ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Kiilto Superfix DF

Kiilto Oy

EPD HUB, EPDHUB-0129

Publishing date 22 September 2022, last updated date 22 September 2022, valid until 22 September 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kiilto Oy
Address	Tampereentie 408, 33880 Lempäälä, FINLAND
Contact details	productsafety@kiilto.com
Website	www.kiilto.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules A4, C1-C4, D
EPD author	Lilli Puntti
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	E.A as an authorized verifier acting for EPD Hub

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Kiilto Superfix DF
Product reference	T2029
Place of production	Finland
Period for data	2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of Superfix DF adhesive
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	5,33E-1
GWP-total, A1-A3 (kgCO2e)	5,39E-1
Secondary material, inputs (%)	2,9E-1
Secondary material, outputs (%)	0E0
Total energy use, A1-A3 (kWh)	1,94E0
Total water use, A1-A3 (m3e)	3,55E-3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Kiilto is a growing, family-owned company, with over a hundred-year history and a vision looking ahead to 2080. We develop, produce and sell chemical industry solutions in four business areas: construction, industrial adhesives and fireproofing, professional hygiene and consumer goods. Please find more info at www.kiilto.com.

PRODUCT DESCRIPTION

A dust reduced, non-sagging, economical and flexible cementitious adhesive with lightweight filler for the laying of ceramic tiles. Ideal for large wall tiles. Prolonged open time. Also for exterior applications.

Further information can be found at www.kiilto.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Minerals	50-55	EU
Fossil materials	45-50	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1
Mass per declared unit	1 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Raw materials are simple and comes from EU or Finland. Main raw materials are cement, sand and fillers (Calcium carbonate etc.). They have been transported by lorries from middle Europe and shipped to Finland coast where from further chartered to Lempäälä by trucks.

The production of the cementitious adhesive product consists of four steps: raw material manufacturing, raw material transportation to Kiilto, mixing and packaging. During the mixing all raw materials are added in big mixing vessel where they are mixed with together few minutes. Then the product is packed in polyethylene (PE) bag. 50 % of polyethylene is recycled. The capacity of the bag is 15 kg. The most manufactured package size has been considered in this study. Other package sizes have been considered negligible due their minor existence.

After packaging the product is ready for the delivery to customer. Eventually, the product is moved out and transported to the customer in the package.

There is no internal transport in the factory site because manufacturing place is very compact. Only resource that has been used is electricity. Emissions to air are not relevant either.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transportation impacts occurred from final products delivery to construction site cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions. Average distance of transportation from production plant to building site is assumed as 300 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 %.
The information sources and key assumptions are described below:
Raw material transport: This information came from purchasing department and raw material supplier. Used Ecoinvent data 3.4. Lorry generic EURO 5, Transoceanic ship, Train Europe
Packaging material transport: This information came from purchasing department and packing material supplier. Used Ecoinvent data 3.4 Lorry generic EURO 5, Transoceanic ship.
Internal transport: Not have any.

PRODUCT USE AND MAINTENANCE (B1-B7)

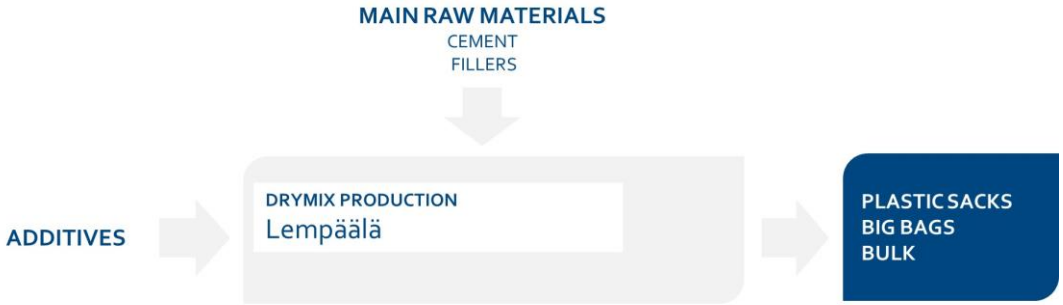
Product use and maintenance is considered negligible due to their minor existence.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as separate construction waste. (C1). All of end-of-life product is assumed to be sent to the closest facilities (C2). 90% of the end-of-life product is sent to recycling (C3). 10% is sent to the landfill (C4). Due to the 90% recycling potential, the benefits for recycling brick and load for rock crushing are considered, and the end-of-life product is converted into recycled raw materials (D).

MANUFACTURING PROCESS (A3)



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

This study does not exclude any modules or processes which represent more than 1 % of the emissions of studied life cycle stage.

Water has not been taking account, because in manufacturing or other cleaning processes does not use water. This plant is dry mix product plant. The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

In this study allocation could not be avoided for ancillary material, energy consumption and waste production as the information was only measured on factory or production process level. The inputs were allocated to studied product based on annual production volume (mass). There was no need to conduct allocation for raw material data as the amounts per declared unit were gotten directly from the product recipe. As a deviation from this, production loss was added to the values by including the allocated product related waste into the raw material inputs.

The values for 1 kilo of mass are calculated by considering the total annual production. In the factory, other floor screeds are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. As the processes for all products produced at the factory are very similar regardless of the products formulation, ancillary materials, energy consumption and waste streams are assumed to be the same for all types of products. Subsequently, the amounts for the flows were calculated by dividing the total inputs by the total output of the facility.

Allocation used in environmental data sources is aligned with the above.

AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent 3.6, Plastic Europe and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,59E-1	7,26E-2	7,3E-3	5,39E-1	3,79E-2	5,77E-3	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,55E-3	7,56E-3	5,28E-4	-7,54E-3
GWP – fossil	kg CO_2e	4,53E-1	7,25E-2	7,09E-3	5,33E-1	3,82E-2	5,71E-3	MND	MND	MND	MND	MND	MND	MND	3,3E-3	4,54E-3	7,5E-3	5,27E-4	-7,43E-3
GWP – biogenic	kg CO_2e	5,91E-3	3,96E-5	2,01E-4	6,15E-3	2,34E-5	6,18E-5	MND	MND	MND	MND	MND	MND	MND	9,17E-7	3,3E-6	5,88E-5	1,04E-6	-9,18E-5
GWP – LULUC	kg CO_2e	1,08E-4	2,61E-5	6,24E-6	1,4E-4	1,35E-5	1,53E-6	MND	MND	MND	MND	MND	MND	MND	2,79E-7	1,37E-6	4,98E-6	1,56E-7	-9,65E-6
Ozone depletion pot.	kg $CFC_{-11}e$	1,48E-8	1,65E-8	2,83E-10	3,15E-8	8,76E-9	4,03E-10	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,07E-9	1,58E-9	2,17E-10	-6,74E-10
Acidification potential	mol H^+e	2,12E-2	3,41E-4	3,37E-5	2,15E-2	1,57E-4	2,17E-4	MND	MND	MND	MND	MND	MND	MND	3,45E-5	1,91E-5	6,37E-5	5E-6	-4,86E-5
EP-freshwater[2)]	kg Pe	1,16E-5	6,08E-7	2,84E-7	1,25E-5	3,3E-7	1,28E-7	MND	MND	MND	MND	MND	MND	MND	1,33E-8	3,7E-8	2,15E-7	6,36E-9	-4,77E-7
EP-marine	kg Ne	2,66E-4	9,88E-5	5,57E-6	3,7E-4	4,66E-5	4,17E-6	MND	MND	MND	MND	MND	MND	MND	1,52E-5	5,75E-6	2,34E-5	1,72E-6	-1,03E-5
EP-terrestrial	mol Ne	3,07E-3	1,09E-3	6,16E-5	4,22E-3	5,15E-4	4,74E-5	MND	MND	MND	MND	MND	MND	MND	1,67E-4	6,35E-5	2,59E-4	1,9E-5	-1,35E-4
POCP ("smog")[3)]	kg NMVOCe	8,65E-4	3,3E-4	2,91E-5	1,22E-3	1,62E-4	1,39E-5	MND	MND	MND	MND	MND	MND	MND	4,59E-5	2,04E-5	7,19E-5	5,51E-6	-3,41E-5
ADP-minerals & metals[4)]	kg Sbe	2,21E-6	1,88E-6	1,36E-7	4,23E-6	9,54E-7	5,18E-8	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	5,89E-8	4,81E-9	-8,21E-7
ADP-fossil resources	MJ	4,76E0	1,09E0	1,99E-1	6,05E0	5,83E-1	6,64E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	1,31E-1	1,47E-2	-1,07E-1
Water use[5)]	m^3e depr.	1,33E-1	3,63E-3	5,59E-3	1,42E-1	2,07E-3	1,44E-3	MND	MND	MND	MND	MND	MND	MND	8,46E-5	2,63E-4	2,28E-3	6,81E-4	-1,33E-2

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,57E-9	5,19E-9	2,74E-10	1E-8	2,95E-9	1,3E-10	MND	MND	MND	MND	MND	MND	MND	9,14E-10	4,11E-10	4,87E-9	9,72E-11	-5,68E-10
Ionizing radiation[6)]	kBq U235e	1,03E-2	4,78E-3	3,23E-4	1,54E-2	2,55E-3	1,8E-4	MND	MND	MND	MND	MND	MND	MND	1,94E-4	3,09E-4	6,78E-4	6,04E-5	-6,78E-4
Ecotoxicity (freshwater)	CTUe	3,56E0	8,46E-1	1,31E-1	4,53E0	4,55E-1	4,99E-2	MND	MND	MND	MND	MND	MND	MND	2,66E-2	5,4E-2	8,92E-2	9,29E-3	-1,3E-1
Human toxicity, cancer	CTUh	8,7E-11	2,48E-11	5,73E-12	1,18E-10	1,29E-11	1,3E-12	MND	MND	MND	MND	MND	MND	MND	9,53E-13	1,38E-12	3,34E-12	2,2E-13	-6,64E-12
Human tox. non-cancer	CTUh	3,97E-9	9,57E-10	1,48E-10	5,07E-9	5,22E-10	5,6E-11	MND	MND	MND	MND	MND	MND	MND	2,35E-11	6,4E-11	8,11E-11	6,79E-12	-1,57E-10
SQP[7)]	-	3,35E-1	1,01E0	1,35E-2	1,36E0	6,5E-1	2,01E-2	MND	MND	MND	MND	MND	MND	MND	1,16E-3	1,07E-1	1,57E-1	2,5E-2	-7,38E-2

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,31E-1	1,53E-2	1,03E-1	3,5E-1	8,28E-3	3,58E-3	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	6,93E-3	1,19E-4	-9,1E-3
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	2,31E-1	1,53E-2	1,03E-1	3,5E-1	8,28E-3	3,58E-3	MND	MND	MND	MND	MND	MND	MND	2,45E-4	8,9E-4	6,93E-3	1,19E-4	-9,1E-3
Non-re. PER as energy	MJ	5,45E0	1,09E0	8,65E-2	6,63E0	5,83E-1	7,21E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	1,31E-1	1,47E-2	-1,07E-1
Non-re. PER as material	MJ	0E0	0E0	1,13E-1	1,13E-1	0E0	1,13E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	5,45E0	1,09E0	1,99E-1	6,74E0	5,83E-1	7,32E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	1,31E-1	1,47E-2	-1,07E-1
Secondary materials	kg	5,27E-4	0E0	2,37E-3	2,9E-3	0E0	2,9E-5	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	3,32E-3	1,93E-4	3,45E-5	3,55E-3	1,11E-4	3,66E-5	MND	MND	MND	MND	MND	MND	MND	4,01E-6	1,47E-5	6,05E-5	1,61E-5	-1,06E-3

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	5,77E-3	1,12E-3	3,31E-4	7,22E-3	6,07E-4	7,83E-5	MND	MND	MND	MND	MND	MND	MND	4,88E-5	6,87E-5	0E0	1,37E-5	-5,56E-4
Non-hazardous waste	kg	1,92E-1	8,19E-2	1,58E-2	2,89E-1	5,04E-2	3,4E-3	MND	MND	MND	MND	MND	MND	MND	5,22E-4	7,6E-3	0E0	1E-1	-2,27E-2
Radioactive waste	kg	1,78E-5	7,5E-6	2,65E-7	2,56E-5	3,99E-6	2,96E-7	MND	MND	MND	MND	MND	MND	MND	3,18E-7	4,85E-7	0E0	9,74E-8	-4,91E-7

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	9E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,98E-1	7,19E-2	6,71E-3	5,77E-1	3,79E-2	6,15E-3	MND	MND	MND	MND	MND	MND	MND	3,27E-3	4,5E-3	7,41E-3	5,17E-4	-7,28E-3
Ozone depletion Pot.	kg $CFC_{-11}e$	1,26E-8	1,31E-8	2,89E-10	2,6E-8	6,97E-9	3,3E-10	MND	MND	MND	MND	MND	MND	MND	5,63E-10	8,49E-10	1,3E-9	1,72E-10	-6,15E-10
Acidification	kg SO_2e	9,92E-4	1,83E-4	2,8E-5	1,2E-3	7,79E-5	1,28E-5	MND	MND	MND	MND	MND	MND	MND	4,87E-6	9,25E-6	1,27E-4	2,08E-6	-2,99E-5
Eutrophication	kg PO_4^3e	3,15E-4	3,41E-5	1,24E-5	3,62E-4	1,62E-5	3,78E-6	MND	MND	MND	MND	MND	MND	MND	8,57E-7	1,87E-6	8,94E-6	4,03E-7	-1,61E-5
POCP (“smog”)	kg C_2H_4e	7,24E-5	1,04E-5	3,79E-6	8,66E-5	5,04E-6	9,16E-7	MND	MND	MND	MND	MND	MND	MND	5,01E-7	5,86E-7	1,39E-6	1,53E-7	-2,44E-6
ADP-elements	kg Sbe	2,21E-6	1,88E-6	1,36E-7	4,23E-6	9,54E-7	5,18E-8	MND	MND	MND	MND	MND	MND	MND	5,03E-9	7,75E-8	5,89E-8	4,81E-9	-8,21E-7
ADP-fossil	MJ	4,76E0	1,09E0	1,99E-1	6,05E0	5,83E-1	6,64E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	7,07E-2	1,31E-1	1,47E-2	-1,07E-1

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elisabet Amat as an authorized verifier acting for EPD Hub Limited
22.09.2022

VERIFIED ISO 14025