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| Statement of Verification |
| BREG EN EPD No.: 000251 Issue 1ECO EPD Ref. No. 00000835 |
| This is to verify that the**Environmental Product Declaration** provided by:MW Insulation Ltd  |
| is in accordance with the requirements of:EN 15804:2012+A1:2013andBRE Global Scheme Document SD207 |
| This declaration is for: Supaphen Phenolic   |
| **Company Address** |  |
| Unit 2Guinness Road Trading EstateTrafford ParkManchesterM17 1SB | **S:\007 EPD EN15804\004 Verification Projects\040 MW Insulation\00 Company Logo and Bio\t2 2019 8x6 ratio Hi-Res (extra contrast).jpg** |
| **C:\Users\scottd\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\IGVMX545\MWI-logo-with-strapline-CMYK-light-back (003) (002).png** |
|  | Laura Crition | 18 February 2019 |
| Signed for BRE Global Ltd  | Operator | Date of this Issue |
| 18 February 2019 | 17 February 2024 |
| Date of First Issue | Expiry Date |

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# Environmental Product Declaration

**EPD Number: 000251**

**General Information**

|  |  |
| --- | --- |
| **EPD Programme Operator** | **Applicable Product Category Rules** |
| BRE GlobalWatford, HertsWD25 9XXUnited Kingdom | BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013 |
| **Commissioner of LCA study** | **LCA consultant/Tool** |
| MW Insulation LtdUnit 2Guinness Road Trading EstateTrafford ParkManchesterM17 1SB | BRE LINA v2.0 |
| **Declared/Functional Unit** | **Applicability/Coverage** |
| 1 linear meter of Supaphen phenolic insulation of specified dimensions | Manufacturer specific product |
| **EPD Type** | **Background database** |
| Cradle to Gate | ecoinvent |
| **Demonstration of Verification** |
| CEN standard EN 15804 serves as the core PCR a  |
| Independent verification of the declaration and data according to EN ISO 14025:2010[ ] Internal [ ]  External |
| (Where appropriate b) Third party verifier:Click here to enter text. |
| a: Product category rulesb: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4) |
| **Comparability** |
| Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance |

**Information modules covered**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Product | Construction  | Use stage | End-of-life |  | Benefits and loads beyond the system boundary |
|  |  | Related to the building fabric | Related to the building |  |  |  |
| **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** |  | **D** |
| Raw materials supply | Transport | Manufacturing | Transport to site | Construction – Installation | Use  | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstructiondemolition | Transport | Waste processing  | Disposal |  | Reuse, Recovery and/or Recycling potential |
|[x] [x] [x] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]   |[ ]

Note: Ticks indicate the Information Modules declared.

**Manufacturing site**

The manufacturing site for the Supaphen insulation is:

|  |  |
| --- | --- |
| MW Insulation LtdUnit 2Guinness Road Trading EstateTrafford ParkManchesterM17 1SB | Click here to enter address. |

**Construction Product:**

**Product Description**

MW Insulation fabricated Supaphen, is a foil faced phenolic pipe insulation product with a foam density of 40kg/m3. The pipe insulation is fabricated into a range of diameters/thicknesses for use as insulation in building services and process pipe work.

**Technical Information**

|  |  |
| --- | --- |
| **Property** | **Value, Unit** |
| Density of Supaphen foam for products covered | 40 kg/m3 |
| Foam colour | Green |
| Thermal conductivity of foam (EN12667), at 10°C | 0.024 W/m.K max |
| Closed cell content (EN4590) | ≥ 90% |
| Dimensional stability (EN1604) | ≤ 1.5% |
| Water absorption (EN1609) | ≤ 1.25 kg/m2 |

**Main Product Contents**

Clearly, the raw material input per linear metre of pipe insulation varies depending on the dimensions of the pipe. However, the average raw material inputs by percentage solid content for the faced Supaphen phenolic pipe insulation, based raw material usage as provided by MW Insulation, can be found in the table below:

|  |  |
| --- | --- |
| **Material/Chemical Input** | **%** |
| Phenolic foam | 95 |
| Adhesive | 4 |
| Bore coating | <1 |
| Aluminium facer | <1 |

**Manufacturing Process**

Raw phenolic foam blocks received from upstream manufacturers are fabricated into pipe section using CNC cutting machines. The sections are stripped from cut blocks and the carcass of block is compacted and put in skip in bags as waste. The cut sections are dedusted and bore coated. Adhesive and aluminium foil is applied to the bore coated section and the finished faced product placed in cardboard carton for dispatch.

**Process flow diagram**



**Life Cycle Assessment Calculation Rules**

**Declared / Functional unit description**

The declared unit is for 1 linear metre of Supaphen phenolic pipe insulation of specified pipe diameter and insulation thickness. Note that results in this EPD are provided per kg of Supaphen phenolic pipe insulation and per m2 of Supaphen aluminium facer. The results per linear metre can be obtained by multiplying the specified weight of the foam in the pipe insulation and area of the facer, by the relevant pipe insulation and facer results, respectively, in the LCA results tables. The dimensions (outer pipe diameter and insulation thickness), of 25 of the most commonly sold Supaphen phenolic pipe insulation products have been given alongside the corresponding foam weight and facer area, to facilitate this calculation.

**System boundary**

This is a cradle-to-gate LCA follows the modular design defined in EN 15804:2012+A1:2013. The LCA models and reports the production stage modules, A1 to A3.

**Data sources, quality and allocation**

The supporting LCA study has been carried out using BRE LINA v2.0 using manufacturer specific data provided by MW Insulation for their production site in the UK, covering a 12-month data period from 1st July 2017 to 30th June 2018.

At the MW Insulation manufacturing site, other insulation is manufactured in addition to the Supaphen phenolic insulation, so allocation, was applied to total site processes (packaging, electricity and gas, water, waste, wastewater), with the Supaphen phenolic insulation under study, representing approximately 98% of total site manufacture on a linear metre basis. Allocation was not possible on a mass basis as MW Insulation were unable to provide total site production as a mass.

Total site usage of raw materials used to make all Supaphen 40 kg/m3 phenolic insulation was used as input to the modeling, so no allocation of raw materials was required.

Production waste and non-production waste is recorded as a single figure by MW Insulation. Therefore, it was assumed that all waste was production waste, to err on the site of worst-case scenario. The mass balance low on inputs, so an uplift factor of 1.17 was applied to adjust raw materials accordingly to account for production waste.

Secondary data has been drawn from the BRE LINA database v2.0.47 and the background LCI datasets are based on ecoinvent v3.2.

**Cut-off criteria**

No inputs or outputs have been excluded and all raw materials, packaging and transport, energy, water use and wastes, are included, except for direct emissions to air, water and soil, which are not measured.

**LCA Results**

The LCA results (see following pages) are provided in two tables; one for 1 kg of unfaced Supaphen phenolic pipe insulation and one for 1 m2 of facer. Note that (MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated).

In order to obtain results for a linear metre of faced Supaphen phenolic insulation, first select the relevant specification of pipe from the 25 listed in the table immediately below:

|  |  |  |
| --- | --- | --- |
| **Dimensions of faced Supaphen pipe section (outside diameter of pipe to be insulated in mm x insulation thickness in mm)**  | **Foam weight (kg per linear metre)** | **Facer area (m2 per linear metre)** |
| 15 x 15  | 0.06 | 0.141 |
| 21 x 15 | 0.07 | 0.160 |
| 21 x 20 | 0.10 | 0.192 |
| 27 x 20 | 0.12 | 0.211 |
| 15 x 20 | 0.09 | 0.173 |
| 34 x 20 | 0.14 | 0.233 |
| 27 x 15 | 0.08 | 0.179 |
| 42 x 20 | 0.16 | 0.258 |
| 22 x 15 | 0.07 | 0.163 |
| 27 x 25 | 0.16 | 0.242 |
| 42 x 25 | 0.21 | 0.289 |
| 22 x 20 | 0.11 | 0.195 |
| 34 x 25 | 0.19 | 0.264 |
| 21 x 25 | 0.14 | 0.223 |
| 54 x 20 | 0.19 | 0.295 |
| 34 x 15 | 0.09 | 0.201 |
| 54 x 25 | 0.25 | 0.327 |
| 28 x 20 | 0.12 | 0.214 |
| 28 x 25 | 0.17 | 0.245 |
| 15 x 25 | 0.13 | 0.204 |
| 76 x 25 | 0.32 | 0.396 |
| 60 x 25 | 0.27 | 0.346 |
| 48 x 20 | 0.17 | 0.276 |
| 48 x 25 | 0.23 | 0.308 |
| 28 x 15 | 0.08 | 0.182 |

Then for that specific pipe dimension, multiply the results of 1kg of unfaced Supaphen phenolic insulation for the foam weight in the table, and the results of 1m2 of Supaphen aluminium facer, by the facer area in the same row. The sum of these two values for each individual results indicator, represents the results of one linear metre of that particular dimension of faced Supaphen phenolic pipe insulation.

LCA results for 1 kg of unfaced Supaphen phenolic pipe insulation.

|  |
| --- |
| **Parameters describing environmental impacts** |
|  | GWP | ODP | AP | EP | POCP | ADPE | ADPF |
| kg CO2 equiv. | kg CFC 11 equiv. | kg SO2 equiv. | kg (PO4)3-equiv. | kg C2H4 equiv. | kg Sb equiv. | MJ, net calorific value. |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 12.0 | 7.92e-7 | 0.0493 | 0.0203 | 0.0177 | 4.20e-5 | 316 |

LCA results for 1 m2 of Supaphen phenolic pipe facer

|  |
| --- |
| **Parameters describing environmental impacts** |
|  | GWP | ODP | AP | EP | POCP | ADPE | ADPF |
| kg CO2 equiv. | kg CFC 11 equiv. | kg SO2 equiv. | kg (PO4)3-equiv. | kg C2H4 equiv. | kg Sb equiv. | MJ, net calorific value. |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0.955 | 3.61e-8 | 0.00646 | 0.00147 | 0.000502 | 1.64e-6 | 12 |

GWP = Global Warming Potential;

ODP = Ozone Depletion Potential;

AP = Acidification Potential for Soil and Water;

EP = Eutrophication Potential

POCP = Formation potential of tropospheric Ozone;

ADPE = Abiotic Depletion Potential – Elements;

ADPF = Abiotic Depletion Potential – Fossil Fuels;

**LCA Results (continued)**

LCA results for 1 kg of unfaced Supaphen phenolic pipe insulation

|  |
| --- |
| **Parameters describing resource use, primary energy** |
|  | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 10.8 | 1.19e-4 | 10.8 | 324 | 0 | 324 |

LCA results for 1 m2 of Supaphen phenolic pipe facer

|  |
| --- |
| **Parameters describing resource use, primary energy** |
|  | PERE | PERM | PERT | PENRE | PENRM | PENRT |
| MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 1.23 | 6.33e-7 | 1.23 | 12.4 | 0 | 12.4 |

|  |  |
| --- | --- |
| PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources;  | PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resource |

**LCA Results (continued)**

LCA results for 1 kg of unfaced Supaphen phenolic pipe insulation

|  |
| --- |
| **Parameters describing resource use, secondary materials and fuels, use of water** |
|  | SM | RSF | NRSF | FW |
| kg | MJnet calorific value | MJnet calorific value | m3 |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0 | 0 | 0 | 0.462 |

LCA results for 1 m2 of Supaphen phenolic pipe facer

|  |
| --- |
| **Parameters describing resource use, secondary materials and fuels, use of water** |
|  | SM | RSF | NRSF | FW |
| kg | MJnet calorific value | MJnet calorific value | m3 |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0 | 0 | 0 | 0.00718 |

|  |  |
| --- | --- |
| SM = Use of secondary material;RSF = Use of renewable secondary fuels;  | NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water |

**LCA Results (continued)**

LCA results for 1 kg of unfaced Supaphen phenolic pipe insulation

|  |
| --- |
| **Other environmental information describing waste categories** |
|  | HWD | NHWD | RWD |
| kg | kg | kg |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0.183 | 0.838 | 3.98e-4 |

LCA results for 1 m2 of Supaphen phenolic pipe facer

|  |
| --- |
| **Other environmental information describing waste categories** |
|  | HWD | NHWD | RWD |
| kg | kg | kg |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0.0827 | 0.0398 | 1.66e-5 |

|  |  |
| --- | --- |
| HWD = Hazardous waste disposed;NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed  |  |

**LCA Results (continued)**

LCA results for 1 kg of unfaced Supaphen phenolic pipe insulation

|  |
| --- |
| **Other environmental information describing output flows – at end of life** |
|  | CRU | MFR | MER | EE |
| kg | kg | kg | MJ per energy carrier |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0 | 8.45e-3 | 1.48 | 0 |

LCA results for 1 m2 of Supaphen phenolic pipe facer

|  |
| --- |
| **Other environmental information describing output flows – at end of life** |
|  | CRU | MFR | MER | EE |
| kg | kg | kg | MJ per energy carrier |
| Product stage | Raw material supply | A1 | AGG | AGG | AGG | AGG |
| Transport | A2 | AGG | AGG | AGG | AGG |
| Manufacturing | A3 | AGG | AGG | AGG | AGG |
| Total (of product stage) | A1-3 | 0 | 0 | 0 | 0 |

|  |  |
| --- | --- |
| CRU = Components for reuse; MFR = Materials for recycling | MER = Materials for energy recovery; EE = Exported Energy |

**References**

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BSI. Thermal insulation products for building applications – Determination of short term water absorption. BS EN 1609:2013. London, BSI, 2013.