

Environmental Product Declaration



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

Nullifire FZ100 Safezone

from

Tremco CPG UK Ltd.



Programme:

The International EPD® System, www.environdec.com

Programme operator:

EPD International AB

EPD registration number:

EPD-IES-0018156

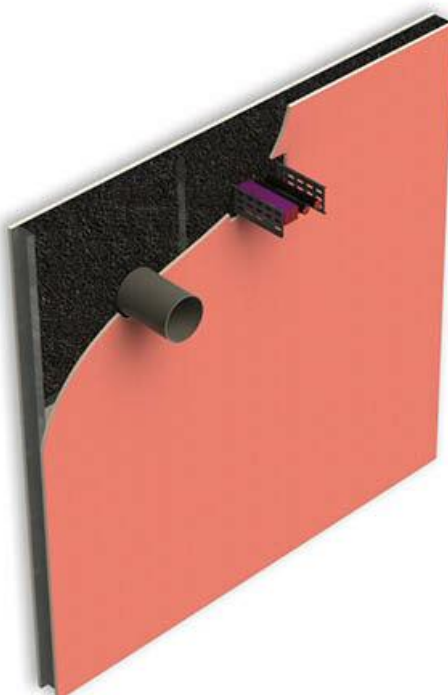
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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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): Construction Products – PCR 2019:14 VERSION 1.3.4
PCR review was conducted by: The Technical Committee of the International EPD® System. The review panel may be contacted via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Nexio Projects NL B.V. Schiekade 10A, 3032 AJ Rotterdam Netherlands info@nexioprojects.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Angela Schindler, Angela Schindler Umweltberatung Approved by: The International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Tremco CPG UK Ltd. 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: Tremco CPG UK Ltd.

Contact: Richard Barcock, richard.barcock@tremcocpg.com

Description of the organisation: Tremco CPG UK Ltd (Tremco CPG Europe is a part of RPM International Inc) produces an array of high-performance building products for the increasingly complex demands of the construction industry with brands including Nullifire, Flowcrete, Nudura, DryVit, Vandex, Illbruck, and Tremco.

Product-related or management system-related certifications: ISO 9001, 14001, 45001, and 50001

Name and location of production site(s): Tremco CPG Germany GmbH, Werner-Haepf-Straße 1, 92439 Bodenwöhr, Germany

Product information

Product name: Nullifire FZ100 Safezone

Product identification: Nullifire FZ100 Safezone

Product description: Nullifire FZ100 Safezone is a fire protection system, and a single product solution tested to cover many fire stopping requirements. The product is an impregnated sheet which uses GXT (Graphite expansion Technology) fire stopping technology developed by Nullifire. It may be located anywhere within a partition, either at the point of construction, or retrospectively fitted.

UN CPC code: N/A

Other codes for product classification: N/A

Geographical scope:

Modules A1 (raw material supply) and A2 (transport) have been modelled for the European market, A3 (manufacturing) to represent the Germany market and modules C1-C4 (end of life stage) and D (resource recovery stage) were modelled for the European market.

LCA information

Declared unit: 1kg of Nullifire FZ100 Safezone

Time representativeness: The activity data used for the LCA calculation covers the year 2023.

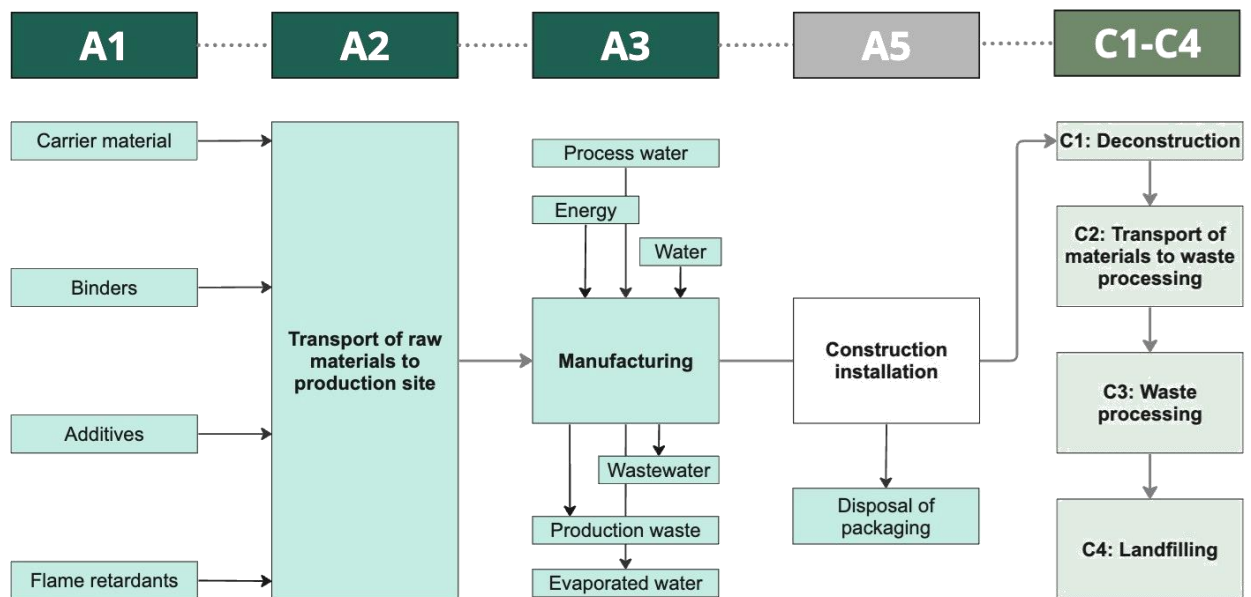
Database(s) and LCA software used: Ecoinvent 3.9.1 and Ecochain Helix 4.3.1

Electricity usage in A3: Electricity, low voltage, residual mix | electricity, low voltage | Germany

Ecoinvent 3.9.1 Cut-off; Climate impact: 0.725 kgCO₂eq/kWh (GWP-GHG)

System boundaries: Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results)

(ND - Not Declared, RER – Europe, GLO – Global, UK – United Kingdom, DE - Germany)

	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 and water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND*	ND	X	X	X	X	X
Geography	RER	RER	DE	ND	ND*	ND	-	UK**	-	UK**	-
Specific data used	> 90%			-	-	-	-	-	-	-	-
Variation – products	Not relevant			-	-	-	-	-	-	-	-
Variation – sites	Not relevant			-	-	-	-	-	-	-	-

*Note: As per the PCR, If the packaging contains more than 5% biogenic carbon, the uptake of this biogenic carbon, as biogenic CO₂, in module A1 shall be balanced out by an equal amount of emission of biogenic CO₂ in module A5. As the EPD only has an A1-A3 scope, module A5 is not fully included. Hence, this “balancing-out reporting” for module A5 is included in the declared A1-A3 results.

**Around 70% of the product is currently destined for the British market. The British context is hence used as the reference to model the end-of-life of the product. The most appropriate datasets were applied; for C2, this corresponded to a dataset with a RER reference geography, and a GLO reference geography for C4.

A1

This phase includes the extraction, treatment, processing, electricity and heat consumption needed to produce the raw materials used in the production of the considered products. Packaging of the raw materials were omitted from this analysis, since it was assumed that they would have a minimal impact.

For the wooden pallet used as part of product packaging, an average of 20 reuses was assumed (Deviatkin & Horttanainen, 2020), and the pallet weight was adjusted to reflect this lifetime.

A2

All relevant transportation of the purchased materials from the various manufacturers and raw material extraction sites to the factory in Bodenwöhr, Germany, was considered in this study. Transport distances were calculated from the origin of the material to the production site. For the suppliers of the flame retardants, the exact distance was unknown and was hence estimated based on the average distance between the supplier location and Bodenwöhr.

A3

The considered product is produced at the factory in Bodenwöhr, and all relevant production processes are included in this assessment.

Only two batches of the Nullifire FZ100 Safezone product were produced in the year 2023. The only metric available for these two production cycles was the amount of water evaporated during the drying process. As the Bodenwöhr factory uses several similar machines for impregnating and drying their products and generally allocates production times based on the order situation, it is not possible to assign a specific system and its consumption to each individual production cycle. However, the decisive step in all cases is drying, causing the evaporation of the water input as well as the water content of additives and binders which are aqueous solutions. Hence, the amount of water evaporated is generally proportional to the energy and material used, reflecting a good average across all machines and processes. Following this logic, the proportion between the total amount of water evaporated during the production of Nullifire FZ100 Safezone and the total amount of water evaporated at the facility level in 2023 was used to allocate facility utilities and waste to Nullifire FZ100 Safezone.

The rolling mill and drying oven are fuelled by electricity and natural gas. Forklifts used to handle materials fuelled by propane were also accounted for. Electricity, natural gas and propane consumption were allocated to the Nullifire FZ100 Safezone product based on water evaporation.

The production of the considered product also generates waste. The waste service provider of the Bodenwöhr factory provided a breakdown of production waste for the facility level per waste. Production waste quantities were estimated through allocation, following the same allocation method applied to estimate utility consumption. The relevant waste streams considered for Nullifire FZ100 Safezone include water treatment sludge arising from wastewater from the cleaning process released into the sewage systems, and plastic waste from scrap sheets. Only the burdens of waste disposal were considered for this assessment.

A5

As per the PCR, since the packaging contains more than 5% biogenic carbon, the uptake of this biogenic carbon as biogenic CO₂ in module A1 shall be balanced out by an equal amount of emission of biogenic CO₂ in module A5. However, module A5 is not within the boundaries of this assessment and is not included. Therefore, this “balancing-out reporting” for module A5 is included in the declared A1-A3 results.

Other impacts that might occur in A5, such as cuttings to fit the product to the specific measurements of the building, energy use for tools, etc., are not included.

C1-C4

C1: Once the product has been installed, it remains there for the entirety of the building's lifetime. Therefore, it is assumed that the demolition of the product occurs simultaneously with the demolition of the building. Hence, the impact of C1 is deemed negligible, and no environmental impacts were included.

C2: Around 70% of the product is currently destined for the British market. The British context is hence used as the reference to model the end-of-life of the product.

The distance to the waste treatment facility is assumed to be 75.6 km. This assumption is taken from the “*market for hazardous waste, for underground deposit | hazardous waste, for underground deposit | RER — Ecoinvent 3.9.1 Cut-off*” reference, which assumes a total of 0.075645 tkm of transport per kilogram of waste. This market reference matches the waste treatment reference used for product disposal in module C4. It is assumed that all transport takes place by lorry.

C3 According to the British Environmental Agency (2023), the following waste types do not have to be treated prior to being sent to a landfill:

- Inert waste where treatment is not technically feasible
- Non-hazardous or hazardous waste where treatment would not reduce its quantity or the risk to people's health or the environment

Hence, no waste processing options were considered.

C4: As mentioned above, the product mainly ends up in the British market. Additionally, the Nullifire FZ100 Safezone product qualifies as hazardous waste due to the high toxicity of some of the substances added to the PU foam. Based on the best available knowledge of Tremco CPG UK Limited, incineration of this type of waste is relatively rare and it is assumed that the Nullifier FZ100 Safezone product is landfilled at the end of its life. The “*treatment of hazardous waste, underground deposit | hazardous waste, for underground deposit | Rest-of-World — Ecoinvent v3.9.1 Cut-off*” dataset was used to model the product disposal.

D

In module C, 100% landfilling is assumed. Hence, no benefits occur in module D.

Methodology

Foreground Data: Tremco CPG Germany GmbH has supplied primary data for the amount of raw materials purchased (A1), the transport distance between their suppliers and production site (A2) as well as its manufacturing operations (A3) for the year 2023.

Background Data: Background data (e.g., for raw material extraction and manufacturing) have predominantly been sourced from the Ecoinvent database (v3.9.1) using Ecochain Helix software v4.3.1.

Allocation: The key production processes that require allocation are:

- Shared electricity, natural gas, propane and water consumption, wastewater generation and production waste generation at the Bodenwöhr production site were allocated with physical allocation, using the proportion between the total amount of water evaporated during the production of Nullifire FZ100 Safezone and the total amount of water evaporated at the facility level in 2023.

No secondary materials (that would require allocation) are used in the product system.

Cut-off criteria: The environmental impact of the product studied has been assessed by considering all significant processes, materials and emissions. Excluded flows are assumed to have a negligible impact, contributing less than 5% to the cumulative impact assessment categories. The following process is excluded:

- C1: demolition and deconstruction of the structure at its end of life are excluded from the system.

Key Assumptions: The key choices and assumptions in the LCA are:

- Proxy impact references were used for raw materials for which no Ecoinvent reference existed.
- It is assumed that the product is landfilled at its end of life.

Content information

The indicated information in the table below presents the content of the Nullifire FZ100 Safezone product.

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, kg C/kg product
Binders	4.49E-01	-	0.00E+00
Additives	1.20E-02	-	4.00E-03
Flame retardants	3.43E-01	-	0.00E+00
PU foam	1.97E-01	-	0.00E+00
TOTAL	1.00E+00	0%	4.00E-03

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg product
Wooden pallet	1.70E-02	1.7	7.55E-03
LDPE foil	2.10E-02	2.1	0.00E+00
Cardboard	9.70E-02	9.7	4.04E-02
TOTAL	1.35E-01	13.5	4.79E-02

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
-	-	-	-

Results of the environmental performance indicators

The environmental performance of the assessed product is reported below, using the parameters and units specified in the PCR. Characterisation factors from EN15804 based on EF 3.1 were used. It is strongly discouraged to use the results of modules A1-A3 without also considering the results from module C.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Mandatory impact category indicators according to EN 15804

Results per declared unit							
Indicator	Unit	A1-A3***	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	4.67E+00	0.00E+00	1.12E-02	0.00E+00	2.00E-01	0.00E+00
GWP-biogenic	kg CO ₂ eq.	-1.72E-02	0.00E+00	0.00E+00	0.00E+00	1.72E-02	0.00E+00
GWP-luluc	kg CO ₂ eq.	5.24E-03	0.00E+00	5.49E-06	0.00E+00	2.21E-03	0.00E+00
GWP-total	kg CO ₂ eq.	4.66E+00	0.00E+00	1.12E-02	0.00E+00	2.20E-01	0.00E+00
ODP	kg CFC 11 eq.	1.47E-07	0.00E+00	2.47E-10	0.00E+00	3.95E-09	0.00E+00
AP	mol H ⁺ eq.	3.71E-02	0.00E+00	5.25E-05	0.00E+00	8.22E-04	0.00E+00
EP-freshwater	kg P eq.	2.17E-04	0.00E+00	9.23E-08	0.00E+00	9.03E-06	0.00E+00
EP-marine	kg N eq.	3.70E-03	0.00E+00	2.07E-05	0.00E+00	1.87E-04	0.00E+00
EP-terrestrial	mol N eq.	3.79E-02	0.00E+00	2.23E-04	0.00E+00	2.06E-03	0.00E+00
POCP	kg NMVOC eq.	1.55E-02	0.00E+00	7.79E-05	0.00E+00	1.01E-03	0.00E+00
ADP-minerals&metals*	kg Sb eq.	3.48E-05	0.00E+00	3.50E-08	0.00E+00	2.88E-07	0.00E+00
ADP-fossil**	MJ	1.10E+02	0.00E+00	1.72E-01	0.00E+00	2.40E+00	0.00E+00
WDP*	m ³	3.24E+00	0.00E+00	7.10E-04	0.00E+00	3.36E-02	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

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

** Disclaimer: The assessment of this indicator contains some unavoidable inconsistencies, and results should be interpreted with caution.

***For GWP-biogenic, this includes disposal of packaging in A5 as required by the PCR and described in Annex 2 of the PCR.

Additional mandatory and voluntary impact category indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	4.68E+00	0.00E+00	1.12E-02	0.00E+00	2.02E-01	0.00E+00
PM	disease incident	2.80E-07	0.00E+00	1.10E-09	0.00E+00	1.62E-08	0.00E+00
IRP	kBq U-235 eq	1.39E-01	0.00E+00	8.40E-05	0.00E+00	1.69E-03	0.00E+00
ETP-freshwater	CTUe	7.49E+01	0.00E+00	7.99E-02	0.00E+00	9.05E-01	0.00E+00
HTP-cancer	CTUh	2.15E-09	0.00E+00	6.05E-12	0.00E+00	1.07E-09	0.00E+00
HTP-non-cancer	CTUh	5.54E-08	0.00E+00	1.26E-10	0.00E+00	1.30E-09	0.00E+00
SQP	Pt	2.13E+01	0.00E+00	1.22E-01	0.00E+00	4.86E+00	0.00E+00
Acronyms	PM = Particulate matter; IRP = Ionising radiation, human health; ETP-freshwater = Ecotoxicity, freshwater; HTP-cancer = Human toxicity, cancer effects; HTP-non-cancer = Human toxicity, non-cancer effects; SQP = Land use related impacts.						

Resource use indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	5.77E+00	0.00E+00	2.57E-03	0.00E+00	7.90E-01	0.00E+00
PERM*	MJ	1.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT*	MJ	7.45E+00	0.00E+00	2.57E-03	0.00E+00	7.90E-01	0.00E+00
PENRE	MJ	8.60E+01	0.00E+00	1.72E-01	0.00E+00	2.40E+00	0.00E+00
PENRM*	MJ	2.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT*	MJ	1.10E+02	0.00E+00	1.72E-01	0.00E+00	2.40E+00	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	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
FW	m ³	8.68E-02	0.00E+00	2.28E-05	0.00E+00	8.98E-04	0.00E+00

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Acronyms

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

** Disclaimer: The results of these environmental impact indicators feature a higher uncertainty and should thus be used with care, due to a lack of adequate implementation of these indicators in the applied software system.*

Waste indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.97E-04	0.00E+00	1.02E-06	0.00E+00	1.00E+00	0.00E+00
Non-hazardous waste disposed	kg	1.27E+00	0.00E+00	1.03E-02	0.00E+00	3.93E-02	0.00E+00
Radioactive waste disposed	kg	1.18E-04	0.00E+00	5.46E-08	0.00E+00	1.09E-06	0.00E+00

Output flow indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

References

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