



## Camaro LVT

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

The declared product Camaro heterogeneous luxury vinyl tiles and planks (LVT) was made by Polyflor Australia in China in 2017 for sale with a 15 year residential warranty.

Polyflor is recognised globally as a leading manufacturer of high quality vinyl floor coverings.

It specialises in stylish, durable and low maintenance vinyl flooring available in sheet, planks and tiles.

In collaboration with industry partners, Polyflor is working on developing new products and technologies.

They continually evaluate new ideas or alternatives that minimise environmental impacts.

The company strives to be an environmentally and economically sustainable business.

It reports annually on progress in key areas including energy efficiency, recycling, air quality, freight and packaging.

Low emissions of Volatile Organic Compounds (VOC) also enable a healthy indoor environment.

Polyflor is the founding member of Recofloor the vinyl flooring take-back scheme where used vinyl is collected and diverted from landfill to be recycled.

Socially aware, Polyflor has commitments to continuously improve life quality of their workforce and families as well as the larger community.

Polyflor's factories Environmental Management Systems are ISO 14001 certified.

See <http://www.polyflor.com.au> for more information.



Figure 1 Camaro LVT



**Camaro LVT®**

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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/certification1@globalgreentag.com>** or contact: [certification1@globalgreentag.com](mailto:certification1@globalgreentag.com) © This EPD remains the property of Global GreenTag Pty Ltd.



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### 1. Details of This Declaration

|                         |  |
|-------------------------|--|
| <b>Program Operator</b> | GreenTag Global Pty Ltd hereafter called Global GreenTag noted at www.globalgreentag.com |
| <b>EPD Number</b>       | PLF-021-2017   |
| <b>Date issue</b>       | 24 <sup>th</sup> June 2018   |
| <b>Validity</b>         | 24 <sup>th</sup> June 2021   |
| <b>Reference PCR</b>    | Compliant with PCR: FC 2017  |
| <b>Time</b>             | Made in and sold from 2017 for 20 years use  |
| <b>Geography</b>        | Made in China. Uses are assumed as for Australasia.                                      |
| <b>Application</b>      | Commercial and residential interior flooring of luxury vinyl tiles and planks            |
| <b>Functional unit</b>  | Polyflor Camaro LVT 3.6kg/m <sup>2</sup> floor covering 20 year use cradle to fate       |

### 2. Product Characterisation

|                   |  |
|-------------------|--|
| <b>Definition</b> | Polyflor Camaro LVT flooring by Polyflor Ltd for use in commercial and residential building interiors      |
| <b>Standard</b>   | EN ISO 10582 Resilient floor coverings – Heterogeneous polyvinyl chloride floor coverings - Specifications |

### 3. 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®:

- Performance V1.1: Refurbishment Materials
- Interiors V1.2: Sustainable Products
- Design and As Built V1.2: Sustainable Products

#### GBCA Disclaimer

Green Star® is a registered mark of the Green Building Council of Australia (GBCA). 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.



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#### 4. Sustainability Assessment Scores

Table 1 lists Global GreenTag Sustainability Assessment Criteria (SAC) scores prior to weighting and then used to determine the GreenTag EcoPOINT<sup>1</sup>.

**Table 1 Normalised GreenTag EcoPOINT & SAC Scores**

| Category Potential                                      | Results (-1 to +1) |
|---|--------------------|
| Building Synergy  | 1.00               |
| Health & Ecotoxicity                                    | 0.25               |
| Biodiversity  | 0.61               |
| LCA Score   | 0.47               |
| Greenhouse Gas Emissions CO <sub>2eq</sub> <sup>2</sup> | 0.31               |
| Social Responsibility                                   | 0.20               |
| GreenTag EcoPOINT                                       | 0.44               |

SAC scores are normalised against business as usual (BAU) product performing comparable functions under the same category rules. Lower scores show better environmental and social benefits with fewer impacts and damages. Considering sustainability:

- worst case BAU results = 1.0,
- neutral = 0.0 and
- net positive benefit = -1.0

#### 5. Type 1 Ecolabel

The declared product Type 1 Ecolabel achieved



Gold PLUS GreenRate Level A



#### 6. Verification of this Declaration

This EPD was approved on 24 06 2018 according to requirements of ISO14025 8.1.3b.

| Role                               | Name         | Position                                  | Signature |
|------------------------------------|--------------|---|-----------|
| PCR Review Chair                   | Murray Jones | Ecquate Pty Ltd CEO                       |           |
| LCI & EPD Developer                | Delwyn Jones | The Evah Institute CEO                    |           |
| LCARate, LCIA Developer            | Judy Luo     | Global GreenTag Assessor                  |           |
| 3 <sup>rd</sup> Party LCI Verifier | Shloka Ashar | Global GreenTag Lead Auditor LCI Verifier |           |
| Internal EPD Audit                 | David Baggs  | Global GreenTag CEO & Program Director    |           |

<sup>1</sup> <http://www.ecospecifier.com.au/knowledge-green/glossary.aspx#greentagecopoint>

<sup>2</sup> Stocker et al (eds.) Climate Change 2013: The Physical Science Basis, CH8, IPCC AR5, Cambridge U Press, UK.



**7. Packaging, Installation, Use & Disposal**

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

**8. Whole of life Performance**

|                                     |   |
|-------------------------------------|---|
| <b>Health Protection</b>            | The product does not contain levels of carcinogenic, toxic or hazardous substances that warrant ecological or human health concern cradle to grave.<br>It passed the Ecospecifier Cautionary Assessment Process (ESCAP) and no issues or red light concerns existed for product human or ecological toxicity. |
| <b>Effluent</b>                     | The LCI results and ESCAP raised no red light concerns in emissions to water <sup>3</sup> .   |
| <b>Waste</b>                        | Cradle to grave waste to landfill was 1% hazardous and 99% non-hazardous.   |
| <b>Environmental Protection</b>     | Continuous improvement under the maker's certified ISO14001 EMS aims to avoid toxics, waste and pollution plus reduce their material and energy use.  |
| <b>Environmental Health Effects</b> | Installed products are certified as having VOC's compliant with Green Star® IEQ VOC credits for indoor environment <sup>4</sup> quality credits.<br>No other potential in-use impacts on environment or health are known.   |

<sup>3</sup> According with national standards in ANZECC Guideline For Fresh & Marine Water Quality (2000)  
<sup>4</sup> in accordance with national standards and practice



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## 9. Base Material Origin and Detail

Table 2 lists key components by function, type, key operation, source and amount as %mass.

**Table 2 Base Material**

| Function    | Component       | Production                              | Origin             | % mass    |
|-------------|-----------------|---|--------------------|-----------|
| Filler      | Limestone       | Mine, Crush, Sieve, Haul                | China <sup>5</sup> | >50 <60   |
| Binder      | SPVC            | Drill, Refine, Chlorinate<br>Polymerise | China &<br>Taiwan  | >20 <25   |
| Wear layer  | SPVC DOTP       | Plasticise, Stabilise & Extrude         | China &<br>Taiwan  | >10 <20   |
| Plasticiser | DOTP            | Drill, Distil, Extract, Polymerise      | China              | >5.0 <10  |
| Print film  | PVC DOTP<br>Dye | Plasticise, Stabilise, Dye, Extrude     | China &<br>Taiwan  | >1.0 <5.0 |
| Stabiliser  | CaZn Soap       | Farm, Press, Extract, Refine, Mill      | China              | <0.4      |
| Black       | Carbon Black    | Mine, Digest, Precipitate, Coat         | China              | <0.3      |
| Coating     | Polyurethane    | Farm, Drill, Extract, Polymerise        | China              | <0.2      |
| Additive    | Gum Rosin       | Forestry, Tap, Extract & Refine         | China              | <0.2      |
| Colour      | Pigment         | Mine, Digest, Precipitate, Coat         | China              | <0.1      |
| Printing    | Ink             | Drill, Distil, Extract, Mill,           | China              | <0.1      |

## 10. Life Cycle Impact Results

Table 3 shows Life Cycle Impact Assessment (LCIA) results for 20 years of product use.

**Table 3 Potential Impact Results**

| Evaluation Category                 | Unit  | Result  |
|-------------------------------------|---|---------|
| Product mass                        | kg/m <sup>2</sup>                             | 3.60    |
| Ecolindicator 99                    | ecopoint                                      | 0.62    |
| Carbon Dioxide Equivalent Emissions | kg CO <sub>2e</sub>                           | 8.40    |
| Renewable Primary Energy            | MJ  | 16.43   |
| Ecosystem Quality Damages           | PDF*m <sup>2</sup> *yr                        | 6.0E-05 |
| Human Health Damages                | DALY  | 1.1E-03 |
| Ozone Depletion                     | kg R11 <sub>e</sub>                           | 1.4E-09 |
| Acidification                       | kg SO <sub>2e</sub>                           | 0.26    |
| Eutrophication                      | kg PO <sub>4</sub> <sup>3-</sup> <sub>e</sub> | 4.9E-03 |
| Fossil Fuel Depletion               | MJ <sub>surplus</sub>                         | 7.93    |
| Mineral Resource                    | MJ <sub>surplus</sub>                         | 0.27    |

<sup>5</sup> Mainland China



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### 11. Supply Chain Modelling

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.

A flow chart in Figure 2 shows most key product supply chain operations from cradle to fate.

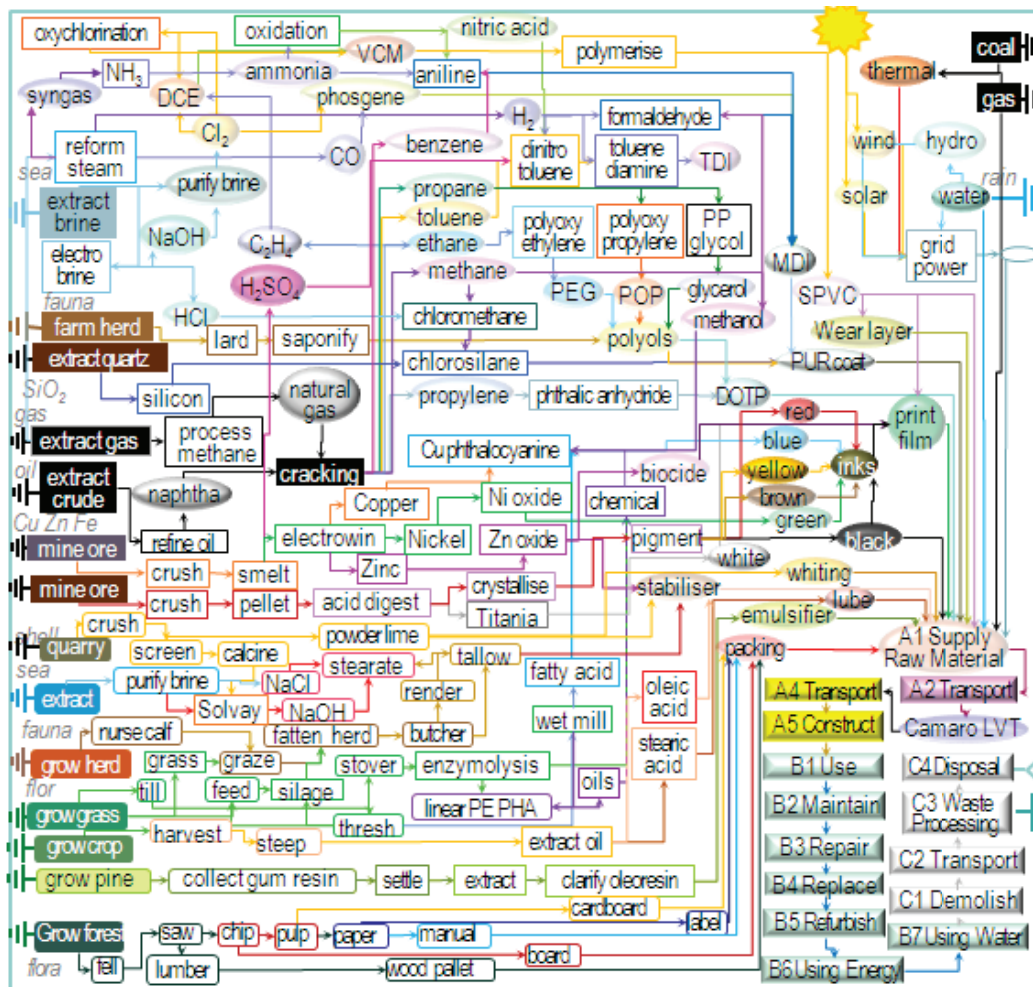


Figure 2 Major Product Operations





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**12. Life Cycle Assessment Method**

**LCA Author** The Evah Institute as described at [www.evah.com.au](http://www.evah.com.au)

**Study Period** Factory data was collected from 2015 to 2018

**LCA Method** Compliant with ISO 14040 and ISO 14044 Standards

**LCIA method** EcoIndicator 99 Life Cycle Impact (LCIA) Assessment

**Scope** Cradle to Fate including all supply chain phases and stages depicted in Figure 2.

**Phases** The LCA covered all known flows in all known stages cradle to end of life fate.

**Assumptions** Use is to typical Australian Facility Management professional practice.

**Scenarios** Use, cleaning, maintenance plus disposal and re-use were scenario-based using Facility Management Association denoted and published typical operations.

**System Boundaries** The LCA covers all operations in the system boundary depicted in Figure 3.

**Processes** All known processes are included from resource acquisition, water, fuel & energy use, power generation & distribution, freight, refining, intermediates, manufacture, scrap re-use, packing and dispatch, installation, use, maintenance and landfill. All significant waste and emission flows from all supply chain operations involved to make, pack and install the product are included.



**Life Cycle Stages**

**Modules**

**Unit Operations**

**Modeling**

**Cradle to Gate**

**Cradle to Gate +options**

**Cradle to Grave**

|  | Product             |           |             | Construct-ion |              | Use stage related to the building Fabric Operation |             |        |             |               |                        |                       | End of Life |           |                  | Beyond system Boundary |   |
|--|---------------------|-----------|-------------|---------------|--------------|--|-------------|--------|-------------|---------------|------------------------|-----------------------|-------------|-----------|------------------|------------------------|---|
|  | A1                  | A2        | A3          | A4            | A5           | B1   | B2          | B3     | B4          | B5            | B6                     | B7                    | C1          | C2        | C3               |                        | C4  |
|  | Raw material supply | Transport | Manufacture | Transport     | Construction | Use  | Maintenance | Repair | Replacement | Refurbishment | Operational Energy use | Operational water use | Demolition  | Transport | Waste Processing | Disposal               | Potential Reuse Recovery and Recycling load & benefit |
|  | Actual              |           |             | Scenarios     |              |  |             |        |             |               |                        |                       |             |           |                  |                        |   |
|  | M                   | M         | M           |               |              |  |             |        |             |               |                        |                       |             |           |                  |                        |   |
|  | M                   | M         | M           | O             | O            | O  | O           | O      | O           | O             | O                      | O                     | O           | O         | O                | O                      | O   |
|  | M                   | M         | M           | M             | M            | M  | M           | M      | M           | M             | M                      | M                     | M           | M         | M                | M                      | O   |

Figure 3 Phases and Stages Cradle to Grave

M: Mandatory O: Optional

Evah industry databases cover all known domestic and global scope 1 and 2 operations. They exclude scope 3 burdens from capital facilities, equipment churn, noise and dehydration as well as incidental activities and employee commuting. The 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<sup>6</sup> for each dataset noted, checked and updated;
- Consistency to Evah guidelines<sup>7</sup> for all process technology, transport and energy demand;
- Completeness of modeling 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 active databases are updated annually. As each project is modelled and new data is available the databases are updated and audited by external Type 1 ecolabel certifiers.

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

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





### 13. Data Sources Representativeness and Quality

Primary data used for modelling the state of art of each operation includes all known process for:

- 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 is sourced from clients, Annual Reports and their publications on corporate locations, logistics, technology use, market share, management systems, standards and commitment to improved environmental performance. Information on operations is also sourced from client:

- Supply chain mills, their technical manuals, corporate annual reports and sector experts, and
- Manufacturing specifications websites and factory site development license applications.

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 on operations is also sourced from:

- Library, document, NPI and web searches, review papers, building manuals and
- Global Industry Association and Government reports on Best Available Technology (BAT).

For benchmarking, comparison and integrity checks inventory data is developed to represent BAT, business as usual and worst practice options with operations covering industry sector supply and infrastructure in Australia and overseas.

Such technology, performance and license conditions were modelled and evaluated across mining, farming, forestry, freight, infrastructure and manufacturing and building industry sectors since 1995.

As most sources do not provide estimates of accuracy, a pedigree matrix of uncertainty estimates to 95% confidence levels of Geometric Standard Deviation<sup>2</sup> ( $\sigma_g$ ) is used to define quality as in Table 6<sup>8</sup>.

**Table 6 Data Quality Uncertainty (U) for 2018**

| Metric $\sigma_g$ | U ±0.01         | U ±0.05       | U ±0.10       | U ±0.20       | U ±0.30       |
|-------------------|-----------------|---------------|---------------|---------------|---------------|
| Temporal          | Post 2015       | Post 2010     | Post 2005     | Post 2000     | Pre 2000      |
| 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 |

No data set with  $\geq\pm 30\%$  uncertainty is used without notation in the LCA as well as the EPD.

<sup>8</sup> Evah Institute data quality control system accords with UNEP SETAC Global LCI Database Quality 2010 Guidelines



### 14. Supply Chain Modelling Assumptions

Australian building sector rules and Evah assumptions applied are defined in Table 7.

**Table 7 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 2015 to 2017  |
| 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 2015 to 2018                                   |
| Functional Unit            | Typical product usage with cleaning & disposal/m <sup>2</sup> over the set year service life           |
| <b>System Control</b>      |  |
| Primary Sources            | Clients and suppliers mills, publications, websites, specifications & manuals                          |
| Other Sources              | IEA 2018, GGT 2018, Boustead 2013, Simapro 2016, IBIS 2018, EcoInvent 2018                             |
| Data mix                   | Power grid and renewable shares updated to latest IEA 2018 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             | VliegLCA, Evah Institute 2018; Global Green Tag Researchers 2018                                       |
| Data Generator             | Manufacturers, Evah Institute 2018; GGT 2018; Meta: IBIS 2018, Other pre 2018                          |
| 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                                   |
| <b>Data Flow &amp; Mix</b> |  |
| 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 $\Delta$ , industry stockpiles $\Delta$ , capital wear $\Delta$ , 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                       |
| <b>Validation</b>          |  |
| Accuracy                   | 10 <sup>th</sup> generation study is $\pm$ 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 3.2                        |
| Validity Checks            | Are made versus Plastics Europe, Ecobilan, GaBi & or Industry LCA Literature                           |



## 15. 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 (2016) LCI Model 3 database <http://www.ecoinvent.ch/> Ecoinvent, Switzerland
- Evah (2016) LCA Tools, Databases & Methodology at <http://www.evah.com.au/tools.html>
- Franklin Associates (2016) US LCI Database <http://www.fal.com/index.html> Eastern Research Group US
- GreenTag™ Certification (2016) [http://www2.ecospecifier.org/services\\_offered/greentag\\_certification](http://www2.ecospecifier.org/services_offered/greentag_certification)
- GreenTag™ (2016) 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 (2016) 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 (2016) Portal <http://www.plasticseurope.org/plastics-sustainability/eco-profiles.aspx>
- Pre (2016) 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 (2016) Persistent Organic Pollutants <http://www.chem.unep.ch/pops/> The UN
- USLCI (2016) Life-Cycle Inventory Database <https://www.lcacommons.gov/nrel/search>, USA
- U.S. Geological Survey National Minerals (2016) <http://minerals.usgs.gov/minerals/pubs/country/> USA
- US EPA (2016) 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



## 16. Reviewers Report Conclusions

The independent LCA reviewer's report confirmed that the LCA project report and addition information addressed the EPD. The verifier, Shloka Ashar, was not involved in developing the LCA and has no conflict of interests from their organisational position. While the report is confidential its conclusions confirmed that documentation according to set ISO Standard requirements was provided including evidence from the:

### The Evah Institute, the LCA developer:

- |  |   |
|--|---|
| a) Recipes of input and output data of unit processes used for LCA calculations              | √ |
| b) Datasheets of measures, calculations, estimates and emails with sources as in Table 6     | √ |
| e) References to literature and databases from which data was extracted as noted in Table 6  | √ |
| g) Notes on supply chain processes and scenarios satisfying requirements of this Standard    | √ |
| i) Embodied Energy shares as used for sensitivity analyses re ISO 14044:2006, 4.5.3.3        | √ |
| j) Proof percentages or figures in calculations in the end of life scenario                  | √ |
| k) Notes on proof of % and allocation calculations   | √ |
| o) All operations covered Vs criteria and substantiation used to determine system boundaries | √ |

### Product Manufacturer in:

- |  |   |
|--|---|
| c) Specifications used to create the manufacturer's product                          | √ |
| d) Citations, references, specifications or regulations & data showing completeness  | √ |
| f) Specification demonstrating that the building product can fulfil the intended use | √ |

### The Certifier Global GreenTag on:

- |  |   |
|--|---|
| l) Notes and calculation of averages of different locations yielding generic data      | √ |
| m) Substantiating additional environmental information ISO 14025:2006, 7.2.4           | √ |
| n) Procedures for data collection, questionnaires, instructions, confidentiality deeds | √ |

### Requiring No Evidence:

As the EPD is cradle to grave as well as PCR compliant the independent reviewer did not need to:

- |   |   |
|---|---|
| h) Substantiate a few stages as all stages were substantiated                                 | √ |
| p) Substantiate alternatives when no other choices and assumptions were applied               | √ |
| q) Demonstrate consistency for few stages as the same rules in Tables 5 and 6 applied to all. | √ |



**Camaro LVT®**

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](mailto:certification1@globalgreentag.com)



**Global GreenTagCert™ EPD Program**

**Environmental Product Declaration**

**Compliant to ISO 14025**

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