

**Environmental
Product
Declaration**

According to ISO14025+EN15804 A2 (+indicators A1)

This declaration is for:

Firesafe FSG

Provided by:

Firesafe AS



MRPI® registration:

1.1.00895.2025

Program operator:

Stichting MRPI®

Publisher:

Stichting MRPI®

www.mrpi.nl

Date of first issue:

9-7-2025

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9-7-2030

COMPANY INFORMATION

Firesafe AS
 Robsrudskogen 15
 1470
 Lørenskog
 Norway
 +47 22 72 20 20
 Pål Paulsen
 firesafe.no

MRPI® REGISTRATION

1.1.00895.2025

DATE OF THIS ISSUE

9-7-2025

EXPIRY DATE

9-7-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Anne Kees Jeeninga, Advieslab VOF. The LCA study has been done by Martijn Blaak, EcoReview. The certificate is based on an LCA-dossier according to ISO14025+EN15804 A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
 Kingsfordweg 151
 1043 GR
 Amsterdam

PRODUCT

Firesafe FSG

DECLARED UNIT / FUNCTIONAL UNIT

1 Mass (kg)

DESCRIPTION OF PRODUCT

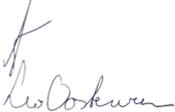
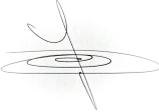
A graphite-based sealant that expands and insulates when heated for fire-resistant sealing.

VISUAL PRODUCT



MORE INFORMATION

firesafe.no

<p>Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI</p>	<p>DEMONSTRATION OF VERIFICATION</p>
	<p>CEN standard EN15804 serves as the core PCR [1]</p>
	<p>Independent verification of the declaration an data according to ISO14025+EN15804 A2 (+indicators A1) Internal: External: X</p>
	<p>Third party verifier: Anne Kees Jeeninga, Advieslab VOF </p>
	<p>[1] PCR = Product Category Rules</p>





DETAILED PRODUCT DESCRIPTION (PART 1)

Firesafe FSG is a heat-intumescent and insulating sealant based on graphite for fire-resistant sealing of openings around cable and pipe penetrations. This sealant prevents the spread of fire and smoke in the event of a fire through fire-resistant walls and floors. Firesafe FSG has been developed to seal hard-to-reach penetrations and where traditional fire-resistant sealants are not sufficient, for example with large plastic pipes. Firesafe FSG has a 30-year job retention.

Component (> 1%)	(%)
Binder	29,33%
Clay	5,72%
Flame Retardant Filler	36,08%
Graphite	15,78%
PP	4,25%
Pigment	1,65%
Thickener	2,07%

SCOPE AND TYPE

This Environmental Product Declaration (EPD) has been prepared for Firesafe FSG manufactured and sold by FireSafe AS. The scope of the EPD is from cradle to gate, following the requirements of EN 15804+A2 and ISO 14025. The following specifications apply:

The manufacturing of the Firesafe FSG takes place at Multimolecules in Kaatsheuvel, Netherlands.

The product is primarily applied within Norway. 1250 km is used as a distance for transport to the Firesafe warehouse in in Lørenskog, + 300 km fixed distance for distribution in accordance with Norwegian standards.

The end-of-life treatment of the product is assumed to take place in Norway based on current market practice.

All background data is sourced from Ecoinvent version 3.6.

The study was conducted using SimaPro version 9.5.1.

This EPD is a product-specific EPD, representing the environmental performance of a specific product from Firesafe, based on primary data collected in 2024 and verified secondary sources.

This declaration is specific to Firesafe FSG.

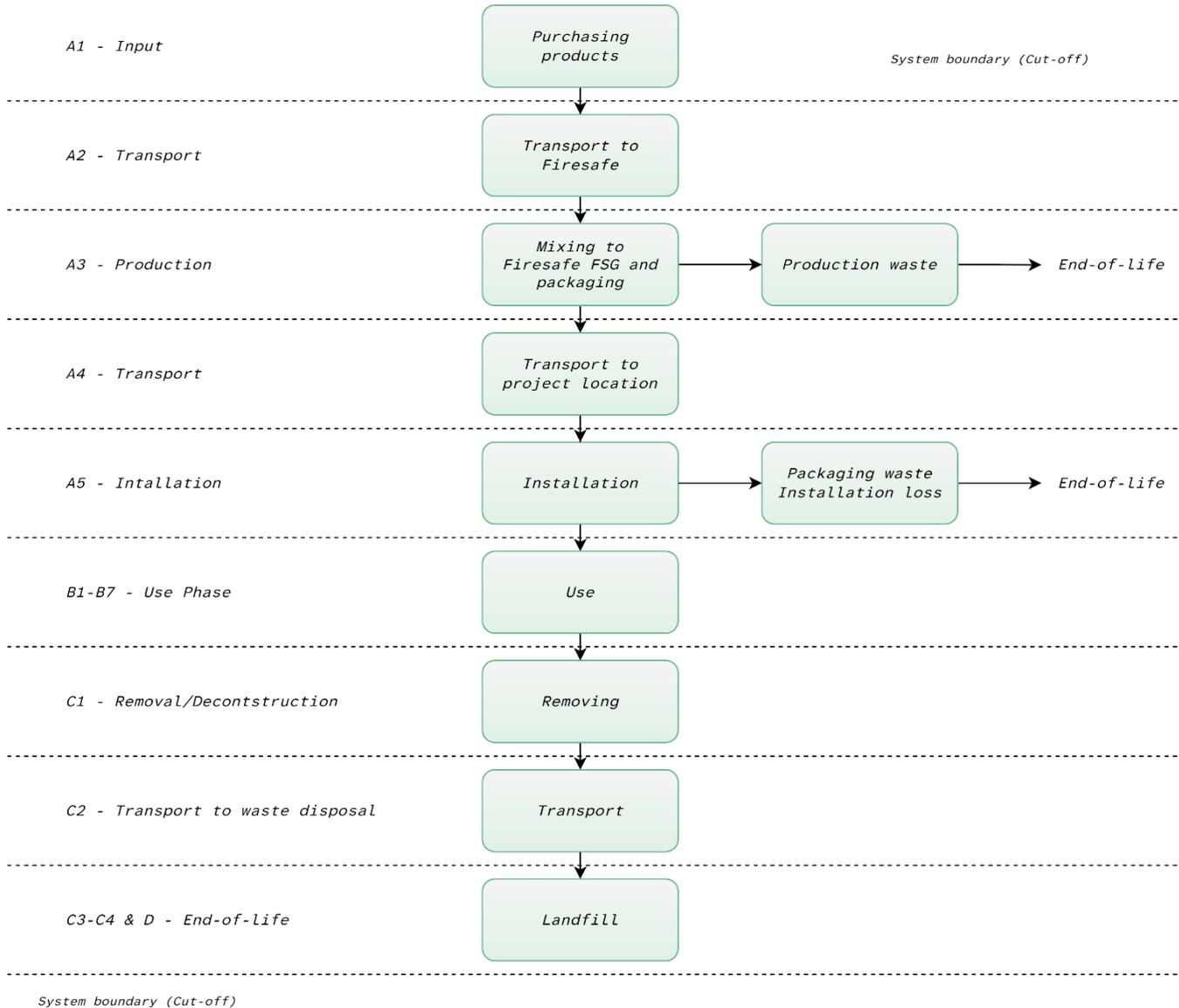
This product is in compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR).

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

X = Modules Assessed

ND = Not Declared





ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE kg Sb eq.	4,36E-05	3,42E-06	5,10E-06	5,21E-05	4,66E-07	7,54E-06	0,00E+00	1,61E-07	0,00E+00	1,40E-07	0,00E+00							
ADPF MJ	2,80E+01	3,08E+00	5,12E+00	3,62E+01	4,21E-01	4,28E+00	0,00E+00	9,63E-02	0,00E+00	3,35E-01	0,00E+00							
GWP kg CO2 eq.	1,35E+00	1,99E-01	3,12E-01	1,86E+00	2,71E-02	4,06E-01	0,00E+00	6,30E-03	0,00E+00	5,93E-01	0,00E+00							
ODP kg CFC11 eq.	1,17E-07	3,77E-08	2,52E-08	1,80E-07	5,14E-09	2,11E-08	0,00E+00	1,12E-09	0,00E+00	2,78E-09	0,00E+00							
POCP kg ethene eq.	1,07E-03	1,21E-04	1,25E-04	1,32E-03	1,65E-05	2,03E-04	0,00E+00	3,80E-06	0,00E+00	1,34E-04	0,00E+00							
AP kg SO2 eq.	8,29E-03	5,31E-04	9,60E-04	9,78E-03	7,06E-05	1,40E-03	0,00E+00	2,77E-05	0,00E+00	1,34E-04	0,00E+00							
EP kg (PO4) 3 eq.	8,75E-04	8,88E-05	1,47E-04	1,11E-03	1,16E-05	2,40E-04	0,00E+00	5,44E-06	0,00E+00	5,61E-04	0,00E+00							

Toxicity indicators and ECI (Dutch market)

HTP kg DCB eq.	7,98E-01	4,28E-02	1,32E-01	9,72E-01	5,83E-03	1,44E-01	0,00E+00	2,65E-03	0,00E+00	2,47E-02	0,00E+00							
FAETP kg DCB eq.	3,71E-02	1,80E-03	3,84E-03	4,27E-02	2,45E-04	7,77E-03	0,00E+00	7,74E-05	0,00E+00	2,27E-03	0,00E+00							
MAETP kg DCB eq.	6,81E+01	4,87E+00	9,17E+00	8,21E+01	6,64E-01	1,44E+01	0,00E+00	2,78E-01	0,00E+00	5,64E+00	0,00E+00							
TETP kg DCB eq.	2,47E-03	2,42E-04	2,90E-03	5,61E-03	3,29E-05	8,31E-04	0,00E+00	9,37E-06	0,00E+00	7,84E-05	0,00E+00							
ECI euro	1,93E-01	1,78E-02	3,45E-02	2,45E-01	2,41E-03	4,35E-02	0,00E+00	7,59E-04	0,00E+00	3,84E-02	0,00E+00							
ADPF kg Sb eq.	1,35E-02	1,48E-03	2,46E-03	1,74E-02	2,02E-04	2,06E-03	0,00E+00	4,63E-05	0,00E+00	1,61E-04	0,00E+00							

- ADPE = Abiotic Depletion Potential for non-fossil resources
- ADPF = Abiotic Depletion Potential for fossil resources
- GWP = Global Warming Potential
- ODP = Depletion potential of the stratospheric ozone layer
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- AP = Acidification Potential of land and water
- EP = Eutrophication Potential
- HTP = Human Toxicity Potential
- FAETP = Fresh water aquatic ecotoxicity potential
- MAETP = Marine aquatic ecotoxicity potential
- TETP = Terrestrial ecotoxicity potential
- ECI = Environmental Cost Indicator
- ADPF = Abiotic Depletion Potential for fossil resources

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

Unit		A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	1,39E+00	2,01E-01	3,37E-01	1,93E+00	2,74E-02	4,59E-01	0,00E+00	6,36E-03	0,00E+00	9,01E-01	0,00E+00							
GWP-fossil	kg CO2 eq.	1,39E+00	2,00E-01	2,84E-01	1,88E+00	2,73E-02	3,32E-01	0,00E+00	6,35E-03	0,00E+00	5,65E-02	0,00E+00							
GWP-biogenic	kg CO2 eq.	-1,61E-03	9,68E-05	5,25E-02	5,10E-02	1,32E-05	1,26E-01	0,00E+00	2,93E-06	0,00E+00	8,44E-01	0,00E+00							
GWP-luluc	kg CO2 eq.	1,35E-03	5,00E-05	1,38E-04	1,54E-03	6,81E-06	2,21E-04	0,00E+00	2,33E-06	0,00E+00	1,70E-05	0,00E+00							
ODP	kg CFC11 eq.	1,31E-07	4,73E-08	2,75E-08	2,06E-07	6,45E-09	2,44E-08	0,00E+00	1,40E-09	0,00E+00	3,39E-09	0,00E+00							
AP	mol H+ eq.	9,70E-03	6,64E-04	1,15E-03	1,15E-02	8,79E-05	1,65E-03	0,00E+00	3,68E-05	0,00E+00	1,69E-04	0,00E+00							
EP-fresh water	kg PO4 eq.	4,73E-05	1,40E-06	8,94E-06	5,77E-05	1,90E-07	8,92E-06	0,00E+00	6,41E-08	0,00E+00	5,07E-06	0,00E+00							
EP-marine	kg N eq.	1,19E-03	1,59E-04	2,50E-04	1,60E-03	2,02E-05	3,96E-04	0,00E+00	1,30E-05	0,00E+00	1,19E-03	0,00E+00							
EP-terrestrial	mol N eq.	1,32E-02	1,78E-03	2,02E-03	1,70E-02	2,27E-04	2,49E-03	0,00E+00	1,43E-04	0,00E+00	4,60E-04	0,00E+00							
POCP	kg NMVOC eq.	4,82E-03	6,52E-04	6,67E-04	6,14E-03	8,50E-05	9,15E-04	0,00E+00	4,09E-05	0,00E+00	3,31E-04	0,00E+00							
ADP-minerals & metals	kg Sb eq.	4,36E-05	3,42E-06	5,10E-06	5,21E-05	4,66E-07	7,54E-06	0,00E+00	1,61E-07	0,00E+00	1,40E-07	0,00E+00							
ADP-fossil	MJ, net calorific value	2,63E+01	3,11E+00	4,72E+00	3,41E+01	4,25E-01	4,09E+00	0,00E+00	9,58E-02	0,00E+00	3,20E-01	0,00E+00							
WDP	m3 world eq. Deprived	1,12E+00	1,30E-02	1,02E-01	1,24E+00	1,80E-03	1,73E-01	0,00E+00	3,43E-04	0,00E+00	1,11E-02	0,00E+00							

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenic total

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

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 Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

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

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

Unit		A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	7,81E-08	1,40E-08	8,35E-09	1,00E-07	1,90E-09	1,50E-08	0,00E+00	5,70E-10	0,00E+00	1,97E-09	0,00E+00							
IRP	kBq U235 eq.	5,04E-02	1,34E-02	9,02E-03	7,28E-02	1,82E-03	1,07E-02	0,00E+00	4,01E-04	0,00E+00	1,28E-03	0,00E+00							
ETP-fw	CTUe	3,13E+01	2,27E+00	5,40E+00	3,89E+01	3,10E-01	6,27E+00	0,00E+00	8,54E-02	0,00E+00	4,83E+00	0,00E+00							
HTP-c	CTUh	1,97E-09	5,75E-11	3,66E-10	2,40E-09	7,84E-12	3,47E-10	0,00E+00	2,77E-12	0,00E+00	3,01E-11	0,00E+00							
HTP-nc	CTUh	3,11E-08	1,84E-09	8,09E-09	4,10E-08	2,50E-10	6,22E-09	0,00E+00	9,34E-11	0,00E+00	1,46E-09	0,00E+00							
SQP	-	8,16E+00	3,56E+00	8,65E-01	1,26E+01	4,86E-01	1,98E+00	0,00E+00	8,31E-02	0,00E+00	5,74E-01	0,00E+00							

- PM = Potential incidence of disease due to PM emissions
- IRP = Potential Human exposure efficiency relative to U235 [1]
- ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
- HTP-c = Potential Comparative Toxic Unit for humans, cancer [2]
- HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
- SQP = Potential soil quality index [2]

Disclaimer [1]:

- 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.

Disclaimer [2]:

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

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,89E-05	7,70E-06	7,94E-06	3,45E-05	1,05E-06	4,31E-06	0,00E+00	2,43E-07	0,00E+00	1,06E-06	0,00E+00							
NHWD	kg	3,02E-01	2,71E-01	9,50E-02	6,68E-01	3,69E-02	2,38E-01	0,00E+00	6,08E-03	0,00E+00	9,44E-01	0,00E+00							
RWD	kg	5,32E-05	2,12E-05	8,93E-06	8,33E-05	2,88E-06	1,24E-05	0,00E+00	6,29E-07	0,00E+00	1,66E-06	0,00E+00							
CRU	kg	0,00E+00																	
MFR	kg	0,00E+00	0,00E+00	1,82E-04	1,82E-04	0,00E+00	2,73E-05	0,00E+00											
MER	kg	0,00E+00	0,00E+00	9,79E-06	9,79E-06	0,00E+00	1,47E-06	0,00E+00											
EEE	MJ	0,00E+00	0,00E+00	6,63E-04	6,63E-04	0,00E+00	9,95E-05	0,00E+00											
ETE	MJ	0,00E+00	0,00E+00	1,14E-03	1,14E-03	0,00E+00	1,71E-04	0,00E+00											

- HWD = Hazardous Waste Disposed
- NHWD = Non Hazardous Waste Disposed
- RWD = Radioactive Waste Disposed
- CRU = Components for reuse
- MFR = Materials for recycling
- MER = Materials for energy recovery
- EEE = Exported Electrical Energy
- ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	0,00E+00	0,00E+00	8,23E-03	8,23E-03	0,00E+00	1,23E-03	0,00E+00											
PERM	MJ	0,00E+00																	
PERT	MJ	1,12E+00	3,19E-02	1,30E-01	1,29E+00	4,35E-03	1,84E-01	0,00E+00	1,20E-03	0,00E+00	1,39E-02	0,00E+00							
PENRE	MJ	0,00E+00	0,00E+00	2,80E+00	2,80E+00	0,00E+00	4,20E-01	0,00E+00											
PENRM	MJ	0,00E+00																	
PENRT	MJ	2,82E+01	3,31E+00	5,11E+00	3,66E+01	4,51E-01	4,36E+00	0,00E+00	1,02E-01	0,00E+00	3,41E-01	0,00E+00							
SM	kg	0,00E+00	0,00E+00	5,55E-05	5,55E-05	0,00E+00	8,33E-06	0,00E+00											
RSF	MJ	0,00E+00																	
NSRF	MJ	0,00E+00																	
FW	m3	2,80E-02	3,93E-04	2,84E-03	3,12E-02	5,43E-05	4,43E-03	0,00E+00	1,17E-05	0,00E+00	2,94E-04	0,00E+00							

- 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 resources excluding non-renewable energy resources used as raw materials
- PENRM = Use of non-renewable primary energy resources used as raw materials
- PENRT = Total use of non-renewable primary energy resources
- SM = Use of secondary materials
- RSF = Use of renewable secondary fuels
- NSRF = Use of non-renewable secondary fuels
- FW = Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	0,00E+00																	
BCCpa	kg C	0,00E+00																	

- BCCpr = Biogenic carbon content in product
- BCCpa = Biogenic carbon content in packaging



CALCULATION RULES (PART 1)

This study follows the modular structure of EN 15804+A2 and ISO 14044. The declared unit is 1kg of Firesafe FSG. All lifecycle stages from raw material extraction through end-of-life are included. The functional unit is based on 1 kg of product ready for use. No significant input or output flows have been deliberately excluded.

Primary data was collected from Firesafe AS, covering production inputs, electricity use, welding operations, transport, and end-of-life scenarios. Background data was sourced from the Ecoinvent 3.6 database. Data quality is considered “good” to “very good” for all records in terms of time, geography, and technology representativeness, as assessed per EN 15804+A2 Annex E.

All primary data used in this study refers to the calendar year 2024. Background data (Ecoinvent v3.6) reflects datasets published and updated as of July 2024. No economic or mass allocations were necessary within the main product system. Recycling allocation for Module D follows the substitution approach, consistent with EN 15804+A2 guidance.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

Description of processes within A1–A3 (Production Stage)

A1 – Raw material supply:

Includes the extraction and processing of input materials.

A2 – Transport:

Transport of input materials to the manufacturing plant by truck. Distances are based on distance between supplier and manufacturing plant in Kaatsheuvel.

A3 – Manufacturing:

Includes electricity, gas usage and water usage. Material losses and waste treatment are included.

Electricity Mix – Global Warming Potential (GWP):

The NMD profile 0510-pro&Elektriciteitsverbruik, bouwmaschine elektrisch, Grijze mix, per kWh input (electricity: 3.6 MJ/kWh; 3.6 MJ input equals 2.75 MJ output) was applied. This grey electricity mix is composed of the following energy sources: natural gas (81.25%), coal (10.93%), nuclear energy (4.42%), oil products (1.51%), and other non-renewable fuels (approximately 1.89%). The Global Warming Potential associated with this electricity mix is 6.23×10^{-1} kg CO₂-equivalent per kWh.

Description of scenarios for modules beyond A1–A3:

A4 – Transport to construction site:

A fixed distance of 300 km from Lørenskog to end-user is assumed, modeled using EURO 6 diesel truck transport.

A5 - Installation

Installation is done by hand and therefore the impact is neglectable. A 15% installation loss is applied .

C1 – Deconstruction:

Firesafe FSG adheres to other materials. The impact generated during the demolition phase is negligible and falls within the cutoff criteria.

C2 – Transport to EoL processing:

100% of the product is transported for recycling over a distance of 50 km, modeled with truck transport.

C3 – Waste processing:

As a finishing material that bonds to other substrates, Firesafe FSG generates negligible impact during the waste processing phase, falling within the cutoff criteria.

C4 – Disposal:

In stage C4, 100% of Firesafe FSG is disposed of via landfill.

D – Module D (recovery):

Module D shows no environmental benefits, as landfilling in C4 prevents any recovery or reuse.

DECLARATION OF SVHC

The product does not contain SVHC



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