

EPD

ENVIRONMENTAL
PRODUCT DECLARATION

POLYURETHANE AND MINERAL WOOL INSULATED WALL AND ROOFING PANELS

Environmental Product Declaration
in accordance with UNI EN ISO 14025
and UNI EN 15804:2012+A2:2019.



DECLARATION NUMBER

S-P-04627

PRODUCT CATEGORY RULES

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PROGRAMME

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Our steel, your life

Sustainability objectives such as respect for the environment and the protection of its workers have always been priorities, and Marcegaglia has been committed over the years to promoting constant innovation in the context of *production efficiency*, in the *safety of its facilities*, and *environmental protection*. These objectives are pursued by adopting the *best technologies* available, investing in *R&D*, ongoing training, and the close *involvement of its collaborators*, thereby tracing a strategic path towards an *increasing awareness of sustainability* which permeates all of the group's activities, in order to strengthen its "green" spirit and maximize its positive impact on employees, the community, and the environment.



SUMMARY

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1. THE COMPANY

Marcegaglia RWD is a part of the Marcegaglia group, a leader in the European and world steel processing sector. A **unique business and manufacturing model**, a typical expression of Italian family entrepreneurship, capable of combining its operational capacity with a significant presence in the international market alongside multinationals.

Marcegaglia RWD is a **global partner in civil and industrial construction**, thanks to the development of custom steel solutions. The expertise developed in the construction sector allows the company to offer a wide range of sandwich panels for roofs, wall sectional doors and corrugated steel sheets. The range is enriched with insulated panels for special applications such as fridge panels, sound-absorbing panels and Coppo insulating roofing panels.

The Marcegaglia RWD range of **sandwich panels** is produced in the largest and most modern specialist Italian plant, in Pozzolo Formigaro (Alessandria).

2. THE PRODUCT

Marcegaglia RWD the market a **wide range of insulated panels** for roofs, walls, sectional doors and corrugated sheets. The range is enhanced with **sandwich panels for special applications**, including cold rooms (refrigerator panels), **sound-absorbing panels** and **insulated roofing panels**.

The products considered in this study are commonly referred to as **sandwich panels** and consist of a composite panel of **one or two sheet metal faces** (mainly steel, but also aluminium) joined together by a **core of expanded polyurethane foam or glued mineral wool**.

In particular, the following are examined:

- **insulated wall panels with PIR/PUR insulating material;**
- **insulated roofing panels with PIR/PUR insulating material;**
- **insulated wall panels with mineral wool insulating material;**
- **insulated roofing panels with mineral wool insulating material;**
- **insulated wall panels with sound-absorbing mineral wool insulating material;**
- **insulated roofing panels with sound-absorbing mineral wool insulating material.**

All panels do not contain SVHC Substances of Very

High Concern covered by ECHA's Candidate List in concentrations greater than 0.1% by mass.

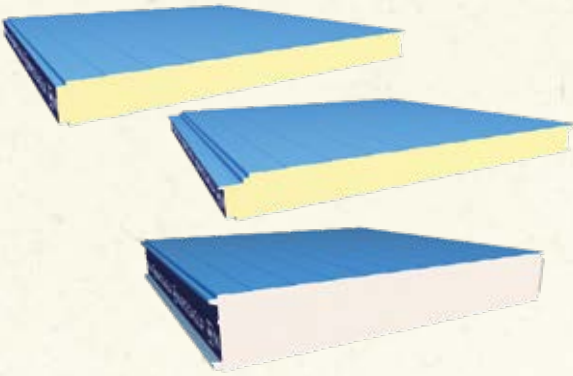
CFC and HCFC free polyurethane formulations are used which produce an antigroscopic, anti-mold and high content of closed cell (> 95%) insulating foam. For fire performance requirements, particularly **high performance foams with reaction to fire** are used. Thermal conductivity assumes a value $\lambda = 0,021$ W/mK.

The **mineral wool** used is of the **biosoluble, anigroscopic, non-rot and non-combustible** type (European class A1 of reaction to fire). Thermal conductivity assumes a value $\lambda = 0,041$ W/mK (correctly measured in the direction of the fibers).

The panels examined have an estimated life cycle of **50 years** [Ref.: Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR)] and are equipped with **CE marking**: in this way, the company provides certified compliance with the legislative requirements on health and safety and environmental protection.

From the company website marcegagliarwd.com, it is possible to download product catalogs which contain an exhaustive description of their technical characteristics.

POLYURETHANE INSULATED WALL PANEL

| MB WALL MB HIDDEN FIX MB COLD-PRO | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 40 | 0,4 | 0,5 |
| | 50 | 0,4 | 0,5 |
| | 60 | 0,4 | 0,5 |
| | 80 | 0,4 | 0,5 |
| | 100 | 0,4 | 0,5 |
| | 120 | 0,4 | 0,5 |
| | 150 | 0,4 | 0,5 |
| | 180 | 0,4 | 0,5 |
| | 200 | 0,4 | 0,5 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE INSULATING MATERIAL (%) | THERMAL TRANSMITTANCE U MB WALL (W/ m ² K) | THERMAL TRANSMITTANCE U MB HIDDEN FIX (W/ m ² K) | THERMAL TRANSMITTANCE U MB COLD PRO (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|---------------------------------------|---|---|---|
| 40 | 9,50 | 82% | 18% | 0,58 | - | - |
| 50 | 9,80 | 78% | 22% | 0,45 | 0,54 | - |
| 60 | 10,20 | 75% | 25% | 0,37 | 0,42 | - |
| 80 | 11,00 | 69% | 31% | 0,27 | 0,29 | - |
| 100 | 11,70 | 64% | 36% | 0,22 | 0,22 | 0,22 |
| 120 | 12,50 | 60% | 40% | 0,18 | 0,18 | 0,18 |
| 150 | 13,60 | 54% | 46% | 0,14 | 0,14 | 0,14 |
| 180 | 16,90 | 50% | 50% | - | - | 0,12 |
| 200 | 17,65 | 47% | 53% | - | - | 0,11 |

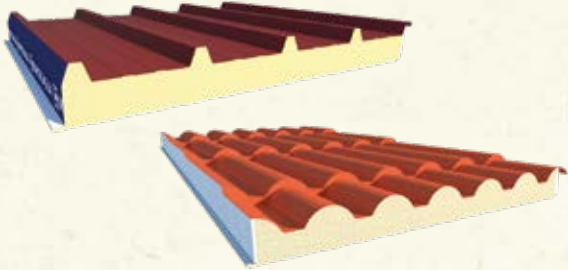
POLYURETHANE INSULATED WALL PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | POLYURETHANE FOAM | TOTAL |
|----------------------|-----------------------------|-------------|-------------------|--------------|
| 40 | weight (kg/m ²) | 6,86 | 1,52 | 8,39 |
| | (%) | 82 | 18 | 100 |
| 50 | weight (kg/m ²) | 6,86 | 1,91 | 8,78 |
| | (%) | 78 | 22 | 100 |
| 60 | weight (kg/m ²) | 6,86 | 2,3 | 9,17 |
| | (%) | 75 | 25 | 100 |
| 80 | weight (kg/m ²) | 6,86 | 3,08 | 9,95 |
| | (%) | 69 | 31 | 100 |
| 100 | weight (kg/m ²) | 6,86 | 3,86 | 10,73 |
| | (%) | 64 | 36 | 100 |
| 120 | weight (kg/m ²) | 6,86 | 4,64 | 11,51 |
| | (%) | 60 | 40 | 100 |
| 150 | weight (kg/m ²) | 6,86 | 5,81 | 12,68 |
| | (%) | 54 | 46 | 100 |
| 180 | weight (kg/m ²) | 6,86 | 6,98 | 13,85 |
| | (%) | 50 | 50 | 100 |
| 200 | weight (kg/m ²) | 6,86 | 7,76 | 14,63 |
| | (%) | 47 | 53 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | 0 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | POLYURETHANE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|--------------|--------------|
| 40 | weight (kg/m ²) | 0,059 | 0,037 | 0,023 | 0,006 | 0,125 |
| | (%) | 48 | 29 | 19 | 5 | 100 |
| 50 | weight (kg/m ²) | 0,063 | 0,046 | 0,029 | 0,007 | 0,145 |
| | (%) | 44 | 31 | 20 | 5 | 100 |
| 60 | weight (kg/m ²) | 0,068 | 0,055 | 0,035 | 0,009 | 0,166 |
| | (%) | 41 | 33 | 21 | 5 | 100 |
| 80 | weight (kg/m ²) | 0,076 | 0,073 | 0,046 | 0,012 | 0,207 |
| | (%) | 37 | 35 | 22 | 6 | 100 |
| 100 | weight (kg/m ²) | 0,085 | 0,091 | 0,058 | 0,014 | 0,248 |
| | (%) | 34 | 37 | 23 | 6 | 100 |
| 120 | weight (kg/m ²) | 0,093 | 0,11 | 0,069 | 0,017 | 0,289 |
| | (%) | 32 | 38 | 24 | 6 | 100 |
| 150 | weight (kg/m ²) | 0,106 | 0,137 | 0,087 | 0,022 | 0,351 |
| | (%) | 30 | 39 | 25 | 6 | 100 |
| 180 | weight (kg/m ²) | 0,119 | 0,164 | 0,104 | 0,026 | 0,413 |
| | (%) | 29 | 40 | 25 | 6 | 100 |
| 200 | weight (kg/m ²) | 0,127 | 0,183 | 0,115 | 0,029 | 0,454 |
| | (%) | 28 | 40 | 25 | 6 | 100 |

POLYURETHANE INSULATED ROOFING PANEL

| MB ROOF MB COPPO | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 40 | 0,4 | 0,5 |
| | 50 | 0,4 | 0,5 |
| | 60 | 0,4 | 0,5 |
| | 80 | 0,4 | 0,5 |
| | 100 | 0,4 | 0,5 |
| | 120 | 0,4 | 0,5 |
| | 150 | 0,4 | 0,5 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE INSULATING MATERIAL (%) | THERMAL TRANSMITTANCE U MB ROOF (W/ m ² K) | THERMAL TRANSMITTANCE U MB COPPO (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|---------------------------------------|---|--|
| 40 | 10,40 | 83% | 17% | 0,53 | 0,53 |
| 50 | 10,80 | 80% | 20% | 0,42 | 0,42 |
| 60 | 11,15 | 77% | 23% | 0,35 | - |
| 80 | 11,90 | 71% | 29% | 0,27 | - |
| 100 | 12,65 | 66% | 34% | 0,21 | 0,21 |
| 120 | 13,45 | 62% | 38% | 0,18 | - |
| 150 | 14,58 | 56% | 44% | 0,14 | - |

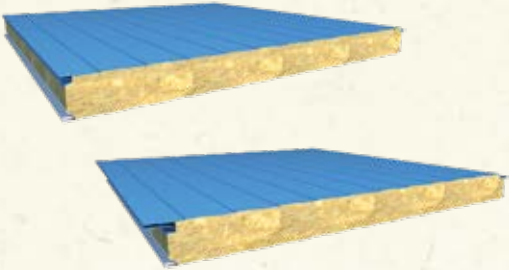
POLYURETHANE INSULATED ROOFING PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | POLYURETHANE FOAM | TOTAL |
|----------------------|-----------------------------|-------------|-------------------|--------------|
| 40 | weight (kg/m ²) | 7,53 | 1,52 | 9,06 |
| | (%) | 83 | 17 | 100 |
| 50 | weight (kg/m ²) | 7,53 | 1,91 | 9,45 |
| | (%) | 80 | 20 | 100 |
| 60 | weight (kg/m ²) | 7,53 | 2,3 | 9,84 |
| | (%) | 77 | 23 | 100 |
| 80 | weight (kg/m ²) | 7,53 | 3,08 | 10,62 |
| | (%) | 71 | 29 | 100 |
| 100 | weight (kg/m ²) | 7,53 | 3,86 | 11,4 |
| | (%) | 66 | 34 | 100 |
| 120 | weight (kg/m ²) | 7,53 | 4,64 | 12,18 |
| | (%) | 62 | 38 | 100 |
| 150 | weight (kg/m ²) | 7,53 | 5,81 | 13,35 |
| | (%) | 56 | 44 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | 0 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | POLYURETHANE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|--------------|--------------|
| 40 | weight (kg/m ²) | 0,059 | 0,037 | 0,023 | 0,006 | 0,125 |
| | (%) | 48 | 29 | 19 | 5 | 100 |
| 50 | weight (kg/m ²) | 0,063 | 0,046 | 0,029 | 0,007 | 0,145 |
| | (%) | 43 | 32 | 20 | 5 | 100 |
| 60 | weight (kg/m ²) | 0,068 | 0,055 | 0,035 | 0,009 | 0,166 |
| | (%) | 41 | 33 | 21 | 5 | 100 |
| 80 | weight (kg/m ²) | 0,076 | 0,073 | 0,046 | 0,012 | 0,207 |
| | (%) | 37 | 35 | 22 | 6 | 100 |
| 100 | weight (kg/m ²) | 0,085 | 0,091 | 0,058 | 0,014 | 0,248 |
| | (%) | 34 | 37 | 23 | 6 | 100 |
| 120 | weight (kg/m ²) | 0,093 | 0,11 | 0,069 | 0,017 | 0,289 |
| | (%) | 32 | 38 | 24 | 6 | 100 |
| 150 | weight (kg/m ²) | 0,106 | 0,137 | 0,087 | 0,022 | 0,351 |
| | (%) | 30 | 39 | 25 | 6 | 100 |

MINERAL WOOL INSULATED WALL PANEL

| MB FIRE-PRO WALL MB FIRE-PRO HIDDEN FIX | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 50 | 0,6 | 0,6 |
| | 60 | 0,6 | 0,6 |
| | 80 | 0,6 | 0,6 |
| | 100 | 0,6 | 0,6 |
| | 120 | 0,6 | 0,6 |
| | 150 | 0,6 | 0,6 |
| | 170 | 0,6 | 0,6 |
| | 200 | 0,6 | 0,6 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE METAL SUPPORTS (%) | THERMAL TRANSMITTANCE U MB FIRE-PRO WALL (W/ m ² K) | THERMAL TRANSMITTANCE U MB FIRE-PRO (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|----------------------------------|--|---|
| 50 | 14,55 | 66% | 34% | 0,79 | 0,96 |
| 60 | 15,50 | 62% | 38% | 0,66 | 0,76 |
| 80 | 17,40 | 55% | 45% | 0,49 | 0,52 |
| 100 | 19,30 | 49% | 51% | 0,39 | 0,41 |
| 120 | 21,20 | 45% | 55% | 0,33 | 0,34 |
| 150 | 24,05 | 39% | 61% | 0,26 | 0,27 |
| 170 | 26,00 | 36% | 64% | 0,23 | 0,24 |
| 200 | 28,80 | 32% | 68% | 0,20 | 0,2 |

MINERAL WOOL INSULATED WALL PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | ROCK WOOL | TOTAL |
|----------------------|-----------------------------|-------------|-----------|--------------|
| 50 | weight (kg/m ²) | 9,55 | 4,88 | 14,43 |
| | (%) | 66 | 34 | 100 |
| 60 | weight (kg/m ²) | 9,55 | 5,88 | 15,43 |
| | (%) | 62 | 38 | 100 |
| 80 | weight (kg/m ²) | 9,55 | 7,88 | 17,43 |
| | (%) | 55 | 45 | 100 |
| 100 | weight (kg/m ²) | 9,55 | 9,88 | 19,43 |
| | (%) | 49 | 51 | 100 |
| 120 | weight (kg/m ²) | 9,55 | 11,88 | 21,43 |
| | (%) | 45 | 55 | 100 |
| 150 | weight (kg/m ²) | 9,55 | 14,88 | 24,43 |
| | (%) | 39 | 61 | 100 |
| 170 | weight (kg/m ²) | 9,55 | 16,88 | 26,43 |
| | (%) | 36 | 64 | 100 |
| 200 | weight (kg/m ²) | 9,55 | 19,88 | 29,43 |
| | (%) | 32 | 68 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | >2 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|--------------|
| 50 | weight (kg/m ²) | 0,058 | 0,046 | 0,029 | 0,132 |
| | (%) | 44 | 35 | 22 | 100 |
| 60 | weight (kg/m ²) | 0,061 | 0,055 | 0,035 | 0,15 |
| | (%) | 40 | 36 | 23 | 100 |
| 80 | weight (kg/m ²) | 0,067 | 0,073 | 0,046 | 0,186 |
| | (%) | 36 | 39 | 25 | 100 |
| 100 | weight (kg/m ²) | 0,073 | 0,091 | 0,058 | 0,222 |
| | (%) | 33 | 41 | 26 | 100 |
| 120 | weight (kg/m ²) | 0,08 | 0,11 | 0,069 | 0,258 |
| | (%) | 31 | 42 | 27 | 100 |
| 150 | weight (kg/m ²) | 0,089 | 0,137 | 0,087 | 0,312 |
| | (%) | 28 | 44 | 28 | 100 |
| 170 | weight (kg/m ²) | 0,095 | 0,155 | 0,098 | 0,348 |
| | (%) | 27 | 45 | 28 | 100 |
| 200 | weight (kg/m ²) | 0,104 | 0,183 | 0,115 | 0,402 |
| | (%) | 26 | 45 | 29 | 100 |

MINERAL WOOL INSULATED ROOFING PANEL

| MB FIRE-PRO ROOF | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 50 | 0,6 | 0,6 |
| | 60 | 0,6 | 0,6 |
| | 80 | 0,6 | 0,6 |
| | 100 | 0,6 | 0,6 |
| | 120 | 0,6 | 0,6 |
| | 150 | 0,6 | 0,6 |
| | 170 | 0,6 | 0,6 |
| | 200 | 0,6 | 0,6 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE INSULATING MATERIAL (%) | THERMAL TRANSMITTANCE U MB FIRE – PRO ROOF (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|---------------------------------------|--|
| 50 | 13,95 | 68% | 32% | 0,76 |
| 60 | 14,90 | 64% | 36% | 0,64 |
| 80 | 16,80 | 57% | 43% | 0,48 |
| 100 | 18,70 | 51% | 49% | 0,39 |
| 120 | 20,60 | 46% | 54% | 0,33 |
| 150 | 23,45 | 41% | 59% | 0,26 |
| 170 | 25,35 | 38% | 62% | 0,23 |
| 200 | 28,20 | 34% | 66% | 0,20 |

MINERAL WOOL INSULATED ROOFING PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | ROCK WOOL | TOTAL |
|----------------------|-----------------------------|-------------|-----------|--------------|
| 50 | weight (kg/m ²) | 10,28 | 4,88 | 15,16 |
| | (%) | 68 | 32 | 100 |
| 60 | weight (kg/m ²) | 10,28 | 5,88 | 16,16 |
| | (%) | 64 | 36 | 100 |
| 80 | weight (kg/m ²) | 10,28 | 7,88 | 18,16 |
| | (%) | 57 | 43 | 100 |
| 100 | weight (kg/m ²) | 10,28 | 9,88 | 20,16 |
| | (%) | 51 | 49 | 100 |
| 120 | weight (kg/m ²) | 10,28 | 11,88 | 22,16 |
| | (%) | 46 | 54 | 100 |
| 150 | weight (kg/m ²) | 10,28 | 14,88 | 25,16 |
| | (%) | 41 | 59 | 100 |
| 170 | weight (kg/m ²) | 10,28 | 16,88 | 27,16 |
| | (%) | 38 | 62 | 100 |
| 200 | weight (kg/m ²) | 10,28 | 19,88 | 30,16 |
| | (%) | 34 | 66 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | >2 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|--------------|
| 50 | weight (kg/m ²) | 0,058 | 0,046 | 0,029 | 0,132 |
| | (%) | 44 | 35 | 22 | 100 |
| 60 | weight (kg/m ²) | 0,061 | 0,055 | 0,035 | 0,15 |
| | (%) | 40 | 36 | 23 | 100 |
| 80 | weight (kg/m ²) | 0,067 | 0,073 | 0,046 | 0,186 |
| | (%) | 36 | 39 | 25 | 100 |
| 100 | weight (kg/m ²) | 0,073 | 0,091 | 0,058 | 0,222 |
| | (%) | 33 | 41 | 26 | 100 |
| 120 | weight (kg/m ²) | 0,08 | 0,11 | 0,069 | 0,258 |
| | (%) | 31 | 42 | 27 | 100 |
| 150 | weight (kg/m ²) | 0,089 | 0,137 | 0,087 | 0,312 |
| | (%) | 28 | 44 | 28 | 100 |
| 170 | weight (kg/m ²) | 0,095 | 0,155 | 0,098 | 0,348 |
| | (%) | 27 | 45 | 28 | 100 |
| 200 | weight (kg/m ²) | 0,104 | 0,183 | 0,115 | 0,402 |
| | (%) | 26 | 45 | 29 | 100 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL PANEL

| MB WALL SOUND | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 50 | 0,6 | 0,6 |
| | 60 | 0,6 | 0,6 |
| | 80 | 0,6 | 0,6 |
| | 100 | 0,6 | 0,6 |
| | 120 | 0,6 | 0,6 |
| | 150 | 0,6 | 0,6 |
| | 170 | 0,6 | 0,6 |
| | 200 | 0,6 | 0,6 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE INSULATING MATERIAL (%) | THERMAL TRANSMITTANCE U MB WALL SOUND (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|---------------------------------------|---|
| 50 | 12,90 | 66% | 34% | 0,79 |
| 60 | 13,85 | 62% | 38% | 0,66 |
| 80 | 15,75 | 55% | 45% | 0,49 |
| 100 | 17,65 | 49% | 51% | 0,39 |
| 120 | 19,55 | 45% | 55% | 0,33 |
| 150 | 22,40 | 39% | 61% | 0,26 |
| 170 | 24,30 | 36% | 64% | 0,23 |
| 200 | 27,15 | 32% | 68% | 0,20 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | ROCK WOOL | TOTAL |
|----------------------|-----------------------------|-------------|-----------|--------------|
| 50 | weight (kg/m ²) | 9,55 | 4,88 | 14,43 |
| | (%) | 66 | 34 | 100 |
| 60 | weight (kg/m ²) | 9,55 | 5,88 | 15,43 |
| | (%) | 62 | 38 | 100 |
| 80 | weight (kg/m ²) | 9,55 | 7,88 | 17,43 |
| | (%) | 55 | 45 | 100 |
| 100 | weigh (kg/m ²) | 9,55 | 9,88 | 19,43 |
| | (%) | 49 | 51 | 100 |
| 120 | weight (kg/m ²) | 9,55 | 11,88 | 21,43 |
| | (%) | 45 | 55 | 100 |
| 150 | weigh (kg/m ²) | 9,55 | 14,88 | 24,43 |
| | (%) | 39 | 61 | 100 |
| 170 | weight (kg/m ²) | 9,55 | 16,88 | 26,43 |
| | (%) | 36 | 64 | 100 |
| 200 | weight (kg/m ²) | 9,55 | 19,88 | 29,43 |
| | (%) | 32 | 68 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | >2 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | POLYPROPYLENE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|---------------|--------------|
| 50 | weight (kg/m ²) | 0,058 | 0,046 | 0,029 | 0,03 | 0,162 |
| | (%) | 36 | 28 | 18 | 18 | 100 |
| 60 | weight (kg/m ²) | 0,061 | 0,055 | 0,035 | 0,03 | 0,18 |
| | (%) | 34 | 30 | 19 | 17 | 100 |
| 80 | weight (kg/m ²) | 0,067 | 0,073 | 0,046 | 0,03 | 0,216 |
| | (%) | 31 | 34 | 21 | 14 | 100 |
| 100 | weight (kg/m ²) | 0,073 | 0,091 | 0,058 | 0,03 | 0,252 |
| | (%) | 29 | 36 | 23 | 12 | 100 |
| 120 | weight (kg/m ²) | 0,08 | 0,11 | 0,069 | 0,03 | 0,288 |
| | (%) | 28 | 38 | 24 | 10 | 100 |
| 150 | weight (kg/m ²) | 0,089 | 0,137 | 0,087 | 0,03 | 0,342 |
| | (%) | 26 | 40 | 25 | 9 | 100 |
| 170 | weight (kg/m ²) | 0,095 | 0,155 | 0,098 | 0,03 | 0,378 |
| | (%) | 25 | 41 | 26 | 8 | 100 |
| 200 | weight (kg/m ²) | 0,104 | 0,183 | 0,115 | 0,03 | 0,432 |
| | (%) | 24 | 42 | 27 | 7 | 100 |

MINERAL WOOL SOUND-ABSORBING INSULATED ROOFING PANEL

| MB ROOF SOUND | PANEL THICKNESS (mm) | INTERNAL SUPPORT THICKNESS (mm) | EXTERNAL SUPPORT THICKNESS (mm) |
|---|----------------------|---------------------------------|---------------------------------|
|  | 50 | 0,6 | 0,6 |
| | 60 | 0,6 | 0,6 |
| | 80 | 0,6 | 0,6 |
| | 100 | 0,6 | 0,6 |
| | 120 | 0,6 | 0,6 |
| | 150 | 0,6 | 0,6 |
| | 170 | 0,6 | 0,6 |
| | 200 | 0,6 | 0,6 |

CONTENT INFORMATION

| PANEL THICKNESS (mm) | WEIGHT (kg/m ²) | WEIGHT OF THE METAL SUPPORTS (%) | WEIGHT OF THE INSULATING MATERIAL (%) | THERMAL TRANSMITTANCE U MB ROOF SOUND (W/ m ² K) |
|----------------------|-----------------------------|----------------------------------|---------------------------------------|---|
| 50 | 14,15 | 68% | 32% | 0,76 |
| 60 | 15,10 | 64% | 36% | 0,64 |
| 80 | 17,00 | 57% | 43% | 0,48 |
| 100 | 18,90 | 51% | 49% | 0,39 |
| 120 | 20,80 | 46% | 54% | 0,33 |
| 150 | 23,65 | 41% | 59% | 0,26 |
| 170 | 25,55 | 38% | 62% | 0,23 |
| 200 | 28,40 | 34% | 66% | 0,20 |

MINERAL WOOL SOUND-ABSORBING INSULATED ROOFING PANEL

CONTENT INFORMATION

| PANEL THICKNESS (mm) | PRODUCT COMPONENTS | SHEET STEEL | ROCK WOOL | TOTAL |
|----------------------|-----------------------------|-------------|-----------|--------------|
| 50 | weight (kg/m ²) | 9,55 | 4,88 | 14,43 |
| | (%) | 66 | 34 | 100 |
| 60 | weight (kg/m ²) | 9,55 | 5,88 | 15,43 |
| | (%) | 62 | 38 | 100 |
| 80 | weight (kg/m ²) | 9,55 | 7,88 | 17,43 |
| | (%) | 55 | 45 | 100 |
| 100 | weight (kg/m ²) | 9,55 | 9,88 | 19,43 |
| | (%) | 49 | 51 | 100 |
| 120 | weight (kg/m ²) | 9,55 | 11,88 | 21,43 |
| | (%) | 45 | 55 | 100 |
| 150 | weight (kg/m ²) | 9,55 | 14,88 | 24,43 |
| | (%) | 39 | 61 | 100 |
| 170 | weight (kg/m ²) | 9,55 | 16,88 | 26,43 |
| | (%) | 36 | 64 | 100 |
| 200 | weight (kg/m ²) | 9,55 | 19,88 | 29,43 |
| | (%) | 32 | 68 | 100 |
| POST CONSUMER | (%) | 24 ÷ 29 | >2 | - |
| RENEWABLE MATERIAL | (%) | 0 | 0 | - |

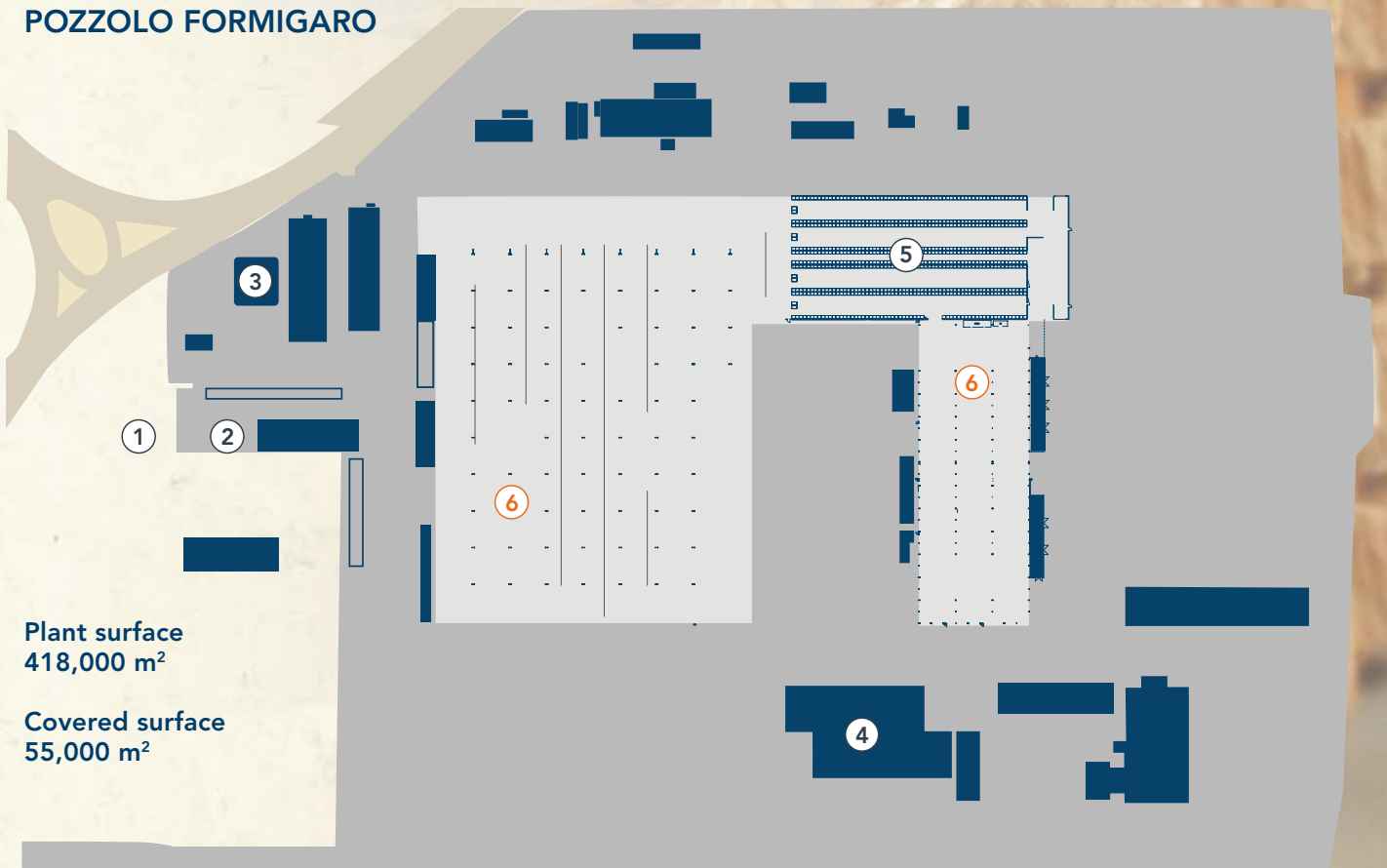
| PANEL THICKNESS (mm) | PACKAGING MATERIALS | POLYETHYLENE | CARDBOARD | POLYSTYRENE | POLYPROPYLENE | TOTAL |
|----------------------|-----------------------------|--------------|-----------|-------------|---------------|--------------|
| 50 | weight (kg/m ²) | 0,058 | 0,046 | 0,029 | 0,03 | 0,162 |
| | (%) | 36 | 28 | 18 | 18 | 100 |
| 60 | weight (kg/m ²) | 0,061 | 0,055 | 0,035 | 0,03 | 0,18 |
| | (%) | 34 | 30 | 19 | 17 | 100 |
| 80 | weight (kg/m ²) | 0,067 | 0,073 | 0,046 | 0,03 | 0,216 |
| | (%) | 31 | 34 | 21 | 14 | 100 |
| 100 | weight (kg/m ²) | 0,073 | 0,091 | 0,058 | 0,03 | 0,252 |
| | (%) | 29 | 36 | 23 | 12 | 100 |
| 120 | weight (kg/m ²) | 0,08 | 0,11 | 0,069 | 0,03 | 0,288 |
| | (%) | 28 | 38 | 24 | 10 | 100 |
| 150 | weight (kg/m ²) | 0,089 | 0,137 | 0,087 | 0,03 | 0,342 |
| | (%) | 26 | 40 | 25 | 9 | 100 |
| 170 | weight (kg/m ²) | 0,095 | 0,155 | 0,098 | 0,03 | 0,378 |
| | (%) | 25 | 41 | 26 | 8 | 100 |
| 200 | weight (kg/m ²) | 0,104 | 0,183 | 0,115 | 0,03 | 0,432 |
| | (%) | 24 | 42 | 27 | 7 | 100 |

3. THE PRODUCTION SITE

Starting from a supply chain of steel semi-finished and finished products, the Marcegaglia RWD plant in **Pozzolo Formigaro** (Alessandria) manufactures insulated panels in mineral wool and polyurethane foam specifically designed for use in civil and industrial construction, in particular for roofs and walls.

The site, **extended and refurbished** using the latest manufacturing technologies to ensure maximum product performance, has a surface area of some **418,000 m²**, of which 55,000 are covered.

POZZOLO FORMIGARO



Plant surface
418,000 m²

Covered surface
55,000 m²

- ① Entrance
- ② Offices
- ③ Utilities
- ④ Main storage
- ⑤ Coils storage
- ⑥ Panels and corrugated sheets production area

4. PLANT CERTIFICATION

The company's **management systems** testify the company's commitment to pursue the **continuous improvement** of its environmental and safety performance, for example by properly managing the hazardous substances and waste produced by its business. Within the **environmental management system** there is also a specific data management procedure for studying the life cycle of products. Year after year, the company plans new improvement objectives aimed at increasing its performance.

Within the environmental management system there is also a specific data management procedure for studying the life cycle of the products. From year to year the company plans new improvement objectives aimed at increasing its performance.

The company has implemented and maintains the following management systems:

- **Quality management system** that meet the requirements of the UNI EN ISO 9001: 2015 (certificate No. 12370/05 / S - expiry 22/05/2025);
- **Environmental management system** that meet the requirements of the UNI EN ISO 14001: 2015 (certificate No. EMS-7290 / S - expiry 25/07/2024);
- Occupational **health and safety management system** that meet the requirements of the UNI ISO 45001: 2018 (certificate No. OHS-260 - expiry 25/09/2025);
- **Social responsibility management system** that meet the requirements of the SA 8000: 2014 (certificate No. SA-2040 - expiry 04/04/2025).

SYSTEM CERTIFICATIONS

| | | | | | | |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| QUALITY MANAGEMENT SYSTEM | ENVIRONMENTAL MANAGEMENT SYSTEM | ENVIRONMENTAL MANAGEMENT SYSTEM | HEALTH AND SAFETY MANAGEMENT SYSTEM | HEALTH AND SAFETY MANAGEMENT SYSTEM | WORKER HEALTH / SAFETY AND ENVIRONMENT POLICY | SOCIAL RESPONSIBILITY MANAGEMENT SYSTEM |
| RINA | RINA | IQNET | RINA | IQNET | | RINA |
| ISO 9001:2015 | ISO 14001:2015 | ISO 14001:2015 | ISO 45001:2018 | ISO 45001:2018 | | SA 8000:2014 |



5. THE PROCESS

The **production cycle** begins with the **arrival of raw materials** to the company by road or rail.

The raw materials consist of:

- coils and strips arriving from the other companies of the Marcegaglia group;
- polyol, catalyst, pentane (expanding) and isocyanate (MDI) for making the polyurethane insulation;
- adhesion promoter;
- mineral wool in mattresses;
- non-woven fabric for sound-absorbing panels;
- polyol mix for bonding wool-sheet strips;
- packaging materials such as sponges, adhesive tape, polystyrene blocks, packaging film, protective cardboard.

In detail, the processing cycle takes place through the phases described below.

• UNWINDING OF COILS

Each of the two metal sheets (steel, aluminum), supplied in coils, is carried out on special reels, electronically controlled to ensure constant power and voltage; an automatic accumulation and crimping system allows the continuous change of the reels without interrupting the production.

• PROTECTIVE FILM APPLICATION

A devolving and application system spreads an adhesive film over the entire pre-painted metal surface to protect it from damage to the paint both in the production phase and later for the various handling and installation phases.

• PROFILING OF SHEETS

The sheets are profiled according to the various shapes through two interchangeable roller profiling trains, always under electronic speed control.

• HEATING SHEETS

The profiled sheets are preheated through an oven with separate chambers and an electronic temperature control system, which allows, in the simple passage, to reach the temperature necessary to favor the adhesion of the polyurethane foam in the subsequent phases (approximately 40 ° C).

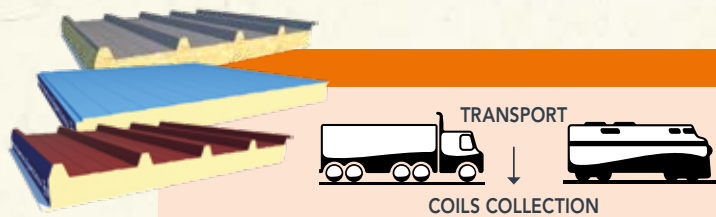
• FOAMING

This is followed by a 5-component special execution high-pressure foaming station (polyol, isocyanate, blowing agent, reaction catalysts and additives) with a distribution portal equipped with a mixing head and comb distributor.

This spreads uniformly on the lower sheet the mixture of chemical components which react to form the expanded polyurethane resin.

The head is fed by dosing groups which, by taking the components from tanks at controlled pressure and temperature, supply the exact quantity necessary for the reaction, by means of high pressure pumps with adjustable flow rate. A special computer and related electronic equipment manage the flow rate and temperature parameters of the components as well as the flow rate / production speed ratio.

The recipe varies according to the type of panel (wall, roof, thickness, etc.) and the type of polyurethane to be made. In some cases, to give the panel high fire resistance characteristics, mineral wool is used instead of polyurethane with a special machine.



• PRESS AND HEAT TREATMENT

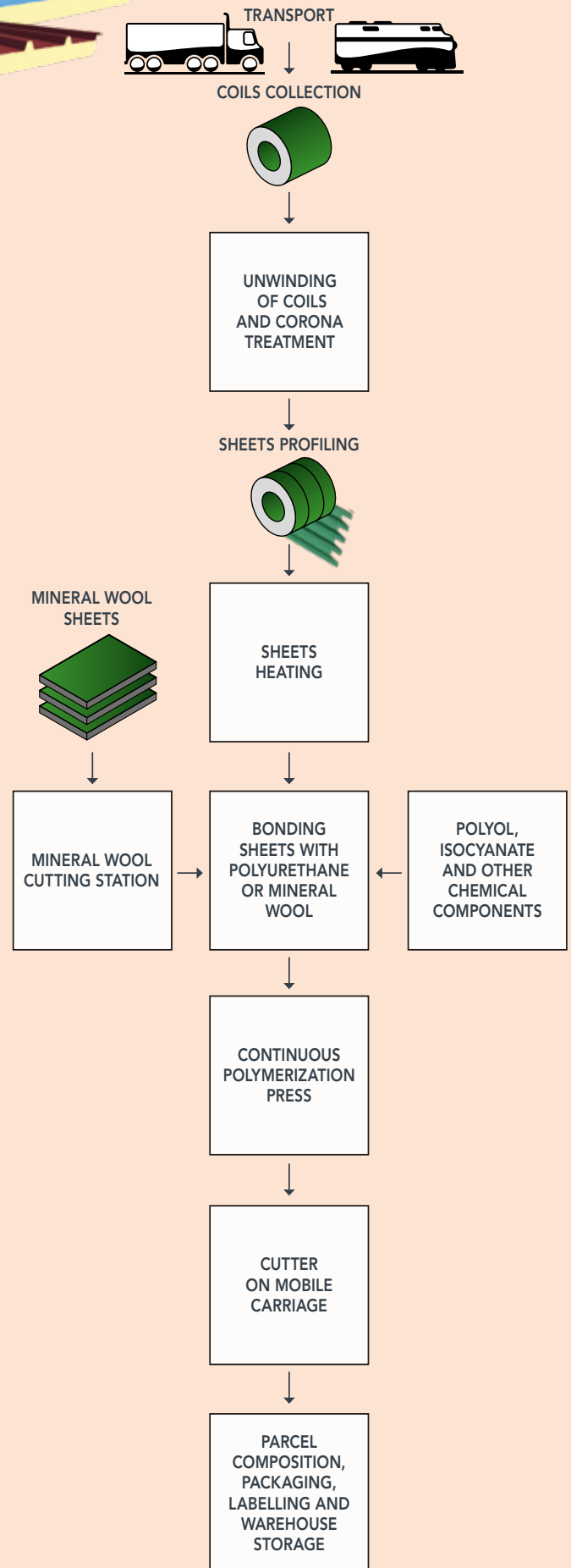
After the foaming phase, the pair of sheets with interposed expanding components are inserted into a continuous press consisting of a double conveyor belt with metal plates and interchangeable counter-shapes. Here the growth and maturation of the polyurethane foam and calibration take place to the finished thickness of the panel. The upper belt is therefore movable in height to allow the production of various panel thicknesses, while a pair of vertical axis catenaries contain the foam on the sides. The entire double belt is enclosed in an insulated tunnel equipped with a heating system.

• CUT TO MEASURE

This is followed by the automatic cutting-to-size system in speed; this is a moving cutter on a carriage controlled by an electronic system, for carrying out the cut continuously at the predetermined size, after reaching the speed of synchronism with the line.

• PACKAGING AND SHIPPING IN WAREHOUSE

A system of motorized chains and roller conveyors sends the packs thus formed to an automatic packaging system. Here the polystyrene spacers are applied for storage and the whole is wound in a spiral with an extensible polyethylene film, which guarantees its stability and compactness during transport. Finally, the packs thus packed are transferred by means of special conveyors and lifting means to the warehouse awaiting shipment.



* To obtain the values per unit of thermal resistance, it is necessary to multiply each indicator by the thermal transmittance value U, shown in the tables in the "2. THE PRODUCT" (see tables from page 4 to page 15).

6. THE METHODOLOGY

Due to the fact that, at the end of the analyzed production cycle, there is no finished product, meant as a piece or unit, the environmental performances have been assessed taking **1 square metre of insulated panel**, with specific thermal resistance, depending on the thickness of the panel, as the functional unit.*

To collect, analyze and monitor performance, **SimaPro rel. 9.3.0.3 software** has been used.

The data used is representative of the **year 2021** and were provided by the company (**primary data**).

Secondary data, on the other hand, comes from the Ecoinvent database (Ref.: database v.3.8, November 2021). For energy consumption and waste, a mass allocation has been made.

The study is the system "**from cradle to gate with options (A1-A3 + A4 + C1-C4 + D)**", as shown in the following table (reference: PCR 2019: 14 "Construction products" version 1.11), valid until 20/12/2024.

Modules A1-A3 include material procurement (raw

and auxiliary materials) and manufacturing processes. **Module A4** examines the distribution of the finished product to the customer, considering an average delivery distance of the same equal to 400 km.

The **C1-C4 modules** consider the transport, the treatment and the disposal of the panel components at the end of their life. These operations are not directly controllable by the company: in this regard, literature data relating to the construction sector are therefore used, considering an average distance of 50 km to transport the panel from the place where it was decommissioned to the recovery center. It is emphasized that the insulated panels supplied by the company, regardless of the type of insulation, can be disassembled in order also to facilitate the subsequent recovery of the components.

Module D considers the steel deriving from the demolition process of the panels after their use and destined for recycling. The calculation of the environmental benefits is based on the indications provided by the document "Product Category Rules for Type III environmental product declaration of construction products to EN 15804: 2012 - Par. 6.3.4.6. Benefits and loads beyond the product system boundary, information Module D".

| | | MODULE | Modules declared | Geography | Specific data | Variations product | Variation site |
|----------------------------|--------------------------------------|--------|------------------|-----------|---------------|--------------------|----------------|
| PRODUCT STAGE | Raw material supply | A1 | X | GLO | >90% | Not relevant | Not relevant |
| | Transport | A2 | X | IT | >90% | Not relevant | Not relevant |
| | Manufacturing | A3 | X | IT | >90% | Not relevant | Not relevant |
| CONSTRUCTION PROCESS STAGE | Transport | A4 | X | IT | >90% | Not relevant | Not relevant |
| | Construction installation | A5 | ND | - | >90% | Not relevant | Not relevant |
| USE STAGE | Use | B1 | ND | - | - | - | - |
| | Maintenance | B2 | ND | - | - | - | - |
| | Repair | B3 | ND | - | - | - | - |
| | Replacement | B4 | ND | - | - | - | - |
| | Refurbishment | B5 | ND | - | - | - | - |
| | Operational energy use | B6 | ND | - | - | - | - |
| | Operational water use | B7 | ND | - | - | - | - |
| END OF LIFE STAGE | De-construction demolition | C1 | X | GLO | - | - | - |
| | Transport | C2 | X | GLO | - | - | - |
| | Waste processing | C3 | X | GLO | - | - | - |
| | Disposal | C4 | X | GLO | - | - | - |
| FRESOURCE RECOVERY STAGE | Reuse, recovery, recycling potential | D | X | IT | - | - | - |

LEGEND: X = Module considered, ND = Module not declared, GLO = Global, IT = Italy



7. POTENTIAL ENVIRONMENTAL IMPACTS

Air quality monitoring programs, the quality of working environments and individual issuing points are active in respect to the prescriptions of the authorizations issued by the competent regional authorities.

All emissions generated by processing are **conveyed into the atmosphere** and where necessary are equipped with adequate **abatement systems** before they are released into the environment.

During the **manufacturing process of the insulation panels**:

- no flame retardants subject to restrictions or prohibitions provided for by applicable national or community regulations are used;
- no blowing agents with an ozone reduction potential greater than zero are used;
- no lead catalysts are used;

- the mineral wool used complies with note Q or note R referred to in Regulation (EC) no. 1272/2008 (CLP) and subsequent amendments (29).

The impact categories are:

- **global warming**: the increase of the average temperature of the surface of the Earth, attributed in large part to increasing quantities of atmospheric emissions of greenhouse gases;
- the **distribution of the ozone layer**, linked to the agents issued by human activity, primarily chlorine and bromine;
- **photochemical oxidation**, a complex mixture of atmospheric pollutants consisting of ozone and other oxidizing chemical substances, nitrogen dioxide (NO₂) and fine particles;
- **atmospheric acidification**: acid rain, due to emissions derived from the use of fossil fuels;
- the **eutrophication of water**: an excess increase in plant organisms in aquatic ecosystems;
- the **depletion of abiotic fossil resources and otherwise**.

| IMPACT CATEGORY | ABB. | UNIT |
|---|--|--------------------------------|
| Climate change - total | GWP - t | kg CO ₂ eq |
| Climate change - Fossil | GWP - fossil | kg CO ₂ eq |
| Climate change - Biogenic | GWP - biogenic | kg CO ₂ eq |
| Climate change - Land use and LU change | GWP - luluc | kg CO ₂ eq |
| Climate change - Greenhouse Gases | GWP - GHG | kg CO ₂ eq |
| Ozone depletion | ODP | kg CFC11 eq |
| Photochemical ozone formation | POCP | kg NMVOC eq |
| Acidification of land and water | AP | mol H ⁺ eq |
| Eutrophication | EP - freshwater EP - marine EP - terrestrial | kg P eq kg N eq mol N eq |
| Water use | WDP | m ³ depriv. |
| Resource use, fossils | ADP - F | MJ |
| Resource use, minerals and metals | ADP - MM | kg Sb eq |





8. RESOURCE USE

The resources used to transform steel products have always been a priority for Marcegaglia.

The company has implemented an energy management system pursuant to the **UNI CEI EN ISO 50001: 2018** (forthcoming certification) to identify the most important plants in terms of energy as well as define opportunities for improvement in order to reduce over time the energy consumption determined by the performance of its business.

Regardless of the type of panel considered, the most impacting elements are the **steel sheet** that covers the insulating material, as well as the **polyol** and **isocyanate** used for the generation of the polyurethane foam. For insulated panels in **mineral wool**, the latter always has a significant impact after the steel sheet.

The **steel** used for the metal supports of the insulating panels has a **recycled content of 24.4%**: this percentage is calculated as a weighted average of the same value associated with the incoming raw material and deriving both from Type III environmental declarations as well as from self-declarations compliant with the UNI EN ISO 14021 standard. The steel comes both from blast furnace (with an average recycled content of 17.0%) and from an electric arc furnace (with an average recycled content of 82.8%).

The **mineral rock wool** used has a **recycled content greater than 25%**: the value is that indicated by the self-declaration prepared by the supplier in accordance with the indications of the UNI EN ISO 14021 standard.

The company is also able to supply insulated panels in **PIR polyurethane foam** characterized by a **recycled content of at least 2%**: the value is that indicated by the self-declaration prepared by the supplier in accordance with what is indicated by the standard UNI EN ISO 14021.

It is emphasized that the **different types** of insulated panels in mineral wool (sound-absorbing and not) do not show significant differences in what are the elements that make up the overall impact.

The insulated panels in **sound-absorbing** mineral wool are characterized in their process from a part of **non-woven fabric**, absent in the non-sound-absorbing ones, however this additional element represents less than 0.2% of the total impact.

The impacts of **energy consumption** (natural gas, electricity) are negligible as they represent a marginal percentage of the total impact.

The amount of energy resources used shall be taken into account in calculating the **resources used** (from renewable and non-renewable sources), the **depletion of fossil fuels** and the **volume of fresh water taken**.

| IMPACT CATEGORY | ABB. | UNIT |
|---|-------|----------------|
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials | PERE | MJ |
| Use of renewable primary energy resources used as raw materials | PERM | MJ |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | PERT | MJ |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | PENRE | MJ |
| Use of non-renewable primary energy resources used as raw materials | PENRM | MJ |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) | PENRT | MJ |
| Use of secondary material | SM | kg |
| Use of renewable secondary fuels | RSF | MJ |
| Use of non-renewable secondary fuels | NRSF | MJ |
| Use of net fresh water | FW | m ³ |



9. WASTE PRODUCTION

In this analysis, the generation of waste is examined, subdividing it into three categories: **hazardous**, **non-hazardous** and **radioactive waste**.

| IMPACT CATEGORY | ABB. | UNIT |
|------------------------------|------|------|
| Hazardous waste disposed | HW | kg |
| Non-hazardous waste disposed | NHW | kg |
| Radioactive waste disposed | RW | kg |



10. OUTPUT FLOWS

Steel falls into the category of durable goods and is considered to be a **permanent material**. It can be **re-generated** and **reused over and over again** without ever losing any of its original properties, resistance, and durability, allowing it to have a **very long life cycle**, ample opportunities for **industrial synergies**, the possibility to be easily separated from other materials, as a result of its magnetic characteristics and specific weight. Marcegaglia RWD has always paid particular attention to **waste reduction** thanks to specific policies in the management of processes: metal waste is a durable material that can be recast over and over again without losing its properties.

It is specified that the types of wall and roofing panels are designed and manufactured to be **disassembled and reused**. With particular reference to the individual parts that make up the panels, it is specified that they may, after separation, be **destined for recycling, recovery or disposal** depending on the type of material and in particular it should be noted that, in line with what is indicated in the "Report special waste" of ISPRA - No. 344/2021:

- the amount of **steel destined for recycling is 88%**;
- the quantity of **mineral wool destined for recycling is equal to 76.2%**.

| IMPACT CATEGORY | ABB. | UNIT |
|----------------------------------|---------|------|
| Reuse | REUSE | kg |
| Materials for recycling | RECYCLE | kg |
| Materials for energy recovery | EN-REC | kg |
| Exported energy - electricity | EE-E | MJ |
| Exported energy - thermal energy | EE-T | MJ |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 40 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,00E+01 | 3,29E-01 | 3,36E+00 | -6,94E+00 | 2,72E+01 | 3,05E-01 | 3,29E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 2,98E+01 | 3,29E-01 | 3,36E+00 | -6,92E+00 | 2,71E+01 | 3,05E-01 | 3,28E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 1,29E-01 | 3,20E-04 | 4,59E-04 | -1,28E-02 | 1,14E-01 | 2,96E-04 | 4,45E-04 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 4,75E-02 | 1,18E-04 | 6,97E-05 | -5,45E-03 | 4,32E-02 | 1,09E-04 | 6,65E-05 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 2,89E+01 | 3,26E-01 | 3,32E+00 | -6,69E+00 | 2,62E+01 | 3,02E-01 | 3,25E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 2,28E-06 | 7,85E-08 | 5,29E-08 | -3,40E-07 | 2,06E-06 | 7,27E-08 | 4,99E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,09E-01 | 1,47E-03 | 5,39E-03 | -3,08E-02 | 9,86E-02 | 1,36E-03 | 5,18E-03 | -2,81E-02 |
| AP | mol H+ eq | 1,41E-01 | 1,37E-03 | 4,23E-03 | -3,11E-02 | 1,27E-01 | 1,27E-03 | 4,07E-03 | -2,84E-02 |
| EP - freshwater | kg P eq | 8,72E-03 | 2,05E-05 | 2,28E-05 | -3,24E-03 | 7,91E-03 | 1,90E-05 | 2,20E-05 | -2,95E-03 |
| EP - marine | kg N eq | 3,59E-02 | 4,19E-04 | 2,74E-03 | -7,45E-03 | 3,25E-02 | 3,88E-04 | 2,65E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 3,16E-01 | 4,58E-03 | 2,14E-02 | -7,07E-02 | 2,86E-01 | 4,24E-03 | 2,07E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 1,46E+01 | 1,76E-02 | 2,12E-01 | -1,71E+00 | 1,32E+01 | 1,63E-02 | 2,07E-01 | -1,56E+00 |
| ADP - F | MJ | 4,01E+02 | 5,13E+00 | 4,22E+00 | -7,21E+01 | 3,63E+02 | 4,75E+00 | 4,00E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 5,19E-04 | 7,54E-07 | 5,93E-07 | -8,80E-05 | 4,72E-04 | 6,98E-07 | 5,72E-07 | -8,10E-05 |
| PERE | MJ | 3,26E+01 | 8,15E-02 | 7,42E-02 | -8,16E+00 | 2,96E+01 | 7,55E-02 | 7,15E-02 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 3,26E+01 | 8,15E-02 | 7,42E-02 | -8,16E+00 | 2,96E+01 | 7,55E-02 | 7,15E-02 | -7,44E+00 |
| PENRE | MJ | 4,46E+02 | 5,07E+00 | 4,36E+00 | -8,83E+01 | 4,04E+02 | 4,69E+00 | 4,15E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 4,46E+02 | 5,07E+00 | 4,36E+00 | -8,83E+01 | 4,04E+02 | 4,69E+00 | 4,15E+00 | -8,05E+01 |
| SM | kg | 2,29E+00 | 0,00E+00 | 1,28E-03 | -1,27E+00 | 2,09E+00 | 0,00E+00 | 1,22E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 3,33E-01 | 1,14E-03 | 6,80E-03 | -7,97E-02 | 3,02E-01 | 1,06E-03 | 6,64E-03 | -7,27E-02 |
| HW | kg | 2,15E+00 | 0,00E+00 | 4,02E-03 | -3,99E-01 | 1,94E+00 | 0,00E+00 | 3,88E-03 | -3,63E-01 |
| NHW | kg | 8,83E+00 | 0,00E+00 | 1,65E+00 | -2,80E+00 | 8,02E+00 | 0,00E+00 | 1,61E+00 | -2,56E+00 |
| RW | kg | 9,43E-03 | 0,00E+00 | 2,50E-04 | -2,20E-03 | 8,53E-03 | 0,00E+00 | 2,33E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 7,01E-02 | 0,00E+00 | 1,80E-03 | -3,49E+00 | 6,35E-02 | 0,00E+00 | 1,70E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 50 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,20E+01 | 3,43E-01 | 4,09E+00 | -6,94E+00 | 2,92E+01 | 3,19E-01 | 4,17E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 3,18E+01 | 3,43E-01 | 4,09E+00 | -6,92E+00 | 2,90E+01 | 3,19E-01 | 4,17E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 1,55E-01 | 3,33E-04 | 5,47E-04 | -1,28E-02 | 1,39E-01 | 3,10E-04 | 5,51E-04 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 4,87E-02 | 1,23E-04 | 7,96E-05 | -5,45E-03 | 4,44E-02 | 1,15E-04 | 7,82E-05 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,08E+01 | 3,40E-01 | 4,04E+00 | -6,69E+00 | 2,81E+01 | 3,16E-01 | 4,12E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 2,60E-06 | 8,19E-08 | 5,80E-08 | -3,40E-07 | 2,37E-06 | 7,61E-08 | 5,57E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,17E-01 | 1,54E-03 | 6,26E-03 | -3,08E-02 | 1,06E-01 | 1,43E-03 | 6,21E-03 | -2,81E-02 |
| AP | mol H+ eq | 1,53E-01 | 1,43E-03 | 4,92E-03 | -3,11E-02 | 1,39E-01 | 1,33E-03 | 4,89E-03 | -2,84E-02 |
| EP - freshwater | kg P eq | 9,31E-03 | 2,14E-05 | 2,68E-05 | -3,24E-03 | 8,48E-03 | 1,98E-05 | 2,67E-05 | -2,95E-03 |
| EP - marine | kg N eq | 3,93E-02 | 4,37E-04 | 3,24E-03 | -7,45E-03 | 3,58E-02 | 4,06E-04 | 3,26E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 3,37E-01 | 4,78E-03 | 2,51E-02 | -7,07E-02 | 3,07E-01 | 4,44E-03 | 2,50E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 1,64E+01 | 1,84E-02 | 2,57E-01 | -1,71E+00 | 1,50E+01 | 1,71E-02 | 2,62E-01 | -1,56E+00 |
| ADP - F | MJ | 4,43E+02 | 5,35E+00 | 4,73E+00 | -7,21E+01 | 4,04E+02 | 4,97E+00 | 4,59E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 5,40E-04 | 7,87E-07 | 6,96E-07 | -8,80E-05 | 4,92E-04 | 7,31E-07 | 6,95E-07 | -8,10E-05 |
| PERE | MJ | 3,55E+01 | 8,50E-02 | 8,68E-02 | -8,16E+00 | 3,24E+01 | 7,90E-02 | 8,64E-02 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 3,55E+01 | 8,50E-02 | 8,68E-02 | -8,16E+00 | 3,24E+01 | 7,90E-02 | 8,64E-02 | -7,44E+00 |
| PENRE | MJ | 4,88E+02 | 5,28E+00 | 4,91E+00 | -8,83E+01 | 4,44E+02 | 4,91E+00 | 4,78E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 4,88E+02 | 5,28E+00 | 4,91E+00 | -8,83E+01 | 4,44E+02 | 4,91E+00 | 4,78E+00 | -8,05E+01 |
| SM | kg | 2,29E+00 | 0,00E+00 | 1,45E-03 | -1,27E+00 | 3,10E+00 | 0,00E+00 | 1,46E-03 | -1,75E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 3,49E-01 | 1,19E-03 | 8,25E-03 | -7,97E-02 | 3,18E-01 | 1,11E-03 | 8,39E-03 | -7,27E-02 |
| HW | kg | 2,40E+00 | 0,00E+00 | 4,73E-03 | -3,99E-01 | 2,18E+00 | 0,00E+00 | 4,72E-03 | -3,63E-01 |
| NHW | kg | 9,38E+00 | 0,00E+00 | 2,02E+00 | -2,80E+00 | 8,55E+00 | 0,00E+00 | 2,06E+00 | -2,56E+00 |
| RW | kg | 1,04E-02 | 0,00E+00 | 2,67E-04 | -2,20E-03 | 9,48E-03 | 0,00E+00 | 2,52E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 7,61E-02 | 0,00E+00 | 2,00E-03 | -3,49E+00 | 6,93E-02 | 0,00E+00 | 1,93E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 60 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,37E+01 | 3,58E-01 | 4,87E+00 | -6,94E+00 | 3,11E+01 | 3,33E-01 | 4,92E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 3,35E+01 | 3,57E-01 | 4,87E+00 | -6,92E+00 | 3,08E+01 | 3,33E-01 | 4,92E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 1,79E-01 | 3,47E-04 | 6,41E-04 | -1,28E-02 | 1,82E-01 | 3,23E-04 | 6,41E-04 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 4,99E-02 | 1,28E-04 | 9,00E-05 | -5,45E-03 | 4,53E-02 | 1,20E-04 | 8,84E-05 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,24E+01 | 3,54E-01 | 4,82E+00 | -6,69E+00 | 2,99E+01 | 3,30E-01 | 4,86E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 2,87E-06 | 8,53E-08 | 6,34E-08 | -3,40E-07 | 2,67E-06 | 7,95E-08 | 6,09E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,24E-01 | 1,60E-03 | 7,19E-03 | -3,08E-02 | 1,14E-01 | 1,49E-03 | 7,11E-03 | -2,81E-02 |
| AP | mol H+ eq | 1,63E-01 | 1,49E-03 | 5,66E-03 | -3,11E-02 | 1,50E-01 | 1,39E-03 | 5,60E-03 | -2,84E-02 |
| EP - freshwater | kg P eq | 9,84E-03 | 2,22E-05 | 3,09E-05 | -3,24E-03 | 9,03E-03 | 2,07E-05 | 3,07E-05 | -2,95E-03 |
| EP - marine | kg N eq | 4,23E-02 | 4,55E-04 | 3,78E-03 | -7,45E-03 | 3,89E-02 | 4,24E-04 | 3,78E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 3,56E-01 | 4,97E-03 | 2,89E-02 | -7,07E-02 | 3,27E-01 | 4,63E-03 | 2,87E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 1,81E+01 | 1,92E-02 | 3,06E-01 | -1,71E+00 | 1,67E+01 | 1,79E-02 | 3,09E-01 | -1,56E+00 |
| ADP - F | MJ | 4,81E+02 | 5,57E+00 | 5,26E+00 | -7,21E+01 | 4,44E+02 | 5,19E+00 | 5,11E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 5,59E-04 | 8,19E-07 | 8,06E-07 | -8,80E-05 | 5,12E-04 | 7,63E-07 | 8,02E-07 | -8,10E-05 |
| PERE | MJ | 3,79E+01 | 8,85E-02 | 1,00E-01 | -8,16E+00 | 3,43E+01 | 8,25E-02 | 9,93E-02 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 3,79E+01 | 8,85E-02 | 1,00E-01 | -8,16E+00 | 3,43E+01 | 8,25E-02 | 9,93E-02 | -7,44E+00 |
| PENRE | MJ | 5,24E+02 | 5,50E+00 | 5,49E+00 | -8,83E+01 | 4,84E+02 | 5,13E+00 | 5,35E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 5,24E+02 | 5,50E+00 | 5,49E+00 | -8,83E+01 | 4,84E+02 | 5,13E+00 | 5,35E+00 | -8,05E+01 |
| SM | kg | 2,30E+00 | 0,00E+00 | 1,62E-03 | -1,27E+00 | 2,09E+00 | 0,00E+00 | 1,58E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 3,63E-01 | 1,24E-03 | 9,80E-03 | -7,97E-02 | 3,32E-01 | 1,16E-03 | 9,89E-03 | -7,27E-02 |
| HW | kg | 2,63E+00 | 0,00E+00 | 5,48E-03 | -3,99E-01 | 2,42E+00 | 0,00E+00 | 5,45E-03 | -3,63E-01 |
| NHW | kg | 9,88E+00 | 0,00E+00 | 2,42E+00 | -2,80E+00 | 8,96E+00 | 0,00E+00 | 2,45E+00 | -2,56E+00 |
| RW | kg | 1,13E-02 | 0,00E+00 | 2,84E-04 | -2,20E-03 | 1,04E-02 | 0,00E+00 | 2,69E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 8,15E-02 | 0,00E+00 | 2,21E-03 | -3,49E+00 | 7,49E-02 | 0,00E+00 | 2,14E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 80 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,80E+01 | 3,86E-01 | 6,58E+00 | -6,94E+00 | 3,50E+01 | 3,62E-01 | 6,58E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 3,77E+01 | 3,85E-01 | 6,58E+00 | -6,92E+00 | 3,48E+01 | 3,61E-01 | 6,58E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 2,36E-01 | 3,75E-04 | 8,45E-04 | -1,28E-02 | 2,15E-01 | 3,51E-04 | 8,40E-04 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 5,24E-02 | 1,39E-04 | 1,13E-04 | -5,45E-03 | 4,81E-02 | 1,30E-04 | 1,10E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,65E+01 | 3,82E-01 | 6,50E+00 | -6,69E+00 | 3,37E+01 | 3,58E-01 | 6,50E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 3,53E-06 | 9,21E-08 | 7,47E-08 | -3,40E-07 | 3,30E-06 | 8,63E-08 | 7,20E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,40E-01 | 1,73E-03 | 9,20E-03 | -3,08E-02 | 1,29E-01 | 1,62E-03 | 9,07E-03 | -2,81E-02 |
| AP | mol H+ eq | 1,88E-01 | 1,61E-03 | 7,25E-03 | -3,11E-02 | 1,74E-01 | 1,51E-03 | 7,15E-03 | -2,84E-02 |
| EP - freshwater | kg P eq | 1,11E-02 | 2,40E-05 | 4,00E-05 | -3,24E-03 | 1,02E-02 | 2,25E-05 | 3,96E-05 | -2,95E-03 |
| EP - marine | kg N eq | 4,94E-02 | 4,91E-04 | 4,96E-03 | -7,45E-03 | 4,57E-02 | 4,60E-04 | 4,92E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 4,01E-01 | 5,37E-03 | 3,73E-02 | -7,07E-02 | 3,70E-01 | 5,03E-03 | 3,68E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 2,20E+01 | 2,07E-02 | 4,13E-01 | -1,71E+00 | 2,03E+01 | 1,94E-02 | 4,13E-01 | -1,56E+00 |
| ADP - F | MJ | 5,72E+02 | 6,01E+00 | 6,41E+00 | -7,21E+01 | 5,29E+02 | 5,63E+00 | 6,24E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 6,01E-04 | 8,84E-07 | 1,05E-06 | -8,80E-05 | 5,53E-04 | 8,28E-07 | 1,03E-06 | -8,10E-05 |
| PERE | MJ | 4,42E+01 | 9,55E-02 | 1,29E-01 | -8,16E+00 | 4,10E+01 | 8,95E-02 | 1,27E-01 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 4,42E+01 | 9,55E-02 | 1,29E-01 | -8,16E+00 | 4,10E+01 | 8,95E-02 | 1,27E-01 | -7,44E+00 |
| PENRE | MJ | 6,14E+02 | 5,94E+00 | 6,73E+00 | -8,83E+01 | 5,67E+02 | 5,56E+00 | 6,56E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 6,14E+02 | 5,94E+00 | 6,73E+00 | -8,83E+01 | 5,67E+02 | 5,56E+00 | 6,56E+00 | -8,05E+01 |
| SM | kg | 2,31E+00 | 0,00E+00 | 2,00E-03 | -1,27E+00 | 2,10E+00 | 0,00E+00 | 1,96E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 3,98E-01 | 1,34E-03 | 1,32E-02 | -7,97E-02 | 3,65E-01 | 1,26E-03 | 1,32E-02 | -7,27E-02 |
| HW | kg | 3,14E+00 | 0,00E+00 | 7,10E-03 | -3,99E-01 | 2,92E+00 | 0,00E+00 | 7,03E-03 | -3,63E-01 |
| NHW | kg | 1,10E+01 | 0,00E+00 | 3,29E+00 | -2,80E+00 | 1,02E+01 | 0,00E+00 | 3,29E+00 | -2,56E+00 |
| RW | kg | 1,33E-02 | 0,00E+00 | 3,21E-04 | -2,20E-03 | 1,24E-02 | 0,00E+00 | 3,05E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 9,37E-02 | 0,00E+00 | 2,66E-03 | -3,49E+00 | 8,69E-02 | 0,00E+00 | 2,58E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 100 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,19E+01 | 4,14E-01 | 8,25E+00 | -6,94E+00 | 3,89E+01 | 3,90E-01 | 8,21E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 4,15E+01 | 4,14E-01 | 8,24E+00 | -6,92E+00 | 3,86E+01 | 3,89E-01 | 8,20E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 2,87E-01 | 4,02E-04 | 1,05E-03 | -1,28E-02 | 2,65E-01 | 3,78E-04 | 1,04E-03 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 5,47E-02 | 1,49E-04 | 1,35E-04 | -5,45E-03 | 5,05E-02 | 1,40E-04 | 1,32E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,02E+01 | 4,10E-01 | 8,15E+00 | -6,69E+00 | 3,73E+01 | 3,86E-01 | 8,11E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 4,13E-06 | 9,88E-08 | 8,59E-08 | -3,40E-07 | 3,91E-06 | 9,30E-08 | 8,30E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,55E-01 | 1,85E-03 | 1,12E-02 | -3,08E-02 | 1,45E-01 | 1,75E-03 | 1,10E-02 | -2,81E-02 |
| AP | mol H+ eq | 2,11E-01 | 1,73E-03 | 8,80E-03 | -3,11E-02 | 1,97E-01 | 1,63E-03 | 8,67E-03 | -2,84E-02 |
| EP - freshwater | kg P eq | 1,22E-02 | 2,58E-05 | 4,89E-05 | -3,24E-03 | 1,14E-02 | 2,43E-05 | 4,83E-05 | -2,95E-03 |
| EP - marine | kg N eq | 5,59E-02 | 5,27E-04 | 6,11E-03 | -7,45E-03 | 5,22E-02 | 4,96E-04 | 6,04E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 4,42E-01 | 5,76E-03 | 4,54E-02 | -7,07E-02 | 4,11E-01 | 5,42E-03 | 4,48E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 2,55E+01 | 2,22E-02 | 5,17E-01 | -1,71E+00 | 2,38E+01 | 2,09E-02 | 5,15E-01 | -1,56E+00 |
| ADP - F | MJ | 6,53E+02 | 6,45E+00 | 7,54E+00 | -7,21E+01 | 6,11E+02 | 6,07E+00 | 7,35E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 6,40E-04 | 9,49E-07 | 1,28E-06 | -8,80E-05 | 5,93E-04 | 8,93E-07 | 1,26E-06 | -8,10E-05 |
| PERE | MJ | 4,98E+01 | 1,03E-01 | 1,57E-01 | -8,16E+00 | 4,66E+01 | 9,65E-02 | 1,55E-01 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 4,98E+01 | 1,03E-01 | 1,57E-01 | -8,16E+00 | 4,66E+01 | 9,65E-02 | 1,55E-01 | -7,44E+00 |
| PENRE | MJ | 6,94E+02 | 6,37E+00 | 7,95E+00 | -8,83E+01 | 6,48E+02 | 6,00E+00 | 7,75E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 6,94E+02 | 6,37E+00 | 7,95E+00 | -8,83E+01 | 6,48E+02 | 6,00E+00 | 7,75E+00 | -8,05E+01 |
| SM | kg | 2,32E+00 | 0,00E+00 | 2,38E-03 | -1,27E+00 | 2,11E+00 | 0,00E+00 | 2,32E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,29E-01 | 1,44E-03 | 1,65E-02 | -7,97E-02 | 3,96E-01 | 1,36E-03 | 1,64E-02 | -7,27E-02 |
| HW | kg | 3,62E+00 | 0,00E+00 | 8,69E-03 | -3,99E-01 | 3,41E+00 | 0,00E+00 | 8,58E-03 | -3,63E-01 |
| NHW | kg | 1,20E+01 | 0,00E+00 | 4,13E+00 | -2,80E+00 | 1,12E+01 | 0,00E+00 | 4,12E+00 | -2,56E+00 |
| RW | kg | 1,52E-02 | 0,00E+00 | 3,56E-04 | -2,20E-03 | 1,43E-02 | 0,00E+00 | 3,40E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 1,05E-01 | 0,00E+00 | 3,10E-03 | -3,49E+00 | 9,85E-02 | 0,00E+00 | 3,01E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 120 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,58E+01 | 4,43E-01 | 9,82E+00 | -6,94E+00 | 4,28E+01 | 4,18E-01 | 9,76E+00 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 4,54E+01 | 4,42E-01 | 9,82E+00 | -6,92E+00 | 4,24E+01 | 4,18E-01 | 9,76E+00 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 3,38E-01 | 4,30E-04 | 1,23E-03 | -1,28E-02 | 3,14E-01 | 4,06E-04 | 1,22E-03 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 5,72E-02 | 1,59E-04 | 1,56E-04 | -5,45E-03 | 5,29E-02 | 1,50E-04 | 1,53E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,39E+01 | 4,39E-01 | 9,70E+00 | -6,69E+00 | 4,10E+01 | 4,14E-01 | 9,64E+00 | -6,10E+00 |
| ODP | kg CFC-11 eq | 4,75E-06 | 1,06E-07 | 9,66E-08 | -3,40E-07 | 4,53E-06 | 9,98E-08 | 9,36E-08 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,71E-01 | 1,98E-03 | 1,30E-02 | -3,08E-02 | 1,60E-01 | 1,87E-03 | 1,28E-02 | -2,81E-02 |
| AP | mol H+ eq | 2,34E-01 | 1,85E-03 | 1,03E-02 | -3,11E-02 | 2,20E-01 | 1,74E-03 | 1,01E-02 | -2,84E-02 |
| EP - freshwater | kg P eq | 1,34E-02 | 2,75E-05 | 5,73E-05 | -3,24E-03 | 1,25E-02 | 2,60E-05 | 5,66E-05 | -2,95E-03 |
| EP - marine | kg N eq | 6,25E-02 | 5,63E-04 | 7,19E-03 | -7,45E-03 | 5,88E-02 | 5,32E-04 | 7,12E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 4,84E-01 | 6,15E-03 | 5,31E-02 | -7,07E-02 | 4,52E-01 | 5,82E-03 | 5,24E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 2,90E+01 | 2,37E-02 | 6,16E-01 | -1,71E+00 | 2,73E+01 | 2,24E-02 | 6,12E-01 | -1,56E+00 |
| ADP - F | MJ | 7,35E+02 | 6,89E+00 | 8,62E+00 | -7,21E+01 | 6,93E+02 | 6,51E+00 | 8,41E+00 | -6,57E+01 |
| ADP - MM | kg Sb eq | 6,80E-04 | 1,01E-06 | 1,50E-06 | -8,80E-05 | 6,33E-04 | 9,58E-07 | 1,48E-06 | -8,10E-05 |
| PERE | MJ | 5,54E+01 | 1,10E-01 | 1,84E-01 | -8,16E+00 | 5,22E+01 | 1,04E-01 | 1,81E-01 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 5,54E+01 | 1,10E-01 | 1,84E-01 | -8,16E+00 | 5,22E+01 | 1,04E-01 | 1,81E-01 | -7,44E+00 |
| PENRE | MJ | 7,75E+02 | 6,81E+00 | 9,11E+00 | -8,83E+01 | 7,29E+02 | 6,44E+00 | 8,90E+00 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 7,75E+02 | 6,81E+00 | 9,11E+00 | -8,83E+01 | 7,29E+02 | 6,44E+00 | 8,90E+00 | -8,05E+01 |
| SM | kg | 2,32E+00 | 0,00E+00 | 2,73E-03 | -1,27E+00 | 2,12E+00 | 0,00E+00 | 2,67E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,60E-01 | 1,54E-03 | 1,96E-02 | -7,97E-02 | 4,26E-01 | 1,45E-03 | 1,95E-02 | -7,27E-02 |
| HW | kg | 4,10E+00 | 0,00E+00 | 1,02E-02 | -3,99E-01 | 3,90E+00 | 0,00E+00 | 1,01E-02 | -3,63E-01 |
| NHW | kg | 1,31E+01 | 0,00E+00 | 4,93E+00 | -2,80E+00 | 1,23E+01 | 0,00E+00 | 4,91E+00 | -2,56E+00 |
| RW | kg | 1,71E-02 | 0,00E+00 | 3,91E-04 | -2,20E-03 | 1,62E-02 | 0,00E+00 | 3,75E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 1,17E-01 | 0,00E+00 | 3,53E-03 | -3,49E+00 | 1,10E-01 | 0,00E+00 | 3,43E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 150 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,16E+01 | 4,85E-01 | 1,24E+01 | -6,94E+00 | 4,86E+01 | 4,61E-01 | 1,23E+01 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | 5,11E+01 | 4,85E-01 | 1,24E+01 | -6,92E+00 | 4,81E+01 | 4,60E-01 | 1,23E+01 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | 4,14E-01 | 4,71E-04 | 1,55E-03 | -1,28E-02 | 3,89E-01 | 4,47E-04 | 1,53E-03 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | 6,08E-02 | 1,74E-04 | 1,91E-04 | -5,45E-03 | 5,65E-02 | 1,65E-04 | 1,87E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,94E+01 | 4,81E-01 | 1,23E+01 | -6,69E+00 | 4,66E+01 | 4,57E-01 | 1,22E+01 | -6,10E+00 |
| ODP | kg CFC-11 eq | 5,66E-06 | 1,16E-07 | 1,14E-07 | -3,40E-07 | 5,45E-06 | 1,10E-07 | 1,11E-07 | -3,10E-07 |
| POCP | kg NMVOC eq | 1,94E-01 | 2,17E-03 | 1,61E-02 | -3,08E-02 | 1,83E-01 | 2,06E-03 | 1,59E-02 | -2,81E-02 |
| AP | mol H+ eq | 2,69E-01 | 2,02E-03 | 1,27E-02 | -3,11E-02 | 2,55E-01 | 1,92E-03 | 1,25E-02 | -2,84E-02 |
| EP - freshwater | kg P eq | 1,51E-02 | 3,02E-05 | 7,12E-05 | -3,24E-03 | 1,42E-02 | 2,87E-05 | 7,03E-05 | -2,95E-03 |
| EP - marine | kg N eq | 7,23E-02 | 6,17E-04 | 8,99E-03 | -7,45E-03 | 6,86E-02 | 5,86E-04 | 8,88E-03 | -6,79E-03 |
| EP - terrestrial | mol N eq | 5,46E-01 | 6,75E-03 | 6,59E-02 | -7,07E-02 | 5,14E-01 | 6,41E-03 | 6,50E-02 | -6,45E-02 |
| WDP | m ³ depriv. | 3,43E+01 | 2,60E-02 | 7,79E-01 | -1,71E+00 | 3,26E+01 | 2,47E-02 | 7,73E-01 | -1,56E+00 |
| ADP - F | MJ | 8,59E+02 | 7,55E+00 | 1,04E+01 | -7,21E+01 | 8,16E+02 | 7,17E+00 | 1,01E+01 | -6,57E+01 |
| ADP - MM | kg Sb eq | 7,40E-04 | 1,11E-06 | 1,87E-06 | -8,80E-05 | 6,93E-04 | 1,06E-06 | 1,84E-06 | -8,10E-05 |
| PERE | MJ | 6,39E+01 | 1,20E-01 | 2,28E-01 | -8,16E+00 | 6,07E+01 | 1,14E-01 | 2,25E-01 | -7,44E+00 |
| PERM | 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 |
| PERT | MJ | 6,39E+01 | 1,20E-01 | 2,28E-01 | -8,16E+00 | 6,07E+01 | 1,14E-01 | 2,25E-01 | -7,44E+00 |
| PENRE | MJ | 8,97E+02 | 7,47E+00 | 1,10E+01 | -8,83E+01 | 8,51E+02 | 7,09E+00 | 1,08E+01 | -8,05E+01 |
| PENRM | 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 |
| PENRT | MJ | 8,97E+02 | 7,47E+00 | 1,10E+01 | -8,83E+01 | 8,51E+02 | 7,09E+00 | 1,08E+01 | -8,05E+01 |
| SM | kg | 2,34E+00 | 0,00E+00 | 3,31E-03 | -1,27E+00 | 2,13E+00 | 0,00E+00 | 3,24E-03 | -1,16E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 5,07E-01 | 1,69E-03 | 2,48E-02 | -7,97E-02 | 4,73E-01 | 1,60E-03 | 2,46E-02 | -7,27E-02 |
| HW | kg | 4,83E+00 | 0,00E+00 | 1,27E-02 | -3,99E-01 | 4,63E+00 | 0,00E+00 | 1,25E-02 | -3,63E-01 |
| NHW | kg | 1,47E+01 | 0,00E+00 | 6,26E+00 | -2,80E+00 | 1,39E+01 | 0,00E+00 | 6,22E+00 | -2,56E+00 |
| RW | kg | 1,99E-02 | 0,00E+00 | 4,46E-04 | -2,20E-03 | 1,90E-02 | 0,00E+00 | 4,29E-04 | -2,00E-03 |
| REUSE | 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 |
| RECYCLE | kg | 1,34E-01 | 0,00E+00 | 4,21E-03 | -3,49E+00 | 1,28E-01 | 0,00E+00 | 4,11E-03 | -3,19E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 180 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-------|------|-------|------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,44E+01 | 5,03E-01 | 1,58E+01 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,38E+01 | 5,03E-01 | 1,58E+01 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 4,65E-01 | 4,89E-04 | 1,94E-03 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 6,02E-02 | 1,81E-04 | 2,31E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,21E+01 | 4,99E-01 | 1,56E+01 | -6,10E+00 |
| ODP | kg CFC-11 eq | N.P. | N.P. | N.P. | N.P. | 6,38E-06 | 1,20E-07 | 1,32E-07 | -3,06E-07 |
| POCP | kg NMVOC eq | N.P. | N.P. | N.P. | N.P. | 2,06E-01 | 2,25E-03 | 1,98E-02 | -2,81E-02 |
| AP | mol H+ eq | N.P. | N.P. | N.P. | N.P. | 2,90E-01 | 2,10E-03 | 1,57E-02 | -2,84E-02 |
| EP - freshwater | kg P eq | N.P. | N.P. | N.P. | N.P. | 1,60E-02 | 3,13E-05 | 8,83E-05 | -2,95E-03 |
| EP - marine | kg N eq | N.P. | N.P. | N.P. | N.P. | 7,85E-02 | 6,40E-04 | 1,12E-02 | -6,79E-03 |
| EP - terrestrial | mol N eq | N.P. | N.P. | N.P. | N.P. | 5,76E-01 | 7,00E-03 | 8,15E-02 | -6,45E-02 |
| WDP | m ³ depriv. | N.P. | N.P. | N.P. | N.P. | 3,79E+01 | 2,70E-02 | 9,88E-01 | -1,56E+00 |
| ADP - F | MJ | N.P. | N.P. | N.P. | N.P. | 9,39E+02 | 7,84E+00 | 1,24E+01 | -6,57E+01 |
| ADP - MM | kg Sb eq | N.P. | N.P. | N.P. | N.P. | 7,53E-04 | 1,15E-06 | 2,32E-06 | -8,06E-05 |
| PERE | MJ | N.P. | N.P. | N.P. | N.P. | 6,91E+01 | 1,25E-01 | 2,82E-01 | -7,44E+00 |
| PERM | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | N.P. | N.P. | N.P. | N.P. | 6,91E+01 | 1,25E-01 | 2,82E-01 | -7,44E+00 |
| PENRE | MJ | N.P. | N.P. | N.P. | N.P. | 9,72E+02 | 7,74E+00 | 1,32E+01 | -8,05E+01 |
| PENRM | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | N.P. | N.P. | N.P. | N.P. | 9,72E+02 | 7,74E+00 | 1,32E+01 | -8,05E+01 |
| SM | kg | N.P. | N.P. | N.P. | N.P. | 2,15E+00 | 0,00E+00 | 3,98E-03 | -1,16E+00 |
| RSF | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | m ³ | N.P. | N.P. | N.P. | N.P. | 5,20E-01 | 1,75E-03 | 3,14E-02 | -7,27E-02 |
| HW | kg | N.P. | N.P. | N.P. | N.P. | 5,37E+00 | 0,00E+00 | 1,57E-02 | -3,63E-01 |
| NHW | kg | N.P. | N.P. | N.P. | N.P. | 1,55E+01 | 0,00E+00 | 7,97E+00 | -2,56E+00 |
| RW | kg | N.P. | N.P. | N.P. | N.P. | 2,19E-02 | 0,00E+00 | 4,92E-04 | -2,00E-03 |
| REUSE | kg | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RECYCLE | kg | N.P. | N.P. | N.P. | N.P. | 1,45E-01 | 0,00E+00 | 4,97E-03 | -3,19E+00 |
| EN-REC | kg | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EE-E | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EE-T | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

POLYURETHANE INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF - MB COPPO

WALL PANEL: MB WALL - MB HIDDEN FIX - MB COLD-PRO

Nominal thickness 200 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-------|------|-------|------|----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,83E+01 | 5,32E-01 | 1,63E+01 | -6,33E+00 |
| GWP - fossil | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,77E+01 | 5,31E-01 | 1,63E+01 | -6,31E+00 |
| GWP - biogenic | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,15E-01 | 5,16E-04 | 2,01E-03 | -1,17E-02 |
| GWP - luluc | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 6,26E-02 | 1,91E-04 | 2,41E-04 | -4,97E-03 |
| GWP - GHG | kg CO ₂ eq | N.P. | N.P. | N.P. | N.P. | 5,58E+01 | 5,27E-01 | 1,62E+01 | -6,10E+00 |
| ODP | kg CFC-11 eq | N.P. | N.P. | N.P. | N.P. | 7,00E-06 | 1,27E-07 | 1,38E-07 | -3,10E-07 |
| POCP | kg NMVOC eq | N.P. | N.P. | N.P. | N.P. | 2,21E-01 | 2,38E-03 | 2,06E-02 | -2,81E-02 |
| AP | mol H+ eq | N.P. | N.P. | N.P. | N.P. | 3,13E-01 | 2,22E-03 | 1,63E-02 | -2,84E-02 |
| EP - freshwater | kg P eq | N.P. | N.P. | N.P. | N.P. | 1,71E-02 | 3,31E-05 | 9,17E-05 | -2,95E-03 |
| EP - marine | kg N eq | N.P. | N.P. | N.P. | N.P. | 8,51E-02 | 6,76E-04 | 1,17E-02 | -6,79E-03 |
| EP - terrestrial | mol N eq | N.P. | N.P. | N.P. | N.P. | 6,18E-01 | 7,39E-03 | 8,47E-02 | -6,45E-02 |
| WDP | m ³ depriv. | N.P. | N.P. | N.P. | N.P. | 4,14E+01 | 2,85E-02 | 1,02E+00 | -1,56E+00 |
| ADP - F | MJ | N.P. | N.P. | N.P. | N.P. | 1,02E+03 | 8,28E+00 | 1,29E+01 | -6,57E+01 |
| ADP - MM | kg Sb eq | N.P. | N.P. | N.P. | N.P. | 7,93E-04 | 1,22E-06 | 2,41E-06 | -8,10E-05 |
| PERE | MJ | N.P. | N.P. | N.P. | N.P. | 7,48E+01 | 1,32E-01 | 2,93E-01 | -7,44E+00 |
| PERM | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | N.P. | N.P. | N.P. | N.P. | 7,48E+01 | 1,32E-01 | 2,93E-01 | -7,44E+00 |
| PENRE | MJ | N.P. | N.P. | N.P. | N.P. | 1,05E+03 | 8,18E+00 | 1,37E+01 | -8,05E+01 |
| PENRM | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | N.P. | N.P. | N.P. | N.P. | 1,05E+03 | 8,18E+00 | 1,37E+01 | -8,05E+01 |
| SM | kg | N.P. | N.P. | N.P. | N.P. | 2,16E+00 | 0,00E+00 | 4,15E-03 | -1,16E+00 |
| RSF | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | m ³ | N.P. | N.P. | N.P. | N.P. | 5,51E-01 | 1,85E-03 | 3,25E-02 | -7,27E-02 |
| HW | kg | N.P. | N.P. | N.P. | N.P. | 5,86E+00 | 0,00E+00 | 1,64E-02 | -3,63E-01 |
| NHW | kg | N.P. | N.P. | N.P. | N.P. | 1,65E+01 | 0,00E+00 | 8,26E+00 | -2,56E+00 |
| RW | kg | N.P. | N.P. | N.P. | N.P. | 2,38E-02 | 0,00E+00 | 5,17E-04 | -2,00E-03 |
| REUSE | kg | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RECYCLE | kg | N.P. | N.P. | N.P. | N.P. | 1,57E-01 | 0,00E+00 | 5,18E-03 | -3,19E+00 |
| EN-REC | kg | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EE-E | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EE-T | MJ | N.P. | N.P. | N.P. | N.P. | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 50 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,87E+01 | 5,51E-01 | 2,75E-01 | -1,37E+01 | 3,59E+01 | 5,24E-01 | 2,62E-01 | -1,31E+01 |
| GWP - fossil | kg CO ₂ eq | 3,87E+01 | 5,50E-01 | 2,75E-01 | -1,38E+01 | 3,60E+01 | 5,24E-01 | 2,61E-01 | -1,32E+01 |
| GWP - biogenic | kg CO ₂ eq | -1,02E-01 | 5,35E-04 | 1,44E-04 | 1,04E-01 | -8,53E-02 | 5,09E-04 | 1,37E-04 | 1,05E-01 |
| GWP - luluc | kg CO ₂ eq | 5,90E-02 | 1,98E-04 | 5,08E-05 | -7,50E-03 | 5,49E-02 | 1,88E-04 | 4,82E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,76E+01 | 5,46E-01 | 2,72E-01 | -1,34E+01 | 3,49E+01 | 5,20E-01 | 2,59E-01 | -1,28E+01 |
| ODP | kg CFC-11 eq | 1,88E-06 | 1,31E-07 | 6,17E-08 | -6,26E-07 | 1,75E-06 | 1,25E-07 | 5,87E-08 | -5,90E-07 |
| POCP | kg NMVOC eq | 1,28E-01 | 2,46E-03 | 3,14E-03 | -5,18E-02 | 1,19E-01 | 2,35E-03 | 2,99E-03 | -4,88E-02 |
| AP | mol H+ eq | 2,01E-01 | 2,30E-03 | 2,42E-03 | -8,55E-02 | 1,85E-01 | 2,19E-03 | 2,30E-03 | -8,25E-02 |
| EP - freshwater | kg P eq | 9,17E-03 | 3,43E-05 | 1,11E-05 | -4,46E-03 | 8,57E-03 | 3,26E-05 | 1,05E-05 | -4,15E-03 |
| EP - marine | kg N eq | 3,89E-02 | 7,00E-04 | 1,03E-03 | -1,38E-02 | 3,62E-02 | 6,67E-04 | 9,78E-04 | -1,30E-02 |
| EP - terrestrial | mol N eq | 5,00E-01 | 7,66E-03 | 1,13E-02 | -2,09E-01 | 4,60E-01 | 7,29E-03 | 1,07E-02 | -2,02E-01 |
| WDP | m ³ depriv. | 1,29E+01 | 2,95E-02 | 1,62E-02 | -2,61E+00 | 1,22E+01 | 2,81E-02 | 1,52E-02 | -2,44E+00 |
| ADP - F | MJ | 4,43E+02 | 8,58E+00 | 3,99E+00 | -1,53E+02 | 4,13E+02 | 8,16E+00 | 3,79E+00 | -1,46E+02 |
| ADP - MM | kg Sb eq | 6,07E-04 | 1,26E-06 | 2,75E-07 | -1,22E-04 | 5,65E-04 | 1,20E-06 | 2,62E-07 | -1,10E-04 |
| PERE | MJ | 3,58E+01 | 1,36E-01 | 3,84E-02 | -1,35E+01 | 3,35E+01 | 1,30E-01 | 3,65E-02 | -1,27E+01 |
| PERM | 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 |
| PERT | MJ | 3,58E+01 | 1,36E-01 | 3,84E-02 | -1,35E+01 | 3,35E+01 | 1,30E-01 | 3,65E-02 | -1,27E+01 |
| PENRE | MJ | 5,05E+02 | 8,48E+00 | 3,94E+00 | -1,75E+02 | 4,71E+02 | 8,07E+00 | 3,75E+00 | -1,66E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,05E+02 | 8,48E+00 | 3,94E+00 | -1,75E+02 | 4,71E+02 | 8,07E+00 | 3,75E+00 | -1,66E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,10E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,05E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,02E-01 | 1,92E-03 | 7,33E-04 | -1,16E-01 | 3,76E-01 | 1,82E-03 | 6,92E-04 | -1,08E-01 |
| HW | kg | 1,69E+00 | 0,00E+00 | 1,82E-03 | -5,49E-01 | 1,58E+00 | 0,00E+00 | 1,73E-03 | -5,10E-01 |
| NHW | kg | 9,48E+00 | 0,00E+00 | 1,00E-02 | -3,86E+00 | 8,85E+00 | 0,00E+00 | 9,51E-03 | -3,59E+00 |
| RW | kg | 8,07E-03 | 0,00E+00 | 3,53E-04 | -3,03E-03 | 7,55E-03 | 0,00E+00 | 3,36E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,62E-02 | 0,00E+00 | 1,86E-03 | -4,81E+00 | 6,18E-02 | 0,00E+00 | 1,77E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 60 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,99E+01 | 5,87E-01 | 2,93E-01 | -1,46E+01 | 3,71E+01 | 5,61E-01 | 2,79E-01 | -1,39E+01 |
| GWP - fossil | kg CO ₂ eq | 4,00E+01 | 5,87E-01 | 2,93E-01 | -1,47E+01 | 3,72E+01 | 5,60E-01 | 2,79E-01 | -1,40E+01 |
| GWP - biogenic | kg CO ₂ eq | -1,37E-01 | 5,70E-04 | 1,53E-04 | 1,29E-01 | -1,20E-01 | 5,44E-04 | 1,46E-04 | 1,30E-01 |
| GWP - luluc | kg CO ₂ eq | 5,91E-02 | 2,11E-04 | 5,38E-05 | -7,50E-03 | 5,50E-02 | 2,01E-04 | 5,12E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,88E+01 | 5,82E-01 | 2,90E-01 | -1,43E+01 | 3,61E+01 | 5,56E-01 | 2,77E-01 | -1,37E+01 |
| ODP | kg CFC-11 eq | 1,94E-06 | 1,40E-07 | 6,56E-08 | -6,60E-07 | 1,82E-06 | 1,34E-07 | 6,26E-08 | -6,30E-07 |
| POCP | kg NMVOC eq | 1,31E-01 | 2,63E-03 | 3,35E-03 | -5,38E-02 | 1,22E-01 | 2,51E-03 | 3,19E-03 | -5,08E-02 |
| AP | mol H+ eq | 2,12E-01 | 2,45E-03 | 2,58E-03 | -9,43E-02 | 1,97E-01 | 2,34E-03 | 2,46E-03 | -9,12E-02 |
| EP - freshwater | kg P eq | 9,19E-03 | 3,65E-05 | 1,18E-05 | -4,46E-03 | 8,58E-03 | 3,49E-05 | 1,12E-05 | -4,15E-03 |
| EP - marine | kg N eq | 3,99E-02 | 7,47E-04 | 1,09E-03 | -1,45E-02 | 3,72E-02 | 7,13E-04 | 1,04E-03 | -1,38E-02 |
| EP - terrestrial | mol N eq | 5,30E-01 | 8,17E-03 | 1,20E-02 | -2,32E-01 | 4,90E-01 | 7,80E-03 | 1,14E-02 | -2,25E-01 |
| WDP | m ³ depriv. | 1,30E+01 | 3,15E-02 | 1,67E-02 | -2,66E+00 | 1,23E+01 | 3,00E-02 | 1,57E-02 | -2,49E+00 |
| ADP - F | MJ | 4,59E+02 | 9,14E+00 | 4,24E+00 | -1,64E+02 | 4,29E+02 | 8,73E+00 | 4,05E+00 | -1,57E+02 |
| ADP - MM | kg Sb eq | 6,07E-04 | 1,35E-06 | 2,92E-07 | -1,20E-04 | 5,65E-04 | 1,28E-06 | 2,79E-07 | -1,10E-04 |
| PERE | MJ | 3,67E+01 | 1,45E-01 | 4,08E-02 | -1,40E+01 | 3,44E+01 | 1,39E-01 | 3,89E-02 | -1,32E+01 |
| PERM | 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 |
| PERT | MJ | 3,67E+01 | 1,45E-01 | 4,08E-02 | -1,40E+01 | 3,44E+01 | 1,39E-01 | 3,89E-02 | -1,32E+01 |
| PENRE | MJ | 5,21E+02 | 9,04E+00 | 4,19E+00 | -1,86E+02 | 4,86E+02 | 8,63E+00 | 4,00E+00 | -1,77E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,21E+02 | 9,04E+00 | 4,19E+00 | -1,86E+02 | 4,86E+02 | 8,63E+00 | 4,00E+00 | -1,77E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,17E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,12E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,05E-01 | 2,04E-03 | 7,69E-04 | -1,17E-01 | 3,78E-01 | 1,95E-03 | 7,28E-04 | -1,09E-01 |
| HW | kg | 1,69E+00 | 0,00E+00 | 1,93E-03 | -5,49E-01 | 1,59E+00 | 0,00E+00 | 1,84E-03 | -5,10E-01 |
| NHW | kg | 9,51E+00 | 0,00E+00 | 1,06E-02 | -3,86E+00 | 8,88E+00 | 0,00E+00 | 1,00E-02 | -3,59E+00 |
| RW | kg | 8,08E-03 | 0,00E+00 | 3,75E-04 | -3,03E-03 | 7,57E-03 | 0,00E+00 | 3,58E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,63E-02 | 0,00E+00 | 1,98E-03 | -4,81E+00 | 6,20E-02 | 0,00E+00 | 1,89E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 80 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,23E+01 | 6,60E-01 | 3,28E-01 | -1,63E+01 | 3,95E+01 | 6,34E-01 | 3,15E-01 | -1,56E+01 |
| GWP - fossil | kg CO ₂ eq | 4,24E+01 | 6,59E-01 | 3,28E-01 | -1,65E+01 | 3,97E+01 | 6,33E-01 | 3,15E-01 | -1,58E+01 |
| GWP - biogenic | kg CO ₂ eq | -2,06E-01 | 6,41E-04 | 1,71E-04 | 1,79E-01 | -1,90E-01 | 6,15E-04 | 1,64E-04 | 1,80E-01 |
| GWP - luluc | kg CO ₂ eq | 5,93E-02 | 2,37E-04 | 5,97E-05 | -7,50E-03 | 5,52E-02 | 2,27E-04 | 5,71E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,12E+01 | 6,54E-01 | 3,25E-01 | -1,60E+01 | 3,86E+01 | 6,28E-01 | 3,12E-01 | -1,54E+01 |
| ODP | kg CFC-11 eq | 2,07E-06 | 1,57E-07 | 7,34E-08 | -7,30E-07 | 1,94E-06 | 1,51E-07 | 7,04E-08 | -6,90E-07 |
| POCP | kg NMVOC eq | 1,36E-01 | 2,95E-03 | 3,75E-03 | -5,76E-02 | 1,27E-01 | 2,83E-03 | 3,60E-03 | -5,46E-02 |
| AP | mol H+ eq | 2,35E-01 | 2,75E-03 | 2,89E-03 | -1,12E-01 | 2,19E-01 | 2,64E-03 | 2,77E-03 | -1,09E-01 |
| EP - freshwater | kg P eq | 9,22E-03 | 4,10E-05 | 1,31E-05 | -4,47E-03 | 8,62E-03 | 3,94E-05 | 1,26E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,20E-02 | 8,39E-04 | 1,23E-03 | -1,59E-02 | 3,93E-02 | 8,05E-04 | 1,18E-03 | -1,52E-02 |
| EP - terrestrial | mol N eq | 5,89E-01 | 9,18E-03 | 1,34E-02 | -2,78E-01 | 5,50E-01 | 8,81E-03 | 1,29E-02 | -2,71E-01 |
| WDP | m ³ depriv. | 1,32E+01 | 3,54E-02 | 1,78E-02 | -2,77E+00 | 1,25E+01 | 3,39E-02 | 1,68E-02 | -2,60E+00 |
| ADP - F | MJ | 4,91E+02 | 1,03E+01 | 4,75E+00 | -1,86E+02 | 4,61E+02 | 9,86E+00 | 4,55E+00 | -1,78E+02 |
| ADP - MM | kg Sb eq | 6,08E-04 | 1,51E-06 | 3,27E-07 | -1,20E-04 | 5,66E-04 | 1,45E-06 | 3,13E-07 | -1,10E-04 |
| PERE | MJ | 3,85E+01 | 1,63E-01 | 4,56E-02 | -1,49E+01 | 3,61E+01 | 1,57E-01 | 4,37E-02 | -1,41E+01 |
| PERM | 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 |
| PERT | MJ | 3,85E+01 | 1,63E-01 | 4,56E-02 | -1,49E+01 | 3,61E+01 | 1,57E-01 | 4,37E-02 | -1,41E+01 |
| PENRE | MJ | 5,53E+02 | 1,02E+01 | 4,69E+00 | -2,08E+02 | 5,18E+02 | 9,75E+00 | 4,49E+00 | -1,99E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,53E+02 | 1,02E+01 | 4,69E+00 | -2,08E+02 | 5,18E+02 | 9,75E+00 | 4,49E+00 | -1,99E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,32E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,26E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,09E-01 | 2,29E-03 | 8,39E-04 | -1,19E-01 | 3,82E-01 | 2,20E-03 | 7,99E-04 | -1,12E-01 |
| HW | kg | 1,70E+00 | 0,00E+00 | 2,15E-03 | -5,49E-01 | 1,59E+00 | 0,00E+00 | 2,06E-03 | -5,10E-01 |
| NHW | kg | 9,57E+00 | 0,00E+00 | 1,16E-02 | -3,86E+00 | 8,94E+00 | 0,00E+00 | 1,11E-02 | -3,59E+00 |
| RW | kg | 8,12E-03 | 0,00E+00 | 4,19E-04 | -3,03E-03 | 7,60E-03 | 0,00E+00 | 4,02E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,65E-02 | 0,00E+00 | 2,22E-03 | -4,81E+00 | 6,22E-02 | 0,00E+00 | 2,13E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 100 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,23E+01 | 7,33E-01 | 3,64E-01 | -1,80E+01 | 4,19E+01 | 7,06E-01 | 3,50E-01 | -1,73E+01 |
| GWP - fossil | kg CO ₂ eq | 4,24E+01 | 7,32E-01 | 3,63E-01 | -1,82E+01 | 4,21E+01 | 7,05E-01 | 3,50E-01 | -1,76E+01 |
| GWP - biogenic | kg CO ₂ eq | -2,06E-01 | 7,11E-04 | 1,89E-04 | 2,29E-01 | -2,59E-01 | 6,85E-04 | 1,82E-04 | 2,30E-01 |
| GWP - luluc | kg CO ₂ eq | 5,93E-02 | 2,63E-04 | 6,55E-05 | -7,50E-03 | 5,54E-02 | 2,54E-04 | 6,29E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,12E+01 | 7,26E-01 | 3,60E-01 | -1,78E+01 | 4,10E+01 | 7,00E-01 | 3,47E-01 | -1,71E+01 |
| ODP | kg CFC-11 eq | 2,07E-06 | 1,75E-07 | 8,12E-08 | -7,94E-07 | 2,07E-06 | 1,68E-07 | 7,82E-08 | -7,60E-07 |
| POCP | kg NMVOC eq | 1,36E-01 | 3,28E-03 | 4,16E-03 | -6,15E-02 | 1,33E-01 | 3,16E-03 | 4,01E-03 | -5,85E-02 |
| AP | mol H+ eq | 2,35E-01 | 3,05E-03 | 3,20E-03 | -1,29E-01 | 2,42E-01 | 2,94E-03 | 3,08E-03 | -1,26E-01 |
| EP - freshwater | kg P eq | 9,22E-03 | 4,56E-05 | 1,45E-05 | -4,47E-03 | 8,65E-03 | 4,39E-05 | 1,40E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,20E-02 | 9,32E-04 | 1,36E-03 | -1,73E-02 | 4,13E-02 | 8,98E-04 | 1,31E-03 | -1,66E-02 |
| EP - terrestrial | mol N eq | 5,89E-01 | 1,02E-02 | 1,49E-02 | -3,23E-01 | 6,10E-01 | 9,82E-03 | 1,43E-02 | -3,16E-01 |
| WDP | m ³ depriv. | 1,32E+01 | 3,93E-02 | 1,88E-02 | -2,87E+00 | 1,27E+01 | 3,78E-02 | 1,78E-02 | -2,70E+00 |
| ADP - F | MJ | 4,91E+02 | 1,14E+01 | 5,25E+00 | -2,07E+02 | 4,93E+02 | 1,10E+01 | 5,05E+00 | -2,00E+02 |
| ADP - MM | kg Sb eq | 6,08E-04 | 1,68E-06 | 3,61E-07 | -1,22E-04 | 5,67E-04 | 1,62E-06 | 3,47E-07 | -1,10E-04 |
| PERE | MJ | 3,85E+01 | 1,81E-01 | 5,04E-02 | -1,58E+01 | 3,79E+01 | 1,75E-01 | 4,85E-02 | -1,50E+01 |
| PERM | 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 |
| PERT | MJ | 3,85E+01 | 1,81E-01 | 5,04E-02 | -1,58E+01 | 3,79E+01 | 1,75E-01 | 4,85E-02 | -1,50E+01 |
| PENRE | MJ | 5,53E+02 | 1,13E+01 | 5,18E+00 | -2,30E+02 | 5,50E+02 | 1,09E+01 | 4,99E+00 | -2,21E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,53E+02 | 1,13E+01 | 5,18E+00 | -2,30E+02 | 5,50E+02 | 1,09E+01 | 4,99E+00 | -2,21E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,46E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,40E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,09E-01 | 2,55E-03 | 9,08E-04 | -1,22E-01 | 3,87E-01 | 2,46E-03 | 8,68E-04 | -1,14E-01 |
| HW | kg | 1,70E+00 | 0,00E+00 | 2,37E-03 | -5,49E-01 | 1,60E+00 | 0,00E+00 | 2,27E-03 | -5,10E-01 |
| NHW | kg | 9,57E+00 | 0,00E+00 | 1,27E-02 | -3,86E+00 | 9,00E+00 | 0,00E+00 | 1,21E-02 | -3,59E+00 |
| RW | kg | 8,12E-03 | 0,00E+00 | 4,63E-04 | -3,03E-03 | 7,64E-03 | 0,00E+00 | 4,46E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,65E-02 | 0,00E+00 | 2,46E-03 | -4,81E+00 | 6,24E-02 | 0,00E+00 | 2,37E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 120 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,71E+01 | 8,05E-01 | 3,99E-01 | -1,97E+01 | 4,43E+01 | 7,79E-01 | 3,86E-01 | -1,90E+01 |
| GWP - fossil | kg CO ₂ eq | 4,73E+01 | 8,04E-01 | 3,99E-01 | -2,00E+01 | 4,46E+01 | 7,78E-01 | 3,85E-01 | -1,93E+01 |
| GWP - biogenic | kg CO ₂ eq | -3,46E-01 | 7,82E-04 | 2,07E-04 | 2,78E-01 | -3,29E-01 | 7,56E-04 | 2,00E-04 | 2,80E-01 |
| GWP - luluc | kg CO ₂ eq | 5,97E-02 | 2,89E-04 | 7,14E-05 | -7,50E-03 | 5,56E-02 | 2,80E-04 | 6,89E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,61E+01 | 7,98E-01 | 3,95E-01 | -1,95E+01 | 4,34E+01 | 7,72E-01 | 3,82E-01 | -1,89E+01 |
| ODP | kg CFC-11 eq | 2,32E-06 | 1,92E-07 | 8,90E-08 | -8,60E-07 | 2,19E-06 | 1,86E-07 | 8,60E-08 | -8,30E-07 |
| POCP | kg NMVOC eq | 1,48E-01 | 3,60E-03 | 4,56E-03 | -6,53E-02 | 1,39E-01 | 3,48E-03 | 4,41E-03 | -6,23E-02 |
| AP | mol H+ eq | 2,80E-01 | 3,36E-03 | 3,51E-03 | -1,47E-01 | 2,65E-01 | 3,25E-03 | 3,40E-03 | -1,44E-01 |
| EP - freshwater | kg P eq | 9,28E-03 | 5,01E-05 | 1,59E-05 | -4,47E-03 | 8,68E-03 | 4,84E-05 | 1,54E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,61E-02 | 1,02E-03 | 1,49E-03 | -1,88E-02 | 4,34E-02 | 9,90E-04 | 1,44E-03 | -1,81E-02 |
| EP - terrestrial | mol N eq | 7,08E-01 | 1,12E-02 | 1,63E-02 | -3,69E-01 | 6,69E-01 | 1,08E-02 | 1,58E-02 | -3,62E-01 |
| WDP | m ³ depriv. | 1,36E+01 | 4,31E-02 | 1,98E-02 | -2,97E+00 | 1,29E+01 | 4,17E-02 | 1,89E-02 | -2,80E+00 |
| ADP - F | MJ | 5,55E+02 | 1,25E+01 | 5,75E+00 | -2,29E+02 | 5,25E+02 | 1,21E+01 | 5,56E+00 | -2,22E+02 |
| ADP - MM | kg Sb eq | 6,09E-04 | 1,84E-06 | 3,95E-07 | -1,20E-04 | 5,67E-04 | 1,78E-06 | 3,82E-07 | -1,10E-04 |
| PERE | MJ | 4,20E+01 | 1,99E-01 | 5,52E-02 | -1,68E+01 | 3,96E+01 | 1,93E-01 | 5,33E-02 | -1,60E+01 |
| PERM | 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 |
| PERT | MJ | 4,20E+01 | 1,99E-01 | 5,52E-02 | -1,68E+01 | 3,96E+01 | 1,93E-01 | 5,33E-02 | -1,60E+01 |
| PENRE | MJ | 6,17E+02 | 1,24E+01 | 5,68E+00 | -2,52E+02 | 5,82E+02 | 1,20E+01 | 5,49E+00 | -2,43E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,17E+02 | 1,24E+01 | 5,68E+00 | -2,52E+02 | 5,82E+02 | 1,20E+01 | 5,49E+00 | -2,43E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,60E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,54E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,18E-01 | 2,80E-03 | 9,76E-04 | -1,24E-01 | 3,91E-01 | 2,71E-03 | 9,40E-04 | -1,16E-01 |
| HW | kg | 1,71E+00 | 0,00E+00 | 2,58E-03 | -5,49E-01 | 1,60E+00 | 0,00E+00 | 2,49E-03 | -5,10E-01 |
| NHW | kg | 9,69E+00 | 0,00E+00 | 1,37E-02 | -3,86E+00 | 9,07E+00 | 0,00E+00 | 1,32E-02 | -3,59E+00 |
| RW | kg | 8,18E-03 | 0,00E+00 | 5,07E-04 | -3,03E-03 | 7,67E-03 | 0,00E+00 | 4,90E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,69E-02 | 0,00E+00 | 2,69E-03 | -4,81E+00 | 6,26E-02 | 0,00E+00 | 2,60E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 150 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,07E+01 | 9,14E-01 | 4,52E-01 | -2,23E+01 | 4,79E+01 | 8,88E-01 | 4,39E-01 | -2,16E+01 |
| GWP - fossil | kg CO ₂ eq | 5,10E+01 | 9,13E-01 | 4,52E-01 | -2,26E+01 | 4,83E+01 | 8,87E-01 | 4,39E-01 | -2,20E+01 |
| GWP - biogenic | kg CO ₂ eq | -4,50E-01 | 8,87E-04 | 2,34E-04 | 3,53E-01 | -4,34E-01 | 8,62E-04 | 2,27E-04 | 3,54E-01 |
| GWP - luluc | kg CO ₂ eq | 6,00E-02 | 3,28E-04 | 8,03E-05 | -7,50E-03 | 5,59E-02 | 3,19E-04 | 7,76E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,97E+01 | 9,06E-01 | 4,48E-01 | -2,21E+01 | 4,71E+01 | 8,80E-01 | 4,34E-01 | -2,14E+01 |
| ODP | kg CFC-11 eq | 2,50E-06 | 2,18E-07 | 1,01E-07 | -9,60E-07 | 2,38E-06 | 2,12E-07 | 9,77E-08 | -9,30E-07 |
| POCP | kg NMVOC eq | 1,56E-01 | 4,09E-03 | 5,17E-03 | -7,11E-02 | 1,47E-01 | 3,97E-03 | 5,02E-03 | -6,81E-02 |
| AP | mol H+ eq | 3,15E-01 | 3,81E-03 | 3,98E-03 | -1,73E-01 | 2,99E-01 | 3,70E-03 | 3,86E-03 | -1,70E-01 |
| EP - freshwater | kg P eq | 9,33E-03 | 5,69E-05 | 1,80E-05 | -4,47E-03 | 8,72E-03 | 5,52E-05 | 1,74E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,92E-02 | 1,16E-03 | 1,69E-03 | -2,09E-02 | 4,65E-02 | 1,13E-03 | 1,64E-03 | -2,02E-02 |
| EP - terrestrial | mol N eq | 7,98E-01 | 1,27E-02 | 1,85E-02 | -4,38E-01 | 7,59E-01 | 1,23E-02 | 1,80E-02 | -4,31E-01 |
| WDP | m ³ depriv. | 1,40E+01 | 4,90E-02 | 2,14E-02 | -3,13E+00 | 1,33E+01 | 4,76E-02 | 2,04E-02 | -2,96E+00 |
| ADP - F | MJ | 6,02E+02 | 1,42E+01 | 6,51E+00 | -2,62E+02 | 5,73E+02 | 1,38E+01 | 6,31E+00 | -2,55E+02 |
| ADP - MM | kg Sb eq | 6,10E-04 | 2,09E-06 | 4,47E-07 | -1,20E-04 | 5,68E-04 | 2,03E-06 | 4,33E-07 | -1,10E-04 |
| PERE | MJ | 4,46E+01 | 2,26E-01 | 6,24E-02 | -1,82E+01 | 4,22E+01 | 2,20E-01 | 6,05E-02 | -1,74E+01 |
| PERM | 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 |
| PERT | MJ | 4,46E+01 | 2,26E-01 | 6,24E-02 | -1,82E+01 | 4,22E+01 | 2,20E-01 | 6,05E-02 | -1,74E+01 |
| PENRE | MJ | 6,65E+02 | 1,41E+01 | 6,42E+00 | -2,84E+02 | 6,30E+02 | 1,37E+01 | 6,23E+00 | -2,76E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,65E+02 | 1,41E+01 | 6,42E+00 | -2,84E+02 | 6,30E+02 | 1,37E+01 | 6,23E+00 | -2,76E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,81E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,75E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,24E-01 | 3,18E-03 | 1,08E-03 | -1,28E-01 | 3,98E-01 | 3,09E-03 | 1,04E-03 | -1,20E-01 |
| HW | kg | 1,72E+00 | 0,00E+00 | 2,91E-03 | -5,49E-01 | 1,61E+00 | 0,00E+00 | 2,82E-03 | -5,10E-01 |
| NHW | kg | 9,79E+00 | 0,00E+00 | 1,53E-02 | -3,86E+00 | 9,16E+00 | 0,00E+00 | 1,48E-02 | -3,59E+00 |
| RW | kg | 8,23E-03 | 0,00E+00 | 5,73E-04 | -3,03E-03 | 7,72E-03 | 0,00E+00 | 5,55E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,72E-02 | 0,00E+00 | 3,05E-03 | -4,81E+00 | 6,29E-02 | 0,00E+00 | 2,96E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 170 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,30E+01 | 9,87E-01 | 4,88E-01 | -2,40E+01 | 5,03E+01 | 9,61E-01 | 4,74E-01 | -2,33E+01 |
| GWP - fossil | kg CO ₂ eq | 5,35E+01 | 9,86E-01 | 4,87E-01 | -2,44E+01 | 5,07E+01 | 9,59E-01 | 4,74E-01 | -2,37E+01 |
| GWP - biogenic | kg CO ₂ eq | -5,20E-01 | 9,58E-04 | 2,52E-04 | 4,03E-01 | -5,04E-01 | 9,32E-04 | 2,45E-04 | 4,04E-01 |
| GWP - luluc | kg CO ₂ eq | 6,01E-02 | 3,54E-04 | 8,62E-05 | -7,50E-03 | 5,61E-02 | 3,45E-04 | 8,35E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 5,22E+01 | 9,78E-01 | 4,83E-01 | -2,38E+01 | 4,95E+01 | 9,52E-01 | 4,69E-01 | -2,32E+01 |
| ODP | kg CFC-11 eq | 2,63E-06 | 2,35E-07 | 1,08E-07 | -1,00E-06 | 2,50E-06 | 2,29E-07 | 1,05E-07 | -1,00E-06 |
| POCP | kg NMVOC eq | 1,62E-01 | 4,42E-03 | 5,58E-03 | -7,50E-02 | 1,53E-01 | 4,30E-03 | 5,43E-03 | -7,20E-02 |
| AP | mol H+ eq | 3,37E-01 | 4,12E-03 | 4,29E-03 | -1,90E-01 | 3,22E-01 | 4,01E-03 | 4,17E-03 | -1,87E-01 |
| EP - freshwater | kg P eq | 9,36E-03 | 6,14E-05 | 1,93E-05 | -4,47E-03 | 8,76E-03 | 5,97E-05 | 1,88E-05 | -4,15E-03 |
| EP - marine | kg N eq | 5,12E-02 | 1,26E-03 | 1,82E-03 | -2,24E-02 | 4,85E-02 | 1,22E-03 | 1,77E-03 | -2,16E-02 |
| EP - terrestrial | mol N eq | 8,58E-01 | 1,37E-02 | 2,00E-02 | -4,83E-01 | 8,18E-01 | 1,34E-02 | 1,94E-02 | -4,77E-01 |
| WDP | m ³ depriv. | 1,42E+01 | 5,29E-02 | 2,25E-02 | -3,23E+00 | 1,35E+01 | 5,15E-02 | 2,15E-02 | -3,06E+00 |
| ADP - F | MJ | 6,34E+02 | 1,54E+01 | 7,01E+00 | -2,84E+02 | 6,05E+02 | 1,50E+01 | 6,81E+00 | -2,77E+02 |
| ADP - MM | kg Sb eq | 6,11E-04 | 2,26E-06 | 4,81E-07 | -1,20E-04 | 5,69E-04 | 2,20E-06 | 4,68E-07 | -1,10E-04 |
| PERE | MJ | 4,63E+01 | 2,44E-01 | 6,72E-02 | -1,91E+01 | 4,40E+01 | 2,38E-01 | 6,52E-02 | -1,83E+01 |
| PERM | 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 |
| PERT | MJ | 4,63E+01 | 2,44E-01 | 6,72E-02 | -1,91E+01 | 4,40E+01 | 2,38E-01 | 6,52E-02 | -1,83E+01 |
| PENRE | MJ | 6,96E+02 | 1,52E+01 | 6,92E+00 | -3,06E+02 | 6,62E+02 | 1,48E+01 | 6,73E+00 | -2,98E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,96E+02 | 1,52E+01 | 6,92E+00 | -3,06E+02 | 6,62E+02 | 1,48E+01 | 6,73E+00 | -2,98E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,95E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,89E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,29E-01 | 3,43E-03 | 1,15E-03 | -1,30E-01 | 4,02E-01 | 3,34E-03 | 1,11E-03 | -1,22E-01 |
| HW | kg | 1,72E+00 | 0,00E+00 | 3,13E-03 | -5,49E-01 | 1,62E+00 | 0,00E+00 | 3,03E-03 | -5,10E-01 |
| NHW | kg | 9,85E+00 | 0,00E+00 | 1,64E-02 | -3,86E+00 | 9,22E+00 | 0,00E+00 | 1,59E-02 | -3,59E+00 |
| RW | kg | 8,26E-03 | 0,00E+00 | 6,17E-04 | -3,03E-03 | 7,75E-03 | 0,00E+00 | 5,99E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,75E-02 | 0,00E+00 | 3,29E-03 | -4,81E+00 | 6,31E-02 | 0,00E+00 | 3,20E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB FIRE-PRO ROOF

WALL PANEL: MB FIRE-PRO WALL - MB FIRE-PRO HIDDEN FIX

Nominal thickness 200 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,66E+01 | 1,10E+00 | 5,41E-01 | -2,66E+01 | 5,39E+01 | 1,07E+00 | 5,27E-01 | -2,59E+01 |
| GWP - fossil | kg CO ₂ eq | 5,72E+01 | 1,09E+00 | 5,40E-01 | -2,70E+01 | 5,44E+01 | 1,07E+00 | 5,27E-01 | -2,64E+01 |
| GWP - biogenic | kg CO ₂ eq | -6,25E-01 | 1,06E-03 | 2,80E-04 | 4,78E-01 | -6,08E-01 | 1,04E-03 | 2,72E-04 | 4,79E-01 |
| GWP - luluc | kg CO ₂ eq | 6,04E-02 | 3,94E-04 | 9,49E-05 | -7,50E-03 | 5,64E-02 | 3,84E-04 | 9,23E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 5,58E+01 | 1,09E+00 | 5,35E-01 | -2,64E+01 | 5,31E+01 | 1,06E+00 | 5,22E-01 | -2,58E+01 |
| ODP | kg CFC-11 eq | 2,82E-06 | 2,61E-07 | 1,20E-07 | -1,10E-06 | 2,69E-06 | 2,55E-07 | 1,17E-07 | -1,10E-06 |
| POCP | kg NMVOC eq | 1,70E-01 | 4,90E-03 | 6,19E-03 | -8,08E-02 | 1,61E-01 | 4,79E-03 | 6,03E-03 | -7,78E-02 |
| AP | mol H+ eq | 3,72E-01 | 4,57E-03 | 4,76E-03 | -2,17E-01 | 3,56E-01 | 4,46E-03 | 4,64E-03 | -2,14E-01 |
| EP - freshwater | kg P eq | 9,40E-03 | 6,82E-05 | 2,14E-05 | -4,47E-03 | 8,80E-03 | 6,65E-05 | 2,09E-05 | -4,15E-03 |
| EP - marine | kg N eq | 5,43E-02 | 1,39E-03 | 2,02E-03 | -2,45E-02 | 5,16E-02 | 1,36E-03 | 1,97E-03 | -2,38E-02 |
| EP - terrestrial | mol N eq | 9,47E-01 | 1,52E-02 | 2,22E-02 | -5,52E-01 | 9,08E-01 | 1,49E-02 | 2,16E-02 | -5,45E-01 |
| WDP | m ³ depriv. | 1,45E+01 | 5,87E-02 | 2,40E-02 | -3,39E+00 | 1,38E+01 | 5,73E-02 | 2,30E-02 | -3,22E+00 |
| ADP - F | MJ | 6,82E+02 | 1,71E+01 | 7,76E+00 | -3,17E+02 | 6,52E+02 | 1,67E+01 | 7,56E+00 | -3,10E+02 |
| ADP - MM | kg Sb eq | 6,12E-04 | 2,51E-06 | 5,33E-07 | -1,20E-04 | 5,70E-04 | 2,45E-06 | 5,19E-07 | -1,10E-04 |
| PERE | MJ | 4,89E+01 | 2,71E-01 | 7,43E-02 | -2,05E+01 | 4,66E+01 | 2,65E-01 | 7,24E-02 | -1,97E+01 |
| PERM | 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 |
| PERT | MJ | 4,89E+01 | 2,71E-01 | 7,43E-02 | -2,05E+01 | 4,66E+01 | 2,65E-01 | 7,24E-02 | -1,97E+01 |
| PENRE | MJ | 7,44E+02 | 1,69E+01 | 7,66E+00 | -3,39E+02 | 7,10E+02 | 1,65E+01 | 7,47E+00 | -3,31E+02 |
| PENRM | 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 |
| PENRT | MJ | 7,44E+02 | 1,69E+01 | 7,66E+00 | -3,39E+02 | 7,10E+02 | 1,65E+01 | 7,47E+00 | -3,31E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 2,16E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 2,11E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,35E-01 | 3,81E-03 | 1,26E-03 | -1,34E-01 | 4,09E-01 | 3,72E-03 | 1,22E-03 | -1,26E-01 |
| HW | kg | 1,73E+00 | 0,00E+00 | 3,45E-03 | -5,49E-01 | 1,62E+00 | 0,00E+00 | 3,36E-03 | -5,10E-01 |
| NHW | kg | 9,94E+00 | 0,00E+00 | 1,80E-02 | -3,86E+00 | 9,31E+00 | 0,00E+00 | 1,74E-02 | -3,59E+00 |
| RW | kg | 8,31E-03 | 0,00E+00 | 6,82E-04 | -3,03E-03 | 7,80E-03 | 0,00E+00 | 6,65E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,78E-02 | 0,00E+00 | 3,65E-03 | -4,81E+00 | 6,34E-02 | 0,00E+00 | 3,55E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 50 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 3,88E+01 | 5,51E-01 | 2,75E-01 | -1,37E+01 | 3,60E+01 | 5,24E-01 | 2,62E-01 | -1,31E+01 |
| GWP - fossil | kg CO ₂ eq | 3,88E+01 | 5,50E-01 | 2,75E-01 | -1,38E+01 | 3,60E+01 | 5,24E-01 | 2,61E-01 | -1,32E+01 |
| GWP - biogenic | kg CO ₂ eq | -1,01E-01 | 5,35E-04 | 1,44E-04 | 1,04E-01 | -8,49E-02 | 5,09E-04 | 1,37E-04 | 1,05E-01 |
| GWP - luluc | kg CO ₂ eq | 5,90E-02 | 1,98E-04 | 5,08E-05 | -7,50E-03 | 5,49E-02 | 1,88E-04 | 4,82E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,77E+01 | 5,46E-01 | 2,72E-01 | -1,34E+01 | 3,50E+01 | 5,20E-01 | 2,59E-01 | -1,28E+01 |
| ODP | kg CFC-11 eq | 1,88E-06 | 1,31E-07 | 6,17E-08 | -6,30E-07 | 1,76E-06 | 1,25E-07 | 5,87E-08 | -5,90E-07 |
| POCP | kg NMVOC eq | 1,28E-01 | 2,47E-03 | 3,14E-03 | -5,18E-02 | 1,19E-01 | 2,35E-03 | 2,99E-03 | -4,88E-02 |
| AP | mol H+ eq | 2,01E-01 | 2,30E-03 | 2,42E-03 | -8,55E-02 | 1,85E-01 | 2,19E-03 | 2,30E-03 | -8,25E-02 |
| EP - freshwater | kg P eq | 9,18E-03 | 3,43E-05 | 1,11E-05 | -4,46E-03 | 8,58E-03 | 3,26E-05 | 1,05E-05 | -4,15E-03 |
| EP - marine | kg N eq | 3,89E-02 | 7,00E-04 | 1,03E-03 | -1,38E-02 | 3,63E-02 | 6,67E-04 | 9,78E-04 | -1,30E-02 |
| EP - terrestrial | mol N eq | 5,00E-01 | 7,66E-03 | 1,13E-02 | -2,09E-01 | 4,61E-01 | 7,29E-03 | 1,07E-02 | -2,02E-01 |
| WDP | m ³ depriv. | 1,30E+01 | 2,95E-02 | 1,62E-02 | -2,61E+00 | 1,23E+01 | 2,81E-02 | 1,52E-02 | -2,44E+00 |
| ADP - F | MJ | 4,46E+02 | 8,58E+00 | 3,99E+00 | -1,53E+02 | 4,16E+02 | 8,16E+00 | 3,79E+00 | -1,46E+02 |
| ADP - MM | kg Sb eq | 6,07E-04 | 1,26E-06 | 2,75E-07 | -1,20E-04 | 5,66E-04 | 1,20E-06 | 2,62E-07 | -1,10E-04 |
| PERE | MJ | 3,59E+01 | 1,36E-01 | 3,84E-02 | -1,35E+01 | 3,36E+01 | 1,30E-01 | 3,65E-02 | -1,27E+01 |
| PERM | 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 |
| PERT | MJ | 3,59E+01 | 1,36E-01 | 3,84E-02 | -1,35E+01 | 3,36E+01 | 1,30E-01 | 3,65E-02 | -1,27E+01 |
| PENRE | MJ | 5,08E+02 | 8,48E+00 | 3,94E+00 | -1,75E+02 | 4,73E+02 | 8,07E+00 | 3,75E+00 | -1,66E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,08E+02 | 8,48E+00 | 3,94E+00 | -1,75E+02 | 4,73E+02 | 8,07E+00 | 3,75E+00 | -1,66E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,10E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,05E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,03E-01 | 1,92E-03 | 7,33E-04 | -1,16E-01 | 3,76E-01 | 1,82E-03 | 6,92E-04 | -1,08E-01 |
| HW | kg | 1,69E+00 | 0,00E+00 | 1,82E-03 | -5,49E-01 | 1,59E+00 | 0,00E+00 | 1,73E-03 | -5,10E-01 |
| NHW | kg | 9,49E+00 | 0,00E+00 | 1,00E-02 | -3,86E+00 | 8,86E+00 | 0,00E+00 | 9,51E-03 | -3,59E+00 |
| RW | kg | 8,08E-03 | 0,00E+00 | 3,53E-04 | -3,03E-03 | 7,57E-03 | 0,00E+00 | 3,36E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,63E-02 | 0,00E+00 | 1,86E-03 | -4,81E+00 | 6,20E-02 | 0,00E+00 | 1,77E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 60 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,00E+01 | 5,87E-01 | 2,93E-01 | -1,46E+01 | 3,72E+01 | 5,61E-01 | 2,79E-01 | -1,39E+01 |
| GWP - fossil | kg CO ₂ eq | 4,00E+01 | 5,87E-01 | 2,93E-01 | -1,47E+01 | 3,73E+01 | 5,60E-01 | 2,79E-01 | -1,40E+01 |
| GWP - biogenic | kg CO ₂ eq | -1,36E-01 | 5,70E-04 | 1,53E-04 | 1,29E-01 | -1,20E-01 | 5,44E-04 | 1,46E-04 | 1,30E-01 |
| GWP - luluc | kg CO ₂ eq | 5,91E-02 | 2,11E-04 | 5,38E-05 | -7,50E-03 | 5,50E-02 | 2,01E-04 | 5,12E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 3,89E+01 | 5,82E-01 | 2,90E-01 | -1,43E+01 | 3,62E+01 | 5,56E-01 | 2,77E-01 | -1,37E+01 |
| ODP | kg CFC-11 eq | 1,94E-06 | 1,40E-07 | 6,56E-08 | -6,60E-07 | 1,82E-06 | 1,34E-07 | 6,26E-08 | -6,30E-07 |
| POCP | kg NMVOC eq | 1,31E-01 | 2,63E-03 | 3,35E-03 | -5,38E-02 | 1,22E-01 | 2,51E-03 | 3,19E-03 | -5,08E-02 |
| AP | mol H+ eq | 2,12E-01 | 2,45E-03 | 2,58E-03 | -9,43E-02 | 1,97E-01 | 2,34E-03 | 2,46E-03 | -9,12E-02 |
| EP - freshwater | kg P eq | 9,20E-03 | 3,65E-05 | 1,18E-05 | -4,46E-03 | 8,59E-03 | 3,49E-05 | 1,12E-05 | -4,15E-03 |
| EP - marine | kg N eq | 3,99E-02 | 7,47E-04 | 1,09E-03 | -1,45E-02 | 3,73E-02 | 7,13E-04 | 1,04E-03 | -1,38E-02 |
| EP - terrestrial | mol N eq | 5,30E-01 | 8,17E-03 | 1,20E-02 | -2,32E-01 | 4,91E-01 | 7,80E-03 | 1,14E-02 | -2,25E-01 |
| WDP | m ³ depriv. | 1,31E+01 | 3,15E-02 | 1,67E-02 | -2,66E+00 | 1,24E+01 | 3,00E-02 | 1,57E-02 | -2,49E+00 |
| ADP - F | MJ | 4,61E+02 | 9,14E+00 | 4,24E+00 | -1,64E+02 | 4,32E+02 | 8,73E+00 | 4,05E+00 | -1,57E+02 |
| ADP - MM | kg Sb eq | 6,08E-04 | 1,35E-06 | 2,92E-07 | -1,20E-04 | 5,66E-04 | 1,28E-06 | 2,79E-07 | -1,10E-04 |
| PERE | MJ | 3,68E+01 | 1,45E-01 | 4,08E-02 | -1,40E+01 | 3,44E+01 | 1,39E-01 | 3,89E-02 | -1,32E+01 |
| PERM | 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 |
| PERT | MJ | 3,68E+01 | 1,45E-01 | 4,08E-02 | -1,40E+01 | 3,44E+01 | 1,39E-01 | 3,89E-02 | -1,32E+01 |
| PENRE | MJ | 5,24E+02 | 9,04E+00 | 4,19E+00 | -1,86E+02 | 4,89E+02 | 8,63E+00 | 4,00E+00 | -1,77E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,24E+02 | 9,04E+00 | 4,19E+00 | -1,86E+02 | 4,89E+02 | 8,63E+00 | 4,00E+00 | -1,77E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,17E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,12E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,05E-01 | 2,04E-03 | 7,69E-04 | -1,17E-01 | 3,78E-01 | 1,95E-03 | 7,28E-04 | -1,09E-01 |
| HW | kg | 1,70E+00 | 0,00E+00 | 1,93E-03 | -5,49E-01 | 1,59E+00 | 0,00E+00 | 1,84E-03 | -5,10E-01 |
| NHW | kg | 9,52E+00 | 0,00E+00 | 1,06E-02 | -3,86E+00 | 8,89E+00 | 0,00E+00 | 1,00E-02 | -3,59E+00 |
| RW | kg | 8,10E-03 | 0,00E+00 | 3,75E-04 | -3,03E-03 | 7,58E-03 | 0,00E+00 | 3,58E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,64E-02 | 0,00E+00 | 1,98E-03 | -4,81E+00 | 6,21E-02 | 0,00E+00 | 1,89E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 80 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,24E+01 | 6,60E-01 | 3,28E-01 | -1,63E+01 | 3,96E+01 | 6,34E-01 | 3,15E-01 | -1,56E+01 |
| GWP - fossil | kg CO ₂ eq | 4,25E+01 | 6,59E-01 | 3,28E-01 | -1,65E+01 | 3,97E+01 | 6,33E-01 | 3,15E-01 | -1,58E+01 |
| GWP - biogenic | kg CO ₂ eq | -2,06E-01 | 6,41E-04 | 1,71E-04 | 1,79E-01 | -1,89E-01 | 6,15E-04 | 1,64E-04 | 1,80E-01 |
| GWP - luluc | kg CO ₂ eq | 5,93E-02 | 2,37E-04 | 5,97E-05 | -7,50E-03 | 5,52E-02 | 2,27E-04 | 5,71E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,13E+01 | 6,54E-01 | 3,25E-01 | -1,60E+01 | 3,86E+01 | 6,28E-01 | 3,12E-01 | -1,54E+01 |
| ODP | kg CFC-11 eq | 2,07E-06 | 1,57E-07 | 7,34E-08 | -7,30E-07 | 1,94E-06 | 1,51E-07 | 7,04E-08 | -6,90E-07 |
| POCP | kg NMVOC eq | 1,37E-01 | 2,95E-03 | 3,75E-03 | -5,76E-02 | 1,28E-01 | 2,83E-03 | 3,60E-03 | -5,46E-02 |
| AP | mol H+ eq | 2,35E-01 | 2,75E-03 | 2,89E-03 | -1,12E-01 | 2,20E-01 | 2,64E-03 | 2,77E-03 | -1,09E-01 |
| EP - freshwater | kg P eq | 9,23E-03 | 4,10E-05 | 1,31E-05 | -4,47E-03 | 8,62E-03 | 3,94E-05 | 1,26E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,20E-02 | 8,39E-04 | 1,23E-03 | -1,59E-02 | 3,93E-02 | 8,05E-04 | 1,18E-03 | -1,52E-02 |
| EP - terrestrial | mol N eq | 5,90E-01 | 9,18E-03 | 1,34E-02 | -2,78E-01 | 5,50E-01 | 8,81E-03 | 1,29E-02 | -2,71E-01 |
| WDP | m ³ depriv. | 1,33E+01 | 3,54E-02 | 1,78E-02 | -2,76E+00 | 1,26E+01 | 3,39E-02 | 1,68E-02 | -2,60E+00 |
| ADP - F | MJ | 4,93E+02 | 1,03E+01 | 4,75E+00 | -1,86E+02 | 4,64E+02 | 9,86E+00 | 4,55E+00 | -1,78E+02 |
| ADP - MM | kg Sb eq | 6,08E-04 | 1,51E-06 | 3,27E-07 | -1,20E-04 | 5,67E-04 | 1,45E-06 | 3,13E-07 | -1,10E-04 |
| PERE | MJ | 3,85E+01 | 1,63E-01 | 4,56E-02 | -1,49E+01 | 3,62E+01 | 1,57E-01 | 4,37E-02 | -1,41E+01 |
| PERM | 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 |
| PERT | MJ | 3,85E+01 | 1,63E-01 | 4,56E-02 | -1,49E+01 | 3,62E+01 | 1,57E-01 | 4,37E-02 | -1,41E+01 |
| PENRE | MJ | 5,55E+02 | 1,02E+01 | 4,69E+00 | -2,08E+02 | 5,21E+02 | 9,75E+00 | 4,49E+00 | -1,99E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,55E+02 | 1,02E+01 | 4,69E+00 | -2,08E+02 | 5,21E+02 | 9,75E+00 | 4,49E+00 | -1,99E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,32E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,26E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,09E-01 | 2,29E-03 | 8,39E-04 | -1,19E-01 | 3,82E-01 | 2,20E-03 | 7,99E-04 | -1,12E-01 |
| HW | kg | 1,70E+00 | 0,00E+00 | 2,15E-03 | -5,49E-01 | 1,60E+00 | 0,00E+00 | 2,06E-03 | -5,10E-01 |
| NHW | kg | 9,58E+00 | 0,00E+00 | 1,16E-02 | -3,86E+00 | 8,95E+00 | 0,00E+00 | 1,11E-02 | -3,59E+00 |
| RW | kg | 8,13E-03 | 0,00E+00 | 4,19E-04 | -3,03E-03 | 7,62E-03 | 0,00E+00 | 4,02E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,66E-02 | 0,00E+00 | 2,22E-03 | -4,81E+00 | 6,23E-02 | 0,00E+00 | 2,13E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 100 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,47E+01 | 7,33E-01 | 3,64E-01 | -1,80E+01 | 4,20E+01 | 7,06E-01 | 3,50E-01 | -1,73E+01 |
| GWP - fossil | kg CO ₂ eq | 4,50E+01 | 7,32E-01 | 3,63E-01 | -1,82E+01 | 4,22E+01 | 7,05E-01 | 3,50E-01 | -1,76E+01 |
| GWP - biogenic | kg CO ₂ eq | -2,76E-01 | 7,11E-04 | 1,89E-04 | 2,29E-01 | -2,59E-01 | 6,85E-04 | 1,82E-04 | 2,30E-01 |
| GWP - luluc | kg CO ₂ eq | 5,95E-02 | 2,63E-04 | 6,55E-05 | -7,50E-03 | 5,54E-02 | 2,54E-04 | 6,29E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,37E+01 | 7,26E-01 | 3,60E-01 | -1,78E+01 | 4,11E+01 | 7,00E-01 | 3,47E-01 | -1,71E+01 |
| ODP | kg CFC-11 eq | 2,19E-06 | 1,75E-07 | 8,12E-08 | -7,90E-07 | 2,07E-06 | 1,68E-07 | 7,82E-08 | -7,60E-07 |
| POCP | kg NMVOC eq | 1,42E-01 | 3,28E-03 | 4,16E-03 | -6,15E-02 | 1,33E-01 | 3,16E-03 | 4,01E-03 | -5,85E-02 |
| AP | mol H+ eq | 2,58E-01 | 3,06E-03 | 3,20E-03 | -1,29E-01 | 2,42E-01 | 2,94E-03 | 3,08E-03 | -1,26E-01 |
| EP - freshwater | kg P eq | 9,26E-03 | 4,56E-05 | 1,45E-05 | -4,47E-03 | 8,66E-03 | 4,39E-05 | 1,40E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,41E-02 | 9,32E-04 | 1,36E-03 | -1,73E-02 | 4,14E-02 | 8,98E-04 | 1,31E-03 | -1,66E-02 |
| EP - terrestrial | mol N eq | 6,49E-01 | 1,02E-02 | 1,49E-02 | -3,23E-01 | 6,10E-01 | 9,82E-03 | 1,43E-02 | -3,16E-01 |
| WDP | m ³ depriv. | 1,35E+01 | 3,93E-02 | 1,88E-02 | -2,87E+00 | 1,28E+01 | 3,78E-02 | 1,78E-02 | -2,70E+00 |
| ADP - F | MJ | 5,25E+02 | 1,14E+01 | 5,25E+00 | -2,07E+02 | 4,96E+02 | 1,10E+01 | 5,05E+00 | -2,00E+02 |
| ADP - MM | kg Sb eq | 6,09E-04 | 1,68E-06 | 3,61E-07 | -1,20E-04 | 5,67E-04 | 1,62E-06 | 3,47E-07 | -1,10E-04 |
| PERE | MJ | 4,02E+01 | 1,81E-01 | 5,04E-02 | -1,58E+01 | 3,79E+01 | 1,75E-01 | 4,85E-02 | -1,50E+01 |
| PERM | 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 |
| PERT | MJ | 4,02E+01 | 1,81E-01 | 5,04E-02 | -1,58E+01 | 3,79E+01 | 1,75E-01 | 4,85E-02 | -1,50E+01 |
| PENRE | MJ | 5,87E+02 | 1,13E+01 | 5,18E+00 | -2,30E+02 | 5,53E+02 | 1,09E+01 | 4,99E+00 | -2,21E+02 |
| PENRM | 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 |
| PENRT | MJ | 5,87E+02 | 1,13E+01 | 5,18E+00 | -2,30E+02 | 5,53E+02 | 1,09E+01 | 4,99E+00 | -2,21E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,46E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,40E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,13E-01 | 2,55E-03 | 9,09E-04 | -1,22E-01 | 3,87E-01 | 2,46E-03 | 8,68E-04 | -1,14E-01 |
| HW | kg | 1,71E+00 | 0,00E+00 | 2,37E-03 | -5,49E-01 | 1,60E+00 | 0,00E+00 | 2,27E-03 | -5,10E-01 |
| NHW | kg | 9,64E+00 | 0,00E+00 | 1,27E-02 | -3,86E+00 | 9,01E+00 | 0,00E+00 | 1,21E-02 | -3,59E+00 |
| RW | kg | 8,16E-03 | 0,00E+00 | 4,63E-04 | -3,03E-03 | 7,65E-03 | 0,00E+00 | 4,46E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,68E-02 | 0,00E+00 | 2,46E-03 | -4,81E+00 | 6,25E-02 | 0,00E+00 | 2,37E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 120 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 4,71E+01 | 8,05E-01 | 3,99E-01 | -1,97E+01 | 4,44E+01 | 7,79E-01 | 3,86E-01 | -1,90E+01 |
| GWP - fossil | kg CO ₂ eq | 4,74E+01 | 8,04E-01 | 3,99E-01 | -2,00E+01 | 4,47E+01 | 7,78E-01 | 3,85E-01 | -1,93E+01 |
| GWP - biogenic | kg CO ₂ eq | -3,46E-01 | 7,82E-04 | 2,07E-04 | 2,78E-01 | -3,29E-01 | 7,56E-04 | 2,00E-04 | 2,80E-01 |
| GWP - luluc | kg CO ₂ eq | 5,97E-02 | 2,89E-04 | 7,14E-05 | -7,50E-03 | 5,56E-02 | 2,80E-04 | 6,89E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,62E+01 | 7,98E-01 | 3,95E-01 | -1,95E+01 | 4,35E+01 | 7,72E-01 | 3,82E-01 | -1,89E+01 |
| ODP | kg CFC-11 eq | 2,32E-06 | 1,92E-07 | 8,90E-08 | -8,60E-07 | 2,19E-06 | 1,86E-07 | 8,60E-08 | -8,30E-07 |
| POCP | kg NMVOC eq | 1,48E-01 | 3,60E-03 | 4,56E-03 | -6,53E-02 | 1,39E-01 | 3,48E-03 | 4,41E-03 | -6,23E-02 |
| AP | mol H+ eq | 2,81E-01 | 3,36E-03 | 3,51E-03 | -1,47E-01 | 2,65E-01 | 3,25E-03 | 3,40E-03 | -1,44E-01 |
| EP - freshwater | kg P eq | 9,29E-03 | 5,01E-05 | 1,59E-05 | -4,47E-03 | 8,69E-03 | 4,84E-05 | 1,54E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,61E-02 | 1,02E-03 | 1,49E-03 | -1,88E-02 | 4,34E-02 | 9,90E-04 | 1,44E-03 | -1,81E-02 |
| EP - terrestrial | mol N eq | 7,09E-01 | 1,12E-02 | 1,63E-02 | -3,69E-01 | 6,70E-01 | 1,08E-02 | 1,58E-02 | -3,62E-01 |
| WDP | m ³ depriv. | 1,37E+01 | 4,31E-02 | 1,98E-02 | -2,97E+00 | 1,30E+01 | 4,17E-02 | 1,89E-02 | -2,80E+00 |
| ADP - F | MJ | 5,57E+02 | 1,25E+01 | 5,75E+00 | -2,29E+02 | 5,28E+02 | 1,21E+01 | 5,56E+00 | -2,22E+02 |
| ADP - MM | kg Sb eq | 6,10E-04 | 1,84E-06 | 3,95E-07 | -1,20E-04 | 5,68E-04 | 1,78E-06 | 3,82E-07 | -1,10E-04 |
| PERE | MJ | 4,20E+01 | 1,99E-01 | 5,52E-02 | -1,68E+01 | 3,97E+01 | 1,93E-01 | 5,33E-02 | -1,60E+01 |
| PERM | 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 |
| PERT | MJ | 4,20E+01 | 1,99E-01 | 5,52E-02 | -1,68E+01 | 3,97E+01 | 1,93E-01 | 5,33E-02 | -1,60E+01 |
| PENRE | MJ | 6,19E+02 | 1,24E+01 | 5,68E+00 | -2,52E+02 | 5,85E+02 | 1,20E+01 | 5,49E+00 | -2,43E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,19E+02 | 1,24E+01 | 5,68E+00 | -2,52E+02 | 5,85E+02 | 1,20E+01 | 5,49E+00 | -2,43E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,60E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,54E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,18E-01 | 2,80E-03 | 9,76E-04 | -1,24E-01 | 3,91E-01 | 2,71E-03 | 9,40E-04 | -1,16E-01 |
| HW | kg | 1,71E+00 | 0,00E+00 | 2,58E-03 | -5,49E-01 | 1,61E+00 | 0,00E+00 | 2,49E-03 | -5,10E-01 |
| NHW | kg | 9,71E+00 | 0,00E+00 | 1,37E-02 | -3,86E+00 | 9,08E+00 | 0,00E+00 | 1,32E-02 | -3,59E+00 |
| RW | kg | 8,20E-03 | 0,00E+00 | 5,07E-04 | -3,03E-03 | 7,68E-03 | 0,00E+00 | 4,90E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,70E-02 | 0,00E+00 | 2,69E-03 | -4,81E+00 | 6,27E-02 | 0,00E+00 | 2,60E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 150 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,07E+01 | 9,14E-01 | 4,52E-01 | -2,23E+01 | 4,80E+01 | 8,88E-01 | 4,39E-01 | -2,16E+01 |
| GWP - fossil | kg CO ₂ eq | 5,11E+01 | 9,13E-01 | 4,52E-01 | -2,26E+01 | 4,84E+01 | 8,87E-01 | 4,39E-01 | -2,20E+01 |
| GWP - biogenic | kg CO ₂ eq | -4,50E-01 | 8,87E-04 | 2,34E-04 | 3,53E-01 | -4,33E-01 | 8,62E-04 | 2,27E-04 | 3,54E-01 |
| GWP - luluc | kg CO ₂ eq | 6,00E-02 | 3,28E-04 | 8,03E-05 | -7,50E-03 | 5,59E-02 | 3,19E-04 | 7,76E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 4,98E+01 | 9,06E-01 | 4,48E-01 | -2,21E+01 | 4,71E+01 | 8,80E-01 | 4,34E-01 | -2,14E+01 |
| ODP | kg CFC-11 eq | 2,50E-06 | 2,18E-07 | 1,01E-07 | -9,60E-07 | 2,38E-06 | 2,12E-07 | 9,77E-08 | -9,30E-07 |
| POCP | kg NMVOC eq | 1,56E-01 | 4,09E-03 | 5,17E-03 | -7,11E-02 | 1,48E-01 | 3,97E-03 | 5,02E-03 | -6,81E-02 |
| AP | mol H+ eq | 3,15E-01 | 3,81E-03 | 3,98E-03 | -1,73E-01 | 2,99E-01 | 3,70E-03 | 3,86E-03 | -1,70E-01 |
| EP - freshwater | kg P eq | 9,34E-03 | 5,69E-05 | 1,80E-05 | -4,47E-03 | 8,73E-03 | 5,52E-05 | 1,74E-05 | -4,15E-03 |
| EP - marine | kg N eq | 4,92E-02 | 1,16E-03 | 1,69E-03 | -2,09E-02 | 4,65E-02 | 1,13E-03 | 1,64E-03 | -2,02E-02 |
| EP - terrestrial | mol N eq | 7,98E-01 | 1,27E-02 | 1,85E-02 | -4,38E-01 | 7,59E-01 | 1,23E-02 | 1,80E-02 | -4,31E-01 |
| WDP | m ³ depriv. | 1,40E+01 | 4,90E-02 | 2,14E-02 | -3,13E+00 | 1,33E+01 | 4,76E-02 | 2,04E-02 | -2,96E+00 |
| ADP - F | MJ | 6,05E+02 | 1,42E+01 | 6,51E+00 | -2,62E+02 | 5,75E+02 | 1,38E+01 | 6,31E+00 | -2,55E+02 |
| ADP - MM | kg Sb eq | 6,11E-04 | 2,09E-06 | 4,47E-07 | -1,20E-04 | 5,69E-04 | 2,03E-06 | 4,33E-07 | -1,10E-04 |
| PERE | MJ | 4,46E+01 | 2,26E-01 | 6,24E-02 | -1,82E+01 | 4,23E+01 | 2,20E-01 | 6,05E-02 | -1,74E+01 |
| PERM | 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 |
| PERT | MJ | 4,46E+01 | 2,26E-01 | 6,24E-02 | -1,82E+01 | 4,23E+01 | 2,20E-01 | 6,05E-02 | -1,74E+01 |
| PENRE | MJ | 6,67E+02 | 1,41E+01 | 6,42E+00 | -2,84E+02 | 6,33E+02 | 1,37E+01 | 6,23E+00 | -2,76E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,67E+02 | 1,41E+01 | 6,42E+00 | -2,84E+02 | 6,33E+02 | 1,37E+01 | 6,23E+00 | -2,76E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,81E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,75E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,24E-01 | 3,18E-03 | 1,08E-03 | -1,28E-01 | 3,98E-01 | 3,09E-03 | 1,04E-03 | -1,20E-01 |
| HW | kg | 1,72E+00 | 0,00E+00 | 2,91E-03 | -5,49E-01 | 1,62E+00 | 0,00E+00 | 2,82E-03 | -5,10E-01 |
| NHW | kg | 9,80E+00 | 0,00E+00 | 1,53E-02 | -3,86E+00 | 9,17E+00 | 0,00E+00 | 1,48E-02 | -3,59E+00 |
| RW | kg | 8,25E-03 | 0,00E+00 | 5,73E-04 | -3,03E-03 | 7,73E-03 | 0,00E+00 | 5,55E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,74E-02 | 0,00E+00 | 3,05E-03 | -4,81E+00 | 6,30E-02 | 0,00E+00 | 2,96E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 170 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,31E+01 | 9,87E-01 | 4,88E-01 | -2,40E+01 | 5,04E+01 | 9,61E-01 | 4,74E-01 | -2,33E+01 |
| GWP - fossil | kg CO ₂ eq | 5,36E+01 | 9,86E-01 | 4,87E-01 | -2,44E+01 | 5,08E+01 | 9,59E-01 | 4,74E-01 | -2,37E+01 |
| GWP - biogenic | kg CO ₂ eq | -5,20E-01 | 9,58E-04 | 2,52E-04 | 4,03E-01 | -5,03E-01 | 9,32E-04 | 2,45E-04 | 4,04E-01 |
| GWP - luluc | kg CO ₂ eq | 6,02E-02 | 3,54E-04 | 8,62E-05 | -7,50E-03 | 5,61E-02 | 3,45E-04 | 8,35E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 5,22E+01 | 9,78E-01 | 4,83E-01 | -2,38E+01 | 4,95E+01 | 9,52E-01 | 4,69E-01 | -2,32E+01 |
| ODP | kg CFC-11 eq | 2,63E-06 | 2,35E-07 | 1,08E-07 | -1,00E-06 | 2,51E-06 | 2,29E-07 | 1,05E-07 | -1,00E-06 |
| POCP | kg NMVOC eq | 1,62E-01 | 4,42E-03 | 5,58E-03 | -7,50E-02 | 1,53E-01 | 4,30E-03 | 5,43E-03 | -7,20E-02 |
| AP | mol H+ eq | 3,38E-01 | 4,12E-03 | 4,29E-03 | -1,90E-01 | 3,22E-01 | 4,01E-03 | 4,17E-03 | -1,87E-01 |
| EP - freshwater | kg P eq | 9,37E-03 | 6,14E-05 | 1,93E-05 | -4,47E-03 | 8,76E-03 | 5,97E-05 | 1,88E-05 | -4,15E-03 |
| EP - marine | kg N eq | 5,13E-02 | 1,26E-03 | 1,82E-03 | -2,24E-02 | 4,86E-02 | 1,22E-03 | 1,77E-03 | -2,16E-02 |
| EP - terrestrial | mol N eq | 8,58E-01 | 1,37E-02 | 2,00E-02 | -4,83E-01 | 8,19E-01 | 1,34E-02 | 1,94E-02 | -4,77E-01 |
| WDP | m ³ depriv. | 1,42E+01 | 5,29E-02 | 2,25E-02 | -3,23E+00 | 1,35E+01 | 5,15E-02 | 2,15E-02 | -3,06E+00 |
| ADP - F | MJ | 6,37E+02 | 1,54E+01 | 7,01E+00 | -2,84E+02 | 6,07E+02 | 1,50E+01 | 6,81E+00 | -2,77E+02 |
| ADP - MM | kg Sb eq | 6,11E-04 | 2,26E-06 | 4,81E-07 | -1,20E-04 | 5,69E-04 | 2,20E-06 | 4,68E-07 | -1,10E-04 |
| PERE | MJ | 4,64E+01 | 2,44E-01 | 6,72E-02 | -1,91E+01 | 4,40E+01 | 2,38E-01 | 6,52E-02 | -1,83E+01 |
| PERM | 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 |
| PERT | MJ | 4,64E+01 | 2,44E-01 | 6,72E-02 | -1,91E+01 | 4,40E+01 | 2,38E-01 | 6,52E-02 | -1,83E+01 |
| PENRE | MJ | 6,99E+02 | 1,52E+01 | 6,92E+00 | -3,06E+02 | 6,65E+02 | 1,48E+01 | 6,73E+00 | -2,98E+02 |
| PENRM | 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 |
| PENRT | MJ | 6,99E+02 | 1,52E+01 | 6,92E+00 | -3,06E+02 | 6,65E+02 | 1,48E+01 | 6,73E+00 | -2,98E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 1,95E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 1,89E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,29E-01 | 3,43E-03 | 1,15E-03 | -1,30E-01 | 4,02E-01 | 3,34E-03 | 1,11E-03 | -1,22E-01 |
| HW | kg | 1,73E+00 | 0,00E+00 | 3,13E-03 | -5,49E-01 | 1,62E+00 | 0,00E+00 | 3,03E-03 | -5,10E-01 |
| NHW | kg | 9,86E+00 | 0,00E+00 | 1,64E-02 | -3,86E+00 | 9,23E+00 | 0,00E+00 | 1,59E-02 | -3,59E+00 |
| RW | kg | 8,28E-03 | 0,00E+00 | 6,17E-04 | -3,03E-03 | 7,77E-03 | 0,00E+00 | 5,99E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,76E-02 | 0,00E+00 | 3,29E-03 | -4,81E+00 | 6,33E-02 | 0,00E+00 | 3,20E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

MINERAL WOOL SOUND-ABSORBING INSULATED WALL/ROOFING PANEL

ROOFING PANEL: MB ROOF SOUND

WALL PANEL: MB WALL SOUND

Nominal thickness 200 mm

| ABB. | UNIT | ROOF | | | | WALL | | | |
|------------------|------------------------|-----------|----------|----------|-----------|-----------|----------|----------|-----------|
| | | A1-A3 | A4 | C1-C4 | D | A1-A3 | A4 | C1-C4 | D |
| GWP - t | kg CO ₂ eq | 5,67E+01 | 1,10E+00 | 5,41E-01 | -2,66E+01 | 5,40E+01 | 1,07E+00 | 5,21E-01 | -2,59E+01 |
| GWP - fossil | kg CO ₂ eq | 5,73E+01 | 1,09E+00 | 5,40E-01 | -2,70E+01 | 5,45E+01 | 1,07E+00 | 5,21E-01 | -2,64E+01 |
| GWP - biogenic | kg CO ₂ eq | -6,25E-01 | 1,06E-03 | 2,80E-04 | 4,78E-01 | -6,08E-01 | 1,04E-03 | 2,67E-04 | 4,79E-01 |
| GWP - luluc | kg CO ₂ eq | 6,05E-02 | 3,94E-04 | 9,49E-05 | -7,50E-03 | 5,64E-02 | 3,84E-04 | 8,67E-05 | -6,97E-03 |
| GWP - GHG | kg CO ₂ eq | 5,59E+01 | 1,09E+00 | 5,35E-01 | -2,64E+01 | 5,32E+01 | 1,06E+00 | 5,16E-01 | -2,58E+01 |
| ODP | kg CFC-11 eq | 2,82E-06 | 2,61E-07 | 1,20E-07 | -1,10E-06 | 2,69E-06 | 2,55E-07 | 1,15E-07 | -1,10E-06 |
| POCP | kg NMVOC eq | 1,71E-01 | 4,90E-03 | 6,19E-03 | -8,08E-02 | 1,62E-01 | 4,79E-03 | 5,97E-03 | -7,78E-02 |
| AP | mol H+ eq | 3,72E-01 | 4,57E-03 | 4,76E-03 | -2,17E-01 | 3,56E-01 | 4,46E-03 | 4,58E-03 | -2,14E-01 |
| EP - freshwater | kg P eq | 9,41E-03 | 6,82E-05 | 2,14E-05 | -4,47E-03 | 8,81E-03 | 6,65E-05 | 2,03E-05 | -4,15E-03 |
| EP - marine | kg N eq | 5,43E-02 | 1,39E-03 | 2,02E-03 | -2,45E-02 | 5,17E-02 | 1,36E-03 | 1,95E-03 | -2,38E-02 |
| EP - terrestrial | mol N eq | 9,48E-01 | 1,52E-02 | 2,22E-02 | -5,52E-01 | 9,08E-01 | 1,49E-02 | 2,14E-02 | -5,45E-01 |
| WDP | m ³ depriv. | 1,45E+01 | 5,87E-02 | 2,40E-02 | -3,39E+00 | 1,38E+01 | 5,73E-02 | 1,55E-02 | -3,22E+00 |
| ADP - F | MJ | 6,85E+02 | 1,71E+01 | 7,76E+00 | -3,17E+02 | 6,55E+02 | 1,67E+01 | 7,40E+00 | -3,10E+02 |
| ADP - MM | kg Sb eq | 6,12E-04 | 2,51E-06 | 5,33E-07 | -1,20E-04 | 5,70E-04 | 2,45E-06 | 5,05E-07 | -1,10E-04 |
| PERE | MJ | 4,90E+01 | 2,71E-01 | 7,43E-02 | -2,05E+01 | 4,67E+01 | 2,65E-01 | 7,05E-02 | -1,97E+01 |
| PERM | 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 |
| PERT | MJ | 4,90E+01 | 2,71E-01 | 7,43E-02 | -2,05E+01 | 4,67E+01 | 2,65E-01 | 7,05E-02 | -1,97E+01 |
| PENRE | MJ | 7,47E+02 | 1,69E+01 | 7,66E+00 | -3,39E+02 | 7,13E+02 | 1,65E+01 | 7,30E+00 | -3,31E+02 |
| PENRM | 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 |
| PENRT | MJ | 7,47E+02 | 1,69E+01 | 7,66E+00 | -3,39E+02 | 7,13E+02 | 1,65E+01 | 7,30E+00 | -3,31E+02 |
| SM | kg | 3,10E+00 | 0,00E+00 | 2,16E-03 | -1,75E+00 | 2,88E+00 | 0,00E+00 | 2,07E-03 | -1,63E+00 |
| RSF | 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 |
| NRSF | 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 |
| FW | m ³ | 4,35E-01 | 3,81E-03 | 1,26E-03 | -1,34E-01 | 4,09E-01 | 3,72E-03 | 1,03E-03 | -1,26E-01 |
| HW | kg | 1,73E+00 | 0,00E+00 | 3,45E-03 | -5,49E-01 | 1,63E+00 | 0,00E+00 | 3,19E-03 | -5,10E-01 |
| NHW | kg | 9,95E+00 | 0,00E+00 | 1,80E-02 | -3,86E+00 | 9,32E+00 | 0,00E+00 | 1,56E-02 | -3,59E+00 |
| RW | kg | 8,33E-03 | 0,00E+00 | 6,82E-04 | -3,03E-03 | 7,82E-03 | 0,00E+00 | 6,46E-04 | -2,81E-03 |
| REUSE | 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 |
| RECYCLE | kg | 6,79E-02 | 0,00E+00 | 3,65E-03 | -4,81E+00 | 6,36E-02 | 0,00E+00 | 3,50E-03 | -4,47E+00 |
| EN-REC | 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 |
| EE-E | 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 |
| EE-T | 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 |

12. NOTES ON SUSTAINABILITY

It is specified that the types of wall and roof panels are designed and manufactured to be **disassembled** and **reused**.

With particular reference to the individual parts that make up the panels, it is specified that they may, after separation, be destined for **recycling, recovery** or **disposal** depending on the type of material and in particular it should be noted that, in line with what is indicated in the "Report special waste" of ISPRA - No. 321/2021:

- the amount of **steel** destined for recycling is **88%**;
- the quantity of **mineral wool** destined for recycling is equal to **76.2%**.

All emissions generated by processing are conveyed into the atmosphere and where necessary are equipped with adequate **abatement systems** before they are released into the environment.

During the manufacturing process of the insulation panels:

- no flame retardants subject to restrictions or prohibitions provided for by applicable national or community regulations are used;
- no blowing agents with an ozone reduction potential greater than zero are used;
- no lead catalysts are used;
- the mineral wool used complies with note Q or note R referred to in Regulation (EC) no. 1272/2008 (CLP) and subsequent amendments (29).

The steel used for the metal supports of the insulating panels has a **recycled content of 24.4%**: this percentage is calculated as a weighted average of the same value associated with the incoming raw material and deriving both from Type III environmental declarations as well as from self-declarations compliant with the UNI EN ISO 14021 standard. The steel comes both from blast furnace (with an average recycled content of 17.0%) and from an electric arc furnace (with an average recycled content of 82.8%).

The mineral rock wool used has a **recycled content greater than 25%**: the value is that indicated by the self-declaration prepared by the supplier in accordance with the indications of the UNI EN ISO 14021 standard.

The company is also able to supply insulated panels in PIR polyurethane foam characterized by a **recycled content of at least 2%**: the value is that indicated by the self-declaration prepared by the supplier in accordance with what is indicated by the standard UNI EN ISO 14021.

13. REFERENCES

- General Programme Instructions of the International EPD® System. Version 3.01;
- PCR 2019:14 - Version 1.11 "CONSTRUCTION PRODUCTS" - Date 2021-02-05;
- PCR 2012:01-SUB-PCR-I "THERMAL INSULATION PRODUCTS (EN 16783:2017)" - Date 2020-09-18;
- BRE Global Product Category Rules (PCR) for Type III EPD of construction products to EN 15804+A2;
- Ecoinvent database v.3.8 - November 2021;
- <http://unstats.un.org/unsd/default.htm>;
- UNI EN ISO 14025: 2010 "Environmental labels and declarations - Type III environmental declarations - Principles and procedures";
- UNI EN ISO 14040: 2021 "Environmental management - Life cycle assessment - Principles and framework";
- UNI EN ISO 14044:2021 "Environmental management - Life cycle assessment - Requirements and guidelines";
- UNI EN ISO 15804:2019 "Sustainability of buildings - Environmental product declarations - Development framework rules by product category";
- European Residual Mixes 2021 Association of Issuing Bodies "European Residual Mixes Results of the calculation of Residual Mixes for the calendar year 2021" - version 1.0, 2022-05-31;
- ISPRA "Special waste report" - n° 344/2021 - Ed. 2021;
- Life Cycle Assessment Report " Coils, strips and sheets in carbon steel" - Marcegaglia Carbon Steel S.p.A. – rev.0 02-09-2022.

14. GENERAL INFORMATION

PROGRAMME INFORMATION

PROGRAMME:

The International EPD® System

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CEN standard EN 15804 serves as the Core Product Category Rules (PCR).

Product category rules (PCR):

Construction products, 2019:14, version 1.11,

UN CPC 54, valid until 20-12-2024

PCR review was conducted by:

The Technical Committee of the International EPD® System.

Review chair: Claudia A. Peña - Contact via the Secretariat www.environdec.com/contact

Independent third-party verification of the declaration and data according to ISO 14025:2010:

EPD process verification

EPD verification by individual verifier

Third-party verifier:

Guido Croce

In case of individual verifiers:

Approved by: The International EPD® System Technical Committee, supported by the Secretariat

Procedure for follow-up of data during EPD validity involves third party verifier:

YES

NO

The EPD owner has the sole ownership, liability and responsibility for this EPD.

Codice UN CPC: 54 Construction services

Geographical scope: Worldwide

EPDs within the same product category but from different programs may not be comparable.

EPDs of construction products may not be comparable if they do not comply with UNI EN 15804. For further information about comparability, refer to UNI EN 15804 and UNI EN ISO 14025:2010

DIFFERENCES FROM PREVIOUS VERSION

Compared to the previous version (revision dated 02/22/2023) the results of the environmental impact indicators have not changed; only the values in the tables relating to the transmittance of the various insulating panels have been updated.

To obtain more information about this product declaration and/or its configurations, the following references are available:

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