit	Total	A1	A2	A3
Total primary energy	MJ	17,546.73	7,696.97	134.81	9,714.95
Non-renewable fossil	MJ	10,578.48	5,249.66	133.58	5,195.24
Non-renewable nuclear	MJ	1,370.91	170.83	1.23	1,198.85
Renewable, biomass	MJ	5,046.25	2,173.94	0.00	2,872.31
Renewable, other	MJ	551.10	102.54	0.00	448.56
Material resources consumption	Unit	Total	A1	A2	A3
Non-renewable materials	kg	49.45	33.82	0.00	15.63
Renewable materials	kg	1,049.94	1,031.79	0.01	18.15
Fresh water	L	3,017.45	1,241.23	0.00	1,776.22
Waste generation	Unit	Total	A1	A2	A3
Hazardous waste generated	kg	0.00	0.00	0.00	0.00
Non-hazardous waste generated	kg	12.36	0.00	0.00	12.36





According to ISO 14025 and ISO 21930:2007

Impact Assessment Results by Life Stage

The two graphs below show that particleboard manufacturing itself is the primary driver of impacts in the cumulative cradle-to-gate product system. Figure 2 shows that particleboard manufacturing, A3, consumes 54% of non-renewable fuels which drive the impacts in every category. Figure 3 shows the breakdown of impacts caused by the upstream production of raw material inputs and the fact that resin production accounts for 59% of non-renewable energy use that drives impacts in every category.

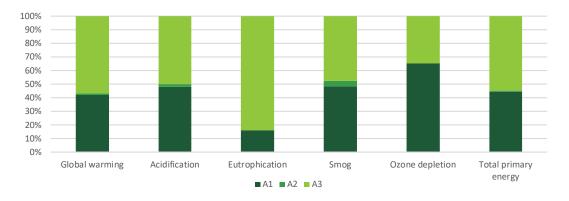
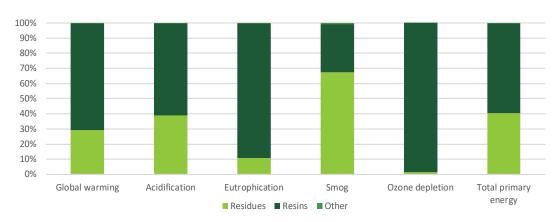


Figure 2: Cradle-to-Gate Impact Assessment Results









North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Figure 4: Cradle-to-Gate Energy Use

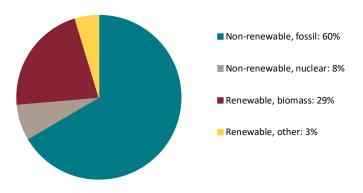


Figure 5: A1 - Raw Materials Production Energy Use

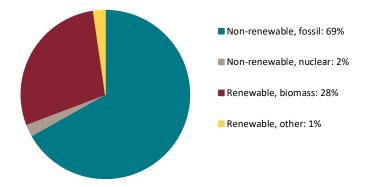
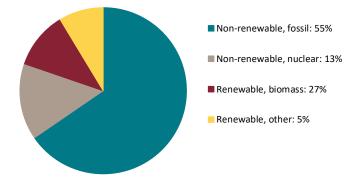


Figure 6: A3 - Manufacturing Energy Use



Primary Energy Consumption by Resource

The three pie charts show the consumption of various energy resources in the cradle-togate portion of the life cycle. The cradle-togate and MDF production charts show similar results as manufacturing consumes the bulk of cradle-to-gate energy.

The cradle-to-gate life cycle relies heavily on oil-based energy as consumed in the form of diesel by heavy machinery used in logging, and transportation of materials as well as natural gas used to heat the production facilities. Non-renewable energy accounts for 60% of energy resources consumed in the cradle-to-gate life cycle.

A significant portion of the energy requirement in manufacturing is met by renewable energy sources, 27% from biomass and 5% from hydro power. This translates to 29% of cradleto-gate energy use for renewable sources. Biomass is also used in the upstream residue production as a readily available coproduct of lumber milling. Besides biomass and hydroelectricity, coal, natural gas, oil, and nuclear power comprise the remaining energy use.

The prevalence of renewable energy use in the life cycle of MDF means that MDF has a particularly low carbon footprint relative to the energy required for manufacturing.



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North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Additional Information

Range of Applications

Medium Density Fiberboard (MDF) is a composite panel product used for non-structural applications such as composite furniture, kitchen cabinets, molding, and laminate floors. The breakdown of uses for MDF is as follows:

- Millwork and moulding: 22%
- Flooring: 18%
- Residential and office furniture: 12%
- Cabinets, vanities, and countertops: 11%
- Other uses: 37%

Source: 2016 North American Shipments and Downstream Market Report. Summarizing shipment data of particlboard, medium density fiberboard, hardboard and engineered wood siding and trim. 2016. Composite Panel Association.







North American Medium Density Fiberboard (MDF) North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Carbon Sequestration

The PCR requires that carbon sequestration may only be credited to the product if the end-of-life fate of that carbon is considered in the LCA study. FPInnovations (FPI) has recently published a carbon sequestration calculation tool that estimates the emissions from typical end-of-life treatment of wood products that includes recycling, combustion, and landfilling. The carbon sequestered in the product at the manufacturing gate serves as the basis for such an analysis and is as follows (all conversion factors and assumptions are documented in carbon tool):

 $1m^3$ MDF = 705.17 oven dry kg = 352.59 kg Carbon = 1292.82 kg CO₂ eq.

This initial carbon sequestration may then be considered against its emission as the MDF product reaches the end of its service life in various applications. The FPI carbon tool is used to estimate the biogenic carbon balance at year 100, including service life estimations for various applications and the average landfill decay rate. The carbon tool gives the following results:

Carbon sequestered in product at manufacturing gate: $1292.82 \text{ kg CO}_2 \text{ eq.} = -1292.82 \text{ kg CO}_2 \text{ eq emission}$

Methane emitted from fugitive landfill gas: 9.58 kg CH_4 = 239.44 kg CO_2 eq. emission

Carbon dioxide emitted from fugitive landfill gas and the combustion of waste and captured landfill gas: 559.05 kg CO₂ eq. emission

Carbon sequestration at year 100, net of biogenic carbon emissions: 494.32 kg CO₂ eq. = - 494.32 kg CO₂ eq. emission







According to ISO 14025 and ISO 21930:2007

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Environmental Product Declaration

PARTICLEBOARD

COMPOSITE PANEL ASSOCIATION



Particleboard panels are composite panel product used for kitchen countertops, kitchen cabinets, and composite furniture.



The Composite Panel Association is pleased to present this Environmental Product Declaration (EPD) for particleboard. This EPD was developed in compliance with ISO 14025 and ISO 21930 and has been verified under UL Environment's EPD program.

The EPD includes Life Cycle Assessment (LCA) results for all processes up to the point that particleboard is packaged and ready for shipment at the manufacturing gate. The life cycle of particleboard includes the production of wood residues that are a coproduct of lumber milling. The cradle-to-gate product system thus includes forest management, logging, transportation of logs to lumber mills, sawing, transportation of wood residues to particleboard plants, and particleboard production.

Please follow our sustainability initiatives at: www.compositepanel.org/cpa-green/







North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

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. <u>Exclusions</u>: 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. <u>Accuracy of Results</u>: 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. <u>Comparability</u>: 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							
DECLARATION HOLDER	Composite Panel Association							
DECLARATION NUMBER	4788663642.102.1	1788663642.102.1						
DECLARED PRODUCT	North American Particleboard							
REFERENCE PCR	PInnovations PCR for North American Structural and Architectural Wood Products, v.2.0 2015							
REFERENCE PCR STANDARD	 □ EN 15804 (2012) ⊠ ISO 21930 (2007) □ ISO 21930 (2017) 							
DATE OF ISSUE	December 31, 2018							
PERIOD OF VALIDITY	5 Years							
CONTENTS OF THE DECLARATION The PCR review was conduc	Product definition and information Information about basic material ar Description of the product's manuf Indication of product processing Information about the in-use condit Life cycle assessment results Testing results and verifications	nd the material's origin acture						
ISO 14025 by Underwriters I	as independently verified in	Grant R. Martin Grant R. Martin, UL Environment						
accordance with ISO 14044	and the relefence FCR by.	James Mellentine, Ramboll						







North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Description of Industry and Product

Description of North American Particleboard Industry

The North American composite panel industry is a major contributor to both the United States and Canada economies. Particleboard is a composite panel that is valued for its consistency and ability to be engineered for specific applications. These properties have caused particleboard to be widely used to manufacture countertops, door cores, floor underlayment, and furniture. Particleboard is also widely regarded as a sustainable material because it utilizes wood residues from other manufacturing processes that might otherwise be wasted. In 2016, total North American production of particleboard was over 5.9 million m³, with 4.1 million m³ from United States facilities and Canada producing an additional 1.8 m³.

Manufacturers of particleboard in North American are members of the Composite Panel Association, Leesburg, Virginia. Fifteen particleboard facilities contributed production data from the United States and Canada (Table 1) for this EPD with a combined production of 3.8 million m³, or 63% of total industry production.

Table 1: Participating Facilities								
Manufacturer	City, State/Province	Country						
Arauco North America	Albany, Oregon	United States						
Arauco North America	Bennettsville, South Carolina	United States						
Arauco North America	Moncure, North Carolina	United States						
Arauco North America	St. Stephen, New Brunswick	Canada						
Georgia Pacific	Diboll, Texas	United States						
Georgia Pacific	Hope, Arkansas	United States						
Georgia Pacific	Monroeville, Alabama	United States						
Georgia Pacific	Thomson, Georgia	United States						
Marshfield DoorSystems, Inc	Marshfield, Wisconsin	United States						
Panolam Industries	Huntsville, Ontario	Canada						
Plummer Forest Products	Post Falls, Idaho	United States						
Roseburg Forest Products	Missoula, Montana	United States						
Roseburg Forest Products	Taylorsville, Mississippi	United States						
Uniboard Canada Inc	Sayabec Mill, Quebec	Canada						
Uniboard Canada Inc	Val-d`Or, Quebec	Canada						





North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Description of Particleboard Product

The product profile presented in this EPD is for a declared unit of 1 cubic meter of particleboard. Particleboard is manufactured from wood residues that are generated as a coproduct of lumber milling. The cradle-to-gate product system thus includes forest management, logging, transportation of logs to lumber mills, sawing, transportation of wood residues to particleboard plants, particleboard production, and packaging for shipment.

One cubic meter of average North American particleboard weighs 691.61 kg, excluding the variable moisture content. The product composition is presented below and represents the weighted average of the various resin types that are used by different manufacturers:

- Wood residues: 639.37 oven dry kg (92.44%)
- Urea formaldehyde (UF) resin: 37.17 kg (5.37%)
- Melamine urea formaldehyde (MUF) resin: 6.14 kg (0.89%)
- Polymeric diphenyl methane diisocyanate (PMDI) Resin: 1.89 kg (0.27%)
- Phenol formaldehyde (PF) Resin: 2.26 kg (0.33%)
- Urea: 2.90 kg (0.42%)
- Ammonium sulphate: 0.53 kg (0.08%)
- Wax: 1.35 kg (0.20%)

This EPD is based on LCA studies that considered the entire range of particleboard product sizes and functions. The results are presented for the metric unit of measure, 1 cubic meter, which is equal to 565 square feet (3/4" thickness).







North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Business-to-Business Industry Average EPDs

Business-to-business EPD's are those that focus on the life cycle up to the point that the product has been manufactured and is ready for shipment, the portion of the life cycle referred to as cradle-to-gate. This EPD includes the cradle-to-gate processes as shown in Figure 1 and in more detail in Figure 2.

Type III environmental product declarations intended for business-to-consumer communication shall be available to the consumer at the point of purchase. This Type III environmental declaration is developed according to ISO 21930 and 14025 for particleboard. This EPD reports environmental impacts based on established life cycle impact assessment methods. The reported environmental impacts are estimates, and their level of accuracy may differ for a particular product line and reported impact. LCAs do not generally address site-specific environmental issues of related to resource extraction or toxic effects of products on human health. Unreported environmental impacts include (but are not limited to) factors attributable to human health, land use change and habitat destruction. Forest certification systems and government regulations address some of these issues. EPDs do not report product environmental performance against any benchmark.

EPDs from different programs may not be comparable. This EPD represents an average performance, in such cases where an EPD declares an average performance for a number of products (i.e., a weighted average based on volume of production that represents the technology, process and energy sources used).

Description Product			of the Constru Install	uction	em Boundary (x : included in LCA; mno Use					d: module not declar End-of-life				ed) Benefits Beyond the System				
Raw Material supply	Transport	Manufacturing	Transport	Construction/Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	х	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd	mnd

Figure 1: Description of the System Boundary

Environment

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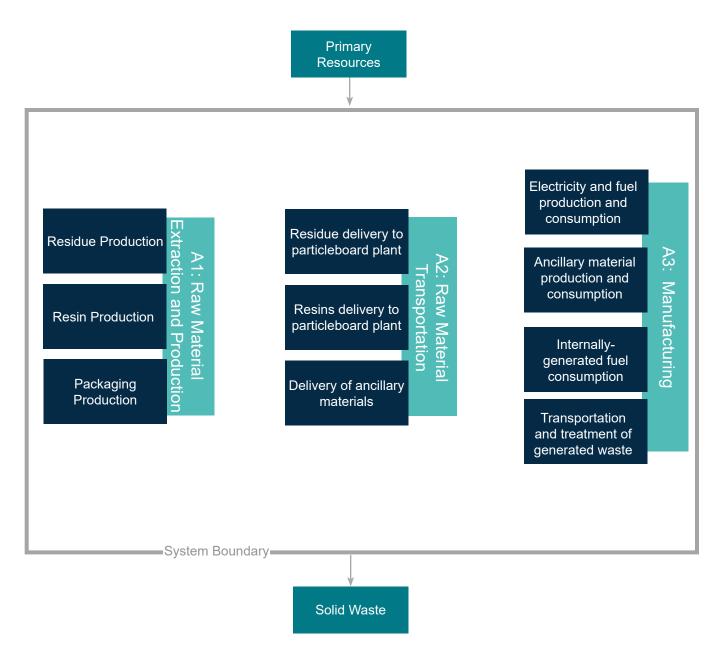


North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Cradle-to-Gate Life Cycle of Particleboard

Figure 2: Cradle-to-gate product system for particleboard







North American Particleboard North American Structural and Architectural Wood Products

According to ISO 14025 and ISO 21930:2007

Methodology of Underlying LCA

Declared Unit

The declared unit in this EPD is 1 cubic meter (m³) of particleboard. This is equivalent to 565 square feet (3/4" thickness). The average density of North American particleboard including resins and excluding moisture content is 691.61 oven dry kg/m³. Particleboard produced in North America is understood to have some moisture in the product, while the oven dry unit of measure contains neither free moisture (moisture in cell cavities) nor bound moisture (moisture in cell walls).

System Boundaries

The system boundary begins with raw material production in the forest and ends with the particleboard product (Figure 1 and Figure 2). The system boundary includes forest operations (A1), which may include site preparation and planting seedlings, fertilization and thinning, final harvest, residue production, and resin production. Transportation of all resources and materials (A2) to the particleboard facility and particleboard production (A3) are also inclued in the product system. The particleboard production complex was modeled as a single unit process. The study recognized twelve steps (A3) necessary to make particleboard. Excluded from the system boundaries are fixed capital equipment and facilities, transportation of employees, land use, delivery of particleboard to construction site, construction, maintenance, use, and final disposal.

Cut-off Rules

The cut-off criteria for flows to be considered within the system boundary are as follows:

- Mass if a flow is less than 1% of the cumulative mass of the model flows it may be excluded, provided its environmental relevance is minor.
- Energy if a flow is less than 1% of the cumulative energy of the system model it may be excluded, provided its environmental relevance is minor.
- Environmental relevance if a flow meets the above two criteria, but is determined (via secondary data analysis) to contribute 2% or more to the selected impact categories of the products underlying the EPD, based on a sensitivity analysis, it is included within the system boundary.



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Data Quality

Precision and Completeness

Three cradle-to-gate life cycle stages (A1: Raw material extraction and production, A2: Transportation, and A3: Particleboard manufacturing) were checked for data completeness including all input elements such as raw and ancillary materials input, energy input, transportation scenarios, water consumption, and outputs such as products and coproducts, emissions to air, water, land, and final waste disposals. All input and output data were found to be complete and no significant data gaps were identified.

Consistency and Reproducibility

To ensure consistency, only primary data provided by the mill participants were used to model gate-to-gate processes (A3). All other secondary upstream data were consistently applied across particleboard system boundary. At various points in the study (data collection and modeling) a quality and consistency check were performed. The quality check process included a review of the precision and completeness of the collected primary data (e.g. mass and energy balance were performed), applicability of LCI datasets used, general model structure, and results plausibility. The data was found to be within acceptable ranges compared to internally and publicly available information.

Temporal Coverage

Primary data collected from the manufacturing facilities for their operational activities related to the product processes of interest are representative for the year 2016 (reference year). Additional data necessary to model base material production and energy use, etc. was adapted from various secondary databases (CORRIM datasets, USLCI-TS, and econvent)

Geographical Coverage

The geographical coverage for this study is based on United States and Canada system boundaries for all processes and products. Whenever North American background data was not readily available, European data (adjusted for North American system boundaries) was used as a proxy.

Allocation

Allocation is the method used to partition the environmental load of a process when several products or functions share the same process. Particleboard is the only valuable output from the manufacturing facility and thus no allocation was applied to A3-product manufacturing.

The wood fiber raw material input is a product of multiple output processes, namely the milling of lumber in the different source regions. In these cases, mass allocation data for fibers was conservatively chosen. Wood fibers are a lower value coproduct than the primary product, lumber, and thus the impacts are higher for fibers in a mass allocation profile. Further, mass allocation data was available for all of the regions participating in this study.







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Life Cycle Assessment Results

The life cycle impact assessment (LCIA) establishes links between the life cycle inventory results and potential environmental impacts. In the LCIA, results are calculated for impact category indicators such as global warming potential and smog potential. These impact category indicator results provide general, but quantifiable, indications of potential environmental impacts. The various impact category indicators and means of characterizing the impacts are summarized in Table 2 below. Environmental impacts are determined using the TRACI 2.1 method. These five impact categories are reported consistently with the requirements of the PCR.

Table 2: Impac	t Assessment Categories	
Impact Catego	ry Indicators	Characterization Model
Global Warming Potential		Calculates global warming potential of all greenhouse gasses that are recognized by the IPCC. The characterization model scales substances that include methane and nitrous oxide to the common unit of kg CO_2 equivalents.
Ozone Depletion Potential	6	Calculates potential impact of all substances that contribute to stratospheric ozone depletion. The characterization model scales substances that include CFC's, HCFC's, chlorine, and bromine to the common unit of kg CFC-11 equivalents.
Acidification Potential		Calculates potential impacts of all substances that contribute to terrestrial acidification potential. The characterization model scales substances that include sulfur oxides, nitrogen oxides, and ammonia to the common unit of kg SO ₂ equivalents.
Smog Potential		Calculates potential impacts of all substances that contribute to photochemical smog potential. The characterization model scales substances that include nitrogen oxides and volatile organic compounds to the common unit of kg O_3 equivalents.
Eutrophication Potential		Calculates potential impacts of all substances that contribute to eutrophication potential. The characterization model scales sub- stances that include nitrates and phosphates to the common unit of kg N equivalents.





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Cradle-to-Gate Impact Assessment Results

The impact assessment results are shown in Table 3 on the following page. This LCIA does not make value judgments about the impact indicators, meaning that no single indicator is given more or less value than any of the others. All are presented as equals. Additionally, each impact indicator value is stated in units that are not comparable to others.

Some variation exists between the two underlying data sets and is a result of differences in regional energy mixes, particularly the sources of electricity, as well as differences in production practices and efficiencies.

The results presented in Table 3 on the following page indicate the potential impacts caused by the cradle-to-gate production of particleboard. The LCA includes all water withdrawals without netting out non-consumptive use. As a result, the weighted average overstates total water consumption and is therefore conservative.





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Table 3: Cradle-to-Gate Impact Assessment Results - 1m³ North American Particleboard										
Impact category indicator	Unit	Total	A1	A2	A3					
Global warming potential	kg CO ₂ eq.	402.61	228.32	4.29	170.00					
Acidification potential	kg SO₂eq.	3.88	2.44	0.05	1.39					
Eutrophication potential	kg N eq.	1.23	0.40	0.00	0.84					
Ozone depletion potential	kg CFC-11 eq.	3.41E-05	2.45E-05	1.82E-10	9.57E-06					
Smog potential	kg O ₃ eq.	46.37	24.19	1.27	20.90					
Total primary energy consumption	Unit	Total	A1	A2	A3					
Total primary energy	MJ	8,926.46	5,478.04	61.27	3,387.14					
Non-renewable fossil	MJ	5,938.15	3,661.27	60.72	2,216.16					
Non-renewable nuclear	MJ	633.91	130.84	0.56	502.52					
Renewable, biomass	MJ	1,936.18	1,560.54	0.00	375.64					
Renewable, other	MJ	418.21	125.39	0.00	292.82					
Material resources consumption	Unit	Total	A1	A2	A3					
Non-renewable materials	kg	28.95	22.77	0.00	6.17					
Renewable materials	kg	798.85	796.63	0.00	2.22					
Fresh water	L	1,242.29	662.45	0.00	579.84					
Waste generation	Unit	Total	A1	A2	A3					
Hazardous waste generated	kg	0.00	0.00	0.00	0.00					
Non-hazardous waste generated	kg	9.22	0.00	0.00	9.22					





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Impact Assessment Results by Life Stage

The two graphs below show that particleboard manufacturing itself is the primary driver of impacts in the cumulative cradle-to-gate product system. Figure 2 shows that raw material production, A1, consumes 58% of non-renewable fuels which drive the impacts in every category. Figure 3 shows the breakdown of impacts caused by the upstream production of raw material inputs and the fact that resin production accounts for 57% of non-renewable energy use that drives impacts in every category.

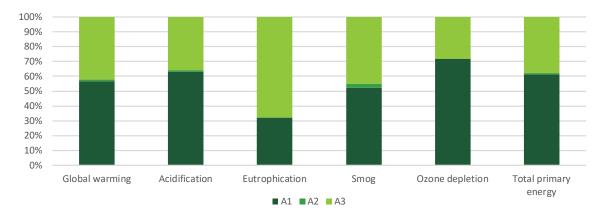
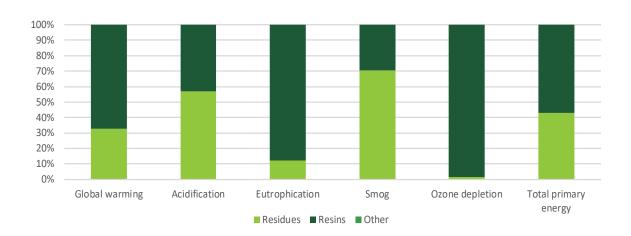


Figure 2: Cradle-to-Gate Contribution Analysis

Figure 3: A1 - Raw Materials Production Contribution Analysis







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Figure 4: Cradle-to-Gate Energy Use

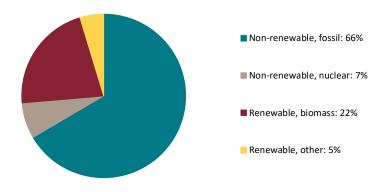


Figure 5: A1 - Raw Materials Production Energy Use

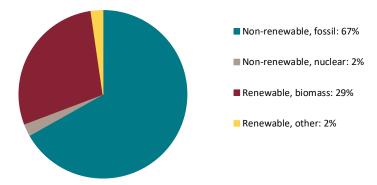
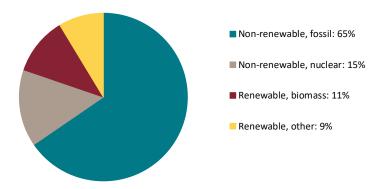


Figure 6: A3 - Manufacturing Energy Use



Primary Energy Consumption by Resource

The three pie charts show the consumption of various energy resources in the cradleto-gate portion of the life cycle. The cradleto-gate and particleboard production charts show similar results as manufacturing consumes the bulk of cradle-to-gate energy.

The cradle-to-gate life cycle relies on oilbased energy as consumed in the form of diesel by heavy machinery used in logging, and transportation of materials as well as natural gas used to heat the production facilities. Non-renewable energy accounts for 62% of energy resources consumed in the cradleto-gate life cycle.

A significant portion of the energy requirement in manufacturing is met by renewable energy sources, 27% from biomass and 5% from hydro power. This translates to 30% of cradleto-gate energy use for renewable sources. Biomass is also used in the upstream residue production as a readily available coproduct of lumber milling. Besides biomass and hydroelectricity, coal, natural gas, oil, and nuclear power comprise the remaining energy use.

The prevalence of renewable energy use in the life cycle of particleboard means that particleboard has a particularly low carbon footprint relative to the energy required for manufacturing.







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Additional Information

Range of Applications

Particleboard panels are composite panel product used for non-structural applications such as kitchen countertops, kitchen cabinets, and composite furniture. This breakdown of uses for particleboard is as follows:

- Cabinets, vanities, and countertops: 30%
- Residential and office furniture: 20%
- Retail/Store fixtures: 7%
- Door components: 6%
- Other uses: 36%

Source: 2016 North American Shipments and Downstream Market Report. Summarizing shipment data of particlboard, medium density fiberboard, hardboard and engineered wood siding and trim. 2016. Composite Panel Association.













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Carbon Sequestration

The PCR requires that carbon sequestration may only be credited to the product if the end-of-life fate of that carbon is considered in the LCA study. FPInnovations (FPI) has recently published a carbon sequestration calculation tool that estimates the emissions from typical end-of-life treatment of wood products that includes recycling, combustion, and landfilling. The carbon sequestered in the product at the manufacturing gate serves as the basis for such an analysis and is as follows (all conversion factors and assumptions are documented in carbon tool):

 $1m^3$ Particleboard = 639.37 oven dry kg = 319.69 kg Carbon = 1172.18 kg CO₂ eq.

This initial carbon sequestration may then be considered against its emission as the particleboard product reaches the end of its service life in various applications. The FPI carbon tool is used to estimate the biogenic carbon balance at year 100, including service life estimations for various applications and the average landfill decay rate. The carbon tool gives the following results:

Carbon sequestered in product at manufacturing gate: 1172.18 kg CO_2 eq. = - 1172.18 kg CO_2 eq emission

Methane emitted from fugitive landfill gas: 8.68 kg CH_4 = 217.10 kg CO_2 eq. emission

Carbon dioxide emitted from fugitive landfill gas and the combustion of waste and captured landfill gas: 506.88 kg CO_2 eq. emission

Carbon sequestration at year 100, net of biogenic carbon emissions: 448.20 kg CO₂ eq. = - 448.20 kg CO₂ eq. emission









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