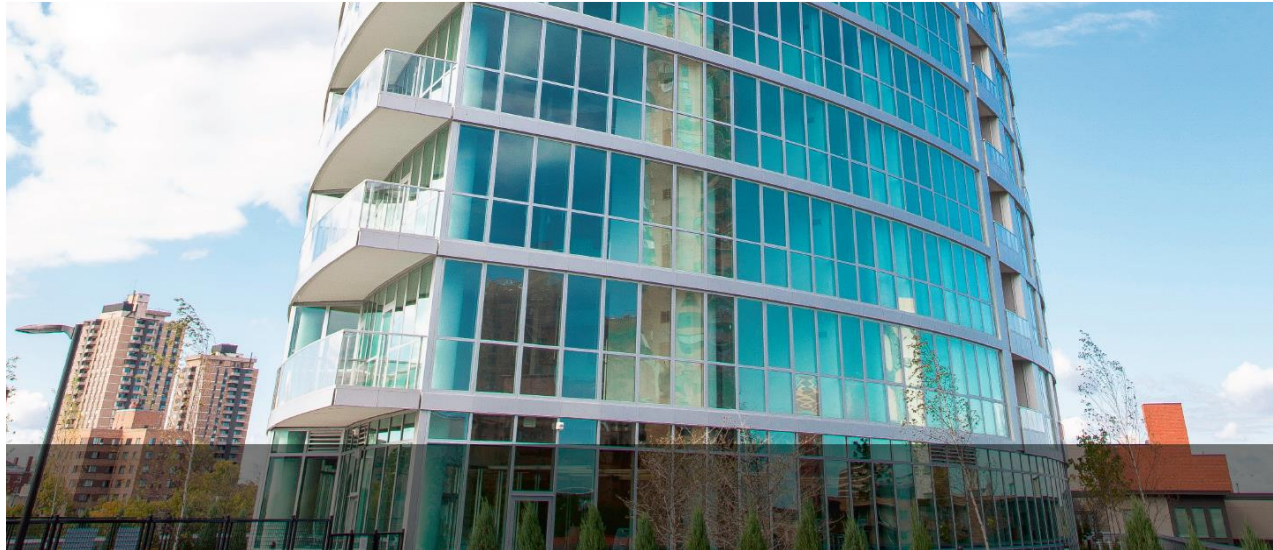




Environmental Product Declaration

EFCO Window Wall Systems



EFCO Series 4500

This Environmental Product Declaration (EPD) was prepared in accordance with ISO 14025 and 21930 using the Earthsure Cradle to Gate Window Product Category Rule 30171600-2015. EPDs are not intended to make comparisons with other products due to varying background data in LCA softwares and/or varying program operator rules or Product Category Rules. An EPD is informational and does not warrant performance. Valid 22 May 2017 through 21 May 2022.

EFCO Corporation

EFCO is a leading manufacturer of architectural aluminum window, curtain wall, storefront and entrance systems for commercial architectural applications. Headquartered in Monett, Missouri, our mission is to be the most trusted supplier in commercial architecture. We seek to provide customers with the highest level of quality, innovation, value, and service.

LCA performed by Four Elements Consulting, LLC. EPD conformance with Earthsure PCR & ISO 14044 validated by LCA Certified Professional Rita Schenck. EPD and data were independently, externally, verified according ISO 14025. For more information contact anne@fourelementslc.com or earthsure@iere.org.

Cradle-to-Gate Results Summary		
Declared unit: 1 m2		
Mass per m2: 39.3 kg		
Potential Environmental Impacts		
Global Climate Change	kg CO2 eq	180
Acidification	kg SO2 eq	1.1
Eutrophication	kg N eq	0.07
Ozone Depletion	kg CFC-11 eq	7.0E-06
Photochemical Smog Formation	kg O3 eq	10
Resources, Energy, & Waste		
Non-renewable Energy Resources	MJ HHV	2,300
Renewable Energy Resources	MJ HHV	520
Non-renewable Material Resources	kg	150
Renewable Material Resources	kg	1.8
Non-Hazardous Waste Production	kg	4.6
Hazardous Waste Production	kg	0
Freshwater Consumption	liter	120
Other Declarations		
Recyclable content: aluminum 41%, glass 51%		
Hazardous materials in >0.1% of window: none		

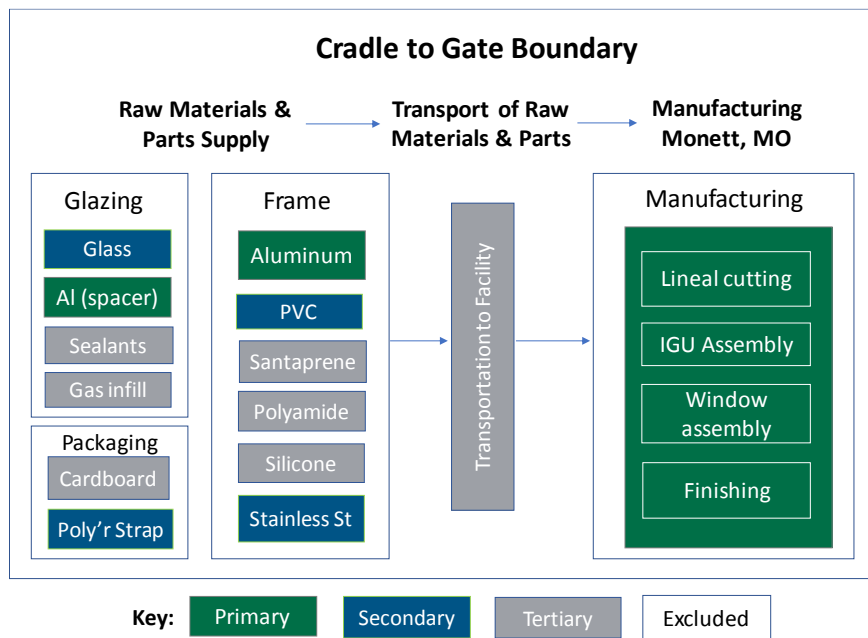
EFCO Window Wall Systems



Used primarily for low to mid rise multi-family and mixed use buildings, window wall products provide the appearance of a traditional curtain wall system, but at a lower price point. Anchored at the head and sill at each floor and installed into the subframe, EFCO's window wall products can be installed from the building's interior.

EFCO window wall systems include the following product lines: Series 450X, Series 600R, Series 4500.

System Boundaries and Data



- Capital equipment
- Personnel impacts
- Non-window components
- Mat'ls to recycling

The LCA evaluated the cradle to gate of the window as required by the PCR. Primary data are 2015 from the Monett, MO, facility. Secondary and tertiary data come from the U.S. LCI and

EcoInvent databases. EcoInvent data are customized to U.S. conditions. The selection of these databases ensures a plausible set of generic and background data. Commercially-available SimaPro LCA software was used to model the window.



Contribution Analysis Results

1 m2 Window Wall		Raw Materials Production	Transport to Plant	Manuf- acturing	Total
Impact Category	Units				
Global Climate Change	kg CO2 eq	92%	1.4%	6.4%	180
Acidification	kg SO2 eq	93%	1.7%	4.9%	1.1
Eutrophication	kg N eq	92%	1.5%	6.4%	0.07
Ozone Depletion	kg CFC-11 eq	80%	0%	20%	6.97E-06
Photochemical Smog Formation	kg O3 eq	90%	5.3%	4.3%	10
Inventory Result	Units				
Non-renewable Energy Resources	MJ HHV	90%	1.7%	8.5%	2,300
Renewable Energy Resources	MJ HHV	99%	0%	0.8%	520
Non-renewable Material Resources	kg	99%	0%	0.7%	150
Renewable Material Resources	kg	94%	0%	5.9%	1.8
Non-Hazardous Waste Production	kg	94%	0%	6.4%	4.6
Hazardous Waste Production	kg	n/a	n/a	n/a	0
Freshwater Consumption	liter	78%	0%	22%	120

May not add to 100% due to rounding. 0% means less than 0.1%

Performance Standards & Certifications

EFCO products are tested, certified and labeled for the following performance standards:

- AAMA/WDMA/CSA 101/IS2/A440 (NAFS-North American Fenestration Standard/Specification for windows, doors, and skylights)
- ASTM E283, AAMA 501 and NFRC 400 Air Leakage
- ASTM E331 and AAMA 501 Water Penetration
- ASTM E330 and AAMA 501 Static Structural Performance
- AAMA 1503, AAMA 507 and NFRC 100 Thermal Transmittance – U-Factors
- AAMA 1503, CSA A440.2 and NFRC 500 Condensation Resistance (CRF,I,CR)
- AAMA 507 and NFRC 200 Overall Solar Heat Gain Coefficient and Visible Transmittance (SHGC) & (VT)
- AAMA 1801, ASTM E90 and ASTM E1425 Sound Transmission (STC, OITC)



References

Earthsure. "Cradle to Gate Window Product Category Rule." September 2015, v.1.02. Earthsure PCR Cradle-to-Gate 30171600:2015.

ISO 14040:2006, The International Standard of the International Standardization Organization, Environmental management. Life cycle assessment. Principles and framework.

ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines.

ISO 14025:2006, Environmental Labels and Declarations – Types III Environmental Declarations – Principles and Procedures.

ISO 21930-2007 Sustainability in building construction – Environmental declaration of building products.

Ecoinvent Centre, Ecoinvent data v2.2 (US-EI) (Dübendorf: Swiss Centre for Life Cycle Inventories), retrieved from SimaPro (2013 update).

National Renewable Energy Laboratory (NREL): U.S. Life-Cycle Inventory Database. 2005. Golden, CO. Found at: <http://www.nrel.gov/lci/database>.

PRé Consultants: SimaPro 8.0 LCA Software. 2013. The Netherlands.

Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) version 2.1 - User's Manual. Washington, D.C.: U.S. EPA.