Environmental
Product
Declaration

According to ISO14025+EN15804 A2 (+indicators A1)

This declaration is for:
Firesafe FSW

Provided by:
Firesafe AS

MRPI® registration:
1.1.00989.2025

Program operator:
Stichting MRPI®
Publisher:
Stichting MRPI®
www.mrpi.nl

Date of first issue:
3-10-2025
Date of this issue:
3-10-2025
Expiry date:
3-10-2030

COMPANY INFORMATION

Firesafe AS

Robsrudskogen 15

1470

Lørenskog

Norway

+47 22 72 20 20

Pål Paulsen

firesafe.no

MRPI® REGISTRATION

1.1.00989.2025

DATE OF THIS ISSUE

3-10-2025

EXPIRY DATE

3-10-2030

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 FSW

DECLARED UNIT / FUNCTIONAL UNIT

1 Piece

DESCRIPTION OF PRODUCT

Thermal Isolation

VISUAL PRODUCT

MORE INFORMATION

firesafe.no

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

DETAILED PRODUCT DESCRIPTION (PART 1)

Firesafe FSW is a self-adhesive thermal insulation on a roll, specially developed for the thermal and fire-resistant insulation of, among other things, metal pipes over a short distance from the fire separation. Firesafe FSW absorbs the temperature of the pipe so that no temperature transfer can take place to adjacent rooms. Firesafe FSW has a function retention of 30 years. One piece of Firesafe FSW weighs 0,299425 kg.

Component (> 1%)	(kg / %)
Bandage	99,00%
PP Layer	1,00%

SCOPE AND TYPE

This Environmental Product Declaration (EPD) has been prepared for Firesafe FSP 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 FSW 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.

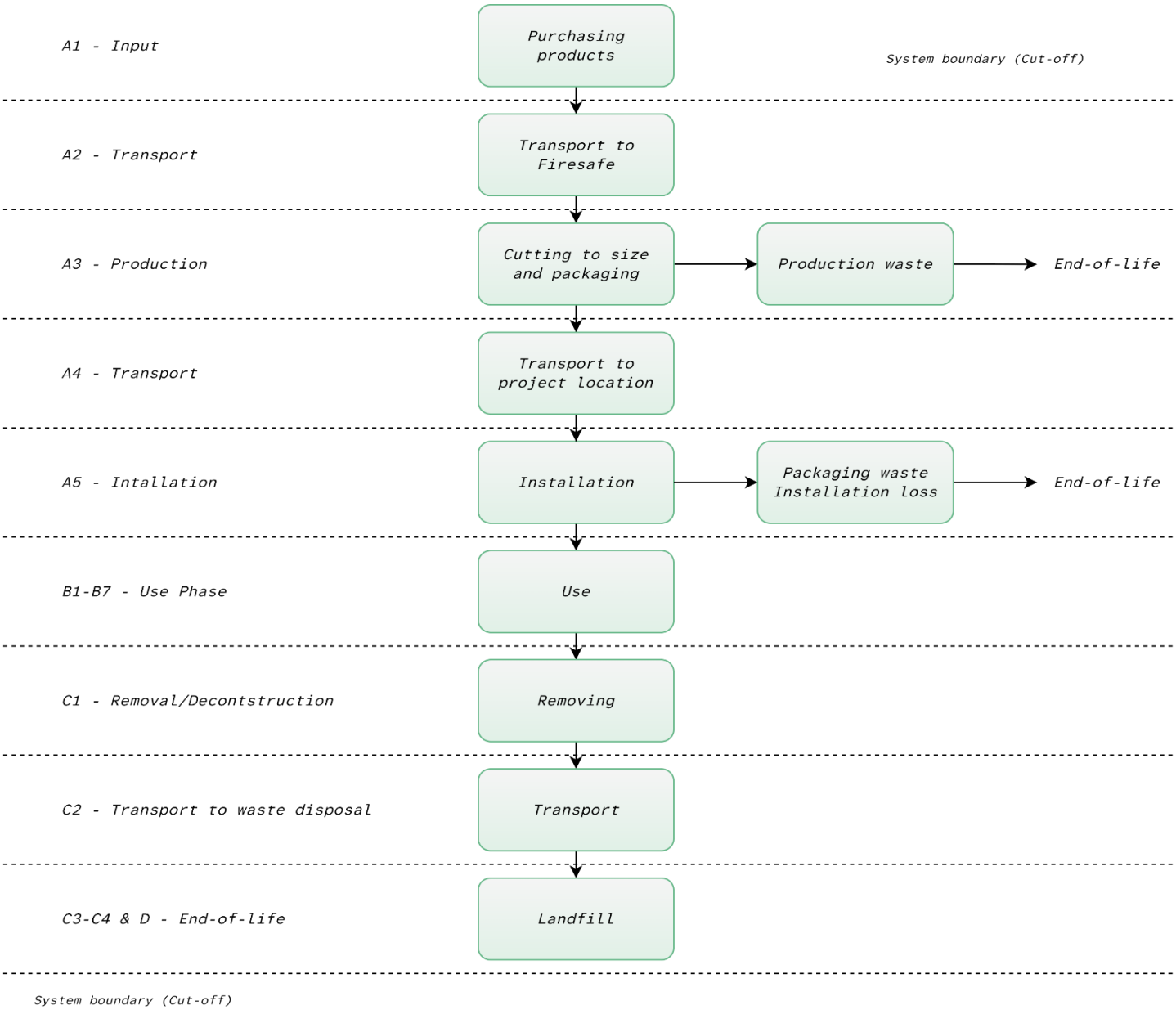
This declaration is specific to Firesafe FSW.

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


A1 - Input
Purchasing products
System boundary (Cut-off)
A2 - Transport
Transport to Firesafe
A3 - Production
Cutting to size and packaging
Production waste
End-of-life
A4 - Transport
Transport to project location
A5 - Intallation
Installation
Packaging waste Installation loss
End-of-life
B1-B7 - Use Phase
Use
C1 - Removal/Decontstruction
Removing
C2 - Transport to waste disposal
Transport
C3-C4 & D - End-of-life
Landfill
System boundary (Cut-off)

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.	3,95E-05	7,21E-07	0,00E+00	4,02E-05	1,39E-07	2,70E-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	5,63E-08	0,00E+00	4,19E-08	-9,94E-09
ADPF	MJ	2,79E+01	6,51E-01	0,00E+00	2,85E+01	1,26E-01	2,02E+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	3,37E-02	0,00E+00	7,96E-02	-7,07E-01
GWP	kg CO2 eq.	8,32E-01	4,20E-02	0,00E+00	8,74E-01	8,12E-03	8,75E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,20E-03	0,00E+00	1,04E-01	-3,71E-02
ODP	kg CFC11 eq.	1,12E-07	7,95E-09	0,00E+00	1,20E-07	1,54E-09	1,35E-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	3,91E-10	0,00E+00	9,89E-10	-4,30E-09
POCP	kg ethene eq.	7,08E-04	2,56E-05	0,00E+00	7,34E-04	4,95E-06	6,15E-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	1,33E-06	0,00E+00	1,00E-05	-5,24E-06
AP	kg SO2 eq.	3,59E-03	1,09E-04	0,00E+00	3,70E-03	2,11E-05	2,92E-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	9,69E-06	0,00E+00	4,98E-05	-2,39E-05
EP	kg (PO4) 3 eq.	4,12E-04	1,80E-05	0,00E+00	4,30E-04	3,48E-06	3,96E-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	1,90E-06	0,00E+00	1,86E-05	-3,46E-06

Toxicity indicators and ECI (Dutch market)

HTP	kg DCB eq.	2,90E-01	9,02E-03	0,00E+00	2,99E-01	1,75E-03	2,37E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,28E-04	0,00E+00	3,05E-03	-1,92E-03
FAETP	kg DCB eq.	7,23E-03	3,79E-04	0,00E+00	7,61E-03	7,34E-05	7,68E-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	2,71E-05	0,00E+00	4,65E-04	-1,94E-05
MAETP	kg DCB eq.	2,49E+01	1,03E+00	0,00E+00	2,59E+01	1,99E-01	2,31E+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	9,74E-02	0,00E+00	6,15E-01	-8,67E-02
TETP	kg DCB eq.	1,08E-03	5,10E-05	0,00E+00	1,13E-03	9,86E-06	1,06E-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	3,28E-06	0,00E+00	7,03E-06	-6,01E-06
ECI	euro	9,21E-02	3,73E-03	0,00E+00	9,58E-02	7,21E-04	8,57E-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	2,65E-04	0,00E+00	5,94E-03	-2,23E-03
ADPF	kg Sb eq.	1,34E-02	3,13E-04	0,00E+00	1,37E-02	6,06E-05	9,72E-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	1,62E-05	0,00E+00	3,83E-05	-3,40E-04

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.	8,41E-01	4,23E-02	0,00E+00	8,83E-01	8,19E-03	8,95E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,22E-03	0,00E+00	1,10E-01	-3,76E-02
GWP-fossil	kg CO2 eq.	8,57E-01	4,23E-02	0,00E+00	8,99E-01	8,18E-03	8,93E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,22E-03	0,00E+00	1,10E-01	-3,76E-02
GWP-biogenic	kg CO2 eq.	-1,73E-02	2,04E-05	0,00E+00	-1,73E-02	3,94E-06	2,05E-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	1,03E-06	0,00E+00	3,89E-05	-9,82E-06
GWP-luluc	kg CO2 eq.	5,76E-04	1,05E-05	0,00E+00	5,87E-04	2,04E-06	3,96E-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	8,14E-07	0,00E+00	2,13E-06	-1,07E-06
ODP	kg CFC11 eq.	1,36E-07	9,98E-09	0,00E+00	1,46E-07	1,93E-09	1,67E-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	4,91E-10	0,00E+00	1,17E-09	-4,89E-09
AP	mol H+ eq.	4,31E-03	1,36E-04	0,00E+00	4,45E-03	2,63E-05	3,55E-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	1,29E-05	0,00E+00	6,20E-05	-3,07E-05
EP-fresh water	kg PO4 eq.	2,61E-05	2,95E-07	0,00E+00	2,64E-05	5,70E-08	1,61E-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	2,24E-08	0,00E+00	8,67E-08	-4,05E-08
EP-marine	kg N eq.	7,17E-04	3,12E-05	0,00E+00	7,48E-04	6,04E-06	6,92E-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	4,54E-06	0,00E+00	4,07E-05	-9,23E-06
EP-terrestrial	mol N eq.	8,07E-03	3,51E-04	0,00E+00	8,42E-03	6,80E-05	7,64E-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	5,01E-05	0,00E+00	1,61E-04	-1,01E-04
POCP	kg NMVOC eq.	3,20E-03	1,32E-04	0,00E+00	3,33E-03	2,55E-05	2,94E-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	1,43E-05	0,00E+00	5,44E-05	-3,35E-05
ADP-minerals & metals	kg Sb eq.	3,95E-05	7,21E-07	0,00E+00	4,02E-05	1,39E-07	2,70E-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	5,63E-08	0,00E+00	4,19E-08	-9,94E-09
ADP-fossil	MJ, net calorific value	2,73E+01	6,57E-01	0,00E+00	2,80E+01	1,27E-01	2,00E+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	3,35E-02	0,00E+00	7,86E-02	-6,28E-01
WDP	m3 world eq. Deprived	4,48E-01	2,79E-03	0,00E+00	4,51E-01	5,40E-04	2,53E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-04	0,00E+00	3,38E-03	-2,73E-03

GWP-total	=	Global Warming Potential total
GWP-fossil	=	Global Warming Potential fossil fuels
GWP-biogenic	=	Global Warming Potential biogenictotal
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 inci-dence	3,37E-08	2,93E-09	0,00E+00	3,66E-08	5,68E-10	4,68E-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	2,00E-10	0,00E+00	6,14E-10	-8,69E-11
IRP	kBq U235 eq.	5,10E-02	2,82E-03	0,00E+00	5,38E-02	5,46E-04	5,42E-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	1,40E-04	0,00E+00	3,15E-04	-2,02E-04
ETP-fw	CTUe	1,57E+01	4,79E-01	0,00E+00	1,62E+01	9,28E-02	1,28E+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	2,99E-02	0,00E+00	1,15E-01	-3,64E-02
HTP-c	CTUh	3,11E-10	1,21E-11	0,00E+00	3,23E-10	2,35E-12	2,83E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,70E-13	0,00E+00	1,16E-11	-2,37E-12
HTP-nc	CTUh	8,67E-09	3,87E-10	0,00E+00	9,06E-09	7,48E-11	8,29E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,27E-11	0,00E+00	9,27E-11	-3,35E-11
SQP	-	4,35E+00	7,51E-01	0,00E+00	5,10E+00	1,45E-01	9,87E-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	2,91E-02	0,00E+00	1,67E-01	-9,04E-03

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	7,87E-06	1,62E-06	0,00E+00	9,49E-06	3,14E-07	2,01E-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	8,49E-08	0,00E+00	1,24E-07	-7,95E-07
NHWD	kg	7,74E-02	5,71E-02	0,00E+00	1,35E-01	1,11E-02	7,53E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,13E-03	0,00E+00	2,72E-01	-2,52E-04
RWD	kg	6,70E-05	4,46E-06	0,00E+00	7,15E-05	8,64E-07	7,88E-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	2,20E-07	0,00E+00	4,51E-07	-3,00E-07
CRU	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	0,00E+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	0,00E+00
MFR	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	0,00E+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	0,00E+00
MER	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,99E-02	0,00E+00
EEE	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	0,00E+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	1,62E-01
ETE	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	0,00E+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	2,79E-01

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	0,00E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+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	0,00E+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	0,00E+00
PERT	MJ	8,47E-01	6,74E-03	0,00E+00	8,54E-01	1,30E-03	4,93E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,20E-04	0,00E+00	2,22E-03	-1,33E-03
PENRE	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	0,00E+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	0,00E+00
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	0,00E+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	0,00E+00
PENRT	MJ	2,91E+01	6,98E-01	0,00E+00	2,98E+01	1,35E-01	2,13E+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	3,56E-02	0,00E+00	8,36E-02	-6,97E-01
SM	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	0,00E+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	0,00E+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	0,00E+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	0,00E+00
NSRF	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	0,00E+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	0,00E+00
FW	m3	1,13E-02	8,39E-05	0,00E+00	1,14E-02	1,62E-05	6,54E-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	4,08E-06	0,00E+00	9,86E-05	-3,62E-05

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	0,00E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa	kg C	0,00E+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	0,00E+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

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

CALCULATION RULES

This study follows the modular structure of EN 15804+A2 and ISO 14044. The declared unit is 1 piece of Firesafe FSW. All lifecycle stages from raw material extraction through end-of-life are included. The functional unit is based on piece 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

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 an 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, bouwmachine 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 CO_2-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 3% installation loss is applied .

C1 – Deconstruction:
Firesafe FSW adheres to other materials. The impact generated during the demolition phase is negligible and falls within the cutoff criteria.

C2 – Transport to EoL processing:
90% of the product is transported for recycling over a distance of 50 km and 10% over 100 km. Both modeled with truck transport.

C3 – Waste processing:
As a finishing material that bonds to other substrates, Firesafe FSW generates negligible impact during the waste processing phase, falling within the cutoff criteria.

C4 – Disposal:
In stage C4, 90% of Firesafe FSW is disposed of to incineration plant and 10% is disposed of to landfill.

D – Module D (recovery):
Although 90% is sent to a incineration plant, the environmental impact remains negligible and falls within the cutoff criteria.

DECLARATION OF SVHC

The product does not contain SVHC

REFERENCES

CE Delft. (2010). Handboek Schaduwprijzen. Opgehaald van https://ce.nl/publicaties/handboek-schaduwprijzen-waardering-en-weging-van-emissies-en-milieueffecten/

ISO. (2006). 'ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Prin-ciples and procedures', International Organization for Standardization, ISO14025:2006.

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

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

NEN. (2013). 'NEN-EN 15804: Duurzaamheid van bouwwerken - Milieuverklaringen van producten - Basisregels voor de productgroep bouwproducten', NEN-EN 15804:2012+A1:2013.

NMD. (2025). Bepalingsmethode ‘Milieuprestatie Bouwwerken’ versie 1.2 inclusief de bijbehorende wijzigingsbladen.

NMD. (2022, March). Environmental Performance Assessment Method for Construction Works. Opgehaald van https://milieudatabase.nl/wp-content/uploads/2022/05/Bepalingsmethode_Milieuprestatie_Bouwwerken_maart_2022_Engels.pdf

TNO. (sd). Toxiciteit heeft z'n prijs : schaduwprijzen voor (eco-)toxiciteit en uitputting van abiotische grondstoffen binnen DuboCalc. Opgehaald van https://puc.overheid.nl/rijkswaterstaat/doc/PUC_119145_31/