

Environmental Product Declaration for Stacked Interior Wall (Calgary)



This Environmental Product Declaration, covering all life cycle stages, was prepared in conformity with ISO 14025, ISO 14040, ISO 14044, and ISO 21930, and in accordance with the Earthsure Product Category Rule 30162403:2014 for Interior Wall Systems. PCR Review Chair Thomas Gloria, LCACP # 2008-3. EPDs prepared under other programs may not be comparable.

Life cycle assessment



PRODUCER

DIRTT Environmental Solutions, the manufacturer of this product, is a building process powered by technology. We're changing the face of construction with software and advanced manufacturing. Custom interior spaces are built faster, cleaner and more sustainably. DIRTT's technology provides certainty on cost, schedule and the final results, while creating a future proof space.

PROGRAM OPERATOR

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428



INDEPENDENT VERIFICATION

Independent verification of the declaration and data, according to ISO 14025: ☐ _internal ☒ _external
Verifier: Thomas Gloria, t.gloria@industrial-ecology.com

ASTM Declaration Number: EPD 097
Dates of Validity: 5/6/2019 to 5/6/2024

Average Life Cycle Impacts and Inventory per m2-30 yr-meeting IBC requirements for interior walls

Climate Change	153	kg CO ₂ -eq
Acidification	0.87	kg SO ₂ -eq
Eutrophication	0.27	kg N-eq
Ozone Depletion	3.78E-6	kg CFC-11-eq
Photochemical Smog	10.5	kg O ₃ -eq
Ecotoxicity	0.44	PAF.m3.day
Human Health – Air	0.02	kg PM _{2.5} -eq
Primary Energy Consumption	1,691 403	MJ non-renewable MJ renewable
Freshwater Consumption	1,777	L
Waste Production	7.65E-3 27.4	kg hazardous kg non-hazardous
Material Resource Consumption	40.9 23.7	kg non-renewable kg renewable
Land Use	4.84	m2-yr

Life cycle assessment continued

PRODUCT

This EPD is for an interior stacked wall with an aluminum frame and glass segment on the top half. The bottom half consists of an aluminum frame with cotton-denim insulation and a NAF (no added formaldehyde) MDF (medium density fiberboard) tile with a chromacoat paint finish. This assembly is manufactured at: 7303 30 St SE, Calgary, AB T2C 1N6 Canada and 6335 57 St SE, Calgary, AB T2C 5K9 Canada.

DIRTT's interior walls are designed and manufactured offsite, then installed in a building with a floor-to-ceiling vertical span. They provide a sight, sound, and air barrier; allow for integrated technology and can be disassembled and moved without losing any performance characteristics.

Functional Unit

The functional Unit is one square meter (1 m²) of demountable interior wall for 30 years, meeting the performance standards of the International Building Code.

System Boundary

This EPD is a cradle-to-grave EPD covering all stages of the life cycle of the interior wall system.

Production Stage (Mandatory)			Construction Stage		Use Stage					End-of-Life Stage			
Extraction and Upstream Production	Transport to Factory	Manufacturing	Transport to Site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction / Demolition	Transport to Waste Processing or Disposal	Waste Processing	Disposal of Waste
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4

Cut-off

Items excluded from system boundary include:

- production and disposal of capital goods and infrastructure;
- personnel impacts (travel, operation of lunchrooms);
- company management and sales activities that may be located either within the factory site or at another location (furniture, office supplies, energy and water use); and
- installation/demounting/reinstallation.

Allocation Procedure

Allocation follows the requirements and guidance of ISO 14044:2006, Clause 4.3.4. Recycling and recycled content is modeled using the cut-off rule.

Life Cycle Inventory (LCI)





Primary data was used for 26% of all technosphere flows.

For additional explanatory material please contact:

Green Team
greenteam@DIRTT.net
 7303 30th Street SE
 Calgary, AB T2C 1N6 Canada
 1-800-605-6707

Life cycle impact assessment results - Calgary

For one square meter of interior wall conforming to the International Building Code for thirty years, using TRACI 2.1 Life Cycle Indicators:

Life Cycle Impact		Total	Stage I: Production	Stage II: Installation	Stage III: Use	Stage IV: End of Life	Units
	Climate Change	153	131	7.86	0.13	13.3	Kg CO ₂ -eq
	Acidification	0.87	0.77	0.08	0.00	0.01	kg SO ₂ -eq
	Eutrophication	0.27	0.23	0.01	0.00	0.03	kg N-eq
	Ozone Depletion	3.78E-6	3.15E-6	5.87E-7	4.84E-9	3.31E-8	kg CFC-11-eq
	Photochemical Smog	10.5	8.10	2.04	0.01	0.32	kg O ₃ -eq
	Ecotoxicity	0.44	0.40	0.01	0.03	0.00	PAF.m3.day
	Human Health - Air	0.02	0.02	0.00	0.00	0.00	kg PM _{2.5} -eq

Life cycle inventory information

For one square meter of interior wall conforming to the International Building Code for thirty years:

Inventory Item	Units	
Primary Energy Consumption	1,691	MJ non-renewable
	403	MJ renewable
Freshwater Consumption	1,777	L
Waste Production	7.65E-3	kg hazardous
	27.4	kg non-hazardous
Material Resource Consumption	40.9	kg non-renewable
	23.7	kg renewable
Land Use	4.84	m2-yr

Hazardous material content

For one square meter of interior wall conforming to the International Building Code for thirty years (at least 0.1% using California DTSC Candidate Chemical List).

Material	CAS number	Amount (%)
Aluminum	7429-90-5	29.51
Polymerized methylene-diphenyldiisocyanate (pMDI)	9016-87-9	1.74

Additional environmental information

Forest Stewardship Council (FSC) (<i>*must be specified</i>)	
Recycled Content	43.6% (pre-consumer) 5.1% (post-consumer)
SCS Indoor Advantage Gold Certified	
Chromacoat paint is a no-VOC formula	
Insulation has 70% rapidly-renewable content	