SAGE

New materials environmental evaluation

Evaluating 3 categories of commonly
used materials for staged environments:
Paneling, Framing materials & Paints

For Museum of Vancouver SAGE Project

A summary presentation by:
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University of British Columbia, 2023

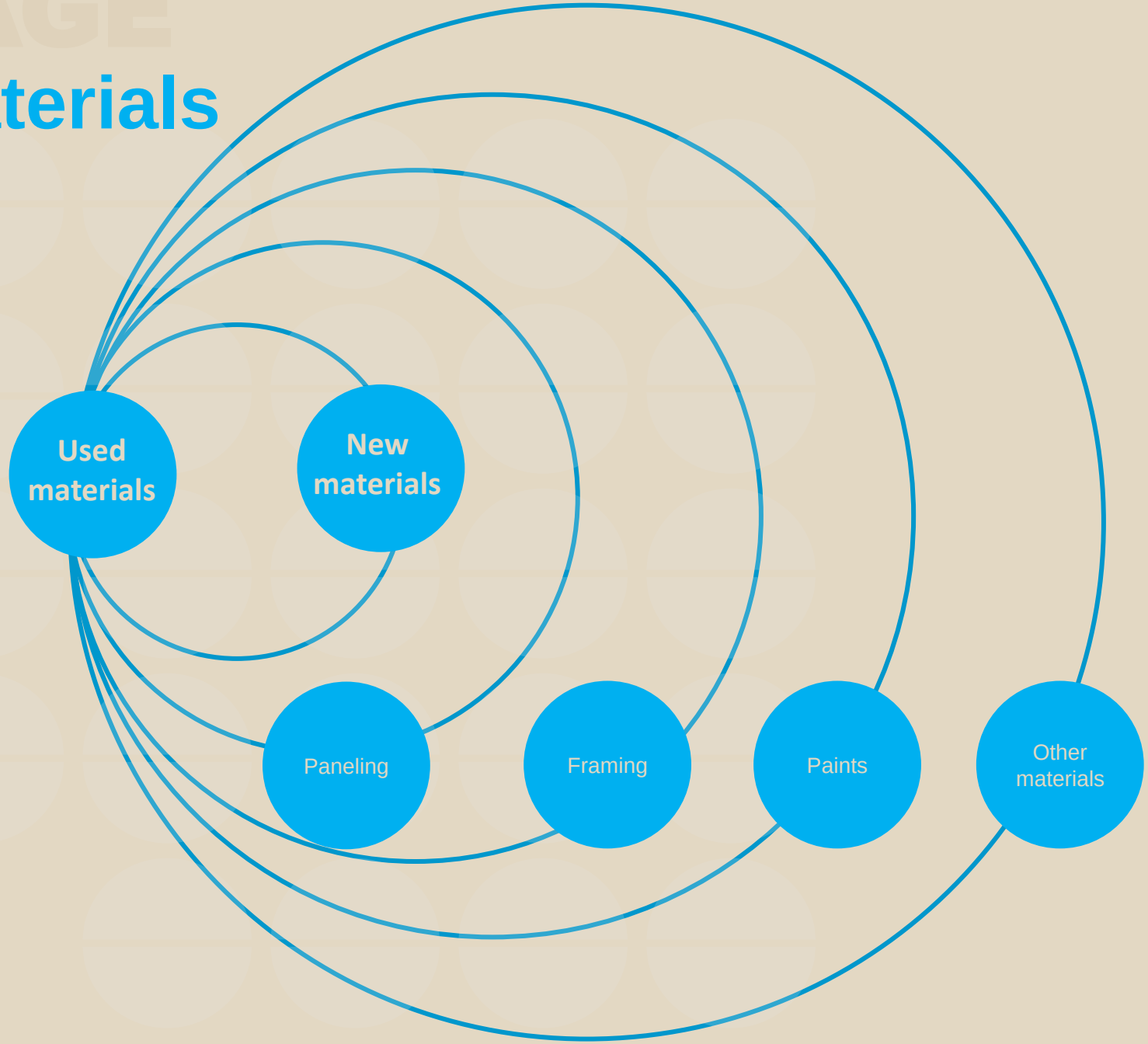
SAGE Toolkit

Materials

Materials selection

Whenever possible & appropriate, circular exhibitions will prioritize sourcing used materials as well as re-use of materials from one exhibition to the next.

When purchasing new materials –consider environmental and sustainability performance characteristics.



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New materials:
Paneling materials

Tip: Environmental performance score is much higher for plywood than MDF.
Whenever possible, choose plywood instead of MDF

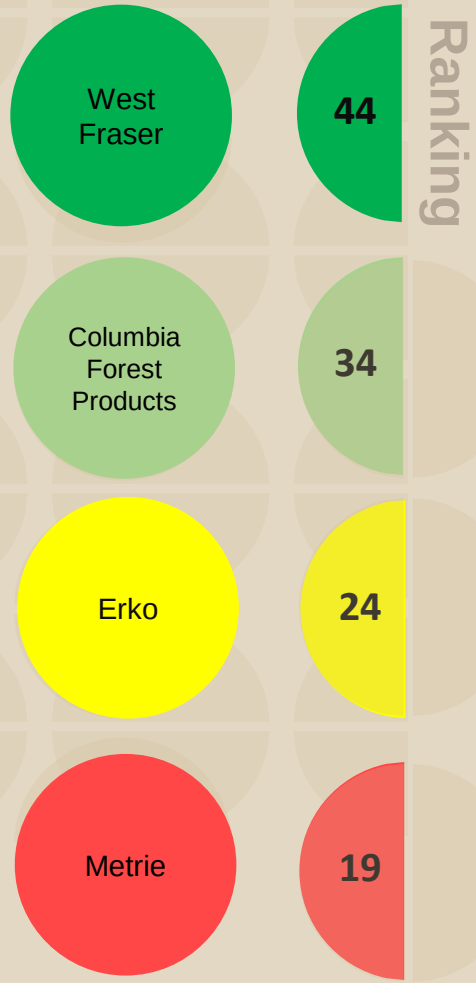
Evaluation of MDF & plywood based on:

- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions
  - EPD - water use in production
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

More details in SAGE Charts sections below

Paneling - MDF

MDF evaluation based on brands



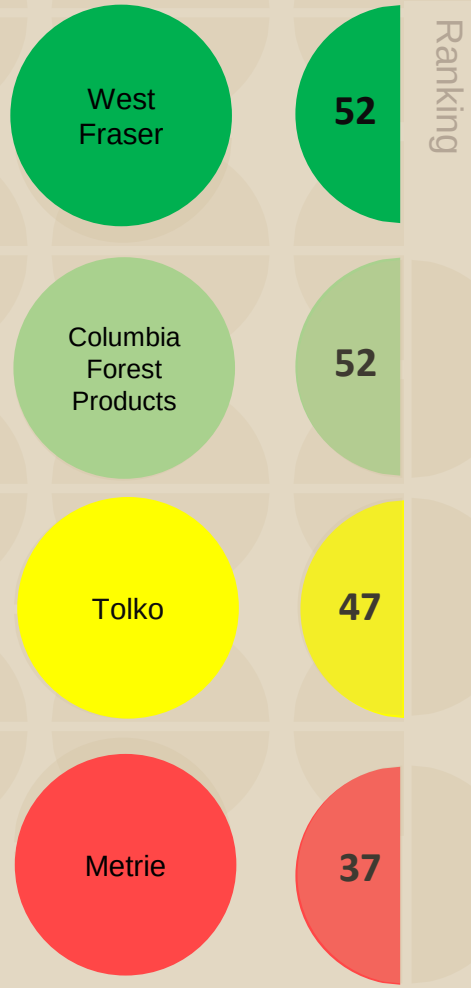
Evaluation of MDF based on:

- Made in BC (& brands locally available)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions
  - EPD - water use in production
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

More details in SAGE Charts sections below

Paneling - Plywood

Plywood evaluation based on brands



Evaluation of plywood based on:

- Made in BC (& brands locally available)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions
  - EPD - water use in production
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

More details in SAGE Charts sections below

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Framing materials

Framing materials evaluation based on the types of materials that can be applied for framing

Tips:

- **UrbanJacks uses upcycled wood to re-manufacture lumber. It scores highest environmentally.**
- **Solid dimensional lumber (typically SPF wood) earns 2nd highest score** (see specific brand performances).
- **LVL ranks 3rd due to glues used to manufacture.**
- **Steel & aluminum studs have extremely high environmental impact. Only appropriate if amortized over a very long lifecycle of use in a building construction. *Exception:* sourcing used steel or aluminum studs.**

More details in SAGE Charts sections below

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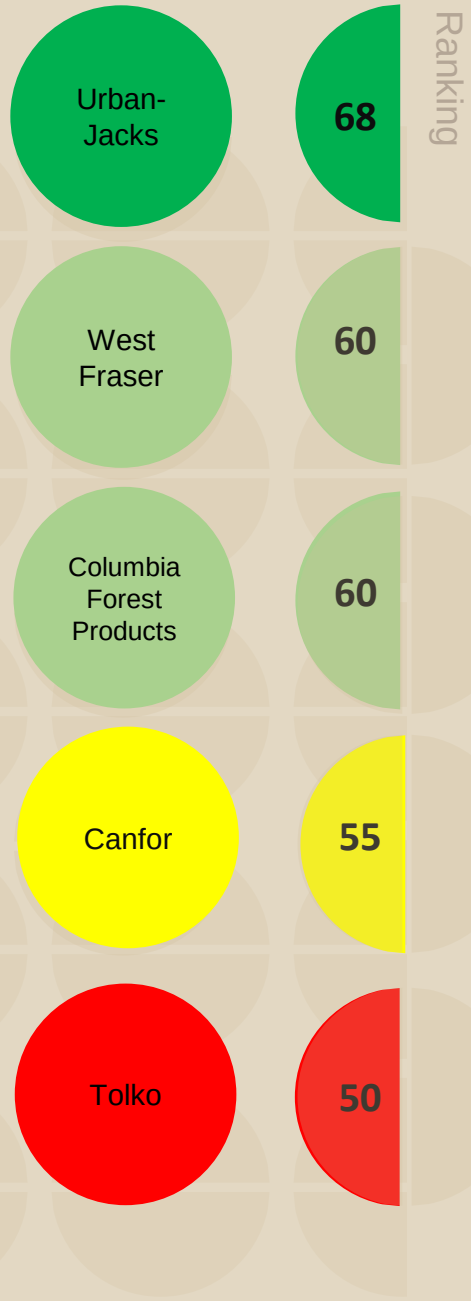
Framing-Dimensional lumber & UrbanJacks

Evaluation based on brands



Evaluation of dimensional lumber (2x4s) based on aggregate of the following criteria (weighted by priority):

- Made in BC (& locally available brands)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

More details in SAGE Charts sections below

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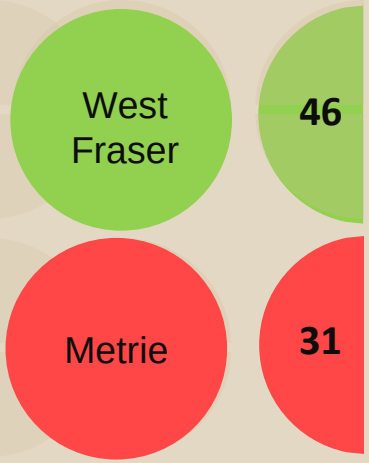
Framing- Laminated Veneer Lumber (LVL)

LVL evaluation based on brands



Evaluation of dimensional LVL based on aggregate of the following criteria (weighted by priority):

- Made in BC (& locally available brands)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

More details in SAGE Charts sections below

To the main page

Return

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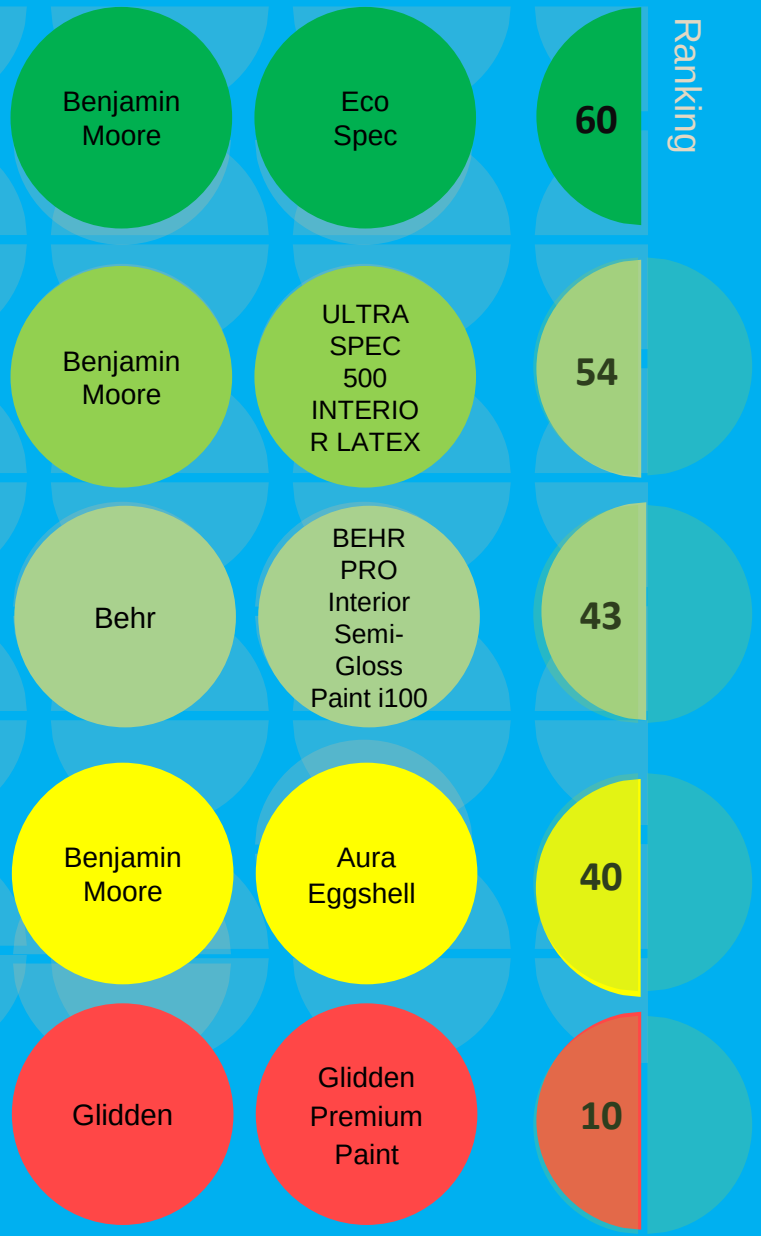
Paints (latex)

Tip: There are many brands of paints with multiple product lines. Some leading paint companies offer more environmentally & healthy paint product options.

Some health & IAQ considerations focus on worker (painter) health risks, not health risks after paint application.



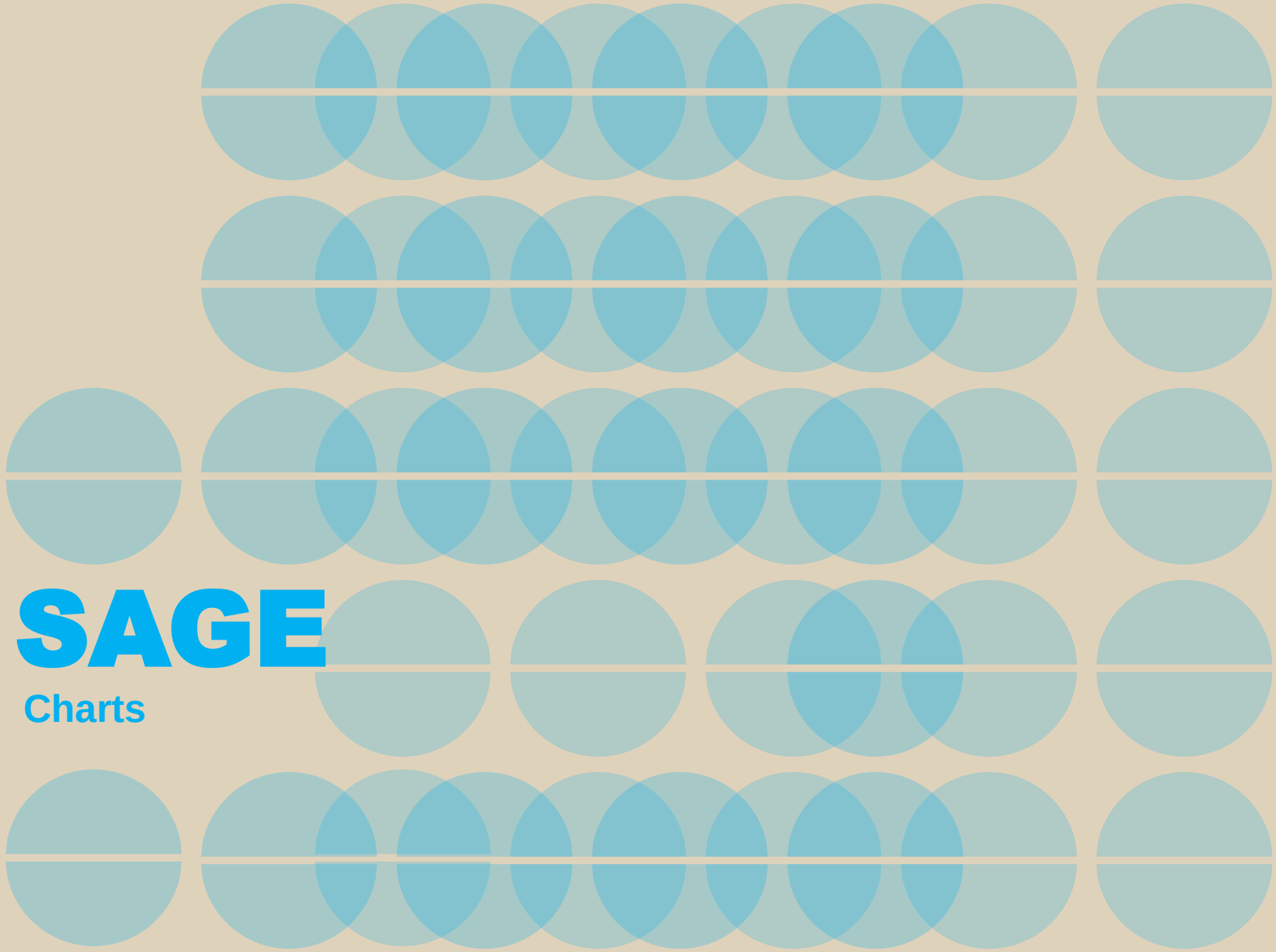
Evaluation of latex paints based on aggregate of the following criteria (weighted by priority):

- Available locally
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - LEED v.4 compliance

Environmental & Health/IAQ certifications

- Greenguard certification &/or Green Seal
- MPI 11 (Master Painter Institute extreme green performance
- Formaldehyde-Free Claim Validation
- Zero VOCS & air emissions
- Asthma & allergy friendly

More details in SAGE Charts sections below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Charts

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SAGE New Materials Project Background

The cultural sector has both obligations and opportunities to create public dialogue, education, and systemic change addressing the global climate crisis.

The Museum of Vancouver (MOV) is a founding member of the Coalition of Museums for Climate Justice (Canadian Museum Association), an active participant with Creative Greens Tools (Centre for Sustainable Practice in the Arts), and has a long-standing working relationship with UBC's Sustainability HUB.MOV is an experienced cultural institution that is ready to shift to new models of working, and public programming more sustainability and cross-sectorally.

Having experimented with upcycling and circular economy practices in previous exhibitions, in 2023, the MOV launched the **Sustainable Arts and Green Ecosystems Project (SAGE)** to engage partners in the museum, gallery, and theatre sectors to collaborate on initiatives and solutions to advance the environmental performance, reduce greenhouse gas (GhG) emissions, and design and manage for circular materials use.

The SAGE initiative draws on multiple experts to discuss and ideate on greener ways of working, and that includes the role of a UBC Scholar to contribute to research and guideline development.

SAGE is particularly focused on staged events and exhibitions: the impact of the materials used, and construction and waste management practices. SAGE partner organizations collectively generate thousands of tonnes of waste annually from demolition of their exhibitions. This contributes to GhG emissions and other environmental impacts. Additionally, materials used for staged events and exhibitions have a significant environmental impact.

SAGE New Materials Project Background *(continued)*

Therefore, the focus of the SAGE project is primarily on three key deliverables:

(1) SAGE Toolkit –guidelines for planning, design, material selection, construction, and de-construction of staged events;

(2) SAGE Hub –online repository tracking couple with physical space for arts organizations to store and trade used materials –to reduce waste and keep materials in circulation;

(3) A demonstration exhibition that will be planned, designed, and constructed following the SAGE Toolkit guidelines. It will serve as a model of circularity and low environmental impact for other exhibitions and staged events.

This UBC Scholar project, ***Documenting and Mapping the Creation of a Deconstruction and Green Design Hub for the Arts & Cultural Sector***, contributes to the SAGE Toolkit. This project focuses on the assessment of materials commonly used in constructing exhibitions and staged events: wood panels, dimensional lumber, and paints.

The aim of this project is to collate and assess the environmental and health impacts of these materials and to present the information in a simplified and accessible way. This materials section of the SAGE Toolkit will guide museum and gallery curators, exhibition directors and managers, designers, and builders in making decisions that will reduce or avoid negative environmental and health impacts.

The research drew from published sources and interviews with experts in this arts sector as well as materials experts. Product and materials ratings (and weightings) were determined based on this information and in collaboration between the UBC Scholar and SAGE partners and project mentors.

New Materials Project completed date: August, 2023.

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Charts

Comparing types of wood panels: MDF and plywood

Evaluation of MDF & plywood based on aggregate of the following criteria (weighted by priority):

- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

A comparison of MDF and Plywood based on environmental considerations and other materials considerations relevant to use for staged events and exhibitions.

Type of materials for paneling	Environmental considerations /impact									Other materials considerations															Total Score
	EPD factors & data																								
	GWP of Raw material supply	GWP of + transport	GWP of + production =	EPD/Total GWP Unit=total Kg CO2eq /25		EPD/ water use Unit=Litre /15		Pre-consumer recycling /10		Surface's smoothness for painting and mudding for 1st time of use /15		Surface's smoothness for painting and mudding after 1st time of use /10		Dust when cutting (re healthy work environment) No dust = 5 High dust = 0 /5		Moisture resistance /5		Disposal challenges /5		Load-bearing capacity /5		Potential for repurposing /5		/100
Plywood	70.03	10.28	139.00	219	16	1080	6	No	0	No	0	Yes	10	Yes	4	Yes	5	Yes	5	Yes	10	Yes	5	61
MDF	319.69	9.44	430.02	759	4	3017	0	Yes	5	Yes	15	Yes	10	No	0	No	0	No	2	No	5	No	0	41

Table 3

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Charts

MDF evaluation based on brands

Evaluation of MDF based on aggregate of the following criteria (weighted by priority):

- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

MDF is a commonly used material for staged events and exhibition walls, risers, and other elements.

Brand		Rating elements																						Total Score
		Local production			Sustainable forest management practices						Environmental impacts						Health/ Indoor air quality							
MDF	Product name	Available in Metro Vancouver	Manufactured in BC 0 /15		FSC - Forest Stewardship Council certification 2 /5		SFI - Sustainable Forestry Initiative certification 3,4 /5		PEFC 5 /5		EPD/GWP 6 Units= kg CO2eq /20		EPD/Water use in production Units=Litre /10		LEED 7 v4 compliant /10		CARB 8 /10		HPD 9 /10		Greenguard certification 10 /10		/100
West Fraser	Westpine MDF	Yes	Yes	15	Yes [i]	5	Yes	5	Yes	5	759	4	3017	0	No	0	Yes	10	No	0	No	0	44
Columbia Forest Products	MDF	Yes	No	0	Yes [ii]	5	No	0	Yes	5	759	4	3017	0	Yes	10	Yes	10	No	0	No	0	34
Eroko	MDF	Yes	Yes	15	Yes [iii]	5	No	0	No	0	759	4	3017	0	No	0	No	0	No	0	No	0	24
Metrie	MDF	Yes	Yes	15	No	0	No	0	No	0	759	4	3017	0	No	0	No	0	No	0	No	0	19

Table 1

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Charts

Plywood evaluation based on brands

Evaluation of plywood based on aggregate of the following criteria (weighted by priority):

- Made in BC (& available locally)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

Plywood is also commonly used material for staged events and exhibition walls, risers, and other elements.

Brand		Rating elements																						Total Score
		Local production			Sustainable forest management practices						Environmental impacts						Health/ Indoor air quality for workers							
PLYWOOD	Product name	Available in Metro Vancouver	Manu-factured in BC 0	/15	FSC -Forest Stewardship Council certification 2	/5	SFI - Sustainable Forestry Initiative certification 3,4	/5	PEFC 5	/5	EPD/GWP 6 Units= kg CO2eq	/20	EPD/Water use in production Units=Litre	/10	LEED 7 v4 compliant	/10	CARB 8	/10	HPD 9	/10	Greenguard certification 10	/10	/100
West Fraser	Plywood	Yes	Yes	15	Yes [iv]	5	Yes	5	Yes	5	219	16	1080	6	No	0	No	0	No	0	No	0	52
Columbia Forest Products	Purabond hardwood (hardwood)	Yes	No	0	Yes [v]	5	No	0	Yes	5	219	16	1080	6	Yes	10	Yes	10	No	0	No	0	52
Tolko	T_PLY	Yes	Yes	15	No	0	Yes	5	Yes	5	219	16	1080	6	No	0	No	0	No	0	No	0	47
Metrie	Plywood	Yes	Yes	15	No	0	No	0	No	0	219	16	1080	6	No	0	No	0	No	0	No	0	37

Table 2

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Charts

Framing score

Evaluation of framing (including dimensional lumber) based on aggregate of the following criteria (weighted by priority):

- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

A comparison of dimensional lumber and other framing materials based on environmental considerations and other materials considerations relevant to use for staged events and exhibitions.

Type of materials for framing	Environmental considerations /impact								Installation considerations		Other materials considerations					
	EPD factors & data								Lightweight	Easy cutting	Resilience against warping post-use	Capable of supporting heavy loads	Indoor air quality for workers (glues offgassing)	Moisture Resistance (storage consideration)	Potential for recycling	Total Score (without durability considerations)
	GWP of Raw material supply	GWP of + transport +	GWP of production =	EPD/Total GWP unit= kg CO2eq /25		EPD/water use Unit=Litre /15		Re-cycled/ used material /10	/5	/5	/10	/10	/5	/5	/10	/100
CanDo!	NA	NA	NA	NA	18	NA	10	10	5	5	3	3	4	2	0	60
Dimensional lumber	10.55	10.01	42.56	63	20	440	10	0	5	5	3	3	5	2	0	53
LVL	167.23	19.84	174.37	361	12	1490	5	0	4	4	15	8	1	5	0	54
Steel studs	NA	NA	NA	19000	-380	20358	-6	0	0	2	15	10	5	5	5	-344
Aluminum	NA	NA	NA	29700	-580	35000	-11	0	4	3	15	7	5	5	5	-547

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Charts

Lumber evaluation based on brands

Evaluation of dimensional lumber (2x4s) based on aggregate of the following criteria (weighted by priority):

- Made in BC (& available locally)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

Brand		Rating elements																				Total Score
		Local production			Sustainable forest management practices						Environmental impacts						Health/ Indoor air quality for workers					
Dimensional Lumber & CanDo!	Product name	Available in Metro Vancouver	Manu-factured in BC 0 /15		FSC -Forest Stewardship Council certification 2 /5		SFI - Sustainable Forestry Initiative 3,4 /5		PEFC 5 /5		EPD/GWP 6 Units= kg CO2eq /20		EPD/Water use in production Units=Litre /10		LEED 7 v4 compliant /10		CARB 8 /10		HPD 9 /10		Greenguard certification 10 /10		/100
CanDo[xi]	CanDo!	Yes	Yes	15	N/A (Recycled)	5	N/A (Recycled)	5	N/A (Recycled)	5		18	No	10	No	0	No	0	No	0	Yes	10	68
West Fraser	Dimensional Lumber	Yes	Yes	15	Yes [ii]	5	Yes	5	Yes	5	63	20	440	10	No	0	No	0	No	0	No	0	60
Columbia Forest Products	Dimensional Lumber	Yes	No	0	Yes [iii]	5	No	0	Yes	5	63	20	440	10	Yes	10	Yes	10	No	0	No	0	60
Canfor	Dimensional Lumber	Yes	Yes	15	Yes [iv]	5	No	0	Yes	5	63	20	440	10	No	0	No	0	No	0	No	0	55
Tolko	Dimensional Lumber	Yes	Yes	15	No	0	Yes	5	No	0	63	20	440	10	No	0	No	0	No	0	No	0	50

SAGE

Charts

Laminated Veneer Lumber (LVL) evaluation based on brands

Evaluation of dimensional lumber (2x4s) based on aggregate of the following criteria (weighted by priority):

- Made in BC (& available locally)
- Sustainable forestry practices (certifications)
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - Pre-consumer recycling
  - LEED v.4 compliance
- Health/IAQ
  - CARB 8 compliance
  - HPD 9 compliance
  - Greenguard certification

Laminated Veneer Lumber (LVL) is a type of engineered wood made from multiple layers of thin wood bonded together. Given British Columbia's strong forestry-based economy, UBC, and other research centers and businesses are exploring the potential of LVL for building construction. Although LVL isn't currently used extensively in the arts sector for exhibitions, possibly due to cost, it holds promise for the future. As LVL becomes more prevalent in the market, it could also find use in other sectors, such as exhibition or staged event wall construction.

Type			Rating elements																				Total Score
		Local production			Sustainable forest management practices						Environmental impacts						Health/ Indoor air quality for workers						
LVL	Product name	Available in Metro Vancouver	Manu-factured in BC 0	/15	FSC -Forest Stewardship Council certification 2	/5	SFI - Sustainable Forestry Initiative 3,4	/5	PEFC 5	/5	EPD/GWP 6 Units= kg CO2eq	/20	EPD/Water use in production Units=Litre	/10	LEED 7 v4 compliant	/10	CARB 8	/10	HPD 9	/10	Greenguard certification10	/10	/100
West Fraser	LVL	Yes	Yes	15	Yes	5	Yes	5	Yes	5	361	12	1490	4	No	0	No	0	No	0	No	0	46
Metrie	LVL	Yes	Yes	15	No	0	No	0	No	0	361	12	1490	4	No	0	No	0	No	0	No	0	31

SAGE

Charts

Paints evaluation based on brands

Evaluation of paints based on aggregate of the following criteria (weighted by priority):

- Available locally
- Key environmental impacts including
  - EPD - GHG emissions and GWP (global warming potential)
  - EPD - water use in production
  - LEED v.4 compliance

Environmental & Health/IAQ certifications

- Greenguard certification &/or Green Seal
- MPI 11 (Master Painter Institute extreme green performance
- Formaldehyde-Free Claim Validation
- Zero VOCS & air emissions; Asthma & allergy friendly

Type			Rating elements																		
			Environmental impacts				Environmental & health certifications								Health considerations						Total Score
Paints (Latex)	Product name	Available in Metro Vancouver	EPD/Total GWP unit= kg CO2eq	/20	EPD/ water use Unit=Litre	/10	GREENGUARD Certification	/10	Green Seal	/10	MPI 11 Master painter institute extreme green performance	/10	HPD	/15	Formaldehyde Free - Claim Validation [1]	/10	Zero VOCs and zero emissions	/10	Asthma and allergy friendly	/5	/100
Benjamin Moore	Eco Spec	Yes	1.12	10	108	0	No	0	Yes	10	Yes	10	Yes	10	No	0	Yes	10	Yes	10	60
Benjamin Moore	ULTRA SPEC 500 INTERIOR LATEX	Yes	0.789	15	14.4	9	No	0	No	0	Yes	10	Yes	10	No	0	Yes	10	No	0	54
Behr	BEHR PRO Interior Semi-Gloss Paint i100	Yes	2.01	5	17.1	8	Yes	10	No	0	Yes	10	No	0	Yes	10	No	0	No	0	43
Benjamin Moore	Aura Eggshell	Yes	NA	0	NA	0	No	0	Yes	10	Yes	10	Yes	10	No	0	Yes	10	No	0	40
Glidden	Glidden Premium Paint	Yes	NA	0	NA	0	Yes	10	No	0	No	0	No	0	N0	0	No	0	No	0	10

Table 9

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Glossary of Terms *(continued)*

Building lifecycle vs. exhibition lifecycle

The life cycle of buildings in the construction industry often extends beyond a century. Therefore, it may be reasonable to use high greenhouse gas (GHG) emitting materials like steel or aluminum if you consider their durability and longevity for use over many decades. However, this logic does not hold for exhibition construction, which typically las less than a year.

While the SAGE project encourages materials re-use, we do not anticipate such long-term use due to the high turnover of exhibitions which will require constant materials manipulation (assembly, disassembly, painting, cutting, etc.). Therefore, choosing to use new materials with high GHG emissions associated with their sourcing and manufacture does not make sense for arts sector exhibitions and staged events that are seeking to reduce their environmental impact. However, if there are used versions of these materials available (that perhaps may otherwise go to waste), these used materials may be an appropriate choice. For example, purchasing (or acquiring) used steel or aluminum studs for reuse.

LEED -Leadership in Energy and Environmental Design

LEED is used in the building and real estate development sector to guide green building practices. LEED provides a framework for healthy, efficient, carbon and cost-saving green buildings. It addresses materials as well as building design and construction. LEED certification is a globally recognized symbol of sustainability achievement, and it is backed by an entire industry of committed organizations and individuals paving the way for market transformation. LEED certification of buildings (or urban developments) is done by a 3rd party and while planning and design may follow LEED guidelines and specifications, the LEED governing body awards the certification to qualifying buildings only after completion of construction

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Glossary of Terms *(continued)*

EPDs -Environmental Product Declarations

Environmental Product Declarations (EPDs) are standardized documents that communicate the environmental impact of a product or system. They provide transparent, verified, and comparable information about the lifecycle environmental impact of products, including data on a product's carbon footprint, water use, etc.

- The most important metric published in an EPD is the product/product type's Global Warming Potential (GWP). With an increasing focus on embodied carbon, the GWP is what the industry uses to assess the extent to which the life of a product impacts the environment.
- For wood products, the Global Warming Potential (GWP) indicates the quantity of CO2 emissions released into the environment per cubic meter of the product, during the 'cradle to gate' process. The 'cradle to gate' process includes all stages from raw material acquisition to the point the product leaves the factory gate, but before it is transported to the user or consumer.

HPDs -Health Product Declarations

HPDs are standardized reports that provide detailed information about the materials (chemicals, etc.) and health effects associated with products used in the built environment. HPDs are used as a tool for architects, designers, and consumers to make informed decisions about the products they select for their projects.

Key points about HPDs include:

- Transparency: HPDs provide transparency about the ingredients in building products, helping stakeholders understand the potential health impacts.
- Material Health: They provide data on the health effects of the materials in a product, which can guide safer product selections.
- Standardization: The HPD Open Standard provides a consistent format for reporting product content and associated health information. *(continues next page)*

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Glossary of Terms *(continued)*

HPDs -Health Product Declarations *(continued)*

- Third-Party Verification: Products with HPDs have been independently verified, adding credibility to their health claims.
- LEED Points: HPDs can contribute to achieving Material Ingredient reporting credits under the LEED v4 and v4.1 rating systems.
- Unlike industries such as paints, the development of HPDs for wood products is still ongoing. As such, they are less common but are becoming increasingly important for transparency in the building materials industry.

CARB -California Air Resources Board

The California Air Resources Board (CARB) certification is a set of air quality standards set by the state of California, often regarded as the most stringent in the USA and valued for their high environmental standards here in Canada as well. CARB certification primarily targets the emission levels of volatile organic compounds (VOCs) and formaldehyde from composite wood products.

Key points about CARB certification include:

- Air Quality Standards: CARB certification ensures that composite wood products meet stringent air quality standards.
- Formaldehyde Emissions Control: The certification mandates that formaldehyde emissions from composite wood products stay below set levels, reducing the risk of exposure.
- Product Scope: The certification applies to a range of products, including hardwood plywood, particleboard, and medium-density fiberboard (MDF).
- Market Requirement: For many products, obtaining CARB certification is necessary to access the Californian and, in many cases, the wider U.S. market.
- Health Protection: Limiting harmful emissions, CARB certification to protect public health.
- LEED Compliance: The materials section of Leadership in Energy and Environmental Design (LEED v4) standards for sustainable building, recognize and encourage compliance with CARB certification. Using CARB-certified materials can contribute to earning LEED points.

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Glossary of Terms *(continued)*

Manufactured in BC

It is beneficial for the wood products to be sourced locally in British Columbia (BC) for several reasons:

- Boosts Local Economy: Supports local businesses and jobs in forestry.
- Environmentally Friendly: Less transportation reduces carbon emissions.
- Sustainable Forestry: BC has a high percentage of certified, responsibly managed forests.
- Regulated Practices: Strict local regulations ensure sustainable harvesting.
- High Quality: Less transport time can result in fresher, higher-quality wood.
- Community Bond: Builds connection with the local environment and community.
- Green Energy Use: BC's hydroelectric-based grid powers wood processing, reducing carbon footprint.

FSC -Forest Stewardship Council

The Forest Stewardship Council (FSC) certification is an international system that guarantees a product comes from responsibly managed forests that provide environmental, social, and economic benefits. It promotes sustainable forestry practices, including biodiversity protection, worker safety, and community engagement. Products with FSC certification, like timber or paper, ensure consumers that they are supporting responsible forest management.

SFI -Sustainable Forestry Initiative

The Sustainable Forestry Initiative (SFI) certification is a standard that ensures forest management practices are sustainable, environmentally responsible, and socially beneficial. It covers key values such as the protection of biodiversity, wildlife habitat, and water quality, and encourages community involvement and adherence to local laws. Products with SFI certification, like timber and paper, assure consumers that they come from responsibly managed forests.

SAGE

Glossary of Terms *(continued)*

PEFC -Program for the Endorsement of Forest Certification

The Program for the Endorsement of Forest Certification (PEFC) is an international non-profit, non-governmental organization dedicated to promoting sustainable forest management. A significant component of the PEFC certification system is the Chain of Custody which provides a mechanism for tracking certified material from the forest to the final product. It is a process of documenting and verifying that each step of the supply chain - from harvesting, through processing, manufacturing, and distribution - maintains the integrity of the certified status of forest-based materials.

It is of immense importance as it provides assurances to customers, consumers, and stakeholders about the origins of the forest-based material, ensuring they originate from responsibly-managed forests. It helps in validating sustainability claims and supports businesses in sourcing responsibly, thereby enhancing consumer trust in products and the brands behind them.

Differences between FSC (Forest Stewardship Council) and SFI (Sustainable Forestry Initiative)

There are certain differences between FSC (Forest Stewardship Council) and SFI (Sustainable Forestry Initiative) as follows:

- Origin and Recognition: FSC is an internationally-recognized organization with standards developed by a global consortium of stakeholders. On the contrary, SFI originated and is mainly recognized within North America, and its standards were primarily formed by forestry industry professionals.
- Chain of Custody: The chain of custody system in FSC is typically considered more stringent, requiring each company in the supply chain to have certification. In contrast, SFI permits a "fiber sourcing" certification where non-certified wood can be mixed in if it fulfills SFI's sourcing standards.
- Scale: FSC certification is generally seen more in tropical countries and smaller forest lands, whereas SFI certification is more prevalent in North America and on extensive forest lands.
- Certification Process: FSC certifications are conducted by independent third-party auditors, while SFI permits self-assessments in conjunction with third-party reviews.