Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC: 2021 for:

FireMaster® Fire Rated Blankets from Morgan Advanced Materials

“EPD of multiple products, based on worst-case results”

Programme: The International EPD® System, www.environdec.com
Programme Operator: EPD International AB, EPD MENA
EPD Registration Number: S-P-10875
Publication Date: 2023-09-29
Valid Until: 2028-09-28

Morgan Advanced Materials

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB, EPD MENA Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification	
Product Category Rules (PCR)	
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR):	PCR 2019:14 Construction products (EN 15804:A2) Version 1.3.1 dated 08.07.2023 PCR 2019:14-c-PCR-005 Thermal Insulation products (EN 16783) (2019-12-20)
PCR review was conducted by:	IVL Swedish Environmental Research Institute, EPD International Secretariat The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. Contact via: info@environdec.com
Life Cycle Assessment (LCA)	
LCA accountability:	Morgan Advanced Materials Industries Limited Plot KHIA 4-07A- Abu Dhabi – United Arab Emirates
Third-party verification	
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by accredited certification body Third party verification: EUROCERT S.A. is an approved certification body accountable for the third-party verification. EUROCERT S.A: 89 Chlois St. & Likovriseos Metamorphosi GR 14452, Athens, GREECE info@eurocert.gr www.eurocert.gr EUROCERT S.A. is an approved certification body accountable for third-party verification. The certification body is accredited by: Hellenic Accreditation System SA (E.S.Y.D), Accreditation No. 21-8	
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 the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must

be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information
Owner of the EPD: Morgan Advanced Materials, Thermal Ceramics Division
Contact: morganehss@morganplc.com

Description of the organisation:
Morgan Advanced Materials is a business rich in history and innovation. Founded in the UK in 1856, we have grown into a global organisation with 70 sites in 18 countries. Our model to serve our customers where they need us has led to a diversified product range using our unparalleled ceramic and carbon materials expertise, which we exploit to solve complex problems for our customers across diverse markets.

We are a purpose-driven organisation. Our purpose is to use advanced materials to make the world more sustainable and to improve the quality of life. We deliver on that purpose through the products that we make and the way that we make them.

We help our customers push the limits of their processes and products to meet their demanding requirements, from higher process temperatures to higher product performance to increasing miniaturisation.

More information is available at www.morganadvancedmaterials.com

Product-related or management system-related certifications: ISO 14024 Type I environmental labels, ISO 9001, ISO 14001 & ISO 45001 certified site.

FireMaster FastWrap XL is certified for use as ventilation and kitchen exhaust ductwork fire insulation for up to 2 hours duration to various international standards such as BS 476 pt, 24, ISO 6944, EN 1366-1 and ASTM E2336

FireMaster Cable Wrap is Factory Mutual Approved for fire protection of cable trays and conduits for 30 minutes in accordance with ASTM E 1725 with hydrocarbon fire exposure according to ASTM E1529

FireMaster Marine Plus Blanket has numerous international certifications and Type Approvals for use in the marine, offshore and construction industries to various International Standards such as EN 13381-4, ISO 22899-1, IMO FTP Code, ISO 20088-3

Name and location of production site:

- Morgan Advanced Materials Industries Limited
- Plot KHIA 4-07A- Abu Dhabi – United Arab Emirates

Product name:

- FireMaster FastWrap® XL Duct Wrap
- FireMaster Marine Plus Blanket
- FireMaster Cable Tray Wrap

Product identification:

- FireMaster® range of products

Product description:

FireMaster FastWrap® XL (Figure 1) is a flexible blanket composed of high temperature fibres classified for applications to 1200°C and fully encapsulated in a durable glass fibre reinforced foil facing for easy handling and installation. FireMaster FastWrap XL is UL and ULC Listed for 1-hour and 2-hour fire resistive enclosure protection, zero clearance for kitchen exhaust ducts, electrical circuit protection, and as a component in UL firestop designs for fire resistance rated floors, ceilings, and walls. The core fibres in FastWrap XL are manufactured using Thermal Ceramics patented Superwool® fibre which is an alkaline-earth silicate wool with low bio persistence and therefore increased safety for installers. FastWrap XL is under UL's Follow-Up Service Program to ensure the consistent quality essential to this life-safety application.

FireMaster Marine Plus Blanket (Figure 2) is a highly insulating blanket especially developed for passive fire protection applications that are space or weight sensitive. Using Morgan's patented Superwool®, low-shot technology manufacturing, FireMaster Marine Plus Blanket features an ultra-low-shot blanket, improving handleability and optimising thermal and physical properties. As a result of this technology, FireMaster Marine Plus Blanket provides typical savings of 20% to 30% in applied weight. FireMaster Marine Plus Blanket is a low-density blanket with high handling strength, allowing easy and convenient installation. No binder is used during manufacture; therefore, no smoke is emitted in a fire. FireMaster Marine Plus Blanket is comprehensively tested and approved for the fire protection of the marine industry's steel, aluminium, and composite structures. Offering substantial weight savings over traditionally-used fibre insulation systems, FireMaster Marine Plus Blanket is suitable for use where fire insulation performance is required in the offshore, petrochemical and construction industries.

FireMaster Cable Wrap (Figure 3) is a flexible blanket composed of high temperature fibres classified for applications to 1200°C. The core fibres inside this FireMaster Cable Tray Wrap are made by Morgan Advanced Materials patented Superwool®, low bio persistent manufacturing technology. FireMaster Cable Tray Wrap is offered standard with full encapsulation in a durable glass fibre reinforced aluminium foil for easy handling and installation. FireMaster Cable Tray Wrap is approved by Factory Mutual for fire protection of grouped electrical cables according to fire testing protocols required by the American Petroleum Institute. FireMaster Cable Tray Wrap is under FM Global follow-up inspection service at manufacturing locations in the Americas and EMEA, which ensures that the product received for installation meets the same exacting quality standards of the material that was submitted for testing.

UN CPC code: 37990

Geographical scope: Manufactured in Abu Dhabi and distributed GCC, EMEA, Asia or as declared.

LCA information

Functional unit / declared unit: This assessment covers the entire life cycle ('cradle-to-grave'). The functional unit for the three FireMaster® products has been defined as follows. This EPD is multiple products, based on worst-case results"

- 1 kg of FireMaster FastWrap® XL Duct Wrap
- 1 kg of FireMaster Marine Plus Blanket
- 1 kg of FireMaster Cable Tray Wrap

For conversion of the results, Table 1 can be used.

Product	Thickness (mm)	Density kg/m^3	kg per m^2
FireMaster Cable Tray Wrap	51	128	6.53
FM FastWrap® XL Duct Wrap	25	96	2.40
FM FastWrap® XL Duct Wrap	38	96	3.65
FireMaster Marine Plus Blanket	13	128	1.66
FireMaster Marine Plus Blanket	50	128	6.40
FireMaster Marine Plus Blanket	25	128	3.20
FireMaster Marine Plus Blanket	25	64	1.60
FireMaster Marine Plus Blanket	45	64	2.88
FireMaster Marine Plus Blanket	50	70	3.50
FireMaster Marine Plus Blanket	60	70	4.20
FireMaster Marine Plus Blanket	40	70	2.80
FireMaster Marine Plus Blanket	30	70	2.10
FireMaster Marine Plus Blanket	60	80	4.80
FireMaster Marine Plus Blanket	25	96	2.40
FireMaster Marine Plus Blanket	50	96	4.80

Reference service life: The Reference Service Life (RSL) of the insulation product is considered to be 25 years as per European Technical Assessment ETA-20/1296 of 2021/01/01.

Time representativeness: The LCA is based on 2021 production data for one site of Kizad, UAE

Database(s) and LCA software used: Eco invent 3.6 and Ecochain Helix 3.5.71 – 2023

Description of system boundaries:

This assessment covers the entire life cycle ('cradle-to-grave') with modules A1-A5, B1-B7, C1-C4 & D.

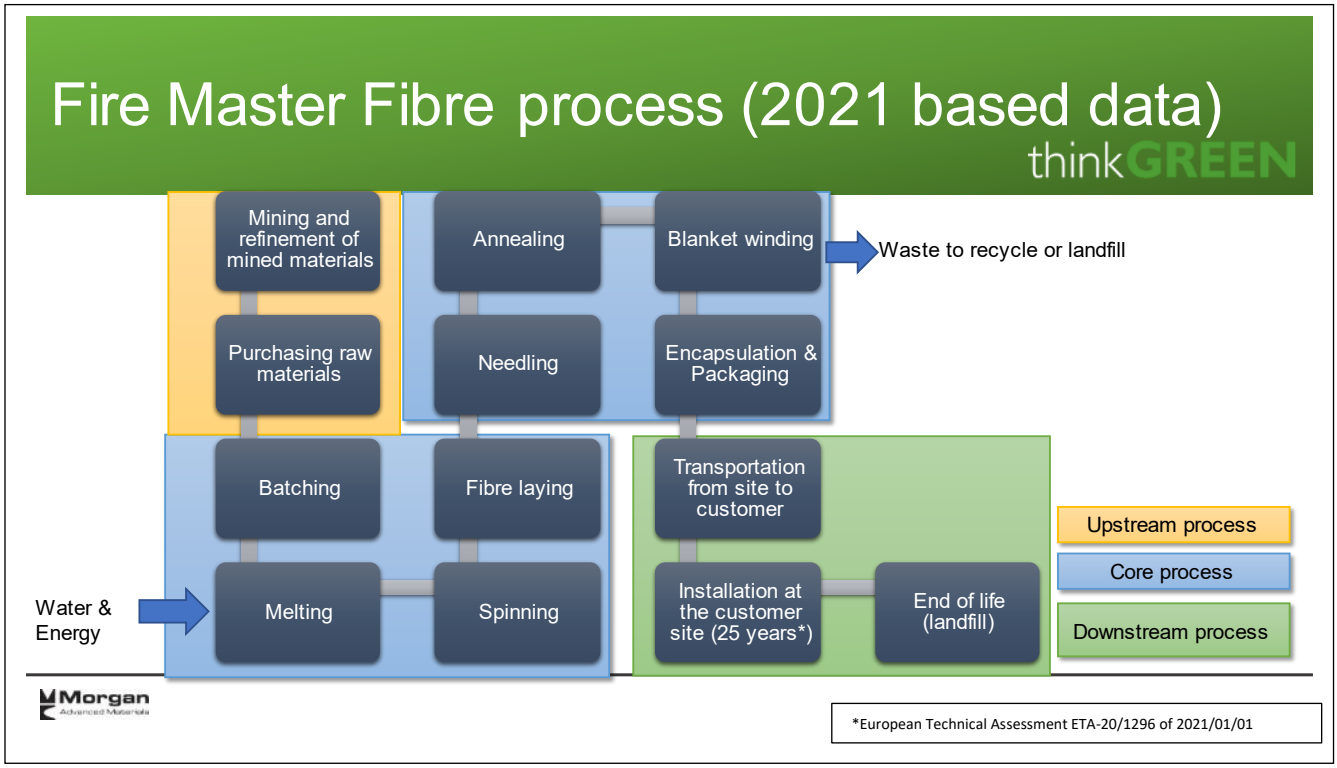
Regarding B1-B7, the PCR, thermal insulation products do not require maintenance, repair, energy, or water during use in standard conditions and if correctly applied. Therefore, the environmental impacts are in this case assumed to be zero.

For Demolition (Module C1), the products are removed by removing the metal banding. No further materials or energy is used for the deconstruction phase (C1) of the FireMaster® products. Therefore, the default environmental impacts are assumed to be zero.

The process tree consists of all processes that cause environmental impacts, such as material extraction and the transportation of these resources to the production facility. The impact flows of 1 kg of FireMaster® product are visualised and described in the below process tree. The processes and life cycle modules that are included in this study are defined by system boundaries.

The process tree is a simplified overview of the production process that is necessary for the production

System diagram:



More information: https://www.morganadvancedmaterials.com/en-gb/what-we-do/

Name and contact information of LCA practitioner: Ecochain Technologies B.V. H.J.E. Wenckebachweg 123 1096 AM Amsterdam +31 (0)20 303 5777

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results). The Impact results declared in this EPD is of multiple products, based on worst-case results":

FireMaster FastWrap® XL Duct Wrap

FireMaster Marine Plus Blanket

FireMaster Cable Tray Wrap

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Middle East	Middle East	Middle East	Taiwan Middle East	Taiwan Middle East	-	-	-	-	-	-	-	-	Taiwan Middle East	Taiwan Middle East	Taiwan Middle East	Taiwan Middle East
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not applicable					-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight %	Biogenic material, weight-% and kg C/kg
Alkaline-earth silicate wools	1	0	Not declared, as it is smaller than 5% of the total mass of the product
Aluminium foil	0.020-0.040	0	
Adhesive	0.0005	0	
TOTAL	1	0	

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/ functional unit
Morgan Printer Tape	≤2	0.0003	0.00
Plain Cello Tape		0.0001	0.00
Scrim Foil Tape		0.0004	0.00
Double Side Tape		0.0014	0.00
Wrapping film		0.0391	0.00
Corner angle - Cardboard	<1	0.0235	0.00
Carton		0.1105	0.00
Pallet	61	0.0506	0.03
Total	**61**	**0.2259**	**0.03**

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
Not applicable			

No details documented regarding Dangerous substances from the candidate list of SVHC for Authorisation.

Results of the environmental performance indicators - EPD of multiple products, based on worst-case results"

Indicator name and abbreviation (EN)	Unit (EN)															
Core environmental impact indicators (MANDATORY)		Total A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	1.97E+00	3.06E-01	2.05E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-03	4.42E-03	6.89E-03	-2.83E-01
Global warming potential - biogenic (GWP-biogenic)	kg CO_2 eq.	-1.41E-01	5.56E-05	1.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-06	-1.17E-04	3.33E-05	2.10E-04
Global warming potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	1.25E-02	1.40E-04	3.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-06	3.63E-06	3.14E-06	-4.89E-04
Global warming potential - total (GWP-total)	kg CO_2 eq.	1.84E+00	3.06E-01	3.47E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E-03	4.31E-03	6.92E-03	-2.84E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	1.33E-07	6.50E-08	1.44E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-09	7.44E-10	2.27E-09	-1.76E-08

Acidification potential, accumulated exceedance (AP)	mol H^+ eq.	7.01E-03	3.84E-03	1.03E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.64E-05	4.15E-05	6.01E-05	-1.65E-03
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	9.02E-05	2.37E-06	1.06E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.88E-08	1.45E-07	1.21E-07	-1.50E-05
Eutrophication potential - marine (EP-marine)	kg N eq.	4.06E-03	9.82E-04	2.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.67E-06	1.14E-05	1.93E-05	-3.50E-04
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	1.86E-02	1.09E-02	2.48E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.48E-05	1.28E-04	2.13E-04	-3.81E-03
Photochemical ozone creation potential (POCP)	kg NMVOC eq.	4.53E-03	2.96E-03	9.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.59E-05	3.53E-05	6.21E-05	-1.34E-03
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	7.12E-05	6.34E-06	4.14E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-07	1.50E-07	6.02E-08	-1.23E-05
Abiotic depletion potential - fossil resources (ADPF)	MJ, net calorific value	3.13E+01	4.33E+00	2.54E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.37E-02	5.98E-02	1.66E-01	-4.66E+00
Water (user) deprivation potential (WDP)	m^3 world eq. deprived	2.90E+00	1.20E-02	1.07E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.03E-04	4.08E-04	6.95E-03	-2.72E-01
Additional mandatory environmental impact indicators (MANDATORY)		**Total A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Global warming potential (GWP-GHG)	kg CO_2 eq.	2.00E+00	3.06E-01	3.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E-03	4.43E-03	6.90E-03	-1.33E-01
Additional voluntary environmental impact indicators (OPTIONAL)		**Total A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Particulate matter emissions (PM)	Disease incidence	6.32E-08	1.76E-08	1.68E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.37E-10	4.89E-10	1.09E-09	-2.76E-08
Ionizing radiation, human health (IRP)	kBq U235 eq.	6.86E-02	1.82E-02	6.22E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.90E-04	2.39E-04	6.64E-04	-8.07E-03
Eco-toxicity - freshwater (ETP-fw)	CTUe	3.65E+01	3.54E+00	8.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.25E-02	1.43E-01	2.92E+01	-1.57E+01
Human toxicity, cancer effect (HTP-c)	CTUh	1.12E-09	1.23E-10	1.24E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E-12	3.94E-12	3.73E-12	-5.05E-10
Human toxicity, non-cancer effects (HTP-nc)	CTUh	2.04E-08	3.40E-09	1.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-11	1.57E-10	1.11E-10	-6.36E-09
Land use related impacts/Soil quality (SQP)	dimensionless	2.13E+01	2.31E+00	1.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.33E-02	7.67E-02	3.26E-01	-3.58E+01
Indicators describing resource use (MANDATORY)		**Total A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**

Use of renewable primary energy as energy carrier (PERE)	MJ, net calorific value	3.26 E+00	4.33 E-02	2.15 E-01	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	1.0 5E-03	4.07 E-03	2.6 9E-03	-4.86 E-02
Use of renewable primary energy resources used as raw materials (PERM)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Total use of renewable primary energy (PERT)	MJ, net calorific value	3.26 E+00	4.33 E-02	2.15 E-01	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	1.0 5E-03	4.07 E-03	2.6 9E-03	-4.86 E-02
Use of non-renewable primary energy as energy carrier (PENRE)	MJ, net calorific value	3.38 E+01	4.60 E+00	2.71 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	9.9 5E-02	6.36 E-02	1.7 7E-01	-2.85 E+00
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Total use of non-renewable primary energy resource (PENRT)	MJ, net calorific value	3.38 E+01	4.60 E+00	2.71 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	9.9 5E-02	6.36 E-02	1.7 7E-01	-2.85 E+00
Use of secondary material (SM)	kg	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Use of renewable secondary fuels (RSF)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Use of non-renewable secondary fuels (NRSF)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Net use of fresh water (FW)	m^3	9.23 E-02	4.11 E-04	3.35 E-03	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	1.0 3E-05	1.49 E-05	1.6 9E-04	-8.70 E-04
Environmental information describing waste categories (MANDATORY)		Total A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	9.06 E-05	9.44 E-06	1.01 E-05	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	2.4 7E-07	1.60 E-07	2.3 5E-07	-6.65 E-06
Non-hazardous waste disposed (NHWD)	kg	1.68 E-01	1.53 E-01	8.97 E-02	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	4.4 2E-03	2.59 E-03	9.9 8E-01	-8.60 E-03
Radioactive waste disposed (RWD)	kg	3.21 E-05	2.89 E-05	5.78 E-06	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	6.1 5E-07	3.42 E-07	1.0 2E-06	-1.41 E-06
Environmental information describing output flows (MANDATORY)		Total A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use (CRU)	kg	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Materials for recycling (MFR)	kg	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Materials for energy recovery (MER)	kg	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Exported electrical energy (EEE)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00
Exported thermal energy (EET)	MJ, net calorific value	0.00 E+00	0.00 E+00	0.00 E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.0 0E+00	0.00 E+00	0.0 0E+00	0.00 E+00

Disclaimer:

Core Environmental Impact categories

"EN 15804+ A2 disclaimers for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator".

Additional Environmental Impact Categories

"EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator".

Additional social and economic information

While conducting the life cycle assessment of the list products in the EPD, we have considered waste recycling in the process up to 9% as per the records. This not only helps the site to reduce the impact of the fibre waste disposal to the landfill but also the transportation impact and thereby reduce the impact of the raw material consumption in the process.

Morgan Advanced Materials and Thermal Ceramics Division are committed to the ESG road map laid under the United Nations Sustainable Development Goals for 2030 and 2050. For more details do refer https://www.morganadvancedmaterials.com/en-gb/sustainability-and-responsibility/

Information related to Sector EPD

This is not a sector EPD

Differences comparing to previous versions

This is the first version of the EPD

Additional environmental information

See the PCR 2019:14-c-PCR-005 Thermal Insulation products (EN 16783) (2019-12-20)

FireMaster® Cable Tray Wrap, FireMaster® FastWrap® XL & FireMaster® Marine Plus Blanket

- Storage: FireMaster® products must be stored in a dry warehouse environment on pallets. Pallets should not be stacked.
- Installation: The installation of the FireMaster® products is done by a qualified contractor in strict accordance with Morgan Advanced Materials installation instructions and certification requirements of EN 13381-4: 2013. These products can be used for many installation methods, a typical method used for calculating A5 is as per the below table and text description in line with the materials required for the installation of 1 kg of FireMaster® product.

Product	Additional material	Amount	Unit
FireMaster FastWrap® XL Duct Wrap	Banding and Crimps	0.075	gm/kg
FireMaster Marine Plus	Steel pins and washer	0.046	gm/kg
	Welding electricity	0.361	Wh
FireMaster Cable Tray Wrap	Banding and Crimps	0.044	gm/kg

- The FireMaster® Cable Tray Wrap (1 layer) product is cut into the required length, and wrapped around the cable tray or conduit, with an overlap. For permanent attachment of the blanket to the cable tray or conduit, stainless-steel bands are tightened around the outside of the blanket centred on the overlaps and crimped tightly.

- The FireMaster® Marine Plus blanket may be installed onto vertical, stiffened, steel bulkheads by impaling onto capacitive discharge pins welded to the bulkhead. Multiple layers of blanket are installed onto the steel plate wrapping over the contour of the stiffeners. The final layer of blanket applied is retained over the pin with friction fit washers.

- The FireMaster FastWrap® XL Duct Wrap (1 Layers) product is cut into the required length, and wrapped around the duct, with an overlap. For permanent attachment of the blanket to the duct, stainless-steel bands are tightened around the outside of the blanket centred on the overlaps and crimped tightly.

- Repair Procedure: The product requires no maintenance, once is fixed, the product is not impacted unless a natural disaster takes place. Reference life is 25 years. Damaged areas shall be replaced and installed per Morgan Advanced Materials approved installation procedures.
- Demolition: The products are removed by removing the metal banding / washers. No further materials or energy is used for the deconstruction phase (C1) of the FireMaster® products. Therefore, the default environmental impacts are assumed to be zero.
- Disposal & recycling: According to the PCR, a default waste percentage of 2% can be taken for the insulation products during installation. Regarding the packaging, foil, tape, wrapping film, cardboard and pallets are 100% recycled and pallets are 100% reused. The disposal of the fibre blanket goes to landfill while the low alloyed steel pins, washer and banding crimps are 95% recycled. The materials ALU-SCRIM (610 MM) FOIL FireMaster Cable Tray Wrap PP 5, FireMaster Cable Tray Wrap PP 48, AL. FOIL UL PRINT 56, AL. FOIL UL PRINT 48 are going to landfill.

References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14. c-PCR-005 Thermal Insulation products (EN 16783). 2019-12-20

'ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.

'ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.

EN 15804+A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

Product Category Rules PCR 2019:14. Construction Products. Version 1.3.1 dated 08-07-2023.

Helix 3.5.71 – 2023, web: https://helix.ecochain.com/.

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