

# DECLARACION AMBIENTAL DE PRODUCTO

Conforme a la norma ISO 14025:2006 y EN 15804:2012+A2:2019 para:

## **URSA PUREONE Pure Floc KD / WBWPFKD**

40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200 mm  
R= 1.20, 1.50, 1.80, 2.10, 2.40, 2.60, 2.90, 3.50, 4.10,  
4.70, 5.30, 5.90 m<sup>2</sup>·K/W

Propietario: URSA INSULATION S.A

Programa: The International EPD® System,  
[www.environdec.com](http://www.environdec.com)

Operador del programa: EPD International AB

Nº de registro EPD: S-P-08681

Fecha de Publicación: 2023-03-13

Fecha de validez: 2028-03-12



Una EPD debe proporcionar información actual y puede actualizarse si cambian las condiciones. Por lo tanto, la validez indicada está sujeta al registro y publicación continua en [www.environdec.com](http://www.environdec.com)

## 1. Información General

### 1.1. Información del programa

**Propietario de la DAP:** URSA Insulation. Paseo de Recoletos 3, 28004 Madrid (España)

**Programa usado:** The International EPD® System. [www.environdec.com](http://www.environdec.com)  
[info@environdec.com](mailto:info@environdec.com)

**DAP preparada por:** Silvia Herranz (URSA Insulation)

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**Fecha de Emisión:** 13-03-2023 **Validez:** 12-03-2028

|                   |   |
|-------------------|---|
| <b>Programme:</b> | The International EPD® System                                       |
| <b>Address:</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| <b>Website:</b>   | <a href="http://www.environdec.com">www.environdec.com</a>          |
| <b>E-mail:</b>    | <a href="mailto:info@environdec.com">info@environdec.com</a>        |

|   |
|---|
| La norma <b>EN 15804+A2</b> sirve como las reglas de categoría de producto principal (C-PCR)  |
| Reglas de categoría de producto (PCR): <i>PCR 2019:14. Construction products (EN 15804+A2) Version 1.11. C-PCR-005 Thermal insulation products (EN 16783:2017) Version: 2019-12-20</i>  |
| La <b>revisión PCR</b> fue realizada por: <i>El comité técnico de The International EPD® System</i><br>Ver listado de miembros: <a href="http://www.environdec.com/TC">www.environdec.com/TC</a><br>Revisión por: Claudia A. Peña.<br>Se puede contactar con el revisor a través de la secretaría: <a href="mailto:info@environdec.com">info@environdec.com</a> |
| Verificación independiente de terceros de la declaración y de los datos, acorde a la ISO 14025:2006, vía:<br><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification  |
| Verificador de terceros:<br>Marcel Gómez Ferrer, Marcel Gómez Consultoría Ambiental S.L<br>Email: <a href="mailto:info@marcelgomez.com">info@marcelgomez.com</a>  |
| Aprobado por: The International EPD® System   |
| El procedimiento de seguimiento de los datos durante la vigencia de la EPD involucra a un tercero verificador:<br><input checked="" type="checkbox"/> Si <input type="checkbox"/> No  |

El propietario de la DAP tiene la propiedad, obligación y responsabilidad exclusivas de la DAP.

Las DAP dentro de la misma categoría de productos, pero de diferentes programas pueden no ser comparables. Las DAP de los productos de construcción pueden no ser comparables si no cumplen con la norma EN 15804. Para obtener más información sobre la comparabilidad, consulte las normas EN 15804 e ISO 14025.

## 2. Información de la empresa

**Propietario de la DAP:** URSA Insulation S.A.

**Contacto:** Silvia Herranz (Sustainability & Technical Manager)  
(silvia.herranz@etexgroup.com)

### **Descripción de la empresa:**

URSA es una empresa dedicada a la fabricación y comercialización de materiales de aislamiento térmico y acústico orientados a la sostenibilidad y la eficiencia energética en la edificación. URSA es uno de los principales fabricantes de lana mineral y poliestireno extruido (XPS) en Europa.

### **Certificaciones relacionadas con el producto o el sistema de gestión:**

La planta de PLA cubierta por el Sistema de verificación de la DAP, esta certificada por ISO 9001, ISO 14001, ISO 50001 y tiene la etiqueta ambiental Tipo I conforme a la ISO 14024.

**Nombre y localización de la planta de producción:** PLA (España) - Carretera Vila-Rodona KM 6.7 ES 43810 El Pla de Santa Maria (Tarragona)

## 3. Información del producto

Esta Declaración ambiental de producto (EPD) describe los impactos ambientales de 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180 y 200 mm y resistencias térmicas de 1.20, 1.50, 1.80, 2.10, 2.40, 2.60, 2.90, 3.50, 4.10, 4.70, 5.30 y 5.90 m<sup>2</sup>·K/W respectivamente.

URSA fabrica la lana mineral de vidrio con materias primas naturales y abundantes (arena) o materias recicladas (casco de vidrio), mediante fusión y fibraje. Los productos obtenidos se presentan en forma de un «colchón de lana mineral» o en copos de lana mineral para insuflar, compuesto por una estructura flexible que aprisiona aire inmovilizado en su interior.

Gracias a su estructura entrelazada, la lana mineral de vidrio es un material poroso que inmovilizan el aire, lo que hace que sea una solución adecuada para aislamiento. La estructura porosa y elástica de la lana mineral de vidrio absorbe asimismo los ruidos aéreos y de impacto, y permite efectuar la corrección acústica en el interior de los locales. Por último, ya que por su naturaleza están constituidas a base de minerales incombustibles, las lanas minerales de vidrio no alimentan el fuego y no propagan las llamas.

El aislamiento con lana mineral de vidrio se utiliza en edificios e instalaciones industriales. Garantiza un alto nivel de confort, reduce los costes de energía, minimiza las emisiones de dióxido de (CO<sub>2</sub>), impide la pérdida de calor a través de los tejados inclinados, las paredes, los suelos, los conductos y calderas, reduce la contaminación sonora y protege las viviendas e instalaciones industriales del riesgo de incendio.

La vida útil de un producto a base de lana mineral de vidrio es similar a la de un edificio, siempre que el elemento constructivo forme parte de éste (con frecuencia, establecido en 50 años).

**Código CPC:** 37990 Productos minerales no metálicos N.C.P. (incluyendo lana mineral, materiales minerales expandidos, mica trabajada, artículos de mica, artículos no eléctricos de grafito u otro carbono y artículos de peral)

**Ámbito Geográfico:** El producto es fabricado en España. El producto es comercializado principalmente en Europa.

**Nombre de producto:** URSA PUREONE Pure Floc KD / WBWPFKD

**Identificación de producto:** Lana mineral URSA PUREONE conforme a la norma EN 14064-1, no hidrófila, sin revestimiento. Suministrado a granel.

**Unidad funcional:** Aislamiento térmico sobre 1 m<sup>2</sup> de cerramiento para la aplicación de aislamiento de muros por el interior que garantice las siguientes resistencias térmicas:

| Espesor (mm) | Resistencia térmica (m <sup>2</sup> ·K/W) |
|--------------|---|
| 40           | 1.20                                      |
| 50           | 1.50                                      |
| 60           | 1.80                                      |
| 70           | 2.10                                      |
| 80           | 2.40                                      |
| 90           | 2.60                                      |
| 100          | 2.90                                      |
| 120          | 3.50                                      |
| 140          | 4.10                                      |
| 160          | 4.70                                      |
| 180          | 5.30                                      |
| 200          | 5.90                                      |

### Datos técnicos y características físicas:

| Parámetros   | Unidad              | Norma de ensayo      | Valor   |      |      |      |      |      |      |      |      |      |      |      |
|--|---------------------|----------------------|---|------|------|------|------|------|------|------|------|------|------|------|
| Espesor  | mm                  |                      | 40  | 50   | 60   | 70   | 80   | 90   | 100  | 120  | 140  | 160  | 180  | 200  |
| Resistencia térmica  | m <sup>2</sup> ·K/W |                      | 1.20  | 1.50 | 1.80 | 2.10 | 2.40 | 2.60 | 2.90 | 3.50 | 4.10 | 4.70 | 5.30 | 5.90 |
| Conductividad térmica                                      | W/(m.K)             | EN 12667<br>EN 12939 | 0.034   |      |      |      |      |      |      |      |      |      |      |      |
| Reacción al fuego  | Euroclase           | EN 13501-1           | A1  |      |      |      |      |      |      |      |      |      |      |      |
| Resistencia al paso del aire                               |                     | EN 29053             | AFr5  |      |      |      |      |      |      |      |      |      |      |      |
| Asentamiento   |                     | EN 14064-1           | S1  |      |      |      |      |      |      |      |      |      |      |      |
| Permeabilidad al vapor de lana (μ)                         |                     | EN 12086             | MU1   |      |      |      |      |      |      |      |      |      |      |      |
| Absorción de agua a corto plazo                            | kg/m <sup>2</sup>   | EN 1609              | ≤ 1   |      |      |      |      |      |      |      |      |      |      |      |
| Norma de referencia para declarar la eficacia del producto |                     |                      | EN 14064-1  |      |      |      |      |      |      |      |      |      |      |      |
| Código de designación CE                                   |                     |                      | MW-EN 14064-1-S1-AFr5-MU1-WS<br>(AENOR 0099/CPR/A43/0681)                 |      |      |      |      |      |      |      |      |      |      |      |
| Certificado  |                     |                      |   |      |      |      |      |      |      |      |      |      |      |      |
| Uso Previsto   |                     |                      | Aislante térmico para Edificios / aislamiento de muros con cámara de aire |      |      |      |      |      |      |      |      |      |      |      |

## Descripción de los principales componentes del producto de lana de vidrio:

| Componentes del Producto | Peso, kg/m <sup>2</sup> |       |       |       |       |       |       |       |       |       |       |       | Post-consumer material, peso-% |
|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------------|
|                          | 40                      | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 140   | 160   | 180   | 200   |                                |
| Espesor (mm)             | 40                      | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 140   | 160   | 180   | 200   |                                |
| Lana de vidrio           | 1.400                   | 1.750 | 2.100 | 2.450 | 2.800 | 3.150 | 3.500 | 4.200 | 4.900 | 5.600 | 6.300 | 7.000 | 35%                            |

| Componentes del Embalaje | Peso, kg/m <sup>2</sup> |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                          | 40                      | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 140   | 160   | 180   | 200   |
| Espesor (mm)             | 40                      | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 140   | 160   | 180   | 200   |
| Embalaje plástico        | 0.005                   | 0.006 | 0.007 | 0.008 | 0.009 | 0.010 | 0.012 | 0.014 | 0.016 | 0.019 | 0.021 | 0.024 |
| Palet de madera          | 0.043                   | 0.054 | 0.065 | 0.076 | 0.086 | 0.097 | 0.108 | 0.130 | 0.151 | 0.173 | 0.195 | 0.216 |
| TOTAL                    | 0.048                   | 0.060 | 0.072 | 0.084 | 0.096 | 0.108 | 0.120 | 0.144 | 0.168 | 0.192 | 0.216 | 0.240 |
| Peso-% (versus producto) | 3%                      | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    |

## 4. Información de Análisis de ciclo de vida (ACV)

**Unidad funcional:** Realizar una función de aislamiento térmico sobre 1 m<sup>2</sup> de cerramiento que garantice la resistencia térmica de R = 1.20, 1.50, 1.80, 2.10, 2.40, 2.60, 2.90, 3.50, 4.10, 4.70, 5.30 y 5.90 m<sup>2</sup>·K/W para la aplicación Aislamiento (Lana de vidrio 1.400-7.000 kg/m<sup>2</sup>) de muros en el interior.

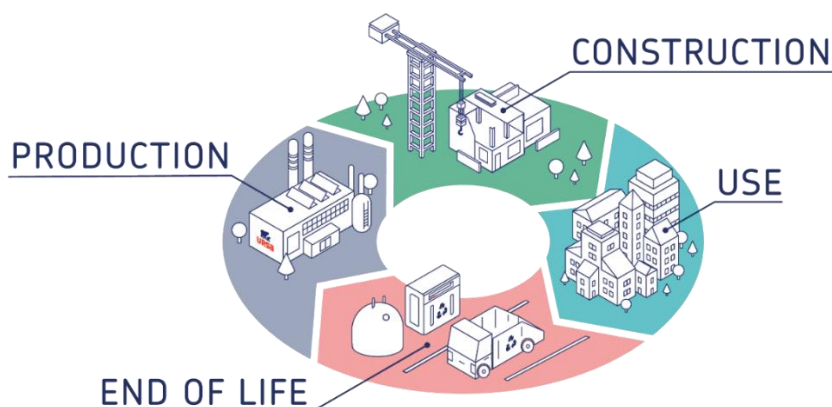
**Vida útil de referencia:** 50 años

**Representatividad geográfica temporal:** Datos de producción de planta para el año completo 2020.

**Bases de datos y LCA software usado:** ECOINVENT 3.6, EuGeos' 15804+A2\_IA v4.1, OPENLCA 1.10.3 (2020)

**Descripción de las fronteras del sistema:**

Cuna a la tumba y módulos D (A + B + C + D)



**Principales hipótesis y consideraciones:**

Se ha considerado el principio de quien contamina paga, el principio de modularidad y las exclusiones del estudio (emisiones a largo plazo, procesos de infraestructura y viajes de personal).

## Reglas de corte:

En el caso de que no haya suficiente información, la energía del proceso y los materiales que representen menos del 1% de la energía total y la masa utilizada pueden ser excluidos (si no causan impactos significativos). La suma de todas las entradas y salidas excluidas no puede ser superior al 5% del total de la masa y energía utilizada, así como de las emisiones al medio ambiente producidas.

## Descripción de la calidad de los datos empleada:

Todas las materias primas para la fabricación del producto declarado, la energía necesaria, el agua, el consumo y las emisiones resultantes son considerado en el análisis de ciclo de vida de este material. Se han empleado los datos de producción de la fábrica del Pla de Santa Maria, del año completo 2020. Las asignaciones de consumos, emisiones y materias primas se han realizado en base a criterios físicos de la masa de vidrio.

Se ha utilizado las bases de datos de Ecoinvent 3.6 y EuGeos' 15804+A2\_IA v4.1 para la elección de los procesos más representativos, teniendo en cuenta que los datos sean representativos del desarrollo tecnológico, datos regionalizados y lo más actuales posibles. Estos datos se han tratado en el software OpenLCA 1.10.3 para el modelado del ACV y el cálculo de las categorías de impacto ambientales, cumpliendo con los requisitos de calidad establecidos en la RCP.

Módulos declarados, ámbito geográfico, porcentaje de datos específicos (en indicador GWP-GHG) y variación de datos:

### Etapas y módulos del ciclo de vida considerados

| Modules              | Etapa de producción | Etapa de construcción |                  | Etapa de utilización |                  |               |                |                   |                   |                | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---------------------|-----------------------|------------------|----------------------|------------------|---------------|----------------|-------------------|-------------------|----------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      | A1 / A2 / A3        | A4 Transporte         | A5 Instalación   | B1 Utilización       | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Uso de energía | B7 Uso de agua | C1 Deconstrucción / Demolición | C2 Transporte | C3 Tratamiento de residuos | C4 Eliminación |   |
| Module declared      | X                   | X                     | X                | X                    | X                | X             | X              | X                 | X                 | X              | X                              | X             | X                          | X              | X   |
| Geography            | España              | España                | Global           | Global               | Global           | Global        | Global         | Global            | Global            | Global         | Global                         | Global        | Global                     | Global         | Global  |
| Specific data used   | >90% GWP            | >90% GWP              | >90% GWP         |                      |                  |               |                |                   |                   |                |                                |               |                            |                |   |
| Variation - Products | No hay variación    | No hay variación      | No hay variación |                      |                  |               |                |                   |                   |                |                                |               |                            |                |   |
| Variación - Planta   | Un solo centro      | Un solo centro        | Un solo centro   |                      |                  |               |                |                   |                   |                |                                |               |                            |                |   |

## A1-A3 Etapa de producción

### Descripción de la etapa:

La etapa de producción de productos de lana mineral se subdivide en tres módulos: A1 - Abastecimiento de materias primas, A2 - Transporte y A3 - Fabricación.

La norma EN 15804+A2, que se aplica a la presente DAP, permite agregar los módulos A1, A2 y A3.



## A1 Suministro de materias primas

Este módulo comprende el suministro y el tratamiento de todas las materias primas y las energías que se producen desde el inicio del proceso de fabricación. En particular, abarca el abastecimiento de materias primas para fabricar el aglomerante y las fibras de vidrio, como, por ejemplo, la arena. Como complemento de estas materias primas, se usan materiales reciclados (casco de vidrio).

## A2 Transporte al fabricante

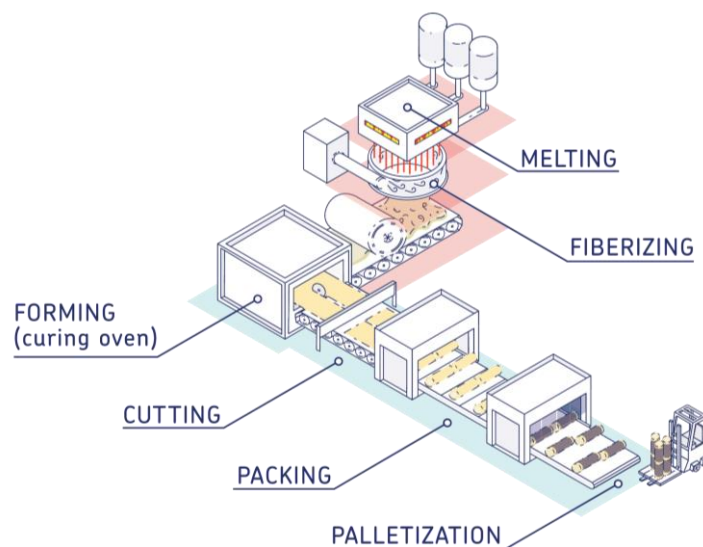
Las materias primas se transportan hasta el lugar de fabricación. La modelización comprende, para cada materia prima, transporte por carretera, fluvial o ferroviario (valores medios).

## A3 Fabricación

La fabricación de la lana de vidrio comprende las etapas de fusión y fibraje (cf. diagrama del proceso de fabricación). También se tiene en cuenta en esta etapa la producción de los embalajes.

Se ha utilizado un mix 100% renovable certificado.

Diagrama del proceso de fabricación:



## A4-A5 Etapa de construcción

### Descripción de la etapa:

La etapa de construcción se divide en dos módulos: A4, transporte hasta la obra y A5, instalación en el edificio.

Descripción de los distintos escenarios e informaciones técnicas suplementarias:

#### A4 Transporte hasta la obra:

Este módulo incluye el transporte desde la salida de fábrica a la obra. Valor medio de España.

El transporte se calcula a partir de un escenario que incluye los siguientes parámetros:

| Parámetro  | Valor  |
|--|--|
| Tipo de combustible y consumo del vehículo o tipo de vehículo utilizado para el transporte, por ejemplo, camión de larga distancia, barco, etc | <i>El vehículo funciona con diésel, su estándar de emisión está clasificado como EURO5 y se incluye en la clase de tamaño de camión de 7,5 a 16 toneladas métricas</i> |
| Distancia media hasta la obra  | 460 km   |
| Utilización de la capacidad (incluidos retornos sin carga)   | 100 % de la capacidad de volumen   |
| Densidad del producto transportado   | 92.49-462.43 m <sup>2</sup> por pallet y 22 pallets por camión<br>Densidad de aplicación = 35 Kg/m <sup>3</sup>  |
| Coefficiente de uso de la capacidad volumétrica  | >1 (productos comprimidos en los embalajes)  |

#### A5 Instalación en el edificio:

Este módulo comprende los residuos resultantes de la instalación mecánica de la lana mineral en el edificio, la producción suplementaria generada para compensar estas pérdidas y el tratamiento de los residuos de la obra. Los distintos escenarios utilizados para la cantidad de residuos resultantes de la instalación y el tratamiento de éstos son los siguientes:

| Parámetro  | Valor   |
|--|---|
| Productos auxiliares para la instalación (especificados por material)  | Sin productos auxiliares  |
| Utilización de agua  | No se utiliza agua  |
| Utilización de otros recursos  | No se utilizan otros recursos   |
| Descripción cuantitativa del tipo de energía (mix regional) y consumo durante el proceso de instalación  | Electricidad  |
| Residuos generados en la obra durante el proceso de la instalación del producto (especificados por tipo)   | 2 % de lana de vidrio   |
| Materias (especificadas por tipo) resultantes del tratamiento de residuos en la obra, por ejemplo, recogida para su reciclado, recuperación de energía, eliminación (especificadas por modo) | Todos los residuos de lana de vidrio, sus embalajes y los derivados de producción para la instalación se consideran como eliminados en vertedero 76-380 gr/UF |
| Transporte a vertedero   | 15 km   |
| Emisiones directas a la atmósfera ambiente, suelo y agua   | No se prevén emisiones  |

#### B1-B7 Etapa de utilización (Exclusión de ahorro de energía en fase de utilización)

##### Descripción de la etapa:

La etapa de utilización se divide en siete módulos:

- B1: Utilización o aplicación del producto instalado
- B2: Mantenimiento



- B3: Reparación
- B4: Sustitución
- B5: Rehabilitación
- B6: Necesidades de energía en la fase de utilización
- B7: Necesidades de agua en la fase de utilización

Descripción de los distintos escenarios e informaciones técnicas suplementarias:

No se requiere ninguna operación técnica durante la fase de utilización hasta el fin de vida útil. Por ello, las lanas minerales carecen de impacto en esta etapa, pero permiten un ahorro de energía en la fase de utilización (véase la información adicional en anexo).

## C1-C4 Etapa de fin de vida útil

### Descripción de la etapa:

Esta etapa incluye los siguientes módulos de fin de vida útil: C1, deconstrucción, demolición; C2, transporte hasta el tratamiento de residuos; C3, tratamiento de residuos para su reutilización, recuperación y/o reciclado; C4, eliminación.

Descripción de los distintos escenarios e informaciones técnicas suplementarias:

### C1 Deconstrucción, demolición:

La deconstrucción y/o el desmontaje de los productos de aislamiento forman parte de la demolición de un edificio entero. En nuestro caso, se prevé que el impacto ambiental sea muy leve e insignificante.

### C2 Transporte hasta el tratamiento de residuos:

Se considera el uso del modelo para el transporte (ver A4, transporte al sitio de construcción) a una distancia de 15 km.

### C3 Tratamiento de residuos para su reutilización, recuperación y/o reciclado:

Se considera que el producto se depositará en un vertedero controlado, sin reutilización, ni recuperación ni reciclado.

### C4 Eliminación:

Se prevé que la lana de vidrio se depositará en un vertedero controlado como residuos no inertes, no peligrosos en su totalidad.

| Parámetro                                     | Valor   |
|---|---|
| Proceso de recogida, especificado por tipo    | 1.400-7.000 kg de lana de vidrio (recogidos mezclados con los residuos de obra) |
| Sistema de recuperación especificado por tipo | Sin reutilización, ni reciclado ni recuperación de energía                      |

|   |   |
|---|---|
| Eliminación especificada por tipo   | 1.400-7.000 kg de lana de vidrio llevados a vertedero de residuos no inertes, no peligrosos |
| Hipótesis para la elaboración de los distintos escenarios (por ejemplo, transporte) | 100% Vertedero  |

### **D Beneficios y cargas (aplicar la norma)**

No hay beneficios del reciclado pues el 100% del peso del producto y su embalaje se considera llevado a vertedero.

## **5. Información Ambiental**

Para la unidad funcional “1m<sup>2</sup> de aislamiento de lana de vidrio de 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180 y 200 mm y resistencia térmicas de 1.20, 1.50, 1.80, 2.10, 2.40, 2.60, 2.90, 3.50, 4.10, 4.70, 5.30 y 5.90 m<sup>2</sup>·K/W respectivamente”.

Los resultados del impacto estimado son solo declaraciones relativas que no indican los puntos finales de las categorías de impacto, superando los valores umbral, los márgenes de seguridad o los riesgos.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 40 mm y resistencia térmicas de 1.20 m<sup>2</sup>·K/W

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 1.38E+00            | 1.38E-01              | 2.12E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 3.46E-03                   | 0.00E+00       | 7.37E-03  | 0.00E+00 |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -6.91E-02           | 2.83E-04              | -1.03E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.12E-06                   | 0.00E+00       | 2.11E-05  | 0.00E+00 |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 1.09E-03            | 6.48E-05              | 1.71E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.37E-06                   | 0.00E+00       | 6.81E-06  | 0.00E+00 |
| GWP- total           | kg CO <sub>2</sub> eq.  | 1.31E+00            | 1.38E-01              | 2.02E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 3.47E-03                   | 0.00E+00       | 7.40E-03  | 0.00E+00 |
| ODP                  | kg CFC 11 eq.   | 2.42E-07            | 3.10E-08              | 3.69E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 8.07E-10                   | 0.00E+00       | 2.98E-09  | 0.00E+00 |
| AP                   | mol H+ eq.  | 6.31E-03            | 5.48E-04              | 9.75E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.75E-05                   | 0.00E+00       | 6.93E-05  | 0.00E+00 |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 1.05E-03            | 3.20E-05              | 1.67E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.95E-07                   | 0.00E+00       | 2.09E-06  | 0.00E+00 |
| EP-freshwater        | kg P eq.  | 3.42E-04            | 1.04E-05              | 5.43E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 2.26E-07                   | 0.00E+00       | 6.81E-07  | 0.00E+00 |
| EP-marine            | kg N eq.  | 1.47E-03            | 1.60E-04              | 2.28E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.04E-06                   | 0.00E+00       | 2.41E-05  | 0.00E+00 |
| EP-terrestrial       | mol N eq.   | 1.67E-02            | 1.74E-03              | 2.58E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.60E-05                   | 0.00E+00       | 2.64E-04  | 0.00E+00 |
| POCP                 | kg NMVOC eq.  | 4.73E-03            | 5.24E-04              | 7.29E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.85E-05                   | 0.00E+00       | 7.49E-05  | 0.00E+00 |
| ADP-minerals&metals* | kg Sb eq.   | 1.53E-04            | 6.04E-07              | 2.30E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.16E-08                   | 0.00E+00       | 1.59E-08  | 0.00E+00 |
| ADP-fossil*          | MJ  | 6.98E+00            | 1.77E-01              | 1.08E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 3.97E-03                   | 0.00E+00       | 1.54E-02  | 0.00E+00 |
| WDP*                 | m <sup>3</sup>  | 1.06E+00            | 1.12E-02              | 1.62E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 2.52E-04                   | 0.00E+00       | 9.48E-03  | 0.00E+00 |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |          |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

| Unidad               | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |          |
|----------------------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|----------|
|                      |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |          |
| GWP-GHG <sup>1</sup> | kg CO <sub>2</sub> eq.              | 1.36E+00              | 1.37E-01       | 2.08E-01             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 3.43E-03       | 0.00E+00  | 7.24E-03 | 0.00E+00 |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad   | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|-------------------------|--|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                         |  |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| PERE                    | MJ   | 6.96E-01                            | 2.59E-02              | 1.15E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 5.59E-04                   | 0.00E+00       | 1.19E-03  | 0.00E+00 |
| PERM                    | MJ   | 1.42E+00                            | 8.82E-03              | 2.14E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.83E-04                   | 0.00E+00       | 5.63E-04  | 0.00E+00 |
| PERT                    | MJ   | 2.11E+00                            | 3.48E-02              | 3.29E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 7.43E-04                   | 0.00E+00       | 1.75E-03  | 0.00E+00 |
| PENRE                   | MJ   | 9.85E+00                            | 2.29E-01              | 1.54E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 5.06E-03                   | 0.00E+00       | 1.75E-02  | 0.00E+00 |
| PENRM                   | MJ   | 1.74E+01                            | 1.85E+00              | 2.65E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 4.80E-02                   | 0.00E+00       | 1.90E-01  | 0.00E+00 |
| PENRT                   | MJ   | 2.72E+01                            | 2.08E+00              | 4.19E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 5.30E-02                   | 0.00E+00       | 2.07E-01  | 0.00E+00 |
| SM                      | kg   | 7.80E-01                            | 2.53E-03              | 1.18E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 5.33E-05                   | 0.00E+00       | 1.11E-04  | 0.00E+00 |
| RSF                     | MJ   | 1.48E-02                            | 7.72E-04              | 2.63E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.59E-05                   | 0.00E+00       | 1.96E-05  | 0.00E+00 |
| NRSF                    | MJ   | 2.70E-02                            | 3.35E-03              | 4.35E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.44E-05                   | 0.00E+00       | 2.82E-05  | 0.00E+00 |
| FW                      | m <sup>3</sup>   | 2.47E-02                            | 2.66E-04              | 3.79E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.01E-06                   | 0.00E+00       | 2.22E-04  | 0.00E+00 |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |          |

<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 6.94E-01                            | 5.42E-02              | 1.19E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.17E-03      | 0.00E+00                   | 3.40E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.43E-01                            | 8.63E-02              | 3.52E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.69E-03      | 0.00E+00                   | 1.40E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 1.39E-03                            | 4.61E-05              | 2.26E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.05E-06      | 0.00E+00                   | 2.61E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 2.95E-02                            | 2.14E-03              | 5.14E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.42E-05      | 0.00E+00                   | 7.07E-05       | 0.00E+00  |
| Materials for energy recovery | kg     | 3.66E-03                            | 5.60E-04              | 5.61E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.22E-05      | 0.00E+00                   | 3.91E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

### Información en contenido de carbono biogénico

#### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.079    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 50 mm y resistencia térmicas de 1.50 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 1.54E+00            | 1.72E-01              | 2.36E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.32E-03      | 0.00E+00                   | 9.21E-03       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -8.71E-02           | 3.54E-04              | -1.29E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.65E-06      | 0.00E+00                   | 2.64E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 1.28E-03            | 8.10E-05              | 2.02E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.71E-06      | 0.00E+00                   | 8.51E-06       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 1.45E+00            | 1.73E-01              | 2.23E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.33E-03      | 0.00E+00                   | 9.25E-03       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 2.63E-07            | 3.88E-08              | 4.03E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.01E-09      | 0.00E+00                   | 3.73E-09       | 0.00E+00  |
| AP                   | mol H+ eq.  | 7.18E-03            | 6.85E-04              | 1.11E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.19E-05      | 0.00E+00                   | 8.66E-05       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 1.28E-03            | 4.00E-05              | 2.03E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.69E-07      | 0.00E+00                   | 2.61E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 4.16E-04            | 1.30E-05              | 6.61E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.83E-07      | 0.00E+00                   | 8.51E-07       | 0.00E+00  |
| EP-marine            | kg N eq.  | 1.63E-03            | 2.00E-04              | 2.54E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.55E-06      | 0.00E+00                   | 3.01E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 1.86E-02            | 2.18E-03              | 2.89E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.25E-05      | 0.00E+00                   | 3.30E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 5.28E-03            | 6.55E-04              | 8.17E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.31E-05      | 0.00E+00                   | 9.36E-05       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 1.90E-04            | 7.55E-07              | 2.85E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.46E-08      | 0.00E+00                   | 1.98E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 8.51E+00            | 2.22E-01              | 1.32E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.96E-03      | 0.00E+00                   | 1.93E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 1.30E+00            | 1.40E-02              | 1.99E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.16E-04      | 0.00E+00                   | 1.18E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.



## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| GWP-GHG <sup>2</sup> | kg CO <sub>2</sub> eq. | 1.51E+00            | 1.71E-01              | 2.32E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 4.29E-03                   | 0.00E+00       | 9.05E-03  | 0.00E+00 |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|-------------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                         |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| PERE                    | MJ  | 8.31E-01            | 3.24E-02              | 1.38E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.99E-04                   | 0.00E+00       | 1.49E-03  | 0.00E+00 |
| PERM                    | MJ  | 1.76E+00            | 1.10E-02              | 2.66E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 2.29E-04                   | 0.00E+00       | 7.04E-04  | 0.00E+00 |
| PERT                    | MJ  | 2.59E+00            | 4.34E-02              | 4.04E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 9.28E-04                   | 0.00E+00       | 2.19E-03  | 0.00E+00 |
| PENRE                   | MJ  | 1.18E+01            | 2.86E-01              | 1.84E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.33E-03                   | 0.00E+00       | 2.19E-02  | 0.00E+00 |
| PENRM                   | MJ  | 1.94E+01            | 2.32E+00              | 2.98E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.00E-02                   | 0.00E+00       | 2.37E-01  | 0.00E+00 |
| PENRT                   | MJ  | 3.12E+01            | 2.60E+00              | 4.82E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.63E-02                   | 0.00E+00       | 2.59E-01  | 0.00E+00 |
| SM                      | kg  | 9.69E-01            | 3.16E-03              | 1.46E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.66E-05                   | 0.00E+00       | 1.39E-04  | 0.00E+00 |
| RSF                     | MJ  | 1.77E-02            | 9.65E-04              | 3.18E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.98E-05                   | 0.00E+00       | 2.44E-05  | 0.00E+00 |
| NRSF                    | MJ  | 2.96E-02            | 4.19E-03              | 4.82E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 8.04E-05                   | 0.00E+00       | 3.53E-05  | 0.00E+00 |
| FW                      | m <sup>3</sup>  | 3.03E-02            | 3.33E-04              | 4.65E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 7.52E-06                   | 0.00E+00       | 2.78E-04  | 0.00E+00 |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |          |

<sup>2</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 8.15E-01                            | 6.78E-02              | 1.40E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.46E-03      | 0.00E+00                   | 4.25E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.48E-01                            | 1.08E-01              | 4.06E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.36E-03      | 0.00E+00                   | 1.75E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 1.51E-03                            | 5.76E-05              | 2.49E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.31E-06      | 0.00E+00                   | 3.26E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 3.46E-02                            | 2.68E-03              | 6.07E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.53E-05      | 0.00E+00                   | 8.84E-05       | 0.00E+00  |
| Materials for energy recovery | kg     | 3.88E-03                            | 7.00E-04              | 5.96E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.52E-05      | 0.00E+00                   | 4.89E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

### Información en contenido de carbono biogénico

#### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.099    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 60 mm y resistencia térmicas de 1.80 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales  | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil            | kg CO <sub>2</sub> eq.  | 1.68E+00            | 2.07E-01              | 2.59E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.19E-03      | 0.00E+00                   | 1.11E-02       | 0.00E+00  |
| GWP-biogenic          | kg CO <sub>2</sub> eq.  | -1.05E-01           | 4.24E-04              | -1.56E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.18E-06      | 0.00E+00                   | 3.16E-05       | 0.00E+00  |
| GWP- luluc            | kg CO <sub>2</sub> eq.  | 1.47E-03            | 9.72E-05              | 2.32E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.06E-06      | 0.00E+00                   | 1.02E-05       | 0.00E+00  |
| GWP- total            | kg CO <sub>2</sub> eq.  | 1.58E+00            | 2.08E-01              | 2.44E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.20E-03      | 0.00E+00                   | 1.11E-02       | 0.00E+00  |
| ODP                   | kg CFC 11 eq.   | 2.83E-07            | 4.65E-08              | 4.35E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.21E-09      | 0.00E+00                   | 4.47E-09       | 0.00E+00  |
| AP                    | mol H+ eq.  | 8.01E-03            | 8.22E-04              | 1.24E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.63E-05      | 0.00E+00                   | 1.04E-04       | 0.00E+00  |
| EP-freshwater         | kg PO <sub>43</sub> - eq.   | 1.50E-03            | 4.80E-05              | 2.38E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.04E-06      | 0.00E+00                   | 3.13E-06       | 0.00E+00  |
| EP-freshwater         | kg P eq.  | 4.88E-04            | 1.56E-05              | 7.76E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.39E-07      | 0.00E+00                   | 1.02E-06       | 0.00E+00  |
| EP-marine             | kg N eq.  | 1.78E-03            | 2.40E-04              | 2.78E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.06E-06      | 0.00E+00                   | 3.62E-05       | 0.00E+00  |
| EP-terrestrial        | mol N eq.   | 2.05E-02            | 2.62E-03              | 3.18E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.90E-05      | 0.00E+00                   | 3.96E-04       | 0.00E+00  |
| POCP                  | kg NMVOC eq.  | 5.77E-03            | 7.86E-04              | 8.95E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.78E-05      | 0.00E+00                   | 1.12E-04       | 0.00E+00  |
| ADP- minerals&metals* | kg Sb eq.   | 2.27E-04            | 9.06E-07              | 3.42E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.75E-08      | 0.00E+00                   | 2.38E-08       | 0.00E+00  |
| ADP-fossil*           | MJ  | 1.00E+01            | 2.66E-01              | 1.55E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.95E-03      | 0.00E+00                   | 2.31E-02       | 0.00E+00  |
| WDP*                  | m <sup>3</sup>  | 1.53E+00            | 1.68E-02              | 2.35E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.79E-04      | 0.00E+00                   | 1.42E-02       | 0.00E+00  |
| Acronyms              | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>3</sup> | kg CO <sub>2</sub> eq. | 1.65E+00            | 2.05E-01              | 2.54E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.14E-03      | 0.00E+00                   | 1.09E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad   | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|--|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |  | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ   | 9.60E-01            | 3.89E-02              | 1.60E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.39E-04      | 0.00E+00                   | 1.79E-03       | 0.00E+00  |
| PERM                    | MJ   | 2.11E+00            | 1.32E-02              | 3.19E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.75E-04      | 0.00E+00                   | 8.45E-04       | 0.00E+00  |
| PERT                    | MJ   | 3.07E+00            | 5.21E-02              | 4.78E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.11E-03      | 0.00E+00                   | 2.63E-03       | 0.00E+00  |
| PENRE                   | MJ   | 1.36E+01            | 3.44E-01              | 2.13E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.60E-03      | 0.00E+00                   | 2.62E-02       | 0.00E+00  |
| PENRM                   | MJ   | 2.12E+01            | 2.78E+00              | 3.26E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.20E-02      | 0.00E+00                   | 2.84E-01       | 0.00E+00  |
| PENRT                   | MJ   | 3.49E+01            | 3.12E+00              | 5.40E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.96E-02      | 0.00E+00                   | 3.11E-01       | 0.00E+00  |
| SM                      | kg   | 1.16E+00            | 3.80E-03              | 1.75E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.99E-05      | 0.00E+00                   | 1.67E-04       | 0.00E+00  |
| RSF                     | MJ   | 2.04E-02            | 1.16E-03              | 3.68E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.38E-05      | 0.00E+00                   | 2.93E-05       | 0.00E+00  |
| NRSF                    | MJ   | 3.20E-02            | 5.03E-03              | 5.24E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.65E-05      | 0.00E+00                   | 4.23E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup>   | 3.57E-02            | 3.99E-04              | 5.49E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.02E-06      | 0.00E+00                   | 3.33E-04       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>3</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                              |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| Hazardous waste disposed     | kg     | 9.19E-01                            | 8.14E-02              | 1.60E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.75E-03                   | 0.00E+00       | 5.10E-03  | 0.00E+00 |
| Non-hazardous waste disposed | kg     | 9.53E-01                            | 1.29E-01              | 4.59E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 4.04E-03                   | 0.00E+00       | 2.10E+00  | 0.00E+00 |
| Radioactive waste disposed   | kg     | 1.62E-03                            | 6.91E-05              | 2.70E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.57E-06                   | 0.00E+00       | 3.91E-06  | 0.00E+00 |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|-------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                               |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| Components for re-use         | kg     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  | 0.00E+00 |
| Material for recycling        | kg     | 3.92E-02                            | 3.21E-03              | 6.94E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 6.64E-05                   | 0.00E+00       | 1.06E-04  | 0.00E+00 |
| Materials for energy recovery | kg     | 4.07E-03                            | 8.40E-04              | 6.28E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 1.83E-05                   | 0.00E+00       | 5.87E-05  | 0.00E+00 |
| Exported energy, electricity  | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  | 0.00E+00 |
| Exported energy, thermal      | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  | 0.00E+00 |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.119    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 70 mm y resistencia térmicas de 2.10 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales  | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil            | kg CO <sub>2</sub> eq.  | 1.83E+00            | 2.41E-01              | 2.82E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.05E-03      | 0.00E+00                   | 1.29E-02       | 0.00E+00  |
| GWP-biogenic          | kg CO <sub>2</sub> eq.  | -1.23E-01           | 4.95E-04              | -1.83E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.07E-05      | 0.00E+00                   | 3.69E-05       | 0.00E+00  |
| GWP- luluc            | kg CO <sub>2</sub> eq.  | 1.66E-03            | 1.13E-04              | 2.62E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.40E-06      | 0.00E+00                   | 1.19E-05       | 0.00E+00  |
| GWP- total            | kg CO <sub>2</sub> eq.  | 1.71E+00            | 2.42E-01              | 2.64E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.07E-03      | 0.00E+00                   | 1.29E-02       | 0.00E+00  |
| ODP                   | kg CFC 11 eq.   | 3.03E-07            | 5.43E-08              | 4.66E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.41E-09      | 0.00E+00                   | 5.22E-09       | 0.00E+00  |
| AP                    | mol H+ eq.  | 8.83E-03            | 9.59E-04              | 1.38E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.07E-05      | 0.00E+00                   | 1.21E-04       | 0.00E+00  |
| EP-freshwater         | kg PO <sub>43</sub> - eq.   | 1.72E-03            | 5.60E-05              | 2.74E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.22E-06      | 0.00E+00                   | 3.66E-06       | 0.00E+00  |
| EP-freshwater         | kg P eq.  | 5.60E-04            | 1.83E-05              | 8.92E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.96E-07      | 0.00E+00                   | 1.19E-06       | 0.00E+00  |
| EP-marine             | kg N eq.  | 1.93E-03            | 2.80E-04              | 3.02E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.06E-05      | 0.00E+00                   | 4.22E-05       | 0.00E+00  |
| EP-terrestrial        | mol N eq.   | 2.23E-02            | 3.05E-03              | 3.47E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.15E-04      | 0.00E+00                   | 4.62E-04       | 0.00E+00  |
| POCP                  | kg NMVOC eq.  | 6.25E-03            | 9.17E-04              | 9.73E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.24E-05      | 0.00E+00                   | 1.31E-04       | 0.00E+00  |
| ADP- minerals&metals* | kg Sb eq.   | 2.65E-04            | 1.06E-06              | 3.98E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.04E-08      | 0.00E+00                   | 2.78E-08       | 0.00E+00  |
| ADP-fossil*           | MJ  | 1.15E+01            | 3.10E-01              | 1.78E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.94E-03      | 0.00E+00                   | 2.70E-02       | 0.00E+00  |
| WDP*                  | m <sup>3</sup>  | 1.76E+00            | 1.96E-02              | 2.71E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.42E-04      | 0.00E+00                   | 1.66E-02       | 0.00E+00  |
| Acronyms              | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.



## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>4</sup> | kg CO <sub>2</sub> eq. | 1.79E+00            | 2.39E-01              | 2.76E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.00E-03      | 0.00E+00                   | 1.27E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad   | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|--|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |  | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ   | 1.09E+00            | 4.54E-02              | 1.82E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.79E-04      | 0.00E+00                   | 2.08E-03       | 0.00E+00  |
| PERM                    | MJ   | 2.45E+00            | 1.54E-02              | 3.70E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.21E-04      | 0.00E+00                   | 9.86E-04       | 0.00E+00  |
| PERT                    | MJ   | 3.54E+00            | 6.08E-02              | 5.52E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.30E-03      | 0.00E+00                   | 3.07E-03       | 0.00E+00  |
| PENRE                   | MJ   | 1.55E+01            | 4.01E-01              | 2.43E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.86E-03      | 0.00E+00                   | 3.06E-02       | 0.00E+00  |
| PENRM                   | MJ   | 2.31E+01            | 3.24E+00              | 3.55E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.40E-02      | 0.00E+00                   | 3.32E-01       | 0.00E+00  |
| PENRT                   | MJ   | 3.86E+01            | 3.64E+00              | 5.98E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.28E-02      | 0.00E+00                   | 3.63E-01       | 0.00E+00  |
| SM                      | kg   | 1.35E+00            | 4.43E-03              | 2.04E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.32E-05      | 0.00E+00                   | 1.95E-04       | 0.00E+00  |
| RSF                     | MJ   | 2.30E-02            | 1.35E-03              | 4.19E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.78E-05      | 0.00E+00                   | 3.42E-05       | 0.00E+00  |
| NRSF                    | MJ   | 3.43E-02            | 5.87E-03              | 5.67E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.13E-04      | 0.00E+00                   | 4.94E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup>   | 4.12E-02            | 4.66E-04              | 6.33E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.05E-05      | 0.00E+00                   | 3.89E-04       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>4</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.02E+00                            | 9.49E-02              | 1.79E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.04E-03      | 0.00E+00                   | 5.95E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.57E-01                            | 1.51E-01              | 5.12E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.71E-03      | 0.00E+00                   | 2.45E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 1.73E-03                            | 8.07E-05              | 2.91E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.84E-06      | 0.00E+00                   | 4.56E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción<br>A1 / A2 / A3 | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|-------------------------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        |                                     | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 4.38E-02                            | 3.75E-03              | 7.81E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.74E-05      | 0.00E+00                   | 1.24E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 4.27E-03                            | 9.80E-04              | 6.60E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.13E-05      | 0.00E+00                   | 6.85E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00                            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.139    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 80 mm y resistencia térmicas de 2.40 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 1.97E+00            | 2.76E-01              | 3.05E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.92E-03      | 0.00E+00                   | 1.47E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -1.41E-01           | 5.66E-04              | -2.10E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.22E-05      | 0.00E+00                   | 4.22E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 1.85E-03            | 1.30E-04              | 2.92E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.74E-06      | 0.00E+00                   | 1.36E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 1.83E+00            | 2.77E-01              | 2.84E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.93E-03      | 0.00E+00                   | 1.48E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 3.22E-07            | 6.21E-08              | 4.98E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.61E-09      | 0.00E+00                   | 5.96E-09       | 0.00E+00  |
| AP                   | mol H+ eq.  | 9.66E-03            | 1.10E-03              | 1.51E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.50E-05      | 0.00E+00                   | 1.39E-04       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 1.94E-03            | 6.40E-05              | 3.09E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.39E-06      | 0.00E+00                   | 4.18E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 6.32E-04            | 2.09E-05              | 1.01E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.53E-07      | 0.00E+00                   | 1.36E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 2.08E-03            | 3.20E-04              | 3.27E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.21E-05      | 0.00E+00                   | 4.82E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 2.41E-02            | 3.49E-03              | 3.76E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.32E-04      | 0.00E+00                   | 5.28E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 6.74E-03            | 1.05E-03              | 1.05E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.70E-05      | 0.00E+00                   | 1.50E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 3.02E-04            | 1.21E-06              | 4.54E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.33E-08      | 0.00E+00                   | 3.17E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 1.30E+01            | 3.55E-01              | 2.01E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.93E-03      | 0.00E+00                   | 3.08E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 2.00E+00            | 2.24E-02              | 3.07E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.05E-04      | 0.00E+00                   | 1.90E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>5</sup> | kg CO <sub>2</sub> eq. | 1.93E+00            | 2.74E-01              | 2.98E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.86E-03      | 0.00E+00                   | 1.45E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad         | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|----------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |                | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ             | 1.22E+00            | 5.19E-02              | 2.04E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.12E-03      | 0.00E+00                   | 2.38E-03       | 0.00E+00  |
| PERM                    | MJ             | 2.79E+00            | 1.76E-02              | 4.22E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.67E-04      | 0.00E+00                   | 1.13E-03       | 0.00E+00  |
| PERT                    | MJ             | 4.01E+00            | 6.95E-02              | 6.26E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.49E-03      | 0.00E+00                   | 3.51E-03       | 0.00E+00  |
| PENRE                   | MJ             | 1.74E+01            | 4.58E-01              | 2.72E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.01E-02      | 0.00E+00                   | 3.50E-02       | 0.00E+00  |
| PENRM                   | MJ             | 2.49E+01            | 3.71E+00              | 3.83E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.59E-02      | 0.00E+00                   | 3.79E-01       | 0.00E+00  |
| PENRT                   | MJ             | 4.23E+01            | 4.16E+00              | 6.56E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.06E-01      | 0.00E+00                   | 4.14E-01       | 0.00E+00  |
| SM                      | kg             | 1.54E+00            | 5.06E-03              | 2.33E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.07E-04      | 0.00E+00                   | 2.22E-04       | 0.00E+00  |
| RSF                     | MJ             | 2.57E-02            | 1.54E-03              | 4.70E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.17E-05      | 0.00E+00                   | 3.91E-05       | 0.00E+00  |
| NRSF                    | MJ             | 3.66E-02            | 6.71E-03              | 6.09E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.29E-04      | 0.00E+00                   | 5.64E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup> | 4.67E-02            | 5.32E-04              | 7.17E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.20E-05      | 0.00E+00                   | 4.44E-04       | 0.00E+00  |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

<sup>5</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.13E+00            | 1.08E-01              | 1.98E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.33E-03      | 0.00E+00                   | 6.80E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.62E-01            | 1.73E-01              | 5.66E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.38E-03      | 0.00E+00                   | 2.80E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 1.84E-03            | 9.22E-05              | 3.12E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.10E-06      | 0.00E+00                   | 5.21E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 4.85E-02            | 4.29E-03              | 8.68E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.85E-05      | 0.00E+00                   | 1.41E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 4.46E-03            | 1.12E-03              | 6.93E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.44E-05      | 0.00E+00                   | 7.83E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.159    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 90 mm y resistencia térmicas de 2.60 m<sup>2</sup>·K/W

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 2.12E+00            | 3.10E-01              | 3.28E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.78E-03      | 0.00E+00                   | 1.66E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -1.59E-01           | 6.36E-04              | -2.37E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.38E-05      | 0.00E+00                   | 4.75E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 2.03E-03            | 1.46E-04              | 3.23E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.09E-06      | 0.00E+00                   | 1.53E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 1.96E+00            | 3.11E-01              | 3.04E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.80E-03      | 0.00E+00                   | 1.66E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 3.42E-07            | 6.98E-08              | 5.29E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.82E-09      | 0.00E+00                   | 6.71E-09       | 0.00E+00  |
| AP                   | mol H+ eq.  | 1.05E-02            | 1.23E-03              | 1.64E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.94E-05      | 0.00E+00                   | 1.56E-04       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 2.16E-03            | 7.20E-05              | 3.44E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.56E-06      | 0.00E+00                   | 4.70E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 7.04E-04            | 2.35E-05              | 1.12E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.09E-07      | 0.00E+00                   | 1.53E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 2.23E-03            | 3.60E-04              | 3.51E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.36E-05      | 0.00E+00                   | 5.43E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 2.59E-02            | 3.92E-03              | 4.05E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.48E-04      | 0.00E+00                   | 5.94E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 7.23E-03            | 1.18E-03              | 1.13E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.17E-05      | 0.00E+00                   | 1.69E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 3.40E-04            | 1.36E-06              | 5.10E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.62E-08      | 0.00E+00                   | 3.57E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 1.45E+01            | 3.99E-01              | 2.24E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.92E-03      | 0.00E+00                   | 3.47E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 2.23E+00            | 2.52E-02              | 3.43E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.68E-04      | 0.00E+00                   | 2.13E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.



## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>6</sup> | kg CO <sub>2</sub> eq. | 2.07E+00            | 3.08E-01              | 3.20E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.72E-03      | 0.00E+00                   | 1.63E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad   | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|--|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |  | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ   | 1.35E+00            | 5.84E-02              | 2.26E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.26E-03      | 0.00E+00                   | 2.68E-03       | 0.00E+00  |
| PERM                    | MJ   | 3.14E+00            | 1.98E-02              | 4.74E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.13E-04      | 0.00E+00                   | 1.27E-03       | 0.00E+00  |
| PERT                    | MJ   | 4.48E+00            | 7.82E-02              | 7.00E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.67E-03      | 0.00E+00                   | 3.95E-03       | 0.00E+00  |
| PENRE                   | MJ   | 1.92E+01            | 5.15E-01              | 3.02E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.14E-02      | 0.00E+00                   | 3.94E-02       | 0.00E+00  |
| PENRM                   | MJ   | 2.67E+01            | 4.17E+00              | 4.12E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.08E-01      | 0.00E+00                   | 4.27E-01       | 0.00E+00  |
| PENRT                   | MJ   | 4.60E+01            | 4.68E+00              | 7.14E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.19E-01      | 0.00E+00                   | 4.66E-01       | 0.00E+00  |
| SM                      | kg   | 1.73E+00            | 5.69E-03              | 2.62E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.20E-04      | 0.00E+00                   | 2.50E-04       | 0.00E+00  |
| RSF                     | MJ   | 2.84E-02            | 1.74E-03              | 5.20E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.57E-05      | 0.00E+00                   | 4.40E-05       | 0.00E+00  |
| NRSF                    | MJ   | 3.89E-02            | 7.54E-03              | 6.51E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.45E-04      | 0.00E+00                   | 6.35E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup>   | 5.21E-02            | 5.99E-04              | 8.01E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.35E-05      | 0.00E+00                   | 5.00E-04       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>6</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.23E+00            | 1.22E-01              | 2.17E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.62E-03      | 0.00E+00                   | 7.65E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.67E-01            | 1.94E-01              | 6.19E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.05E-03      | 0.00E+00                   | 3.15E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 1.95E-03            | 1.04E-04              | 3.33E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.36E-06      | 0.00E+00                   | 5.87E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 5.31E-02            | 4.82E-03              | 9.55E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.96E-05      | 0.00E+00                   | 1.59E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 4.66E-03            | 1.26E-03              | 7.25E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.74E-05      | 0.00E+00                   | 8.81E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

### Información en contenido de carbono biogénico

#### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.178    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 100 mm y resistencia térmicas de 2.90 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 2.26E+00            | 3.45E-01              | 3.51E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.65E-03      | 0.00E+00                   | 1.84E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -1.77E-01           | 7.07E-04              | -2.64E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.53E-05      | 0.00E+00                   | 5.28E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 2.22E-03            | 1.62E-04              | 3.53E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.43E-06      | 0.00E+00                   | 1.70E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 2.09E+00            | 3.46E-01              | 3.25E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.67E-03      | 0.00E+00                   | 1.85E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 3.62E-07            | 7.76E-08              | 5.61E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.02E-09      | 0.00E+00                   | 7.46E-09       | 0.00E+00  |
| AP                   | mol H+ eq.  | 1.13E-02            | 1.37E-03              | 1.77E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.38E-05      | 0.00E+00                   | 1.73E-04       | 0.00E+00  |
| EP-freshwater        | kg PO43- eq.  | 2.38E-03            | 8.00E-05              | 3.80E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.74E-06      | 0.00E+00                   | 5.22E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 7.76E-04            | 2.61E-05              | 1.24E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.66E-07      | 0.00E+00                   | 1.70E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 2.38E-03            | 4.00E-04              | 3.76E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.51E-05      | 0.00E+00                   | 6.03E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 2.77E-02            | 4.36E-03              | 4.34E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.65E-04      | 0.00E+00                   | 6.60E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 7.71E-03            | 1.31E-03              | 1.21E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.63E-05      | 0.00E+00                   | 1.87E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 3.77E-04            | 1.51E-06              | 5.66E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.91E-08      | 0.00E+00                   | 3.97E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 1.60E+01            | 4.43E-01              | 2.48E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.92E-03      | 0.00E+00                   | 3.86E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 2.47E+00            | 2.80E-02              | 3.79E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.31E-04      | 0.00E+00                   | 2.37E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |          |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|----------|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |          |
| GWP-GHG <sup>7</sup> | kg CO <sub>2</sub> eq. | 2.21E+00            | 3.42E-01              | 3.43E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 8.57E-03                   | 0.00E+00       | 1.81E-02  | 0.00E+00 |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad         | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|----------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |                | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ             | 1.48E+00            | 6.48E-02              | 2.48E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.40E-03      | 0.00E+00                   | 2.98E-03       | 0.00E+00  |
| PERM                    | MJ             | 3.48E+00            | 2.20E-02              | 5.26E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.59E-04      | 0.00E+00                   | 1.41E-03       | 0.00E+00  |
| PERT                    | MJ             | 4.96E+00            | 8.69E-02              | 7.74E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.86E-03      | 0.00E+00                   | 4.39E-03       | 0.00E+00  |
| PENRE                   | MJ             | 2.11E+01            | 5.73E-01              | 3.31E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.27E-02      | 0.00E+00                   | 4.37E-02       | 0.00E+00  |
| PENRM                   | MJ             | 2.85E+01            | 4.63E+00              | 4.41E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.20E-01      | 0.00E+00                   | 4.74E-01       | 0.00E+00  |
| PENRT                   | MJ             | 4.96E+01            | 5.20E+00              | 7.72E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.33E-01      | 0.00E+00                   | 5.18E-01       | 0.00E+00  |
| SM                      | kg             | 1.92E+00            | 6.33E-03              | 2.90E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.33E-04      | 0.00E+00                   | 2.78E-04       | 0.00E+00  |
| RSF                     | MJ             | 3.11E-02            | 1.93E-03              | 5.71E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.97E-05      | 0.00E+00                   | 4.89E-05       | 0.00E+00  |
| NRSF                    | MJ             | 4.13E-02            | 8.38E-03              | 6.94E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.61E-04      | 0.00E+00                   | 7.05E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup> | 5.76E-02            | 6.65E-04              | 8.85E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.50E-05      | 0.00E+00                   | 5.55E-04       | 0.00E+00  |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

<sup>7</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.34E+00            | 1.36E-01              | 2.37E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.92E-03      | 0.00E+00                   | 8.50E-03       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.71E-01            | 2.16E-01              | 6.72E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.73E-03      | 0.00E+00                   | 3.50E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 2.06E-03            | 1.15E-04              | 3.54E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.62E-06      | 0.00E+00                   | 6.52E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 5.77E-02            | 5.36E-03              | 1.04E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.11E-04      | 0.00E+00                   | 1.77E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 4.85E-03            | 1.40E-03              | 7.57E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.05E-05      | 0.00E+00                   | 9.79E-05       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.198    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 120 mm y resistencia térmicas de 3.50 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 2.55E+00            | 4.14E-01              | 3.96E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.04E-02      | 0.00E+00                   | 2.21E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -2.14E-01           | 8.49E-04              | -3.17E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.84E-05      | 0.00E+00                   | 6.33E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 2.60E-03            | 1.94E-04              | 4.13E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.11E-06      | 0.00E+00                   | 2.04E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 2.34E+00            | 4.15E-01              | 3.65E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.04E-02      | 0.00E+00                   | 2.22E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 4.01E-07            | 9.31E-08              | 6.23E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.42E-09      | 0.00E+00                   | 8.95E-09       | 0.00E+00  |
| AP                   | mol H+ eq.  | 1.30E-02            | 1.64E-03              | 2.03E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.25E-05      | 0.00E+00                   | 2.08E-04       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 2.82E-03            | 9.60E-05              | 4.50E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.08E-06      | 0.00E+00                   | 6.27E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 9.19E-04            | 3.13E-05              | 1.47E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.79E-07      | 0.00E+00                   | 2.04E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 2.69E-03            | 4.80E-04              | 4.24E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.81E-05      | 0.00E+00                   | 7.24E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 3.14E-02            | 5.23E-03              | 4.93E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.98E-04      | 0.00E+00                   | 7.92E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 8.69E-03            | 1.57E-03              | 1.36E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.55E-05      | 0.00E+00                   | 2.25E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 4.52E-04            | 1.81E-06              | 6.79E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.49E-08      | 0.00E+00                   | 4.76E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 1.90E+01            | 5.32E-01              | 2.94E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.19E-02      | 0.00E+00                   | 4.63E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 2.94E+00            | 3.35E-02              | 4.51E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.57E-04      | 0.00E+00                   | 2.84E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.



## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>8</sup> | kg CO <sub>2</sub> eq. | 2.49E+00            | 4.10E-01              | 3.87E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.03E-02      | 0.00E+00                   | 2.17E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad         | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|----------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |                | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ             | 1.74E+00            | 7.78E-02              | 2.92E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.68E-03      | 0.00E+00                   | 3.57E-03       | 0.00E+00  |
| PERM                    | MJ             | 4.17E+00            | 2.65E-02              | 6.30E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.50E-04      | 0.00E+00                   | 1.69E-03       | 0.00E+00  |
| PERT                    | MJ             | 5.90E+00            | 1.04E-01              | 9.22E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.23E-03      | 0.00E+00                   | 5.26E-03       | 0.00E+00  |
| PENRE                   | MJ             | 2.48E+01            | 6.87E-01              | 3.90E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.52E-02      | 0.00E+00                   | 5.25E-02       | 0.00E+00  |
| PENRM                   | MJ             | 3.22E+01            | 5.56E+00              | 4.98E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.44E-01      | 0.00E+00                   | 5.69E-01       | 0.00E+00  |
| PENRT                   | MJ             | 5.70E+01            | 6.25E+00              | 8.88E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.59E-01      | 0.00E+00                   | 6.21E-01       | 0.00E+00  |
| SM                      | kg             | 2.31E+00            | 7.59E-03              | 3.48E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.60E-04      | 0.00E+00                   | 3.34E-04       | 0.00E+00  |
| RSF                     | MJ             | 3.64E-02            | 2.32E-03              | 6.72E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.76E-05      | 0.00E+00                   | 5.87E-05       | 0.00E+00  |
| NRSF                    | MJ             | 4.59E-02            | 1.01E-02              | 7.79E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.93E-04      | 0.00E+00                   | 8.46E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup> | 6.86E-02            | 7.99E-04              | 1.05E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.80E-05      | 0.00E+00                   | 6.66E-04       | 0.00E+00  |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

<sup>8</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.54E+00            | 1.63E-01              | 2.75E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.50E-03      | 0.00E+00                   | 1.02E-02       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.80E-01            | 2.59E-01              | 7.79E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.07E-03      | 0.00E+00                   | 4.20E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 2.28E-03            | 1.38E-04              | 3.96E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.15E-06      | 0.00E+00                   | 7.82E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 6.70E-02            | 6.43E-03              | 1.22E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.33E-04      | 0.00E+00                   | 2.12E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 5.24E-03            | 1.68E-03              | 8.21E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.65E-05      | 0.00E+00                   | 1.17E-04       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

### Información en contenido de carbono biogénico

#### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.238    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 140 mm y resistencia térmicas de 4.10 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 2.84E+00            | 4.83E-01              | 4.42E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.21E-02      | 0.00E+00                   | 2.58E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -2.49E-01           | 9.90E-04              | -3.70E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.14E-05      | 0.00E+00                   | 7.39E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 2.97E-03            | 2.27E-04              | 4.73E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.80E-06      | 0.00E+00                   | 2.38E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 2.60E+00            | 4.84E-01              | 4.06E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.21E-02      | 0.00E+00                   | 2.59E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 4.41E-07            | 1.09E-07              | 6.86E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.82E-09      | 0.00E+00                   | 1.04E-08       | 0.00E+00  |
| AP                   | mol H+ eq.  | 1.46E-02            | 1.92E-03              | 2.29E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.13E-05      | 0.00E+00                   | 2.43E-04       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 3.26E-03            | 1.12E-04              | 5.21E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.43E-06      | 0.00E+00                   | 7.31E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 1.06E-03            | 3.65E-05              | 1.70E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.92E-07      | 0.00E+00                   | 2.38E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 2.99E-03            | 5.60E-04              | 4.73E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.11E-05      | 0.00E+00                   | 8.44E-05       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 3.50E-02            | 6.10E-03              | 5.51E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.31E-04      | 0.00E+00                   | 9.23E-04       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 9.66E-03            | 1.83E-03              | 1.52E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.48E-05      | 0.00E+00                   | 2.62E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 5.27E-04            | 2.11E-06              | 7.91E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.08E-08      | 0.00E+00                   | 5.55E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 2.20E+01            | 6.21E-01              | 3.41E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.39E-02      | 0.00E+00                   | 5.40E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 3.40E+00            | 3.91E-02              | 5.23E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.84E-04      | 0.00E+00                   | 3.32E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                      | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>9</sup> | kg CO <sub>2</sub> eq. | 2.78E+00            | 4.79E-01              | 4.31E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.20E-02      | 0.00E+00                   | 2.53E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ  | 1.99E+00            | 9.08E-02              | 3.36E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.96E-03      | 0.00E+00                   | 4.17E-03       | 0.00E+00  |
| PERM                    | MJ  | 4.85E+00            | 3.09E-02              | 7.33E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.42E-04      | 0.00E+00                   | 1.97E-03       | 0.00E+00  |
| PERT                    | MJ  | 6.85E+00            | 1.22E-01              | 1.07E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.60E-03      | 0.00E+00                   | 6.14E-03       | 0.00E+00  |
| PENRE                   | MJ  | 2.86E+01            | 8.02E-01              | 4.49E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.77E-02      | 0.00E+00                   | 6.12E-02       | 0.00E+00  |
| PENRM                   | MJ  | 3.58E+01            | 6.48E+00              | 5.55E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.68E-01      | 0.00E+00                   | 6.64E-01       | 0.00E+00  |
| PENRT                   | MJ  | 6.44E+01            | 7.29E+00              | 1.00E+01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.86E-01      | 0.00E+00                   | 7.25E-01       | 0.00E+00  |
| SM                      | kg  | 2.69E+00            | 8.86E-03              | 4.06E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.86E-04      | 0.00E+00                   | 3.89E-04       | 0.00E+00  |
| RSF                     | MJ  | 4.18E-02            | 2.70E-03              | 7.74E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.55E-05      | 0.00E+00                   | 6.85E-05       | 0.00E+00  |
| NRSF                    | MJ  | 5.06E-02            | 1.17E-02              | 8.64E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.25E-04      | 0.00E+00                   | 9.87E-05       | 0.00E+00  |
| FW                      | m <sup>3</sup>  | 7.95E-02            | 9.32E-04              | 1.22E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.10E-05      | 0.00E+00                   | 7.78E-04       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>9</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.75E+00            | 1.90E-01              | 3.14E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.08E-03      | 0.00E+00                   | 1.19E-02       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.90E-01            | 3.02E-01              | 8.86E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.42E-03      | 0.00E+00                   | 4.90E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 2.51E-03            | 1.61E-04              | 4.38E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.67E-06      | 0.00E+00                   | 9.13E-06       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 7.62E-02            | 7.50E-03              | 1.39E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.55E-04      | 0.00E+00                   | 2.48E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 5.63E-03            | 1.96E-03              | 8.85E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.26E-05      | 0.00E+00                   | 1.37E-04       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.278    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 160 mm y resistencia térmicas de 4.70 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales  | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil            | kg CO <sub>2</sub> eq.  | 3.14E+00            | 5.52E-01              | 4.88E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.38E-02      | 0.00E+00                   | 2.95E-02       | 0.00E+00  |
| GWP-biogenic          | kg CO <sub>2</sub> eq.  | -2.86E-01           | 1.13E-03              | -4.25E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.45E-05      | 0.00E+00                   | 8.44E-05       | 0.00E+00  |
| GWP- luluc            | kg CO <sub>2</sub> eq.  | 3.35E-03            | 2.59E-04              | 5.33E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.49E-06      | 0.00E+00                   | 2.72E-05       | 0.00E+00  |
| GWP- total            | kg CO <sub>2</sub> eq.  | 2.85E+00            | 5.53E-01              | 4.46E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.39E-02      | 0.00E+00                   | 2.96E-02       | 0.00E+00  |
| ODP                   | kg CFC 11 eq.   | 4.81E-07            | 1.24E-07              | 7.49E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.23E-09      | 0.00E+00                   | 1.19E-08       | 0.00E+00  |
| AP                    | mol H+ eq.  | 1.63E-02            | 2.19E-03              | 2.56E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.01E-05      | 0.00E+00                   | 2.77E-04       | 0.00E+00  |
| EP-freshwater         | kg PO <sub>43</sub> - eq.   | 3.71E-03            | 1.28E-04              | 5.92E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.78E-06      | 0.00E+00                   | 8.36E-06       | 0.00E+00  |
| EP-freshwater         | kg P eq.  | 1.21E-03            | 4.17E-05              | 1.93E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.05E-07      | 0.00E+00                   | 2.72E-06       | 0.00E+00  |
| EP-marine             | kg N eq.  | 3.29E-03            | 6.40E-04              | 5.22E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.42E-05      | 0.00E+00                   | 9.65E-05       | 0.00E+00  |
| EP-terrestrial        | mol N eq.   | 3.87E-02            | 6.97E-03              | 6.09E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.64E-04      | 0.00E+00                   | 1.06E-03       | 0.00E+00  |
| POCP                  | kg NMVOC eq.  | 1.06E-02            | 2.10E-03              | 1.68E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.41E-05      | 0.00E+00                   | 3.00E-04       | 0.00E+00  |
| ADP- minerals&metals* | kg Sb eq.   | 6.02E-04            | 2.42E-06              | 9.03E-05       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.66E-08      | 0.00E+00                   | 6.34E-08       | 0.00E+00  |
| ADP-fossil*           | MJ  | 2.50E+01            | 7.09E-01              | 3.87E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.59E-02      | 0.00E+00                   | 6.17E-02       | 0.00E+00  |
| WDP*                  | m <sup>3</sup>  | 3.87E+00            | 4.47E-02              | 5.95E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.01E-03      | 0.00E+00                   | 3.79E-02       | 0.00E+00  |
| Acronyms              | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                       | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>10</sup> | kg CO <sub>2</sub> eq. | 3.06E+00            | 5.47E-01              | 4.76E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.37E-02      | 0.00E+00                   | 2.89E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad   | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|--|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |  | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ   | 2.25E+00            | 1.04E-01              | 3.80E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.24E-03      | 0.00E+00                   | 4.76E-03       | 0.00E+00  |
| PERM                    | MJ   | 5.55E+00            | 3.53E-02              | 8.39E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.34E-04      | 0.00E+00                   | 2.25E-03       | 0.00E+00  |
| PERT                    | MJ   | 7.80E+00            | 1.39E-01              | 1.22E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.97E-03      | 0.00E+00                   | 7.02E-03       | 0.00E+00  |
| PENRE                   | MJ   | 3.23E+01            | 9.16E-01              | 5.08E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.03E-02      | 0.00E+00                   | 7.00E-02       | 0.00E+00  |
| PENRM                   | MJ   | 3.95E+01            | 7.41E+00              | 6.12E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.92E-01      | 0.00E+00                   | 7.59E-01       | 0.00E+00  |
| PENRT                   | MJ   | 7.18E+01            | 8.33E+00              | 1.12E+01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.12E-01      | 0.00E+00                   | 8.29E-01       | 0.00E+00  |
| SM                      | kg   | 3.07E+00            | 1.01E-02              | 4.63E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.13E-04      | 0.00E+00                   | 4.45E-04       | 0.00E+00  |
| RSF                     | MJ   | 4.71E-02            | 3.09E-03              | 8.75E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.35E-05      | 0.00E+00                   | 7.82E-05       | 0.00E+00  |
| NRSF                    | MJ   | 5.53E-02            | 1.34E-02              | 9.49E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.57E-04      | 0.00E+00                   | 1.13E-04       | 0.00E+00  |
| FW                      | m <sup>3</sup>   | 9.04E-02            | 1.06E-03              | 1.39E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.41E-05      | 0.00E+00                   | 8.89E-04       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>10</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.



## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 1.96E+00            | 2.17E-01              | 3.52E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.66E-03      | 0.00E+00                   | 1.36E-02       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 9.99E-01            | 3.45E-01              | 9.93E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.08E-02      | 0.00E+00                   | 5.60E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 2.73E-03            | 1.84E-04              | 4.80E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.20E-06      | 0.00E+00                   | 1.04E-05       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 8.55E-02            | 8.57E-03              | 1.56E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.77E-04      | 0.00E+00                   | 2.83E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 6.02E-03            | 2.24E-03              | 9.50E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.87E-05      | 0.00E+00                   | 1.57E-04       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.317    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 180 mm y resistencia térmicas de 5.30 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                      |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 3.43E+00            | 6.21E-01              | 5.34E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.56E-02      | 0.00E+00                   | 3.32E-02       | 0.00E+00  |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | -3.22E-01           | 1.27E-03              | -4.79E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.75E-05      | 0.00E+00                   | 9.50E-05       | 0.00E+00  |
| GWP- luluc           | kg CO <sub>2</sub> eq.  | 3.72E-03            | 2.92E-04              | 5.93E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.17E-06      | 0.00E+00                   | 3.06E-05       | 0.00E+00  |
| GWP- total           | kg CO <sub>2</sub> eq.  | 3.11E+00            | 6.23E-01              | 4.87E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.56E-02      | 0.00E+00                   | 3.33E-02       | 0.00E+00  |
| ODP                  | kg CFC 11 eq.   | 5.20E-07            | 1.40E-07              | 8.12E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.63E-09      | 0.00E+00                   | 1.34E-08       | 0.00E+00  |
| AP                   | mol H+ eq.  | 1.79E-02            | 2.47E-03              | 2.82E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.88E-05      | 0.00E+00                   | 3.12E-04       | 0.00E+00  |
| EP-freshwater        | kg PO <sub>43</sub> - eq.   | 4.15E-03            | 1.44E-04              | 6.63E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.13E-06      | 0.00E+00                   | 9.40E-06       | 0.00E+00  |
| EP-freshwater        | kg P eq.  | 1.35E-03            | 4.69E-05              | 2.16E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.02E-06      | 0.00E+00                   | 3.06E-06       | 0.00E+00  |
| EP-marine            | kg N eq.  | 3.59E-03            | 7.20E-04              | 5.71E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.72E-05      | 0.00E+00                   | 1.09E-04       | 0.00E+00  |
| EP-terrestrial       | mol N eq.   | 4.23E-02            | 7.85E-03              | 6.68E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.97E-04      | 0.00E+00                   | 1.19E-03       | 0.00E+00  |
| POCP                 | kg NMVOC eq.  | 1.16E-02            | 2.36E-03              | 1.83E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.33E-05      | 0.00E+00                   | 3.37E-04       | 0.00E+00  |
| ADP-minerals&metals* | kg Sb eq.   | 6.76E-04            | 2.72E-06              | 1.02E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.24E-08      | 0.00E+00                   | 7.14E-08       | 0.00E+00  |
| ADP-fossil*          | MJ  | 2.80E+01            | 7.98E-01              | 4.34E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.78E-02      | 0.00E+00                   | 6.94E-02       | 0.00E+00  |
| WDP*                 | m <sup>3</sup>  | 4.34E+00            | 5.03E-02              | 6.67E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.14E-03      | 0.00E+00                   | 4.27E-02       | 0.00E+00  |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                       | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>11</sup> | kg CO <sub>2</sub> eq. | 3.34E+00            | 6.15E-01              | 5.20E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.54E-02      | 0.00E+00                   | 3.26E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ  | 2.51E+00            | 1.17E-01              | 4.24E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.52E-03      | 0.00E+00                   | 5.36E-03       | 0.00E+00  |
| PERM                    | MJ  | 6.24E+00            | 3.97E-02              | 9.43E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.26E-04      | 0.00E+00                   | 2.53E-03       | 0.00E+00  |
| PERT                    | MJ  | 8.75E+00            | 1.56E-01              | 1.37E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.34E-03      | 0.00E+00                   | 7.90E-03       | 0.00E+00  |
| PENRE                   | MJ  | 3.60E+01            | 1.03E+00              | 5.67E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.28E-02      | 0.00E+00                   | 7.87E-02       | 0.00E+00  |
| PENRM                   | MJ  | 4.31E+01            | 8.34E+00              | 6.69E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.16E-01      | 0.00E+00                   | 8.53E-01       | 0.00E+00  |
| PENRT                   | MJ  | 7.92E+01            | 9.37E+00              | 1.24E+01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.39E-01      | 0.00E+00                   | 9.32E-01       | 0.00E+00  |
| SM                      | kg  | 3.45E+00            | 1.14E-02              | 5.21E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.40E-04      | 0.00E+00                   | 5.00E-04       | 0.00E+00  |
| RSF                     | MJ  | 5.25E-02            | 3.47E-03              | 9.77E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.14E-05      | 0.00E+00                   | 8.80E-05       | 0.00E+00  |
| NRSF                    | MJ  | 6.00E-02            | 1.51E-02              | 1.03E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.90E-04      | 0.00E+00                   | 1.27E-04       | 0.00E+00  |
| FW                      | m <sup>3</sup>  | 1.01E-01            | 1.20E-03              | 1.56E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.71E-05      | 0.00E+00                   | 1.00E-03       | 0.00E+00  |
| Acronyms                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

<sup>11</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 2.17E+00            | 2.44E-01              | 3.91E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.25E-03      | 0.00E+00                   | 1.53E-02       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 1.01E+00            | 3.88E-01              | 1.10E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.21E-02      | 0.00E+00                   | 6.30E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 2.95E-03            | 2.07E-04              | 5.22E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.72E-06      | 0.00E+00                   | 1.17E-05       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 9.47E-02            | 9.64E-03              | 1.74E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.99E-04      | 0.00E+00                   | 3.18E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 6.41E-03            | 2.52E-03              | 1.01E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.48E-05      | 0.00E+00                   | 1.76E-04       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

### Información en contenido de carbono biogénico

#### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.357    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

Resultados para 1m<sup>2</sup> de aislamiento de lana de vidrio de espesor 200 mm y resistencia térmicas de 5.90 m<sup>2</sup>·K/W:

## Potencial de Impacto ambiental – indicadores obligatorios acorde a la EN 15804

### Resultados por unidad funcional o declarada

| Impactos Ambientales  | Unidad  | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|---|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |   | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-fossil            | kg CO <sub>2</sub> eq.  | 3.72E+00            | 6.90E-01              | 5.80E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.73E-02      | 0.00E+00                   | 3.68E-02       | 0.00E+00  |
| GWP-biogenic          | kg CO <sub>2</sub> eq.  | -3.58E-01           | 1.41E-03              | -5.32E-02      | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.06E-05      | 0.00E+00                   | 1.06E-04       | 0.00E+00  |
| GWP- luluc            | kg CO <sub>2</sub> eq.  | 4.10E-03            | 3.24E-04              | 6.54E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.86E-06      | 0.00E+00                   | 3.40E-05       | 0.00E+00  |
| GWP- total            | kg CO <sub>2</sub> eq.  | 3.36E+00            | 6.92E-01              | 5.27E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.73E-02      | 0.00E+00                   | 3.70E-02       | 0.00E+00  |
| ODP                   | kg CFC 11 eq.   | 5.60E-07            | 1.55E-07              | 8.75E-08       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 4.04E-09      | 0.00E+00                   | 1.49E-08       | 0.00E+00  |
| AP                    | mol H+ eq.  | 1.96E-02            | 2.74E-03              | 3.08E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 8.76E-05      | 0.00E+00                   | 3.46E-04       | 0.00E+00  |
| EP-freshwater         | kg PO <sub>43</sub> - eq.   | 4.59E-03            | 1.60E-04              | 7.33E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.47E-06      | 0.00E+00                   | 1.04E-05       | 0.00E+00  |
| EP-freshwater         | kg P eq.  | 1.49E-03            | 5.21E-05              | 2.39E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.13E-06      | 0.00E+00                   | 3.40E-06       | 0.00E+00  |
| EP-marine             | kg N eq.  | 3.89E-03            | 7.99E-04              | 6.19E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.02E-05      | 0.00E+00                   | 1.21E-04       | 0.00E+00  |
| EP-terrestrial        | mol N eq.   | 4.60E-02            | 8.72E-03              | 7.26E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.30E-04      | 0.00E+00                   | 1.32E-03       | 0.00E+00  |
| POCP                  | kg NMVOC eq.  | 1.26E-02            | 2.62E-03              | 1.99E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.26E-05      | 0.00E+00                   | 3.75E-04       | 0.00E+00  |
| ADP- minerals&metals* | kg Sb eq.   | 7.51E-04            | 3.02E-06              | 1.13E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.82E-08      | 0.00E+00                   | 7.93E-08       | 0.00E+00  |
| ADP-fossil*           | MJ  | 3.10E+01            | 8.87E-01              | 4.80E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.98E-02      | 0.00E+00                   | 7.71E-02       | 0.00E+00  |
| WDP*                  | m <sup>3</sup>  | 4.81E+00            | 5.59E-02              | 7.40E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.26E-03      | 0.00E+00                   | 4.74E-02       | 0.00E+00  |
| Acronyms              | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                     |                       |                |                      |                  |               |                |                   |                              |                         |                                |               |                            |                |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Potencial de Impacto ambiental– Indicadores obligatorios y voluntarios adicionales

### Resultados por unidad funcional o declarada

|                       | Unidad                 | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-----------------------|------------------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                       |                        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| GWP-GHG <sup>12</sup> | kg CO <sub>2</sub> eq. | 3.62E+00            | 6.84E-01              | 5.65E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.71E-02      | 0.00E+00                   | 3.62E-02       | 0.00E+00  |

## Utilización de recursos

### Resultados por unidad funcional o declarada

| Utilización de recursos | Unidad         | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------|----------------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                         |                | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| PERE                    | MJ             | 2.77E+00            | 1.30E-01              | 4.68E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.80E-03      | 0.00E+00                   | 5.96E-03       | 0.00E+00  |
| PERM                    | MJ             | 6.92E+00            | 4.41E-02              | 1.05E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 9.17E-04      | 0.00E+00                   | 2.82E-03       | 0.00E+00  |
| PERT                    | MJ             | 9.69E+00            | 1.74E-01              | 1.51E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.71E-03      | 0.00E+00                   | 8.77E-03       | 0.00E+00  |
| PENRE                   | MJ             | 3.98E+01            | 1.15E+00              | 6.26E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.53E-02      | 0.00E+00                   | 8.75E-02       | 0.00E+00  |
| PENRM                   | MJ             | 4.68E+01            | 9.26E+00              | 7.26E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.40E-01      | 0.00E+00                   | 9.48E-01       | 0.00E+00  |
| PENRT                   | MJ             | 8.65E+01            | 1.04E+01              | 1.35E+01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.65E-01      | 0.00E+00                   | 1.04E+00       | 0.00E+00  |
| SM                      | kg             | 3.83E+00            | 1.27E-02              | 5.79E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.66E-04      | 0.00E+00                   | 5.56E-04       | 0.00E+00  |
| RSF                     | MJ             | 5.78E-02            | 3.86E-03              | 1.08E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 7.93E-05      | 0.00E+00                   | 9.78E-05       | 0.00E+00  |
| NRSF                    | MJ             | 6.46E-02            | 1.68E-02              | 1.12E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.22E-04      | 0.00E+00                   | 1.41E-04       | 0.00E+00  |
| FW                      | m <sup>3</sup> | 1.12E-01            | 1.33E-03              | 1.73E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 3.01E-05      | 0.00E+00                   | 1.11E-03       | 0.00E+00  |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

<sup>12</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Producción de residuos y flujos salientes

### Producción de residuos

#### Resultados por unidad funcional o declarada

| Categoría de residuos        | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                              |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Hazardous waste disposed     | kg     | 2.38E+00            | 2.71E-01              | 4.29E-01       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.83E-03      | 0.00E+00                   | 1.70E-02       | 0.00E+00  |
| Non-hazardous waste disposed | kg     | 1.02E+00            | 4.31E-01              | 1.21E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 1.35E-02      | 0.00E+00                   | 7.00E+00       | 0.00E+00  |
| Radioactive waste disposed   | kg     | 3.17E-03            | 2.30E-04              | 5.64E-04       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 5.25E-06      | 0.00E+00                   | 1.30E-05       | 0.00E+00  |

### Flujos Salientes

#### Resultados por unidad funcional o declarada

| Flujos salientes              | Unidad | Etapa de producción | Etapa de construcción |                | Etapa de utilización |                  |               |                |                   |                              |                         | Etapa de fin de vida útil      |               |                            |                | D Beneficios y cargas más allá de las fronteras del sistema |
|-------------------------------|--------|---------------------|-----------------------|----------------|----------------------|------------------|---------------|----------------|-------------------|------------------------------|-------------------------|--------------------------------|---------------|----------------------------|----------------|---|
|                               |        | A1 / A2 / A3        | A4 Transporte         | A5 Instalación | B1 Uso               | B2 Mantenimiento | B3 Reparación | B4 Sustitución | B5 Rehabilitación | B6 Utilización de la Energía | B7 Utilización del agua | C1 Deconstrucción / demolición | C2 Transporte | C3 Tratamiento de Residuos | C4 Eliminación |   |
| Components for re-use         | kg     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Material for recycling        | kg     | 1.04E-01            | 1.07E-02              | 1.91E-02       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 2.21E-04      | 0.00E+00                   | 3.54E-04       | 0.00E+00  |
| Materials for energy recovery | kg     | 6.80E-03            | 2.80E-03              | 1.08E-03       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 6.09E-05      | 0.00E+00                   | 1.96E-04       | 0.00E+00  |
| Exported energy, electricity  | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |
| Exported energy, thermal      | MJ     | 0.00E+00            | 0.00E+00              | 0.00E+00       | 0.00E+00             | 0.00E+00         | 0.00E+00      | 0.00E+00       | 0.00E+00          | 0.00E+00                     | 0.00E+00                | 0.00E+00                       | 0.00E+00      | 0.00E+00                   | 0.00E+00       | 0.00E+00  |

## Información en contenido de carbono biogénico

### Resultados por unidad funcional o declarada

| CONTENIDO DE CARBON BIOGENICO                 | Unidad | CANTIDAD |
|---|--------|----------|
| Contenido de carbón biogénico en el producto  | kg C   | 0        |
| Contenido del carbón biogénico en el embalaje | kg C   | 0.396    |

Nota: 1 kg carbón biogénico es equivalente a 44/12 kg CO<sub>2</sub>.

## 6. Información adicional

### Emisiones en el aire interior:

URSA PUREONE Pure Floc KD / WBWPFKD cumplir con los requisitos de Indoor Air Comfort Gold para el tipo de producto, versión 7.0 (2020). Estos incluyen inspecciones de la producción en fábrica según DIN 18200 y pruebas de VOC según EN 16516 por parte de un laboratorio acreditado ISO 17025, a intervalos regulares.

La certificación Indoor Air COMFORT Gold garantiza que se cumplan los requisitos de baja emisión del producto y es una señal del enfoque del solicitante en la calidad y la contribución a un ambiente interior saludable.



Certificate number: IACG-451-01-01-2022

El cumplimiento de Indoor Air Comfort significa el cumplimiento de los requisitos de VOC en productos de baja emisión de:

France VOC class A+, Germany (AgBB/ABG), BREEAM international, BREEM NOR, BREEM NL, LEED (ACP), WELL Building, SKA Rating, French HQE certification, Italian CAM Edilizia, BVB (Sweden), Eco Product Norway, DGNB, Blue Angel DE-UZ 132, M1, Danish Indoor Climate Label (Emission Class 1), very low emitting products according to EN 16798-1, Singapore Green Label, GreenTag Australia.

### EUCEB:

Las fibras que componen las lanas minerales quedan exentas de la clasificación cancerígena, conforme al Reglamento sobre clasificación y etiquetado de sustancias y mezclas, el Reglamento (CE) n° 1272/2008 y su última actualización, el Reglamento (CE) n° 2021/643. En efecto, estas fibras superaron con éxito los ensayos que dispone dicho Reglamento, siendo su bio-persistencia inferior a los valores definidos en su nota «Q». La exención está certificada por el EUCEB (European Certification Board - [www.euceb.org](http://www.euceb.org)).

EUCEB certifica que las fibras cumplen con las disposiciones de la nota «Q» del Reglamento (CE) n° 1272/2008. EUCEB garantiza que los ensayos para obtener el certificado de exención han sido realizados conforme a los protocolos europeos, que los industriales han aplicado los procedimientos de control de la fabricación de los productos y que los resultados han sido verificados y validados por terceros.

El compromiso de los industriales respeto del EUCEB consiste en:

- Presentar un informe del ensayo establecido por uno de los laboratorios reconocidos por EUCEB, que demuestre que las fibras cumplen con una de las cuatro condiciones de exención previstas en la nota «Q» del Reglamento (CE) n° 1272/2008.



- Someterse, dos veces al año, al control de su producción por parte de un tercero independiente, reconocido por el EUCEB (extracción de muestras y conformidad con el rango composicional aprobado).
- Implantar los procedimientos de autocontrolen cada fábrica.

Los productos que cumplen con esta certificación se reconocen gracias al logotipo EUCEB que figura en el empaquetado:



### **REACH:**

#### **Reglamento (CE) Nº 1907/2006 del Parlamento Europeo y del Consejo de 18 de diciembre de 2006 sobre el Consejo de 18 de diciembre de 2006 relativo al Registro, Autorización y Restricción de Sustancias Químicas (REACH)**

Los productos de lana mineral (rollos y paneles) fabricados por URSA se definen como "artículos" de acuerdo con el artículo 3 (3) del Reglamento CE 1907/2006(REACH). Artículos cuya funcionalidad está principalmente determinada por su forma, superficie o diseño dado en su proceso de producción, más que por su composición química.

Nuestros productos no contienen Sustancias Extremadamente Preocupantes (SVHC) en una concentración superior al 0,01 % en peso, según la última actualización de la lista de candidatos conocida en la fecha de publicación de este documento.

ECHA – La Agencia Europea de Sustancias y Preparados Químicos publica periódicamente una lista actualizada de SVHC. La validez de esta declaración depende, por tanto, de las nuevas publicaciones de la ECHA.

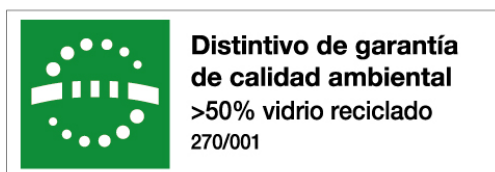
### **ESG – Economía circular:**

#### **Contenido de vidrio reciclado:**

El Distintivo de Garantía de Calidad Ambiental es un sistema catalán de etiquetado ecológico que reconoce productos y servicios que superan determinados requerimientos de calidad ambiental más allá de los establecidos como obligatorios por la normativa vigente.

URSA obtuvo el Distintivo de Garantía de Calidad Ambiental, por primera vez en 2008, de más de un 35% de vidrio reciclado hasta 2020.

En 2021, la Generalitat de Catalunya certificó el porcentaje de material de vidrio reciclado en lana de vidrio es del 50%.



### ***Etiqueta de información de clasificación para el embalaje***

El artículo 17 de la Ley francesa AGECE y el Decreto n. 2021-835 del 29 de junio de 2021, dice que se debe implementar una nueva etiqueta de clasificación armonizada obligatoria para los envases domésticos para contribuir al reciclaje y la economía circular. El objetivo es proporcionar a los consumidores la información que necesitan y garantizar que los productores cumplan con los nuevos requisitos reglamentarios.



### ***Códigos Europeos de residuos***

Los residuos de lana de vidrio del módulo A5 y C se clasificarán según los Códigos Europeos de Residuos:

17 06 04 Materiales de aislamiento distintos de los especificados en los códigos 17 06 01 y 17 06 03

## **7. Referencias**

- ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines
- EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- PCR 2019:14. Construction products (EN 15804+A2) Version 1.11. C-PCR-005 Thermal insulation products (EN 16783:2017) Version: 2019-12-20
- General Programme Instructions of the International EPD® System. Version 3.01.
- Informe de ACV (Versión 3 – 30.06.2022)