



Natural Flat Sheets and Weatherboards



Figure 1 Natural Flat Sheet and Weatherboard

Weathertex is an Australian owned and operated manufacturer of sustainably harvested timber weatherboard, wall panels and cladding.

Durability is at the forefront of Weathertex' service delivery.

These products use no artificial glues or binders, and have a 25-year warranty.

Weathertex products are carbon sinks with a better than zero carbon footprint.

The company furthers its sustainability commitment by reusing waste fibre as fuel, and incorporating scrap into compost.

Weathertex reduces its water use by ensuring that process water is treated and recycled back to the aquifer for irrigation.

The company firmly believes in giving back to the community.

For the last 50 years, Weathertex has employed over 100 local residents, contributing to economic growth in the community.

Through product donations the company also supports charities, not-for-profit organisations and educational institutions.

Weathertex Quality Management System is ISO 9001-certified.

It operates an Environmental Management System in line with ISO 14001 principles.

More information is at <http://www.weathertex.com.au>

This Environmental Product Declaration (EPD) discloses potential environmental outcomes compliant with ISO 14025 for business to business communication. The declared product is natural flat sheets and weatherboards made by Weathertex Pty Ltd in Australia in 2014 for sale and application in commercial and residential sectors with a 25 year warranty.



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Different program EPDs may not be comparable as e.g. Australian transport is more than elsewhere. **Further explanatory information is found at <http://www.globalgreentag.com/>** or contact: certification1@globalgreentag.com © This EPD remains the property of Global GreenTag Pty Ltd.



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1. Details of This Declaration

Program Operator	GreenTag Global Pty Ltd hereafter called Global GreenTag noted at www.globalgreentag.com	EPD Number	WEACT-001-A-2016
		Date issue	12 February 2016
		Validity	12 February 2019
Reference PCR	Compliant with PCR WC: 2015 v1.0		
Time	Made in 2013, sold from 2014 for 20 years use		
Geography	Made in Australia. Uses are assumed as for Australasia.		
Application	Commercial and residential building exteriors		
Declared unit	Weathertex Exterior Panels kg/m ²		
Functional unit	Product manufacture, 60 years use and disposition		
Ecolabel Global GreenTag^{Cert™}	LCARate Platinum PLUS GreenRate Level A		



2. Product Characterisation

Definition	Natural Flat Sheets and Weatherboards by Weathertex, used for external cladding in commercial/residential applications
Standard	AS 4266.3 and AS 4266.4 Reconstituted wood-based panels

3. Base Material Origin and Detail

Table 1 lists key components by function, type, key operation, source and mass share.

Table 1 Base Material

Function	Component	Production	Origin	Amount
Fibre	Hardwood	seed, forest, thin, fell, cut, radial saw	Australia	>97
Wax	Paraffin wax	drill, distil, refine, blend	Australia	3



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4. Packaging, Installation, Use & Disposal

Packaging	Cardboard forms & cartons, plastic wrap & strapping on reused pallets.
Service life	Residential and commercial refits vary but 20 year life is assumed typical.
Health Safety & Environment	Apart from compliance to occupational and workplace health safety and environmental laws no additional personal protection is considered essential.
Residual Scrap	Mill off-cuts are reused. Installation scrap of 5% is assumed to landfill.
Cleaning & Maintenance	The recommended cleaning and maintenance raises no ecosystem or human health concerns. Care and maintenance guides are on company websites.
Scenario	Weekly detergent spray, light mop, monthly wet machine scrub and cloth dry.
Recycling	Home mill, fabrication and installation scrap is reworked into new product.
Re-use	This study assumes 60% product is serviceable for reuse over 40 more years.
Disposal	It assumes 30% is recycled. Incineration is rare in Australia so none is modelled.

5. Whole of life Performance

Health Protection	The product contains minimal Titanium Dioxide that if inhaled acts as IARC Group 1, that warrants human health concern cradle to grave. It is excluded from the Ecospecifier Cautionary Assessment Process (ESCAP) and no issues or red light concerns existed for product human or ecological toxicity.
Effluent Waste	The LCI results and ESCAP raised no red light concerns in emissions to water ¹ . Cradle to grave waste to landfill was 100% non-hazardous.
Environmental Protection	Continual improvement under the maker's compliant EMS aims to avoid toxics, waste and pollution plus reduce their material and energy use.
Environmental Health Effects	Installed products are certified as having VOC's compliant with Green Star® IEQ VOC credits for indoor environment ² quality credits. No other potential in-use impacts on environment or health are known.

6. Green Star® Certified Credits

Products are relevant to the Green Building Council of Australia's (GBCA) Green Star® scheme. If required this EPD is evidence the declared product meets the following Green Star® credits. It may be used as evidence in Green Star® submissions for those credits. The product is certified by GBCA recognised Global GreenTag GreenRate to meet Green Star® credits internally including:

- Design and As Built V1.1: Sustainable Product, Indoor Pollutants
- Interiors V1.1: Sustainable Products, Indoor Pollutants
- Performance V1: Refurbishment Materials as well as,

Legacy rating tools:

- Office Interiors V1.1: IEQ-12: Formaldehyde Minimisation, MAT-3: Walls and Partitions
- Office As Built V2, Office Design V3: IEQ-14: Formaldehyde Minimisation
- Healthcare V1: IEQ-9: Formaldehyde Minimisation, MAT-14, Ceilings, Walls and Partitions
- Education V1, Retail Centre V1, Industrial V1: IEQ-9: Formaldehyde Minimisation
- Multi Unit Residential V1: IEQ-9: Formaldehyde Minimisation, MAT- 14: Internal Walls
- Public Building V1: IEQ-9: Formaldehyde Minimisation, Mat-12: Assemblies

GBCA Disclaimer

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¹ According with national standards in ANZECC Guideline For Fresh & Marine Water Quality (2000)

² in accordance with national standards and practice



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7. Results

Table 2 shows the product Life Cycle Assessment (LCA) Eco-Indicator 99 results for 20 years of use.

Table 2 Potential Impact Results

Evaluation Category	Unit	Result
Product mass	kg/m ²	9.66
EcoIndicator 99	ecopoint	0.45
Embodied Water	kl	15.5
Carbon Dioxide Equivalent Emissions	kg CO _{2e} ³	-4.72
Gross Energy and Feedstock	MJ	253
Renewable Primary Energy	MJ	140
Ecosystem Quality Damages	PDF*m ² *yr	5.1E-05
Human Health Damages	DALY	6.5E-04
Ozone Depletion	kg R11 _e	1.9E-11
Acidification	kg SO _{2e}	0.25
Eutrophication	kg PO ₄ ³⁻ _e	6.9E-03
Fossil Fuel Depletion	MJ _{surplus}	6.90
Mineral Resource	MJ _{surplus}	4.9E-03

Table 3 lists product Global GreenTag Sustainability Assessment Criteria (SAC) scores prior to weighting and then used to determine the GreenTag EcoPOINT⁴. Lower scores show greater environmental and social outcome benefits with fewer impacts and damages for sustainability. SAC scores are normalised against products that perform the same function and results with:

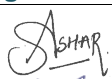
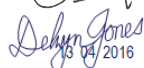
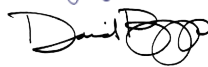
- 1.0 = worst case business as usual (BAU)
- 0.0 = neutral no improvement and
- -1.0= net positive benefit

Table 3 Normalised GreenTag EcoPOINT & SAC Scores

Category Potential	Results (-1 to +1)
Building Synergy	0.75
Health & Ecotoxicity	0.00
Biodiversity	0.12
LCA Score	0.05
Greenhouse Emission	-0.15
Social Responsibility	0.40
GreenTag EcoPOINT	0.14

8. Verification of this Declaration

This EPD was approved on 13 04 2016 according to requirements of ISO14025 8.1.3b.

Role	Signature	Name	Position
LCA Review		Shloka Ashar	Global GreenTag Lead Auditor
PCR Review Chair		Delwyn Jones	Evah Institute CEO & Assessment Director
Internal EPD Review		David Baggs	Global GreenTag CEO & Program Director

³ Stocker et al (eds.) Climate Change 2013: The Physical Science Basis, CH8, IPCC AR5, Cambridge U Press, UK.

⁴ <http://www.ecospecifier.com.au/knowledge-green/glossary.aspx#greentagecopoint>



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9. Life Cycle Assessment Method

LCA Author	The Evah Institute as described at www.evah.com.au
Study Period	Factory data was collected from 2012 to 2014
Scope	Cradle to grave
LCA Method	Compliant with ISO 14040 and ISO 14044 Standards
LCIA method	Ecolindicator 99 Life Cycle Impact (LCIA) Assessment
System Boundaries	The LCA covers all operations in the system boundary depicted in Figure 2. It includes water, waste and emissions for all intermediates used to make and pack product as well as after sale delivery. Some background operations are not shown but all known operations were tracked to the cradle and included.
Phases	The study covered all known stages and phases including resource acquisition, fuel use, power generation, scrap recovery, manufacture, packing, freight, installation, use, disposal plus dispatch for reuse, recycling, landfill and recovery.
Processes	All known processes are included for water, fuel & energy use, resource acquisition, power generation, manufacture, transport, installation and landfill. All waste and emissions for depicted product intermediates and supply chain operations shown in Figure 3 are included.
Scenarios	Use, cleaning, maintenance plus disposition and re-use were scenario-based using Facility Management Association denoted and published typical operations.
Assumptions	Use is to typical Australian Facility Management professional practice.



10. LCA System Phases

All cradle to grave phases and stages that the LCA covered are depicted in Figure 2.

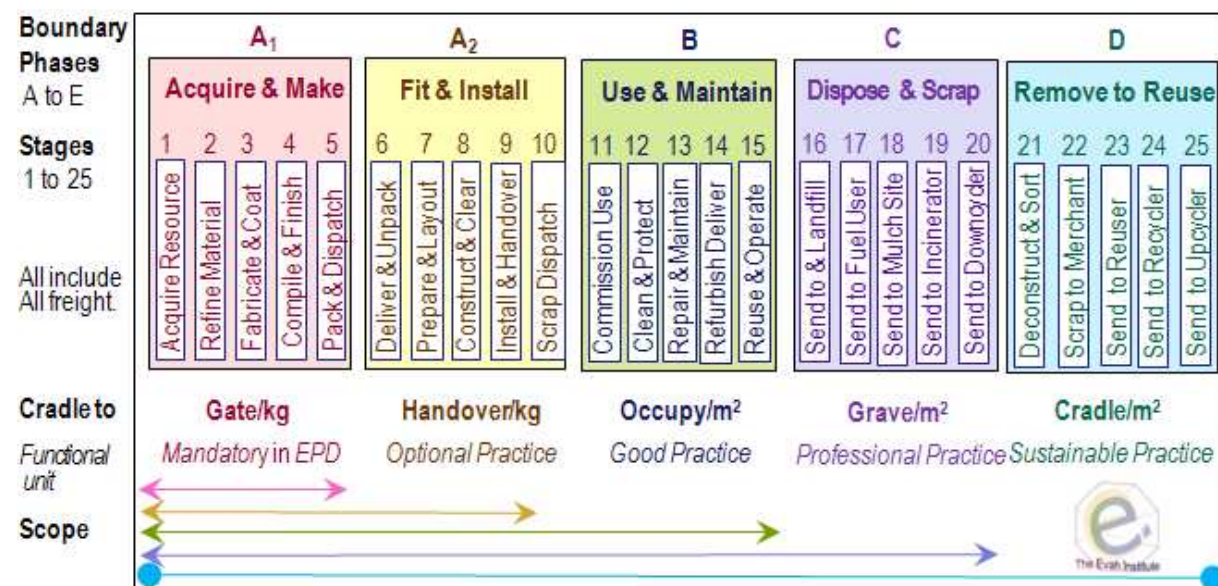


Figure 2 Phases and Stages Cradle to Grave



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11. Supply Chain Modelling

Industry supply chain databases cover all known domestic and global scope 1 and 2 operations. Processes to acquire, refine, transport, fabricate, coat, use, clean, repair, reuse and dispose of metal, masonry, ceramic, timber, glass, plastic and composites are modelled. These include those of:

- Mining, extracting and refining resources to make commodities and packaging;
- Acquiring, cultivating, harvesting, extracting, refining produce and biomass;
- Fuel production to supply power and process energy and freight;
- Chemicals use in processing resources, intermediates and ancillaries;
- Process energy, fuel and freight of resources, intermediates and ancillaries;
- Use, cleaning, recoating, repair, recycling, re-use and landfill, as well as
- Infrastructure process energy transformed and material wear loss e.g. tyres.

They exclude scope 3 burdens from:

- Building capital facilities, churn updates and equipment; Noise and dehydration as well as
- Incidental activities and travel of employees engaged on-site in production facilities.

A flow chart in Figure 3 shows key product supply chain operations from cradle to disposition.

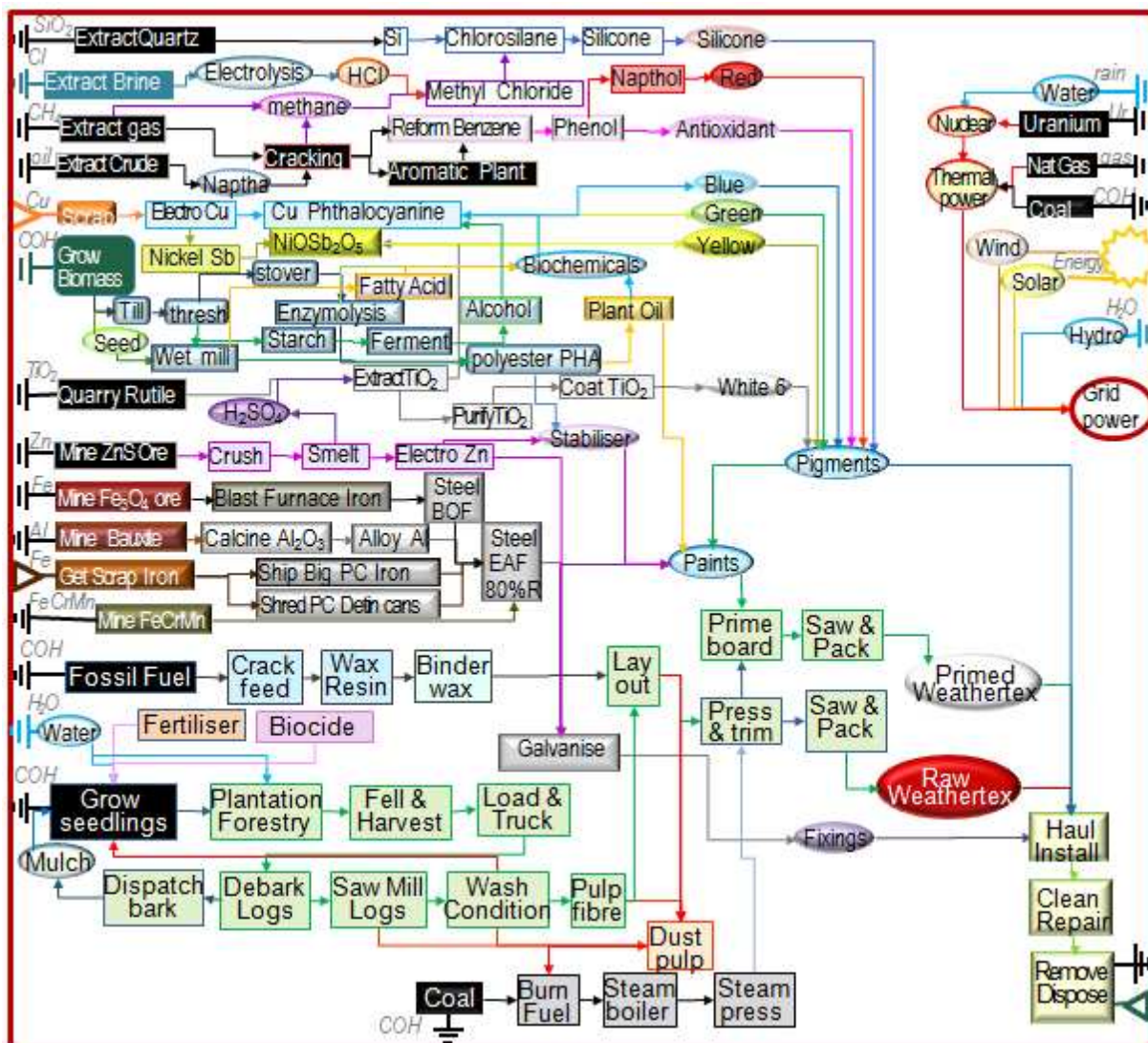


Figure 3 Major Product Operations



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12. Data Sources Representativeness and Quality

Metadata on corporate locations, logistics and technology used is documented along with market share, management systems, standards and commitment to improved environmental performance. The data employed for modelling the state of art of each operation including all known process:

- technology sequences
- energy and water use
- landfill and effluent plus
- reliance on raw and recycled material
- high and reduced process emissions
- freight and distribution systems.

Primary data has been sourced from clients, their Annual Reports and research papers since 1995. Background data is sourced from the International Energy Agency, IBISWorld, USGS Minerals, Franklin Associates, Boustead 6, Plastics Europe, CML2, Simapro 8, Ecolnvent 3 and NREL USLCI model databases. Information about manufacturers' operations is also sourced from:

- Supply chain mills, their technical manuals, corporate annual reports and sector experts;
- Manufacturers development license applications, specifications, websites;
- Library, document, NPI and web searches, review papers, building manuals and
- Global Industry Association and Government reports on Best Available Technology (BAT).

As most sources do not provide estimates of accuracy a pedigree matrix of uncertainty estimates to 95% confidence levels of Geometric Standard Deviation² (σ_g) is used to define quality as in Table 4⁵. Data sets with uncertainties in any of these qualities greater than $>\pm 30\%$ are not used.

Table 4 Data Quality Uncertainty (U) for 2014

Metric σ_g	U ± 0.01	U ± 0.05	U ± 0.10	U ± 0.20	U ± 0.30
Temporal	Post 2013	Post 2009	Post 2005	Post 2000	Pre 1999
Duration	>3yr	3yr	2yr	1yr	<1yr
Data Source	Process	Line	Plant	Corporate	Sector
Technology	Actual	Comparable	Within Class	Conventional	Within Sector
Reliability on	Site Audit	Expert verify	Region Report	Sector Report	Academic
Precision to	Process	Line	Plant	Company	Industry
Geography	Process	Line	Plant	Nation	Continent
True of the	Process	Mill	Company	Group	Industry
Sites cover of	>50%	>25%	>10%	>5%	<5%
Sample size	>66% trend	>25% trend	>10% batch	>5% batch	Academic
Cut-off mass	0.01%	0.05%	0.1%	0.5%	1%
Consistent to	± 0.01	$<\pm 0.05$	$<\pm 0.10$	$<\pm 0.20$	$<\pm 0.30$
Reproducible	>98% confidence	>95%	>90%	>80%	<70%
Certainty	Very High	High	Typical	Poor	$>\pm 0.30$ unused

The Evah databases exist in top zones of commercial global modelling and calculating engines. Quality control methods are applied to ensure:

- Coverage of place in time with all information⁶ for each dataset noted, checked and updated;
- Consistency to Evah guidelines⁷ for all process technology, transport and energy demand;
- Completeness of modelling based on in-house reports, literature and industry reviews;
- Plausibility in 2 way checks of LCI input and output flows of data checked for validity, plus
- Mathematical correctness of all calculations in mass and energy balance cross checks.

Electricity supply models in the active databases are updated annually. As each project is modelled and new data is available the databases are updated and audited by external certifiers.

⁵ Evah Institute data quality control system accords with UNEP SETAC Global LCI Database Quality 2010 Guidelines

⁶ Jones D G (2004) LCI Database for Australian Commercial Building Report 2001-006-B-15 Icon.net, Australia

⁷ Evah Tools, Databases and Methodology Queensland, Australia at <http://www.evah.com.au/tools.html>



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13. Assumptions for Supply Chain Modelling

Industry sector inventory data is also developed to represent business as usual as well as BAT practices with operations covering industry supply chains and infrastructure in Australia and overseas. Environmental performance is evaluated across sectors by mining, farming, fishery, forestry, freight, infrastructure, manufacture and other process technology type plus their license conditions. Australian building sector rules and Evah assumptions applied are defined in Table 5.

Table 5 Scope Boundaries Assumptions and Metadata

Quality/Domain	National including Import and Export
Process Model	Typical industry practice with currently most common or best (BAT) technology
Resource flows	Regional data for resource mapping, fuels, energy, electricity and logistics
Temporal	Project data was collated from 2011 to 2014
Geography	Designated client, site, regional, national, Pacific Rim then European jurisdiction
Representation	Designated client, their suppliers and energy supply chains back to the cradle
Consistency	Model all operations by known given operations with closest proximity
Technology	Pacific Rim Industry Supply Chain Technology typical of 2012 to 2015
Functional Unit	Typical product usage with cleaning & disposal/m ² over the set year service life
System Control	
Primary Sources	Clients and suppliers mills, publications, websites, specifications & manuals
Other Sources	IEA 2014 , GGT 2014 , Boustead 2013 , Simapro 2014 , IBIS 2013 , Ecolnvent 2014 ,
Data mix	Power grid and renewable shares updated to latest IEA 2014 reports
Operational	Company data for process performance, product share, waste and emissions
Logistics	Local data is used for power, fuel mix, water supply, logistics share & capacity
New Data Entry	Evah Institute 2014; Global Green Tag Researchers 2014; IBIS 2014
Data Generator	Manufacturers, Evah Institute 2014; GGT 2014 ; Meta: IBIS 2012, Other pre 2014
Data Publisher	The Evah Institute Pty Ltd to Global GreenTag and designated client only
Persons input	All contributors cited in Evah & Global GreenTag records or websites
Data Flow & Mix	
System Boundary	Earth's cradle of all resource & emission flows to end of use, fitout or build life
System flows	All known from and to air, land, water and community sources & sinks
Capital inclusions	Natural stocks Δ , industry stockpiles Δ , capital wear Δ , system losses and use
Arid Practice	Dry technology adopted, Water use is factored by 0.1 as for e.g. Mining
Transportation	Distance >20% than EU; >20% fuel efficient larger vehicles, load & distance
Industrial	Company or industry sector data for manufacturing and minerals involved
Mining	All raw material extraction is based on Australian or Pacific Rim technology
Imported fuel	Mix is from nearest sources is e.g. UAE, SE Asia, Canada or New Zealand
Finishes	Processing inputs with finishing burdens are factored in. If not that is denoted
Validation	
Accuracy	10 th generation study is ± 5 to 15% uncertain due to some background data
Completeness	All significant operations are tracked and documented from the cradle to grave
Precision	Tracking of >90% flows applies a 90:10 rule sequentially to 99.9% and beyond
Allocation	%100 to co products on reaction stoichiometry by energetic or mass fraction
Burdens	All resource use from & emissions to community air land, water are included
Plausibility	Results are checked and benchmarked against BAT, BAU & worst practice
Sensitivity	Calculated U is reported & compared to libraries of Bath U RICE & Ecolnvent 3
Validity Checks	Are made versus Plastics Europe, Ecobilan, GaBi & or Industry LCA Literature



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14. References for this LCA & EPD

Australian & New Zealand (ANZECC) Guidelines For Fresh & Marine Water Quality (2000) <http://www.environment.gov.au/water/quality/national-water-quality-management-strategy>

Basel Convention (2011) Control of Transboundary Movement of Hazardous Waste & Disposal <http://www.basel.int/portals/4/basel%20convention/docs/text/baselconvention-text-e.pdf>

Boustead (2014) Model 6 LCI database <http://www.boustead-consulting.co.uk/publicat.htm> USA & UK

Ecoinvent (2014) LCI Model 3 database <http://www.ecoinvent.ch/> Ecoinvent, Switzerland

Evah (2015) LCA Tools, Databases & Methodology at <http://www.evah.com.au/tools.html>

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IBISWorld (2014) Market Research, <http://www.ibisworld.com.au/> IBISWorld Australia

International Energy Agency (2014) Energy Statistics <http://www.iea.org/countries/membercountries/>
ISO 9001:2008 Quality Management Systems Requirements

ISO 14001:2004 Environmental management systems: Requirements with guidance for use

ISO 14004:2004 EMS: General guidelines on principles, systems & support techniques

ISO 14015:2001 EMS: Environmental assessment of sites & organizations (EASO)

ISO 14020:2000 Environmental labels & declarations — General principles

ISO 14024:2009 Environmental labels & declarations -- Type I Principles & procedures

ISO 14025:2006 Environmental labelling & declarations Type III EPDs Principles & procedures

ISO 14031:1999 EM: Environmental performance evaluation: Guidelines

ISO 14040:2006 EM: Life cycle assessment (LCA): Principles & framework

ISO 14044:2006 EM: LCA: Requirement & guideline for data review: LCI; LCIA, Interpretation results

ISO 14064:2006 EM: Greenhouse Gases: Organisation & Project reporting, Validation & verification

ISO 15392:2008 Sustainability in building construction General principles

ISO 15686-1:2011 Buildings & constructed assets Service life planning Part 1: General principles

ISO 15686-2:2012 Buildings & constructed assets Service life (SL) planning Part 2: prediction

ISO 15686-8:2008 Buildings & constructed assets SL planning Part 8: Reference & estimation

ISO 21929-1:2011 Sustainability in building construction Sustainability indicators Part 1: Framework

ISO 21930:2007 Building construction: Sustainability, Environmental declaration of building products

ISO/TS 21931-1:2010 Sustainability in building construction: Framework for assessment, Part 1:

ISO 21932:2013 Sustainability in buildings and civil engineering works -- A review of terminology

Plastics Europe (2014) Portal <http://www.plasticseurope.org/plastics-sustainability/eco-profiles.aspx>

Pre (2014) SimaPro 8 Software, The Netherlands <http://www.pre-sustainability.com/simapro-manuals>

Myhre et al, 2013, Anthropogenic and Natural Radiative Forcing Chapter 8 in Stocker et al (eds.)
Climate Change 2013, AR5 of the IPCC, Cambridge U Press UK. <http://www.ipcc.ch/report/ar5/wg1/>

Roache S. K. (2012) IMF Report WP/12/115 China's Impact on World Commodity Markets
<http://www.imf.org/external/pubs/ft/wp/2012/wp12115.pdf> International Monetary Fund

UNEP (2014) Persistent Organic Pollutants <http://www.chem.unep.ch/pops/> The UN

USLCI (2014) Life-Cycle Inventory Database <https://www.lcacommons.gov/nrel/search>, USA

U.S. Geological Survey National Minerals <http://minerals.usgs.gov/minerals/pubs/country/> USA

US EPA (2014) Database of Sources of Environmental Releases of Dioxin like Compounds in U.S
<http://cfpub.epa.gov/ncea/cfm/recorddisplay.cfm?deid=20797> p 1-38, 6-9, USA



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**Global GreenTagCert™ EPD Program
Environmental Product Declaration
Compliant to ISO 14025**

This Environmental Product Declaration (EPD) discloses potential environmental outcomes compliant with ISO 14025 for business to business communication.

Further and explanatory information is found at

<http://www.globalgreentag.com/>

or contact:

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