# Euroscreen® Transparent Blind Fabric

***Figure 1 Euroscreen® Transparent Blind Fabric***

Australian Vertilux, blind and window covering manufacturer began in 1976.

Their blinds are designed and manufactured in Melbourne Victoria from local and international material.

Vertilux employs over 100 people.

Vertilux Greenvision® fabrics are low in VOCs.

Many of these fabrics including the Trevira CS fabrics meet requirements for international Oeko-Tex 100 certification.

Vertilux as a company reduce their impact on the environment.

By manufacturing high quality blinds Vertilux allows building occupants to better control heat and light coming into the building.

This reduces reliance on heating and air-conditioning, reducing electricity use and ensuing greenhouse gas emissions.

Product innovation is at the forefront of the Vertilux environment policy.

Processes in the Vertilux factory are governed by their *"Waste Not Want Not"* principles that aim to minimise material, energy and water inputs and waste outputs.

More information is at https://www.vertilux.com.au

This Environmental Product Declaration (EPD) discloses potential environmental outcomes compliant with ISO 14025 for business to business communication. The declared product Euroscreen® Transparent Blind Fabric is made by Vertilux in Germany in 2013-2014 for sale with a 7 year warranty for Interior window blind fabric applications in commercial and residential sectors.

# Euroscreen® Transparent Blind Fabric

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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 

# Euroscreen® Transparent Blind Fabric

## 1. Details of This Declaration

| | | | |
|---|---|---|---|
| **Program Operator** | GreenTag Global Pty Ltd hereafter called Global GreenTag noted at www.globalgreentag.com | **EPD Number** | VERRE-001-A-2015 |
| | | **Date issue** | 11 July 2016 |
| | | **Validity** | 11 July 2019 |
| **Reference PCR** | Compliant with PCR T: 2014 | | |
| **Time** | Made in 2013-2014, sold from 2014 for 20 years use | | |
| **Geography** | Made in Germany. Uses are assumed as for Australasia. | | |
| **Application** | Commercial and residential building interiors | | |
| **Declared unit** | Vertilux® Euroscreen® Transparent blind fabric 170g/m$^2$ | | |
| **Functional unit** | Product manufacture 20 year use and disposal | | |
| **Ecolabel Global GreenTag[CertTM]** | LCARate Gold Streamlined<br>GreenRate Level A | | |

## 2. Product Characterisation

| | |
|---|---|
| **Definition** | Euroscreen® Transparent blind fabric by Vertilux® |
| **Standards** | AS 1530.2-1993 (R2016) Methods for fire tests on building materials, components and structures - Test for flammability of materials<br>AS/NZS 1530.3:1999 (R2016) Methods For Fire Tests On Building Materials, Components And Structures - Simultaneous Determination Of Ignitability, Flame Propagation, Heat Release And Smoke Release<br>ISO 105-B02:2014 Textiles -- Tests For Colour Fastness -- Part B02: Colour Fastness To Artificial Light: Xenon Arc Fading Lamp Test |

## 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% |
|---|---|---|---|---|
| **Polymer** | Polyester | Drill, refine, polymerise, dye, spin, weave | Germany | >77<80 |
| **Fire retard** | P monomer | Drill, extract, polymerise, blend, mill | Germany | >5.0 <5.5 |
| **Coating** | PUR | Farm, drill, extract, polymerise, mix, coat | Germany | >2.5 <5.0 |
| **White** | Pigment | Mine, extract, mill, coat, blend | Global | >2.5 <5.0 |
| **Tint** | Dyes | Farm, mine, drill, extract, polymerise, mill | Germany | >2.0 <5.0 |
| **Black** | Pigment | Mine, drill, extract, mill, blend | Germany | >1.0 <2.5 |
| **Biocide** | Mixed | Mine extract, polymerise, blend | Global | <0.001 |

## 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 not 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** | Annual detergent spray, light mop, monthly wet machine scrub and cloth dry. |
| **Recycling** | Home mill, fabrication and installation scrap is not 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 does not contain levels of carcinogenic, toxic or hazardous substances that warrant ecological or human health concern cradle to grave. It passed the Ecospecifier Cautionary Assessment Process (ESCAP) and no issues or red light concerns existed for product human or ecological toxicity. |
| **Effluent** | The LCI results and ESCAP raised no red light concerns in emissions to water[1]. |
| **Waste** | Cradle to grave waste to landfill was <1% hazardous and >99% non-hazardous. |
| **Environmental Protection** | Continuous improvement under the maker's 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 the following credits of Green Star®:

- Design and As Built V1.1: Sustainable Product;
- Interiors V1.1 Sustainable Products, and
- Performance V1: Refurbishment Materials

### GBCA Disclaimer

Green Star® is a registered mark of the Green Building Council of Australia. Assessments shall not be reproduced in part at any time. Rating Tools and Technical Manuals are subject to change by the GBCA. This EPD provides Technical Opinion and as such is not endorsed by the GBCA or its agents. Green Star® Technical Manuals give technical details of credit requirements.

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

## 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/item | 0.170 |
| EcoIndicator 99 | ecopoint | 0.08 |
| Embodied Water | kl | 27.8 |
| Carbon Dioxide Equivalent Emissions | kg $CO_{2e}$ | 1.34 |
| Gross Energy and Feedstock | MJ | 30.3 |
| Renewable Primary Energy | MJ | 2.8 |
| Ecosystem Quality Damages | PDF*$m^2$*yr | 9.6E-06 |
| Human Health Damages | DALY | 1.2E-04 |
| Ozone Depletion | kg $R11_e$ | 6.9E-12 |
| Acidification | kg $SO_{2e}$ | 0.05 |
| Fossil Fuel Depletion | $MJ_{surplus}$ | 1.24 |
| Mineral Resource | $MJ_{surplus}$ | 0.02 |

Table 3 lists product Global GreenTag Sustainability Assessment Criteria (SAC) scores prior to weighting and then used to determine the GreenTag EcoPOINT[3]. 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:

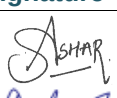
- 1.0 = worst base business as usual (BAU)
- 0.0 = neutral no improvement and
- -1.0= net positive benefit

**Table 3 Normalised GreenTag EcoPOINT & SAC Scores**

| Category Potential | Results (-1 to +1) |
|---|---|
| Building Synergy | 0.50 |
| Health & Ecotoxicity | 0.25 |
| Biodiversity | 0.50 |
| LCA Score | 0.13 |
| Greenhouse Emission | 0.25 |
| Social Responsibility | 0.65 |
| GreenTag EcoPOINT | 0.37 |

## 8. Verification of this Declaration

This EPD was approved on 11 07 2015 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] http://www.ecospecifier.com.au/knowledge-green/glossary.aspx#greentagecopoint

## 9. Life Cycle Assessment Method

| | |
|---|---|
| **LCA Author** | The Evah Institute as described at www.evah.com.au |
| **Study Period** | Factory data was collected from 2013 to 2014 |
| **Scope** | Cradle to grave |
| **LCA Method** | Compliant with ISO 14040 and ISO 14044 Standards |
| **LCIA method** | EcoIndicator 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.

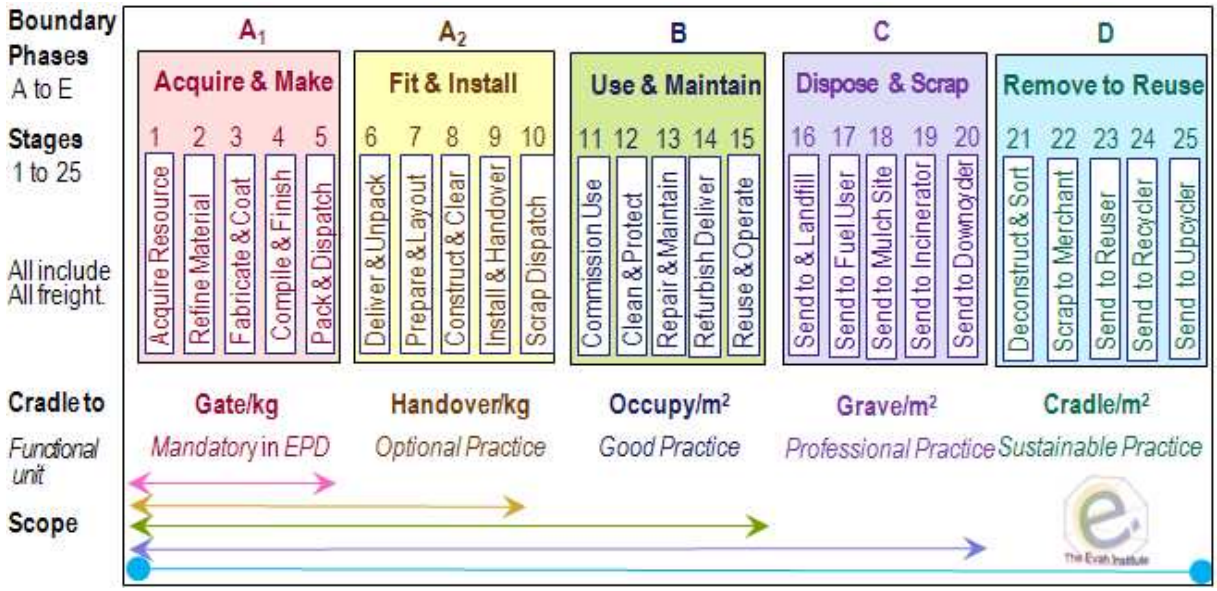



***Figure 2 Phases and Stages Cradle to Grave***

## 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.

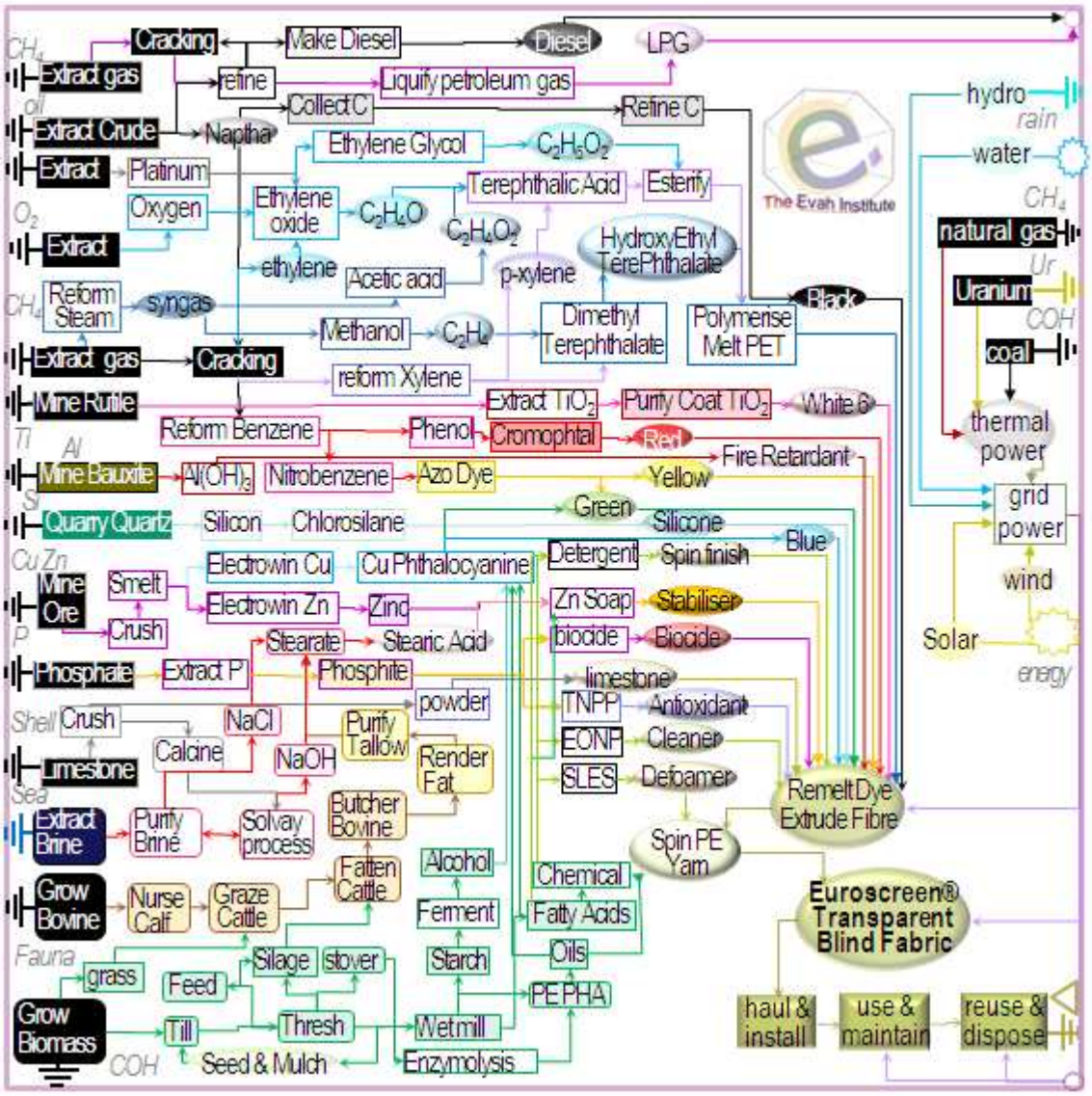



***Figure 3 Major Product Operations***

## 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, EcoInvent 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 Deviation[2] ($\sigma_g$) is used to define quality as in Table 4[4]. Data sets with uncertainties in any of these qualities greater than >±30% are not used.

**Table 4 Data Quality Uncertainty (U) for 2014**

| Metric $\sigma_g$ | 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 | <±0.05 | <±0.10 | <±0.20 | <±0.30 |
| Reproducible | >98% confidence | >95% | >90% | >80% | <70% |
| Certainty | Very High | High | Typical | Poor | >±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 information[5] for each dataset noted, checked and updated;
- Consistency to Evah guidelines[6] 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.

[4] Evah Institute data quality control system accords with UNEP SETAC Global LCI Database Quality 2010 Guidelines
[5] Jones D G (2004) LCI Database for Commercial Building Report 2001-006-B-15 Icon.net, Australia
[6] Evah Tools, Databases and Methodology Queensland, Australia at http://www.evah.com.au/tools.html

## 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, EcoInvent 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 stocksΔ, industry stockpilesΔ, 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 & EcoInvent 3 |
| Validity Checks | Are made versus Plastics Europe, Ecobilan, GaBi & or Industry LCA Literature |

## 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/baselconventiontext-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

Franklin Associates (2014) US LCI Database http://www.fal.com/index.html Eastern Research Group US

GreenTag™ Certification (2015) http://www2.ecospecifier.org/services_offered/greentag_certification

GreenTag™ (2015) Product Category Rules http://www.globalgreentag.com/greentag-epd-program

Jones D., Mitchell. P. & Watson P. (2004) LCI Database for Australian Commercial Building Material: Report 2001-006-B-15, Sustainable Built Assets, CRC for Construction Innovation

Jones D.G et al. (2009) Chapter 3: Material Environmental LCA in Newton P et al., (eds) Technology, Design & Process Innovation in the Built Environment, Taylor & Francis, UK

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/recordisplay.cfm?deid=20797 p 1-38, 6-9, USA

vertilux®
control your environment

# Euroscreen® Transparent Blind Fabric

**Global GreenTagCertTM 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:

certification1@globalgreentag.com