

## Environmental Product Declaration

BREG EN EPD No.: 000064  
ECO EPD Ref. No.: 00000171

Issue 01

This is to certify that this verified Environmental Product Declaration provided by:

**Saint-Gobain Isover UK**

Is in accordance with the requirements of:  
**EN 15804:2012+A1:2013**

This declaration is for:  
**Spacesaver and Spacesaver Ready - Cut Product Families**

### Company Address

Saint - Gobain Isover UK  
Whitehouse Industrial Estate  
Runcorn  
Cheshire  
WA7 3DP  
United Kingdom



Derek Hughes

20 April 2015

Signed for BRE Global Ltd

Operator

Date of this Issue

20 April 2015

19 April 2020

Date of First Issue

Expiry Date



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## EPD verification and LCA details

Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR <sup>a</sup>	
Independent verification of the declaration and data according to EN ISO 14025:2010	
<input type="checkbox"/> Internal	<input checked="" type="checkbox"/> External
Third party verifier <sup>b</sup> : <b>Nigel Jones</b>	
<small>a: Product category rules            b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)</small>	

LCA Consultant	Verifier
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Commissioner of LCA study	
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## General Information

### Summary

This environmental product declaration is for 1 square metre of glass mineral wool from the Spacesaver and Spacesaver Ready - Cut product families produced by Saint - Gobain Isover UK at the following manufacturing facilities:

Saint - Gobain Isover UK  
 Whitehouse Industrial Estate  
 Runcorn  
 Cheshire  
 WA7 3DP  
 United Kingdom

This is a Cradle to grave EPD. The life cycle stages included are as shown below (X = included, MND = module not declared):

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction - Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy use	Operational Water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

### Programme Operator

BRE Global, Watford, Herts, WD25 9XX, United Kingdom.

This declaration is based on the BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013.

### Comparability

Environmental declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the product category rules used and the source of the data, e.g. the database. See EN 15804:2012+A1:2013 for further guidance.

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## Construction Product

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### Product Description

Saint – Gobain Isover UK, which has a production site situated in Runcorn, utilizes a variety of fusion and fiberizing techniques to convert natural and abundant raw materials (Sand, Borax, and Feldspar etc.) as well as Cullet into a homogeneous melt, which is subsequently fabricated into glass wool fibres. These glass wool fibres are formed into a “mineral wool mat” consisting of a soft, airy structure

The best natural insulator on earth is dry immobile air at 10°C: its thermal conductivity factor, expressed in  $\lambda$ , is 0.025 W/(m.K) (watts per meter Kelvin degree). The thermal conductivity of glass mineral wool is close to immobile air as its  $\lambda$  (Lambda) varies from 0.032 W/(m.K) for the most efficient to 0.044 W/(m.K) for the least.

The glass mineral wool products have an entangled, porous structure: This enables air to become trapped in the pores of the material providing exceptional thermal properties. Furthermore, its porous and elastic structure absorbs noise in the air and offers acoustic correction inside premises. Incombustible by nature, Isover glass mineral wool does not fuel fire or propagate flames.

Glass mineral wool insulation usage is extensive, ranging from use in building insulation (loft, cavity walls) to technical insulation (Industrial facilities, Marine & offshore). It ensures a high level of comfort, lowers energy costs, minimizes carbon dioxide (CO<sub>2</sub>) emissions, prevents heat loss through pitched roofs, walls, floors, pipes and boilers, reduces noise pollution and protects homes and industrial facilities from the risk of fire. Moreover, Isover insulation allows substantial weight savings for marine applications.

The glass mineral wool products generated at Saint – Gobain Isover UK have an average building lifespan of 60 years, or as long as the insulated building component is part of the building.

### Technical Information

Insulation can serve many purposes within a building, from providing thermal and acoustic insulation to fire protection. Saint – Gobain Isover UK produces insulation which can satisfy many of these purposes, if not all.

Spacesaver loft insulation is supplied in a variety of thicknesses, ranging from 100 mm to 200 mm. Moreover, Spacesaver loft insulation is also supplied in a ready-cut format, allowing easy fitting in common joist spacing's within lofts.

### Spacesaver Technical Information

Characteristic	Unit	Spacesaver 100	Spacesaver 150	Spacesaver 170	Spacesaver 200
Thickness	mm	100	150	170	200
Width	mm	1160	1160	1160	1160
Length	mm	9170	6030	5390	3880
Pack Area	m <sup>2</sup>	10.64	6.99	6.25	4.5
Thermal Conductivity, $\lambda_D$	W/m.K	0.044	0.044	0.044	0.044
Thermal Resistance, RD	m <sup>2</sup> .K/W	2.3	3.45	3.95	4.65
Fire Rating Euroclass	-	A1	A1	A1	A1

### Spacesaver Ready - Cut Technical Information

Characteristic	Unit	SS Ready - Cut 100 (2 X 580)	SS Ready - Cut 100 (3 X 386)	SS Ready - Cut 150 (2 X 580)	SS Ready - Cut 150 (3 X 386)	SS Ready - Cut 200 (2 X 580)	SS Ready - Cut 200 (3 X 386)
Thickness	mm	100	100	150	150	200	200
Width	mm	2 X 580	3 X 386	2 X 580	3 X 386	2 X 580	3 X 386
Length	mm	9170	9170	6030	6030	3880	3880
Pack Area	m <sup>2</sup>	10.64	10.62	6.99	6.98	4.5	4.49
Thermal Conductivity, $\lambda_D$	W/m.K	0.044	0.044	0.044	0.044	0.044	0.044
Thermal Resistance, RD	m <sup>2</sup> .K/W	2.3	2.3	3.45	3.45	4.65	4.65
Fire Rating Euroclass	-	A1	A1	A1	A1	A1	A1

## Product Contents

Material/Chemical Input	Unit	Value
Glass Mineral Wool	%	95
Binder	%	5
Wood Pallet	g	43 - 102 per m <sup>2</sup> of Insulation
Adhesives	g	0.3 - 0.78 per m <sup>2</sup> of Insulation
Stretch Film	g	1.63 - 3.86 per m <sup>2</sup> of Insulation
Labels	g	0.17 - 0.4 per m <sup>2</sup> of Insulation
Polyethylene	g	16.35 - 38.65 per m <sup>2</sup> of Insulation

The glass mineral wool and binder are the two actual components of the Spacesaver Insulation and they summate to 100%. The composition of the Spacesaver insulation (Glass mineral wool and binder) is the same for every thickness and for both the normal and ready – cut format. The packaging per FU differs between the different thicknesses.

Spacesaver Insulation contains no substances that are listed in the ‘Candidate List of Substances of very high concern for authorisation’, however, due to propriety information they are not listed individually.

## Construction/Installation

Spacesaver and Spacesaver Ready - Cut insulation is supplied in a roll form and is intended for application in lofts. Spacesaver is firstly installed in between the joists of the loft and then the rolls are cross – laid to achieve the desired depth of insulation. No additional material is required to install Spacesaver loft insulation. For a more detailed guide on how to install Spacesaver, please refer to the installation guides provided on the Isover website.

<http://www.Isover.co.uk/products/Spacesaver>

## Use Information

Once installed into the building, Spacesaver and Spacesaver Ready - Cut insulation is not used directly. Therefore, there is no need for maintenance, repair, replacement or refurbishment. Moreover, no additional water and energy is used

## Reference Service Life

Refer to LCA calculation rules

## End of Life

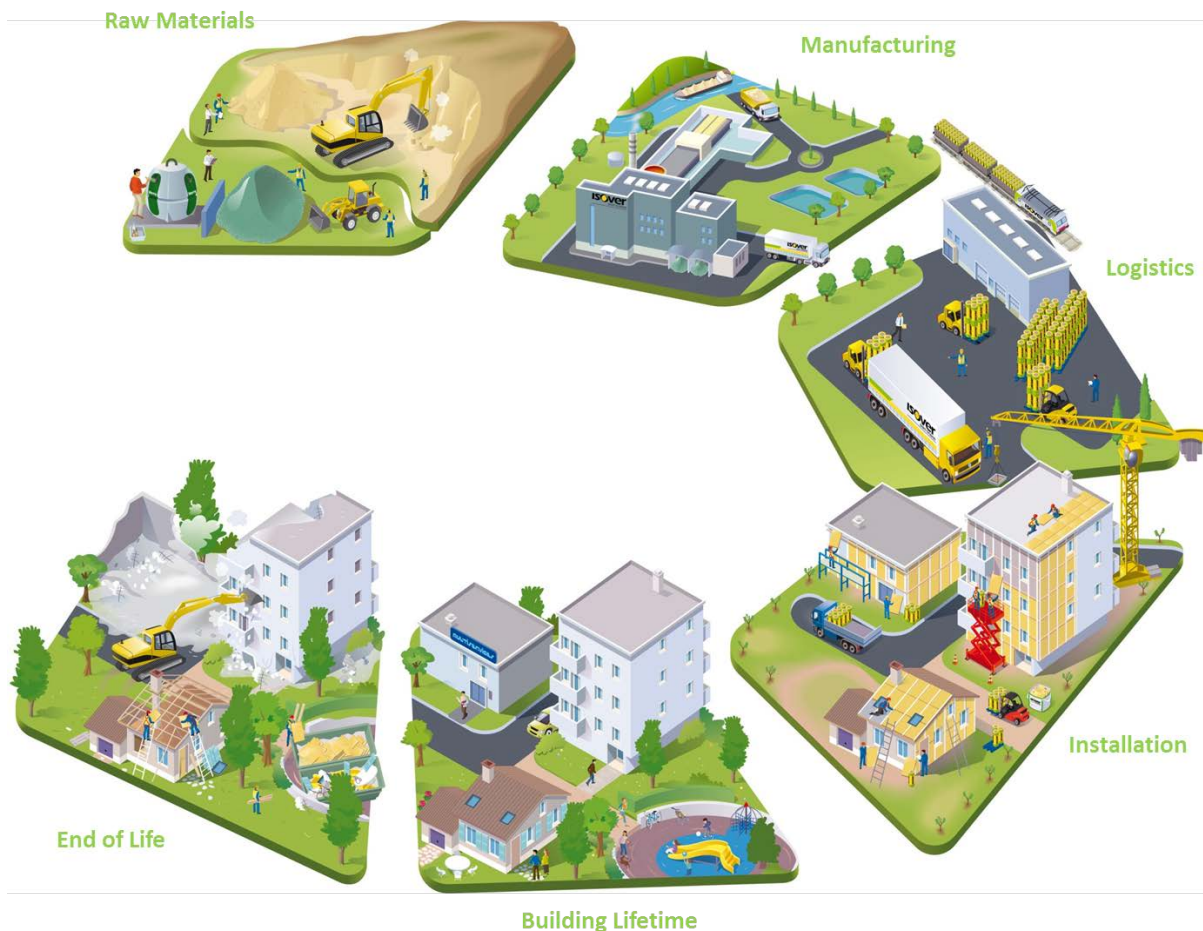
The insulation will last the whole duration of the building lifetime. Once the insulation has reached the end-of-life stage, 100% of it is sent to landfill.

## LCA – Calculation Rules

### CALCULATION RULES

<b>FUNCTIONAL UNIT</b>	<p>The functional unit is 1 m<sup>2</sup> surface of Insulation providing a thermal resistance of R = 2.3 m<sup>2</sup>.K/W, whilst ensuring the stipulated product performances.</p> <p>This functional unit is our reference unit for the multiplication factors and is based on the Spacesaver 100 mm thickness.</p>
<b>SYSTEM BOUNDARIES</b>	Cradle to Grave: Mandatory stages = A1 – 3, B1 – 7, C1 – 4.
<b>REFERENCE SERVICE LIFE</b>	60 Years
<b>CUT-OFF RULES</b>	<p>The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%);</p> <p>Flows related to human activities such as employee transport are excluded</p> <p>The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.</p>
<b>ALLOCATIONS</b>	The allocation of all the production data is based on mass (kg).
<b>DATA QUALITY</b>	<p>All the data complies with the EN 15804:2012 + A1:2013 standards regarding geographical, technological and technical relevance.</p> <p>Primary data is obtained from our UK manufacturing site for the period of the 2014 calendar year.</p> <p>A 2011 UK fuel mix was used to model the electricity for our production site.</p>
<b>BACKGROUND DATA</b>	All the background data was either obtained from EU ETS/ DEAM/ Ecoinvent.

## Life cycle stages



## Product stage, A1-A3

### Description of the stage:

#### A1, Raw material supply

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the Spacesaver loft insulation manufacturing process.

#### A2, Transport to the manufacturing facility

This includes the transport distance of the raw materials to the manufacturing facility via road, boat and/or train. These values are specific unless the raw materials come from multiple suppliers, in which case the values are averaged.

#### A3, Manufacture of the product.

This module covers the manufacturing of the products and any associated packaging/facing. Specifically, it covers the glass production, binder production and glass mineral wool fabrication.





## Manufacture:

The Saint – Gobain Isover UK manufacturing facility is managed through an ISO 9001:2008 certified Quality Management System.

The manufacturing process for glass mineral wool insulation is split into the following 7 segments and is the same for every product manufactured at the Saint – Gobain Isover UK site.

### 1. Raw Material Handling

The raw materials for glass wool manufacture are received in bulk quantities and stored in silos. According to a particular desired product recipe, the raw materials are weighed and blended well before introduction into the melting unit.

### 2. Glass Melting

In the glass melting furnace, the raw materials introduced from the batch plant are heated to temperatures exceeding 1400°C and are transformed into a homogenous melt through a sequence of chemical reactions.

### 3. Fiberizing

The homogenous melt travels through a fore hearth and enters rotary spinners. Glass wool fibers are formed and binder is simultaneously sprayed on these. These fibers fall into a forming chamber and are formed into a mat.

### 4. Curing

The formed mat travels through a curing oven where it reaches a specified temperature to allow the binder to cure and for the mat to reach the desired thickness.

### 5. Cutting

The cured glass mineral wool mat is cut via slitters into either rolls or batts. Any edge trim is recycled back into the process. Facings can be applied at this stage.

### 6. Packaging

The products are compressed, packaged and labelled.

### 7. Palletisation

At this stage, the products are combined together and stacked onto pallets where they are wrapped with stretch film. Once the pallets have been wrapped and labelled, they are ready to enter Lorries and be transported to the customer.

## Construction process stage, A4-A5

### Description of the stage:

The construction process is divided into 2 modules: A4, transport to the building site and A5, installation in the building.

**A4, Transport to the building site:** This module includes transport from the production gate to the building site.

**A5, Installation in the building:** The installation stage considers the wastage rate of the product during installation, waste recycling/recovery, water/energy usage and direct emissions.

### Transport to the building site

PARAMETER	VALUE per square metre of Insulation
<b>Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.</b>	The truck uses diesel as the fuel and has an average payload of 24 tonnes.  Fuel consumption is 38 litres / 100 kilometres
<b>Distance</b>	265 km
<b>Capacity utilisation (including empty returns)</b>	100% capacity utilisation with 30% empty returns
<b>Bulk density of transported products</b>	~ 10 - 40 kg/m <sup>3</sup>
<b>Volume capacity utilisation factor</b>	1

### Installation in the building

PARAMETER	VALUE per square metre of Insulation
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	5% of the insulation material is wasted at this stage
Sorting of waste materials on site for recycling, energy recovery and disposal (A5)	Packaging wastes are 100 % collected and modelled as recovered matter. Glass wool losses are 100 % landfilled.

### Use stage (excluding potential savings), B1-B7

#### Description of the stage:

The use stage relating to the building fabric is assessed over a defined study period, taking into account the service life of the product.

This stage includes the following information modules:

B1, use of the installed construction product in the building – Glass mineral wool insulation is installed into the building, ranging from applications in lofts to cavity walls etc. There are no environmental impacts associated with this information module as we don't directly use the product once it has been installed.

B2, maintenance of the product – There is no need to maintain the product once it has been installed into the site. It will continue to provide its declared product performance for the duration of its reference service life.

B3, repair of the product – Once the product has been installed into the building, there should be no need to for corrective/reactive treatment to repair the product and return it to an acceptable condition. It will provide the declared product performance for the full reference service life.

B4, replacement of the product – Our reference service life for glass mineral wool insulation is assumed to be greater than or equal to the lifetime of the building it is installed in. Therefore, there is no need replace the product.

B5, refurbishment of the product – During the reference service life of our product, the performance will not diminish and therefore there is no need to refurbish the product.

#### Maintenance

PARAMETER	VALUE per square metre of Insulation
Maintenance process	None required during insulation lifetime

#### Repair

PARAMETER	VALUE per square metre of Insulation
Repair process	None required during insulation lifetime

### Replacement

PARAMETER	VALUE per square metre of Insulation
Replacement cycle	None required during insulation lifetime

### Refurbishment

PARAMETER	VALUE per square metre of Insulation
Refurbishment process	None required during insulation lifetime

### Use of energy and water

PARAMETER	VALUE per square metre of Insulation
Water and Energy usage	None required during insulation lifetime

### End-of-life stage, C1-C4

The end-of-life stage includes the following information modules:

C1, demolition of the building or construction product installation – The environmental impacts associated with the demolition of the Spacesaver product is considered to be negligible.

C2, transport of the demolition waste comprising the end-of-life construction product to waste processing facility.

C3, waste processing operations for reuse, recovery or recycling – We don't reuse, recover or recycle our glass mineral wool insulation.

C4, final disposal of the end-of-life construction product – The product is 100% landfilled.

### End of life

PARAMETER	VALUE per square metre of Insulation
Collection process specified by type	The entire product, including any surfacing is collected alongside any mixed construction waste
Recovery system specified by type	There is no recovery, recycling or reuse of the product once it has reached its end of life phase.
Disposal specified by type	The product alongside the mixed construction waste from demolishing will go to landfill
Assumptions for scenario development (e.g. transportation)	We assume that the waste going to landfill will be transported by truck with a 24 tonne payload, using diesel as a fuel consuming 38 litres per 100 km. Distance covered is 25 km

## LCA results

This section will cover the LCA results of both the Spacesaver and Spacesaver Ready – cut product families. Using specialist LCA software (TEAM 5.2), an LCA was calculated for every individual thickness of both of these product families.








Using the LCA results for both the Spacesaver and Spacesaver Ready – cut product families, a sensitivity analysis was carried out to determine the difference in environmental impacts between the two. It was concluded that the differences were negligible since the sensitivity analysis showed a difference of around 0.01% difference. Therefore, the environmental impact for the same thicknesses (i.e. 100 mm Spacesaver and 100 mm Spacesaver Ready – cut) in these two product families is taken to be the same.

As this EPD covers a range of thicknesses in the two product families, a multiplication factor was used to determine their individual environmental impacts. In order to calculate the multiplication factors, a reference unit was chosen (Spacesaver 100 mm with an R value = 2.3 m<sup>2</sup>.K/W) which also acts as our functional unit. The various impacts for the other thicknesses were compared against this reference unit and a multiplication factor was calculated.

The table below highlights the multiplication factors for each individual thickness in the two product families. In order to determine the environmental impacts associated with a specific product thickness, multiply the LCA results by the corresponding multiplication factor.









Product	Multiplication Factor
Spacesaver 100 mm	1
Spacesaver Ready-Cut 100 mm	1
Spacesaver 150 mm	1.5
Spacesaver Ready-Cut 150 mm	1.5
Spacesaver 170 mm	1.7
Spacesaver 200 mm	2
Spacesaver Ready-Cut 200 mm	2

## Environmental impacts





Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
 Global Warming Potential (GWP) - <i>kg CO<sub>2</sub> equiv/FU</i>	1.60E+00	5.01E-02	8.29E-02	0	0	0	0	0	0	0	0	4.70E-03	0	0	MND
The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.															
 Ozone Depletion (ODP) - <i>kg CFC 11 equiv/FU</i>	6.28E-08	3.62E-08	5.12E-09	0	0	0	0	0	0	0	0	3.39E-09	0	0	MND
Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.															
 Acidification potential (AP) - <i>kg SO<sub>2</sub> equiv/FU</i>	1.26E-02	2.30E-04	6.44E-04	0	0	0	0	0	0	0	0	2.16E-05	0	0	MND
Acid depositions have negative impacts on natural ecosystems and the man-made environment incl. buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.															
 Eutrophication potential (EP) - <i>kg (PO<sub>4</sub>)<sup>3-</sup> equiv/FU</i>	1.38E-03	5.39E-05	7.22E-05	0	0	0	0	0	0	0	0	7.22E-05	0	3.75E-06	MND
Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.															
 Photochemical ozone creation potential (POCP) - <i>kg Ethene equiv/FU</i>	1.54E-03	3.58E-05	7.89E-05	0	0	0	0	0	0	0	0	3.36E-06	0	0	MND
Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.															
 Abiotic depletion potential for non-fossil resources (ADP-elements) - <i>kg Sb equiv/FU</i>	2.30E-07	1.36E-11	1.15E-08	0	0	0	0	0	0	0	0	1.27E-12	0	0	MND
 Abiotic depletion potential for fossil resources (ADP-fossil fuels) - <i>MJ/FU</i>	2.98E+01	6.41E-01	1.53E+00	0	0	0	0	0	0	0	0	6.01E-02	0	0	MND
Consumption of non-renewable resources, thereby lowering their availability for future generations.															







## Resource use

Parameters	Product stage	Construction process stage		Use stage								End-of-life stage				Reuse, recovery, recycling A5 Installation
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Returbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal		
 Use of renewable primary energy excluding renewable primary energy resources used as raw materials <i>MJ/FU</i>	1.79E+00	3.13E-04	8.95E-02	0	0	0	0	0	0	0	0	0	2.94E-05	0	0	MND
 Use of renewable primary energy resources used as raw materials <i>MJ/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
<b>Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) <i>MJ/FU</i></b>	1.79E+00	3.13E-04	8.95E-02	0	0	0	0	0	0	0	0	0	2.94E-05	0	0	MND
 Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials <i>MJ/FU</i>	2.81E+01	6.45E-01	1.44E+00	0	0	0	0	0	0	0	0	0	6.05E-02	0	0	MND
 Use of non-renewable primary energy resources used as raw materials <i>MJ/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
<b>Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) <i>MJ/FU</i></b>	2.81E+01	6.45E-01	1.44E+00	0	0	0	0	0	0	0	0	0	6.05E-02	0	0	MND
 Use of secondary material <i>kg/FU</i>	5.58E-01	0	2.79E-02	0	0	0	0	0	0	0	0	0	0	0	0	MND
 Use of renewable secondary fuels <i>MJ/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
 Use of non-renewable secondary fuels <i>MJ/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
 Net use of fresh water <i>m³/FU</i>	9.40E-03	6.12E-05	4.73E-04	0	0	0	0	0	0	0	0	0	5.75E-06	0	0	MND

### Waste categories

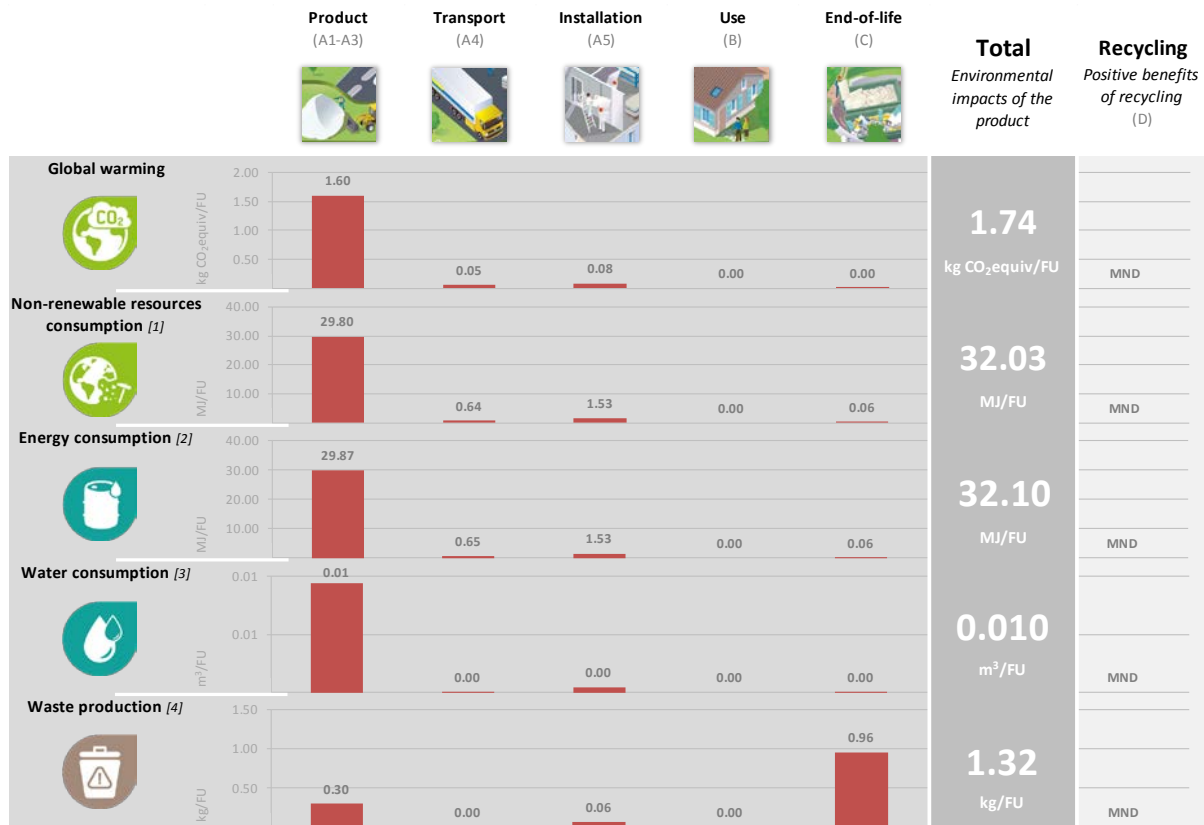
Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
 Hazardous waste disposed <i>kg/FU</i>	3.06E-04	1.48E-05	1.61E-05	0	0	0	0	0	0	0	0	1.39E-06	0	0	MND
 Non-hazardous(excluding inert) waste disposed <i>kg/FU</i>	3.01E-01	5.78E-05	6.30E-02	0	0	0	0	0	0	0	0	5.42E-06	0	9.60E-01	MND
 Radioactive waste disposed <i>kg/FU</i>	3.59E-05	1.03E-05	2.36E-06	0	0	0	0	0	0	0	0	9.66E-07	0	0	MND
 Radioactive waste disposed (high level waste) <i>kg/FU</i>	5.40E-07	5.81E-10	2.70E-08	0	0	0	0	0	0	0	0	5.46E-11	0	0	MND

### Output flows

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
 Components for re-use <i>kg/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
 Materials for recycling <i>kg/FU</i>	4.07E-01	2.66E-07	4.28E-02	0	0	0	0	0	0	0	0	2.50E-08	0	0	MND
 Materials for energy recovery <i>kg/FU</i>	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	MND
 Exported energy, detailed by energy carrier <i>MJ/FU</i>	2.72E-02	0	1.36E-03	0	0	0	0	0	0	0	0	0	0	0	MND



## LCA results interpretation



[1] This indicator corresponds to the abiotic depletion potential of fossil resources.

[2] This indicator corresponds to the total use of primary energy.

[3] This indicator corresponds to the use of net fresh water.

[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.

The impacts associated with Global warming are predominantly seen in the A1 – A3 information module. This stage is the primary source of CO<sub>2</sub> emissions (Combustion of fuel for electricity generation upstream and combustion of natural gas on site). The second highest contribution to global warming from the A4 transport stage is primarily due to fuel consumption.

A similar trend is seen for Non – renewable resource consumption and total primary energy consumption. A1 – A3 information modules account for over 90% of the contribution due to electricity generation and fossil fuel combustion. Once more, the transport stage A4 contributes the second highest to these environmental impacts due to fuel consumption.

Water is primarily consumed in the A1 – A3 modules and therefore most of the environmental impacts are attributed to this stage.

Waste production does not follow the same trend and the primary contribution to this impact is from the end of life module C4. This is because our material once it reaches its end of life is 100% landfilled. The second highest contributor is the A1 – A3 module since we produce waste on site during the manufacture of the product

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## Environmental positive contribution & comments

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The manufacturing process in Saint – Gobain Isover UK uses a very large amount of recycled glass that would have otherwise been sent to landfill, therefore eliminating the impact associated with landfill. Furthermore, the lower amount of batch materials we use in contrast to recycled glass means we alleviate the impact associated with extracting and transporting these materials.

All Isover products are manufactured under Environmental Management System – ISO 14001:2004. Our finished products also have Zero ODP (Ozone Depletion Potential), GWP < 5 (Global Warming Potential). Moreover, the manufacturing process does not use or contain CFC's, HCFC's or other damaging gases.

Isover Spacesaver corresponds to the BRE Global Green Guide online generic specification 'Glass wool insulation - density 10 kg/m<sup>3</sup>' ref 815320005 which achieves a summary rating of A+ within Domestic, Health, Industrial, Commercial, Retail, Education.

NB: The density stated above is part of a generic BRE classification and does not reflect the exact specification of the product.

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## References

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BRE Global. BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013. PN 514. Watford, BRE, 2014.

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – Requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

BBA. Isover Cavity Wall Insulation – CWS 36 and CWS 32 Full Fill Cavity Wall Slabs. Watford, UK, British Board of Agrément, 2013

CPR. Declaration of performance – Spacesaver, Spacesaver Ready-Cut and Spacesaver Plus. Runcorn, Cheshire, UK, Saint – Gobain Isover UK, 2014

CPR. Declaration of performance – Cavity Wall Slab 32 and Cavity Wall Slab 36. Runcorn, Cheshire, UK, Saint – Gobain Isover UK, 2013

BSI. Guide to durability of buildings and building elements, products and components, BS 7543:2003. London, UK, BSI Standards Limited, 2003

BSI. Building Construction. Service Life Planning. Service Life Planning using Building Information Modelling, BS ISO 15686-4:2014. London, UK, BSI Standards Limited, 2014

WRAP. Wastage rate report. Banbury, UK, WRAP, 2008

WRAP. Net Waste Tool. Banbury, UK, WRAP, 2008