TASMAN
INSULATION NEW ZEALAND

Environmental Product Declaration for Tasman Insulation: **Pink® Batts® glass wool insulation: segments, blankets and boards**

In accordance with ISO 14025 and EN 15804

AUSTRALASIA EPD®
ENVIRONMENTAL PRODUCT DECLARATION

Programme:	The Australasian EPD Programme www.epd-australasia.com
Programme operator:	The Australasian EPD Programme
Technical Rules:	Instructions of the Australasian EPD Programme — a Regional Annex to the General Programme Instructions (2018)
Product Category Rules (PCR):	Construction Products and Construction Services 2012:01, Version 2.2, 2017-05-30 Sub-PCR-1 Thermal Insulation Products (EN 16783) of the International EPD® System

pink® batts®
Always.

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Product Category Rules (PCR):	Construction Products and Construction Services 2012:01, Version 2.2, 2017-05-30 Sub-PCR-1 Thermal Insulation Products (EN 16783) of the International EPD® System
EPD registration number:	S-P-01169
Approval date:	2019-01-17
Valid until:	2024-01-17
Geographical scope:	New Zealand

TASMAN
INSULATION NEW ZEALAND

AUSTRALASIA EPD®
ENVIRONMENTAL PRODUCT DECLARATION

Company Specific Information

Tasman Insulation New Zealand Limited, the country's foremost manufacturer and supplier of insulation products, has been operating in New Zealand since 1961. We pride ourselves on keeping homes and workplaces warm, dry, healthy and quiet with our range of insulation products, including our Pink® Batts® insulation, Sisalation® building underlays and our national PinkFit® installer service.

The Pink® Batts® brand is market leader in the New Zealand insulation industry. Locally made for New Zealand conditions, we make and supply products you can trust - with independent accreditations from BRANZ, GREENGUARD and Environmental Choice New Zealand.

Our commitment to continued development, product safety and sustainability, the Pink® Batts® Lifetime Warranty and excellent customer service assure you that what you are getting is the best insulation for your build.

Backed by our national team of insulation experts, easily accessible data sheets, technical and product information, you will never be short of support or advice.

pinkbatts.co.nz
0800 746 522

pink® batts®
Always.

pinkfit®
PREFERRED PINK® BATTS® INSTALLERS

GREENGUARD

ENVIRONMENTAL CHOICE NEW ZEALAND
Building Insulants
Licence No. 2504017

BRANZ Appraised
Appraisal No. 238 [2018]
Appraisal No. 632 [2018]
Appraisal No. 767 [2018]

BIO SOLUBLE NK8340 INSULATION

pink batts Lifetime WARRANTY

General Information

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules).

Environmental product declarations within the same product category from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Declaration owner:	**Tasman Insulation New Zealand**	
	WEB	pinkbatts.co.nz
	EMAIL	customer@pinkbatts.co.nz
	POST	P O Box 12 069, Penrose Auckland 1642, New Zealand

EPD produced by:	**thinkstep Ltd**	
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	EMAIL	anz@thinkstep.com
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EPD programme operator:	**The Australasian EPD Programme Ltd**	
	WEB	epd-australasia.com
	EMAIL	info@epd-australasia.com
	POST	69 Rutherford Street, Hutt Central, Lower Hutt 5010, New Zealand

CEN standard EN 15804 served as the core PCR	
PCR:	PCR 2012:01 Construction Products and Construction Services 2012:01, Version 2.2, 2017-05-30 (valid until 2019-03-03) Sub-PCR-1 Thermal Insulation Products (EN 16783) of the International EPD® System
PCR review was conducted by:	The Technical Committee of the International EPD® System
Independent verification of the declaration and data, according to ISO 14025:	☐ EPD process certification (Internal) ☑ EPD verification (External)

Third party verifier:	**Kimberly Robertson, Catalyst Ltd**	
	EMAIL	kimberly.robertson@catalystnz.co.nz

Accredited or approved by:	**The Australasian EPD® Programme**

Glass Wool Range

Segments and Blankets

Pink® Batts® has a range of glass wool insulation products with proven performance you can use with confidence. Pink® Batts® glass wool insulation has a number of product features across the wall, ceiling, floor and blanket range.

- Non-combustible
- Bio soluble
- Made from over 80% recycled glass
- Made in New Zealand
- High R-values
- Provides acoustic and thermal benefits
- Easy to install
- Made to meet or exceed the requirements of the New Zealand Building Code (NZBC)
    - o **Pink® Batts® Classic range:** Used to meet R-value levels of thermal performance to the requirements of the NZBC.
    - o **Pink® Batts® Ultra® range:** Provides premium levels of insulation with R-values that usually exceed the requirements of the NZBC.

Boards

Tasman Insulation has a standard list of board products and also produce boards to suit customer specification based on size (width, length and thickness) and density.

Boards are not tested for R-value. Boards are used for thermal as well as acoustic insulation.

Pink® Batts® Wall Insulation

Pink® Batts® wall insulation is used to thermally insulate timber and steel framed walls. It fits easily into standard wall constructions and can be easily cut to fit in non-standard constructions.

- Range of R-values – from R1.0 - R4.0
- 70mm, 90mm and 140mm thicknesses
- Narrow wall for different frame spacings
- Steel and masonry sizes

WALL - Thermal Insulation		SIZE (mm)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	APPROX. COVERAGE PER BALE* (m^2)	ENVIRONMENTAL CHOICE	APPROX. kg/m^2**
90mm Wall Range							
R1.8	Pink® Batts® Classic R1.8 Wall	1140 x 560	90	16.6	19.6	✓	0.81
R2.2	Pink® Batts® Classic R2.2 Wall	1140 x 560	90	13.4	15.8	✓	1.06
R2.2	Pink® Batts® Steel R2.2 Wall	1220 x 610	90	15.6	15.6	✓	1.06
R2.2	Pink® Batts® R2.2 Narrow Wall	1140 x 360	90	9.0	11.2	✓	1.06
R2.4	Pink® Batts® Classic R2.4 Wall	1140 x 560	90	10.2	12.1	✓	1.36
R2.6	Pink® Batts® Ultra® R2.6 Wall	1140 x 560	90	9.6	11.3	✓	1.74
R2.6	Pink® Batts® Ultra® Steel R2.6 Wall	1220 x 610	90	9.7	9.7	✓	1.74
R2.6	Pink® Batts® Ultra® R2.6 Narrow Wall	1140 x 360	90	7.4	9.2	✓	1.74
R2.8	Pink® Batts® Ultra® R2.8 Wall	1140 x 560	90	6.4	7.5	✓	2.43
R2.8	Pink® Batts® Ultra® R2.8 Narrow Wall	1140 x 360	90	4.5	5.6	✓	2.43
140mm Wall Range							
R3.2	Pink® Batts® Ultra® R3.2 140mm Wall	1140 x 560	140	9.6	11.3	✓	1.34
R3.2	Pink® Batts® Ultra® R3.2 140mm Narrow Wall	1140 x 360	140	7.0	8.6	✓	1.34
R3.6	Pink® Batts® Ultra® R3.6 140mm Wall	1140 x 560	140	7.0	8.3	✓	1.97
R4.0	Pink® Batts® Ultra® R4.0 140mm Wall	1140 x 560	140	5.1	6.0	✓	2.74
R4.0	Pink® Batts® Ultra® R4.0 140mm Narrow Wall	1140 x 360	140	4.1	5.0	✓	2.74
Masonry							
R1.0	Pink® Batts® Masonry R1.0	1220 x 580	40	21.2	-	✓	0.56
R1.2	Pink® Batts® Masonry R1.2	1220 x 580	50	17.0	-		0.64
70mm Wall Range							
R2.2	Pink® Batts® Classic R2.2 70mm Wall	1140 x 560	70	6.4	7.5	✓	2.1

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.
** Contact Tasman Insulation for specific details

Pink® Batts® Ceiling Insulation

Pink® Batts® ceiling insulation is used to thermally insulate ceilings in new homes, be retrofitted into existing homes without insulation, or over existing insulation for better performance. It fits easily into standard ceiling constructions and can be easily cut to fit in non-standard constructions.

- **Range of R-values – from R1.8 - R7.0**
- **Varying thicknesses**
- **Skillion roof products with maximum thickness to help maintain required air gaps**

ROOF - Thermal Insulation		SIZE (mm)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	APPROX. COVERAGE PER BALE* (m^2)	ENVIRONMENTAL CHOICE	APPROX. kg/m^2**
R1.8	Pink® Batts® Classic R1.8 Ceiling	1220 x 432	95	13.7	14.4	✓	0.79
R2.2	Pink® Batts® Classic R2.2 Ceiling	1220 x 432	115	12.6	13.3	✓	0.94
R2.6	Pink® Batts® Classic R2.6 Ceiling	1220 x 432	140	10.5	11.1	✓	1.08
R3.2	Pink® Batts® Classic R3.2 Ceiling‡	1220 x 432	170	8.4	8.8	✓‡	1.21
R3.2	Pink® Batts® Skillion Roof R3.2	1220 x 432	115 max	3.7	3.9	✓	2.60
R3.6	Pink® Batts® Classic R3.6 Ceiling‡	1220 x 432	180	7.4	7.7	✓‡	1.35
R3.6	Pink® Batts® Skillion Roof R3.6	1220 x 432	165 max	6.3	6.6	✓	1.71
R4.0	Pink® Batts® Ultra® R4.0 Ceiling	1220 x 432	195	6.3	6.6	✓	1.59
R5.0	Pink® Batts® Ultra® R5.0 Ceiling	1220 x 432	220	4.2	4.4	✓	2.22
R6.0	Pink® Batts® Ultra® R6.0 Ceiling	1220 x 432	235	3.7	3.9	✓	3.09
R6.3	Pink® Batts® Ultra® R6.3 Ceiling	1220 x 432	250	3.2	3.3	✓	3.09
R7.0	Pink® Batts® Ultra® R7.0 Ceiling	1220 x 432	260	2.6	2.8	✓	4.33

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.
‡ Product manufactured in both New Zealand and Australia. Environmental Choice applies to New Zealand made product only.
** Contact Tasman Insulation for specific details.

Pink® Batts® Floor Insulation

Pink® Batts® floor insulation reduces heat loss in new and existing homes with suspended floors and eliminates draughts through exposed floorboards. Fits easily into standard floor constructions and can be easily cut to fit in non-standard constructions.

- **Range of R-values – from R1.6 - 2.6**
- **Narrow and Wide for different joist spacings**

FLOOR - Thermal Insulation		SIZE (mm)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	APPROX. COVERAGE PER BALE* (m^2)	ENVIRONMENTAL CHOICE	APPROX. kg/m^2**
R1.6	Pink® Batts® SnugFloor® R1.6 Narrow†	1220 x 480	70	9.4	8.8	✓	0.97
R1.6	Pink® Batts® SnugFloor® R1.6 Wide†	1220 x 580	70	11.3	11.3	✓	0.97
R2.6	Pink® Batts® SnugFloor® R2.6 Narrow†	1220 x 480	110	8.8	8.2	✓	1.46
R2.6	Pink® Batts® SnugFloor® R2.6 Wide†	1220 x 580	110	10.6	10.6	✓	1.46

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.
† Product does not have Lifetime Warranty.
** Contact Tasman Insulation for specific details

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Pink® Batts® Acoustic Insulation

Pink® Batts® acoustic insulation provides acoustic benefits in internal walls and midfloors. It fits easily into standard constructions and can be easily cut to fit in non-standard constructions.
Pink® Batts® Silencer® wall insulation is designed for use in internal walls only, where acoustic thermal properties are desired.

- **Internal Wall and Midfloor available**
- **Different thicknesses for wall-acoustic insulation.**

WALL - Acoustic Insulation	SIZE (mm)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	APPROX. COVERAGE PER BALE* (m^2)	APPROX. kg/m^2**
Pink® Batts® Silencer® 100mm^	1140 x 560	100	12.8	14.9	1.20
Pink® Batts® Silencer® 75mm^	1140 x 560	75	16.6	19.5	0.90

FLOOR - Acoustic Insulation	SIZE (mm)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	APPROX. COVERAGE PER BALE* (m^2)	APPROX. kg/m^2**
Pink® Batts® Silencer® Midfloor^	1140 x 432	150	4.9	5.2	1.80

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.
^ Product does not have Lifetime Warranty or BRANZ appraised accreditation..
** Contact Tasman Insulation for specific details.

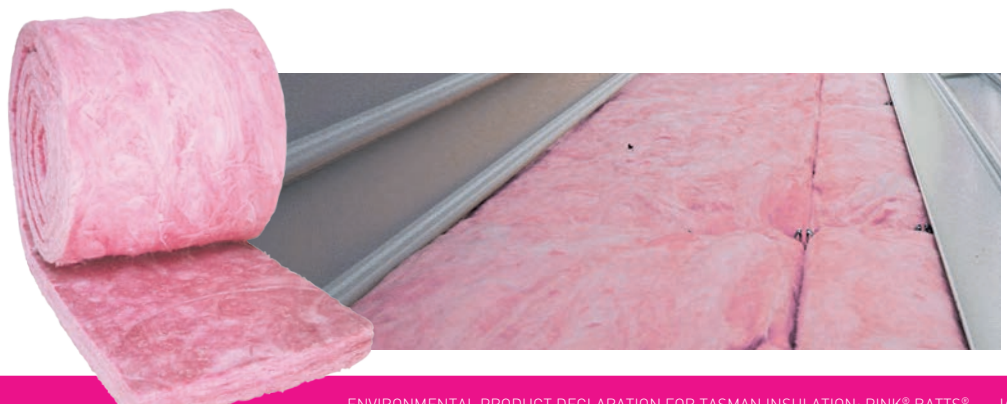
Pink® Batts® Building Insulation Blanket

Pink® Batts® Building Insulation Blanket (BIB) is used to thermally insulate commercial and industrial buildings. It comes in large lengths to increase installation efficiency when large quantities of insulation are required.

- **Range of R-values – from R1.2 - R3.2**
- **Can be used in wall or roof applications**
- **Comes in varying lengths up to 12 metres for R1.2**

ROOF - Building Insulation Blanket		SIZE (m)	NOMINAL STABILISED THICKNESS (mm)	NOMINAL TOTAL AREA PER BALE (m^2)	PIECES PER BALE	APPROX. kg/m^2**
R1.2	Pink® Batts® BIB R1.2 Blanket†	1.2m x 12m	50	28.8	2	0.60
R1.8	Pink® Batts® BIB R1.8 Blanket†	1.2m x 8m	75	19.2	2	0.90
R2.2	Pink® Batts® BIB R2.2 Blanket†	1.2m x 8m	100	19.2	2	0.91
R2.4	Pink® Batts® BIB R2.4 Blanket†	1.2m x 8m	100	19.2	2	1.15
R2.6	Pink® Batts® BIB R2.6 Blanket†	1.2m x 6m	110	14.4	2	1.21
R3.2	Pink® Batts® BIB R3.2 Blanket†	1.2m x 8m	135	9.6	1	1.47

† Product does not have Lifetime Warranty.
** Contact Tasman Insulation for specific details.



Boards, FEI, ISB and LEI Industrial Insulation

High density glass wool insulation in board form for commercial and industrial applications.

- **LEI: Light equipment insulation**
- **FEI: Flexible equipment insulation**
- **ISB: Intermediate service board**
- **Boards typically start at 32kg/m³ and as low as 25mm thick**

Industrial Insulation (<350˚C)	SIZE (mm)	THICKNESS (mm)	AREA PER BALE (m²)	PIECES PER BALE	APPROX. kg/m²**
LEI Boards 50mm	1200 x 900	50	21.6	20	1.1
LEI Blanket 25mm	8000 x 1200	25	48.0	5	0.50
FEI Boards 25mm	1200 x 900	25	28.1	26	0.90
FEI Boards 50mm	1200 x 900	50	13.0	12	1.80
FEI Boards 75mm	1200 x 900	75	8.6	8	2.7
FEI Boards 100mm	1200 x 900	100	7.6	7	3.6
FEI Blanket 36kg/m³	10000 x 1200	25	12.0	1	0.9
FEI Blanket 32kg/m³	10000 x 1200	50	12.0	1	1.6

Industrial Insulation (<450˚C)	SIZE (mm)	THICKNESS (mm)	AREA PER BALE (m²)	PIECES PER BALE	APPROX. kg/m²**
ISB Boards 25mm	1200 x 900	25	21.6	20	1.125
ISB Boards 38mm	1200 x 900	38	13.0	12	1.710
ISB Boards 50mm	1200 x 900	50	10.8	10	2.25
ISB Boards 75mm	1200 x 900	75	6.5	6	3.375
ISB Boards 100mm	1200 x 900	100	5.4	5	4.50

** Contact Tasman Insulation for specific details.

Technical Information

Tasman Insulation Products Covered By EPD

This EPD covers Pink® Batts® glass wool insulation manufactured at the Tasman Insulation site in Auckland, New Zealand.

Data for some specific products is outlined in Table 1.

Table 1: Tasman Insulation specific products

Product	R-Value	Mass per area (kg/m^2)	Density (kg/m^3)
Pink® Batts® Ceiling insulation	R 4.0	1.59	8.11
Pink® Batts® Wall insulation	R 2.2	1.06	11.76
FEI Boards 50mm	N/A	1.8	36

Declared Unit

This EPD is valid for a declared unit of $1m^2$ of Pink® Batts® Ultra R4.0® Ceiling Insulation and $1m^2$ of Pink® Batts® Classic R2.2 Wall Insulation and $1m^2$ FEI board (50mm).

Results for 1kg of glasswool insulation product are also given to allow for results to be calculated for other products. To calculate results, simply multiply the 1 kg results by the mass/area values per product (approx kg/m^2) given in the product tables.

Product Description

Pink® Batts® insulation (segments and blankets) are produced to standard AS/NZS 4859.1
Boards undergo rigorous internal quality assurance procedures similar to the segments and blankets.

Table 2: Industry classification

Product	Classification	Code	Category
Pink® Batts® Ceiling insulation	UN CPC Ver.2	54650	Insulation services
Pink® Batts® Wall insulation	ANZSIC 2006	3239	Other Building Installation Services
FEI Boards 50mm		2010	Glass and glass product manufacturing

Product Manufacturing

Description of Manufacturing Process

The principal operation carried out by Tasman Insulation New Zealand Limited (TINZ) at its Penrose site is the manufacture of glass fibre insulation materials from recycled window glass. The processes include:

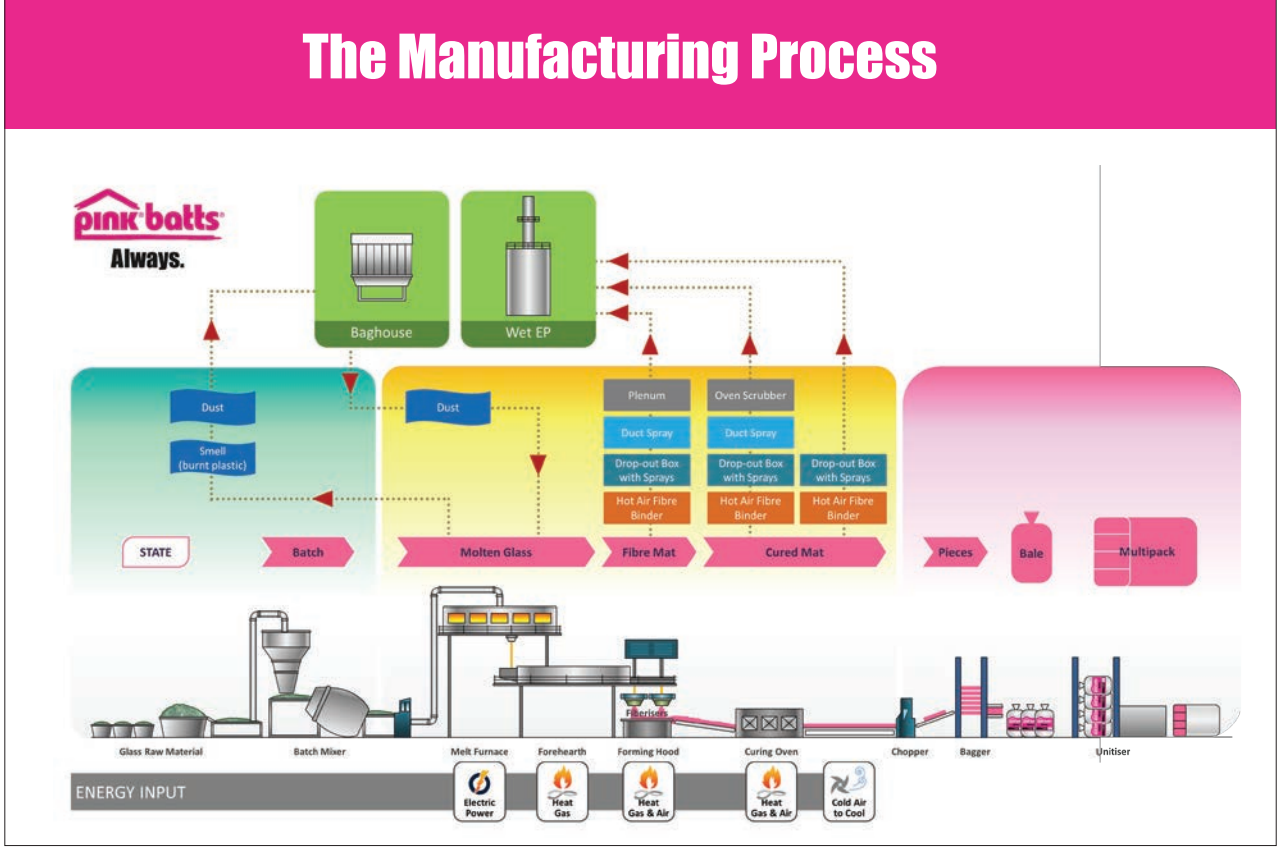
- Mixing of dry raw materials for glass manufacture;
- Melting of glass and subsequent spinning of glass fibre;
- Adding binder to the glass fibre, the forming of a fibre glass mat and its subsequent curing in an oven;
- Cutting, packing and dispatching of finished products;
- Product is packaged in polyethylene wrap

Product Composition

Table 3 - Materials

Material	% Composition for 1 kg glass wool insulation
Recycled window glass	78-84%
Borax	6-7%
Feldspar sand	5-6%
Limestone and soda ash	1-2%
Phenolic binder	2.5-10%

The Manufacturing Process



System Boundaries

As shown in the table below, this EPD is of the 'cradle-to-gate' type. Other life cycle stages are dependent on particular scenarios and best modelled at the building level.

Table 2: Modules included in the scope of the EPD

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundary
Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Construction / Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/Demolition	Transport to waste processing	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X = included in the EPD; MND = Module not declared (such a declaration shall not be regarded as an indicator result of zero)

Production (Module A1-A3)

The production stage includes the environmental impacts associated with raw material extraction and processing of inputs; transport to, between and within Tasman Insulation manufacturing site; and manufacturing of Tasman Insulation products ready for distribution at the exit gate of the manufacturing site.
The production process is as follows:

Glass batch mixing

About 80% of the raw material for the manufacture of the insulation products is crushed window glass. The recycled window glass used in the process is purchased as a crushed material suitable for blending with the other raw materials. The appropriate quantities of each of these raw materials are fed to a rotary mixer before being discharged to portable feed bins.

Melting

The melter is where the glass raw materials are fused to form the insulation glass. The glass batch is fed into the top of the refractory-lined melter and heated by three arc electrodes. When molten, the glass drops from an orifice in the centre of the melter into the forehearth.

Temperature conditioning

The forehearth section is where the insulation glass is allowed to run from the melter to the fiberisers. The forehearth acts as a reservoir for glass and a conditioning channel where the glass is cooled to its working temperature. Glass is pulled from the forehearth up to 24 hours per day, 7 days per week.

Fiberising

Molten glass from the forehearth falls in two streams, one into each fiberiser unit. The fiberisers are spinning bowls with small holes on the outer wall. Fibre is formed by the centrifugal action of the spinning bowls forcing the molten glass out through the holes.

Forming

The spun glass is blown down from the fiberisers through cooling water and binder application sprays. The resulting uncured product is laid down into a continuous mat by the action of large fans which draw the fibres on to a perforated conveyor.

Curing

All the glass fibre and resin mat passes through the curing oven. The conveyor carries the newly formed mat (Pink® Batts® insulation) through the oven to enable the thermosetting binder to cure. The first stage of the oven evaporates the majority of the water from the product. The second and third stages cure the bottom and top of the product, respectively. At the end of this process, the resin has been set into a rigid polymer which enables the product to recover after it is compressed. The oven usually operates at about 200-260 °C.

Trimming

The uncut mat then passes through a chopper where it is cut to length. The cut mat (slab product) travels along a series of conveyors.

Packaging

After the product has been bagged, it is conveyed to a heat sealer, where the ends of the bags are melted together to seal the product.

Each bag is then automatically weighed and conveyed to the unitiser where stacks of 4-5 bales are compressed and ejected into oversleeves to form unitised packs.

Life Cycle Inventory (LCI) Data and Assumptions

Data for Core Processes

Primary data were used for all manufacturing operations up to the factory gate. Primary data were collected for the period May 2017 to April 2018.

Background Data

All data in the background system used for energy inputs, raw material and transport processes were from the GaBi Life Cycle Inventory Database 2018 (thinkstep 2018). Most datasets have a reference year between 2014 and 2017 and all fall within the 10-year limit allowable for generic data under EN 15804.

Geographical Representativeness

Data for energy and transport correctly reflect New Zealand conditions. Most upstream (supply chain) data used were from Europe due to a lack of consistent life cycle inventory data for New Zealand at the time this study was conducted.

Electricity

Electricity for production is based on the average New Zealand grid mix.

Cut off Criteria

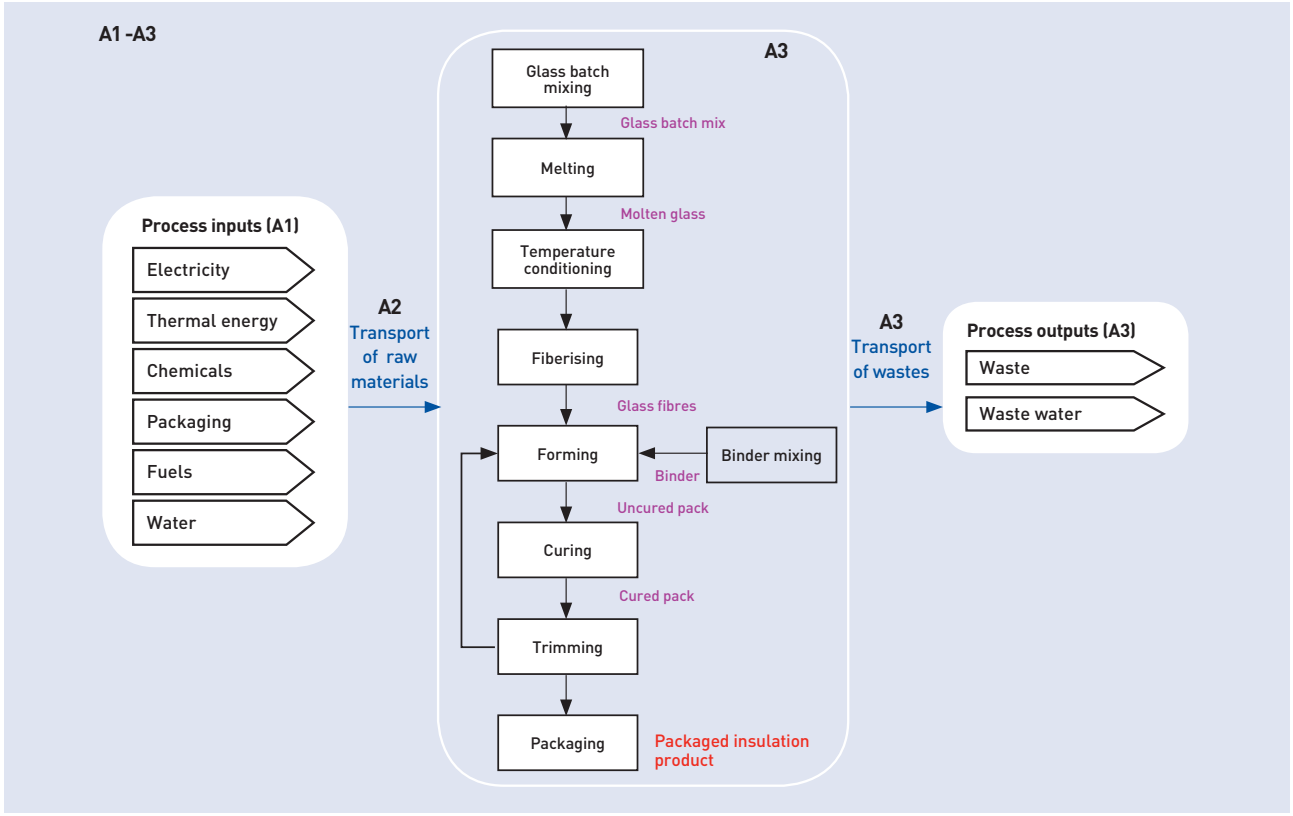
Environmental impacts relating to personnel, infrastructure and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR (IEPDS 2017).

All other reported data were incorporated and modelled using the best available life cycle inventory data.

Allocation

At TINZ three main range of products are produced: segments, blankets and boards. Boards contain more binder than the segments and blankets making the product more rigid. Data was unavailable separately for Pink® Batts® insulation (segments and blankets) and Boards. To calculate impact for Pink® Batts® insulation (segments and blankets), it was assumed that the data provided by TINZ represented the production of 100% Pink® Batts® insulation (segments and blankets) and 0% Boards. To calculate impact of board it was assumed that all product by TINZ was now board with an increased binder content and decreased glass fibre content. Therefore, allocation was not applied in this study.

Upstream data: For all refinery products, allocation by mass and net calorific value has been applied. Materials and chemicals needed in the manufacturing process are modelled using the allocation rule most suitable for the respective product. Allocation of background data (energy and materials) taken from the GaBi 2018 databases is documented online at http://gabi-software.com/support/gabi/gabi-database-2018-lci-documentation/



Results of Assessment

Note: All indicators represent the potential to cause environmental impacts; they do not predict if specific environmental threshold, safety margins or risks will be exceeded. The actual impacts on the environment typically depends upon local, regional and/or global conditions.

ENVIRONMENTAL IMPACT INDICATORS
An introduction to each environmental indicator is as follows. The best-known effect of each indicator is listed to the right of its name

GLOBAL WARMING POTENTIAL (GWP) > Climate Change
A measure of greenhouse gas emissions, such as carbon dioxide and methane. These emissions increase absorption of radiation emitted by the earth, intensifying the natural greenhouse effect. Contributions to GWP can come from either fossil or biogenic sources, e.g. burning fossil fuels or burning wood. GWP is reported both including biogenic carbon (GWPIB) and excluding biogenic carbon (GWPEB).

OZONE DEPLETION POTENTIAL (ODP) > Ozone Hole
A measure of air emissions that contribute to the depletion of the stratospheric ozone layer, causing higher levels of ultraviolet B (UVB) to reach the earth's surface with detrimental effects on humans, animals and plants.

ACIDIFICATION POTENTIAL (AP) > Acid Rain
A measure of emissions that cause acidifying effects to the environment. Acidification potential is a measure of a molecule's capacity to increase the hydrogen ion (H+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline and the deterioration of building materials.

EUTROPHICATION POTENTIAL (EP) > Algal Blooms
A measure of nutrient enrichment that may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. It includes potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N) and phosphorus (P).

PHOTOCHEMICAL OZONE CREATION POTENTIAL (POCP) > Smog
A measure of emissions of precursors that contribute to ground level smog formation (mainly ozone O3), produced by the reaction of VOCs and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone may be harmful to human and ecosystem health and may also damage crops.

ABIOTIC DEPLETION POTENTIAL > Resource Consumption
The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources. Depletion of mineral resource elements (ADPE) and non-renewable fossil energy resources (ADPF) are reported separately.

Results of Assessment

Table 3: A1-A3 impacts for 1 kg of Pink® Batts® insulation

	Unit	1 kg of Pink® Batts® Insulation
Environmental impact indicators		
Global warming potential (total)	kg CO_2-eq.	0.96
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.60E-13
Acidification potential of land and water	kg SO_2-eq.	0.00404
Eutrophication potential	kg PO_4^{3-}-eq.	8.39E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	3.32E-04
Abiotic depletion potential - Elements	kg Sb-eq.	3.44E-07
Abiotic depletion potential - Fossil fuels	MJ	14.5
Resource use		
Renewable primary energy as energy carrier	MJ	9.25
Renewable primary energy resources as material utilisation	MJ	0
Total use of renewable primary energyresources	MJ	9.25
Non-renewable primary energy as energy carrier	MJ	13.8
Non-renewable primary energy as material utilisation	MJ	0.894
Total use of non-renewable primary energy resources	MJ	14.7
Use of secondary material	kg	0.864
Use of renewable secondary fuels	MJ	3.72E-10
Use of non-renewable secondary fuels	MJ	4.37E-09
Use of net fresh water	m^3	0.0298
Waste and output flow indicators		
Hazardous waste disposed	kg	1.01E-08
Non-hazardous waste disposed	kg	0.129
Radioactive waste disposed	kg	8.37E-05
Components for re-use	kg	0.00909
Materials for recycling	kg	0.00346
Materials for energy recovery	kg	0
Exported electrical energy	MJ	0
Exported thermal energy	MJ	0

Results of Assessment

Table 6: A1-A3 impacts for 1m² of R4.0 Pink® Batts® Ceiling insulation

	Unit	1 m² R4.0 Pink® Batts® Ceiling Insulation
Environmental impact indicators		
Global warming potential (total)	kg CO_2-eq.	1.53
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	2.54E-13
Acidification potential of land and water	kg SO_2-eq.	0.00642
Eutrophication potential	kg PO_4^{3-}-eq.	0.00133
Photochemical ozone creation potential	kg C_2H_4-eq.	5.28E-04
Abiotic depletion potential - Elements	kg Sb-eq.	5.47E-07
Abiotic depletion potential - Fossil fuels	MJ	23
Resource use		
Renewable primary energy as energy carrier	MJ	14.7
Renewable primary energy resources as material utilisation	MJ	0
Total use of renewable primary energyresources	MJ	14.7
Non-renewable primary energy as energy carrier	MJ	21.9
Non-renewable primary energy as material utilisation	MJ	1.42
Total use of non-renewable primary energy resources	MJ	23.4
Use of secondary material	kg	1.37
Use of renewable secondary fuels	MJ	5.92E-10
Use of non-renewable secondary fuels	MJ	6.95E-09
Use of net fresh water	m^3	0.0474
Waste and output flow indicators		
Hazardous waste disposed	kg	1.61E-08
Non-hazardous waste disposed	kg	0.205
Radioactive waste disposed	kg	1.33E-04
Components for re-use	kg	0.0145
Materials for recycling	kg	0.0055
Materials for energy recovery	kg	0
Exported electrical energy	MJ	0
Exported thermal energy	MJ	0

Results of Assessment

Table 7: A1-A3 impacts for 1m^2 of R2.2 Pink® Batts® Wall insulation

	Unit	1 m^2 R2.2 Pink® Batts® Wall Insulation
Environmental impact indicators		
Global warming potential (total)	kg CO_2-eq.	1.02
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.69E-13
Acidification potential of land and water	kg SO_2-eq.	0.00428
Eutrophication potential	kg PO_4^{3-}-eq.	8.89E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	3.52E-04
Abiotic depletion potential - Elements	kg Sb-eq.	3.65E-07
Abiotic depletion potential - Fossil fuels	MJ	15.4
Resource use		
Renewable primary energy as energy carrier	MJ	9.81
Renewable primary energy resources as material utilisation	MJ	0
Total use of renewable primary energyresources	MJ	9.81
Non-renewable primary energy as energy carrier	MJ	14.6
Non-renewable primary energy as material utilisation	MJ	0.948
Total use of non-renewable primary energy resources	MJ	15.6
Use of secondary material	kg	0.915
Use of renewable secondary fuels	MJ	3.95E-10
Use of non-renewable secondary fuels	MJ	4.63E-09
Use of net fresh water	m^3	0.0316
Waste and output flow indicators		
Hazardous waste disposed	kg	1.07E-08
Non-hazardous waste disposed	kg	0.136
Radioactive waste disposed	kg	8.87E-05
Components for re-use	kg	0.00964
Materials for recycling	kg	0.00367
Materials for energy recovery	kg	0
Exported electrical energy	MJ	0
Exported thermal energy	MJ	0

Results of Assessment

Table 8: A1-A3 impacts for 1kg of boards

	Unit	1 kg of boards
Environmental impact indicators		
Global warming potential (total)	kg CO_2-eq.	1.10
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	2.12E-13
Acidification potential of land and water	kg SO_2-eq.	0.00540
Eutrophication potential	kg PO_4^{3-}-eq.	0.00113
Photochemical ozone creation potential	kg C_2H_4-eq.	4.60E-04
Abiotic depletion potential - Elements	kg Sb-eq.	3.72E-07
Abiotic depletion potential - Fossil fuels	MJ	18.0
Resource use		
Renewable primary energy as energy carrier	MJ	9.47
Renewable primary energy resources as material utilisation	MJ	0
Total use of renewable primary energyresources	MJ	9.47
Non-renewable primary energy as energy carrier	MJ	17.4
Non-renewable primary energy as material utilisation	MJ	0.894
Total use of non-renewable primary energy resources	MJ	18.3
Use of secondary material	kg	0.824
Use of renewable secondary fuels	MJ	3.72E-10
Use of non-renewable secondary fuels	MJ	4.37E-09
Use of net fresh water	m^3	0.0299
Waste and output flow indicators		
Hazardous waste disposed	kg	1.20E-08
Non-hazardous waste disposed	kg	0.152
Radioactive waste disposed	kg	1.26E-04
Components for re-use	kg	0.0200
Materials for recycling	kg	0.00349
Materials for energy recovery	kg	0
Exported electrical energy	MJ	0
Exported thermal energy	MJ	0

Results of Assessment

Table 9: A1-A3 impacts for 1m^2 of FEI board - 50mm

	Unit	1 m^2 FEI Boards 50mm
Environmental impact indicators		
Global warming potential (total)	kg CO_2-eq.	1.98
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	3.816E-13
Acidification potential of land and water	kg SO_2-eq.	0.00972
Eutrophication potential	kg PO_4^{3-}-eq.	0.00203
Photochemical ozone creation potential	kg C_2H_4-eq.	0.000828
Abiotic depletion potential - Elements	kg Sb-eq.	6.696E-07
Abiotic depletion potential - Fossil fuels	MJ	32.4
Resource use		
Renewable primary energy as energy carrier	MJ	17.05
Renewable primary energy resources as material utilisation	MJ	0
Total use of renewable primary energyresources	MJ	17.05
Non-renewable primary energy as energy carrier	MJ	31.3
Non-renewable primary energy as material utilisation	MJ	1.609
Total use of non-renewable primary energy resources	MJ	32.9
Use of secondary material	kg	1.483
Use of renewable secondary fuels	MJ	6.696E-10
Use of non-renewable secondary fuels	MJ	7.866E-09
Use of net fresh water	m^3	0.0538
Waste and output flow indicators		
Hazardous waste disposed	kg	2.16E-08
Non-hazardous waste disposed	kg	0.274
Radioactive waste disposed	kg	2.27E-04
Components for re-use	kg	0.036
Materials for recycling	kg	0.00628
Materials for energy recovery	kg	0
Exported electrical energy	MJ	0
Exported thermal energy	MJ	0

Additional Environmental Information

Our glass wool manufacturing plant is constantly looking for initiatives to reduce their environmental impact, currently our focus is on:

- Installation of new machinery to reduce waste and improve energy efficiency
- Reducing blockages and offcut scrap
- Adjusting the size of the bales to reduce the amount of plastic used in packaging
- Water conservation
- Incorporating recycled content into plastic bale bags
- Improving collection and recycling of waste plastic from bags and unitiser oversleeves

In addition to this EPD, we also have a range of other independent certifications such as Environmental Choice and Greenguard.
Those credentials, and their purpose, are outlined below and online at:
https://pinkbatts.co.nz/insulate-your-home/why-to-choose-pink-batts-insulation/warranty-and-credentials/

Environmental Choice

The Environmental Choice New Zealand label identifies products and services that minimise negative impact on the environment. Pink® Batts® glass wool insulation has been independently assessed against world class criteria across their whole life cycle. In New Zealand it is the only Type I ecolabel.

Building Insulants
Licence No. 2504017

The Environmental Choice NZ labelling applies to all the Pink® Batts® glass wool products that are BRANZ appraised.

Greenguard

Pink® Batts® glass wool insulation is certified under the GREENGUARD Certification Program. Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits to help create healthier indoor environments.

GREENGUARD is not limited solely to formaldehyde, but also specify limits on VOCs, aldehydes, particulate matter, carcinogenic compounds, ammonia, odour and phthalates

All certified products must meet stringent emissions standards based on established exposure criteria. Product samples are selected at random by UL Environment and sent off for quarterly testing.

Homestar®

Homestar® is an independent rating tool that measures the health, warmth and efficiency of New Zealand houses. It is a tool developed by New Zealand Green Building Council (NZGBC).
A home is rated on a 1 (very poor) to 10 (world class) scale. Most existing NZ houses only achieve 2-3 Homestar® rating and a new home built to the NZ Building Code would achieve 3-4 Homestar.
TINZ can contribute to achieve points in the following categories

A. Energy, Health and Comfort (EHC)

To obtain a 6-star rating there is a minimum requirement of 12 points for the credit "EHC-1 Whole House Thermal Comfort", this credit is part of the EHC category.

Pink® Batts® glass wool insulation offers high R-value products that will help your project to achieve higher R-value elements.

B. Materials (MAT)

"MAT 1 – Sustainable Material" rewards the use of third-party certification. Pink® Batts® glass wool insulation products have an Environmental Choice accreditation, a Homestar® accepted eco label.

C. Management (MAN)

If the insulation is installed by PinkFit®, TINZ professional installers, then points can be achieved under MAN 3 – Responsible Contracting".

Green Star NZ

Green Star NZ is a rating tool for commercial buildings.
Green Star V3 has included an Innovation Category and Innovation Challenges have been introduced. Environmental Product Declarations (EPD) are considered Innovation Challenges.

Points for EPDs: 1 point is available where two different products hold current EPDs. 2 points are available where six or more different products hold current EPDs.

This EPD meets NZGBC's requirements of being "a product specific, third party EPD".

References

EN 15804:2012+A1:2103; Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products. Brussels: European Committee for Standardization.

EN 16783:2017; Thermal insulation for products - Product category rules (PCR) for factory made in-situ formed products for preparing environmental product declarations.

ISO 14040:2006; Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO 14044:2006; Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

ISO 14025:2006; Environmental labels and declarations — Type III environmental declarations — Principles and procedures. Geneva: International Organization for Standardization.

PCR 2012:01 Construction Products and Construction Services 2012:01, Version 2.2, 2017-05-30 (valid until 2019-03-03). International EPD System, Stockholm.

thinkstep. (2018). GaBi life cycle inventory database documentation. Leinfelden-Echterdingen, Germany: thinkstep AG. URL: http://www.gabi-software.com/support/gabi/gabi-database-2018-lci-documentation/.

Full product technical information is available from pinkbatts.co.nz

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