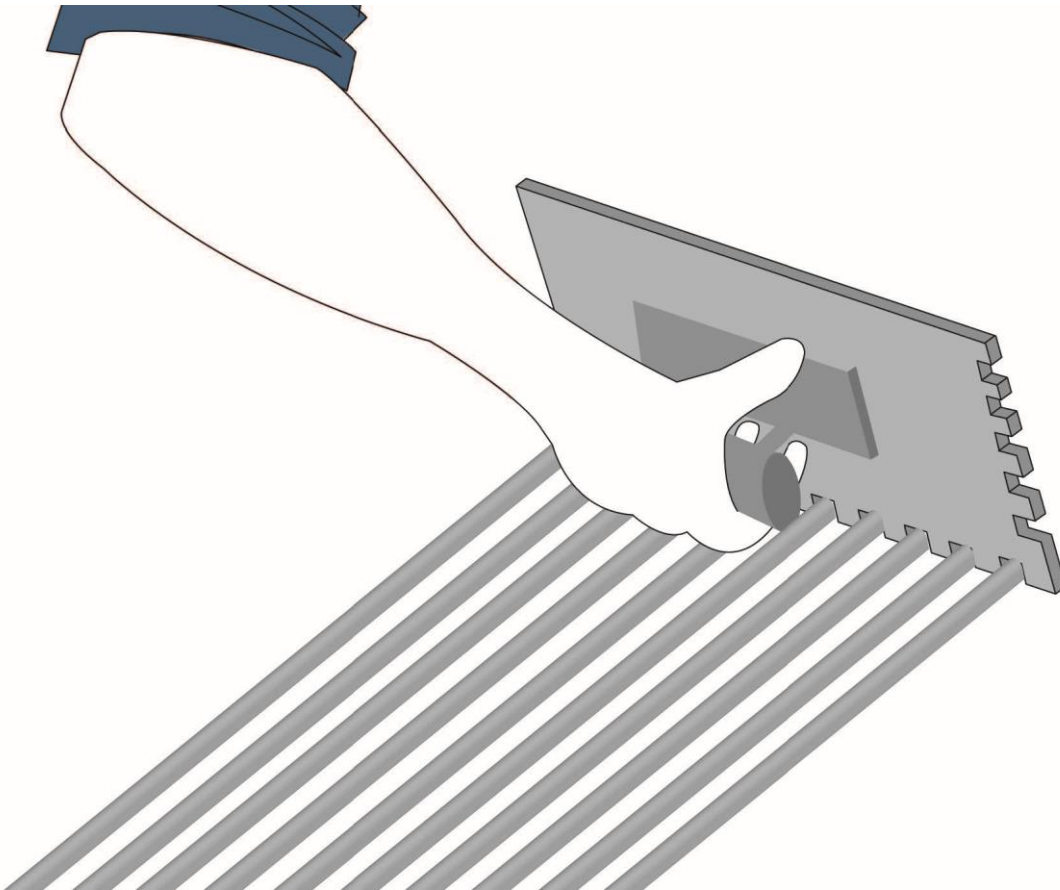


ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804 +A2

Lim, an adhesive for stones and tiles, contains 30–40% cement



Owner of the declaration:

Adda Byggkjemi AS

Product name:

Lim (Adhesive for tiles and stones)

Declared unit:

1 kg of Lim (Adhesive for tiles and stones)

Product category /PCR:

NPCR 009 Part B for Technical - Chemical products for building and construction industry (references to EN15804+A2)

Programme operator and publisher:

The Norwegian EPD foundation

Declaration number:

NEPD-6262-5528-EN

Registration number:

NEPD-6262-5528-EN

Issue date: 14.03.2024

Valid to: 14.03.2029

General information

Product:

Lim (Adhesive for tiles and stones)

Programme Operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Tel: +47 23 08 80 00
e-mail: post@epd-norge.no

Declaration Number:

NEPD-6262-5528-EN

This declaration is based on Product Category Rules:

NPCR 009 Part B for Technical - Chemical products for building and construction industry (references to EN15804+A2)

Statements:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidence.

Declared unit:

1 kg of Lim (Adhesive for tiles and stones)

Functional unit:

Not relevant

Conversion factor to mass:

Not relevant

Verification:

Independent verification of the declaration and data, according to ISO14025:2006

internal external



Julie Lyslo Skullestad

Independent verifier approved by EPD Norway

Owner of the declaration:

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Contact person: Håvard Tveit
Phone: +47 95036939
e-mail: havard@adda.no

Manufacturer:

Adda Byggkjemi AS
Gråterudveien 26, 3036 Drammen, Norway

Place of production:

Adda Byggkjemi AS
Gråterudveien 26, 3036 Drammen, Norway

Management system:

N/A

Organization no:

968 272 551

Issue date:

14.03.2024

Valid to:

14.03.2029

Year of study:

2022-2023

Comparability:

EPDs from other programs than EPD-Norway may not be comparable.

The EPD has been worked out by:

Modi Michael Elisa & Børge Heggen Johansen of Energiråd AS

Approved



Manager of EPD Norway

Product

Product description:

Adda Byggkjemi AS is a supplier of products and product systems, like mortars, screeds, membranes, tile adhesive and grout, for new buildings and renovations. We are a Norwegian-owned company with head office and production in Drammen. After over 40 years of industry experience, we are concerned with good customer service, high product quality and delivery efficiency.

Lim (Adhesive for tiles and stones) is a group of products used to adhere tiles long-term and securely to the substrate. This is an average EPD for self-leveling compounds with a cement content of between 30-40%. The maximum difference between the results of the listed products is less than 10% or precisely 5.68%.

- Adda Topcrete Ekstra Pulver
- Adda Topcrete Flyt Fleks
- Adda Topcrete Fleks Grå
- Adda Topcrete Fliselim/Fix Grå
- Adda Topcrete Grå
- Adda Topcrete Kvikkk
- Adda Settermørtel
- Adda Skiferlim
- Adda Lettlim Lys Grå
- Adda Lettlim Grå
- Adda Topcrete Plus+
- Adda Flislim1
- Adda Flislim Grå
- Adda Lettlim Hvit
- Adda Pro Fleksibelt Flislim

Product specification:

The material requirements for an average 1 kg of Lim (Adhesive for tiles and stones) are shown below.

Materials	%
Sand	50.00 – 68.50
Cement	30.00 – 40.00
Additives	0.00 – 8.00
packaging (paper sack)	0.40

Technical data:

Areas of use: indoors and outdoors.

Mixing ratio: about 3-6 liters of water per bag (12,5-15-20 kg) of Lim (Adhesive). Consumption: differs with toothed spatula size, from 3 – 10 mm, and substrate. For more information see - adda.no.

Market:

Norway, Sweden

Reference service life, product:

Not relevant

Reference service life, building:

Not relevant

LCA: Calculation rules

Declared unit

1 kg of Lim (Adhesive for tiles and stone)

Data quality

Both primary and secondary data were used in the LCA. Site-specific foreground data were provided by Adda Byggkjemi and is based on the production activities of 2022. These data were obtained from the bill of materials. For materials with valid EPDs that conform to the EN15804+A2, environmental impacts for the respective materials were used for the analysis. For all processes for which primary data was not available, generic data from the ecoinvent database v3.8 (2021) were assumed. All generic data used for the analysis are not older than 10 years old. Where necessary, the used generic data were modified to ensure technological, temporal, and geographical consistency. Modelling and calculations were conducted via OpenLCA equipped with v.3.8 of the Ecoinvent database with LCIA and classification factors conforming to EN 15804+A2.

The LCA results presented in this EPD reflects the average environmental profiles of the included products. Tests were conducted to investigate the variations in the GWP-total indicator among the products. whereby products with a $\pm 10\%$ variation in the results have been excluded and/or included in a separate EPD.

Allocation

The allocation is made in accordance with the requirements of EN 15804: A2. Energy and water inputs and waste generation during production were allocated equally among all products on mass basis. The effects of primary production of recycled materials were allocated to the main product in which the material is used. No recycled materials are used in the manufacture of this product.

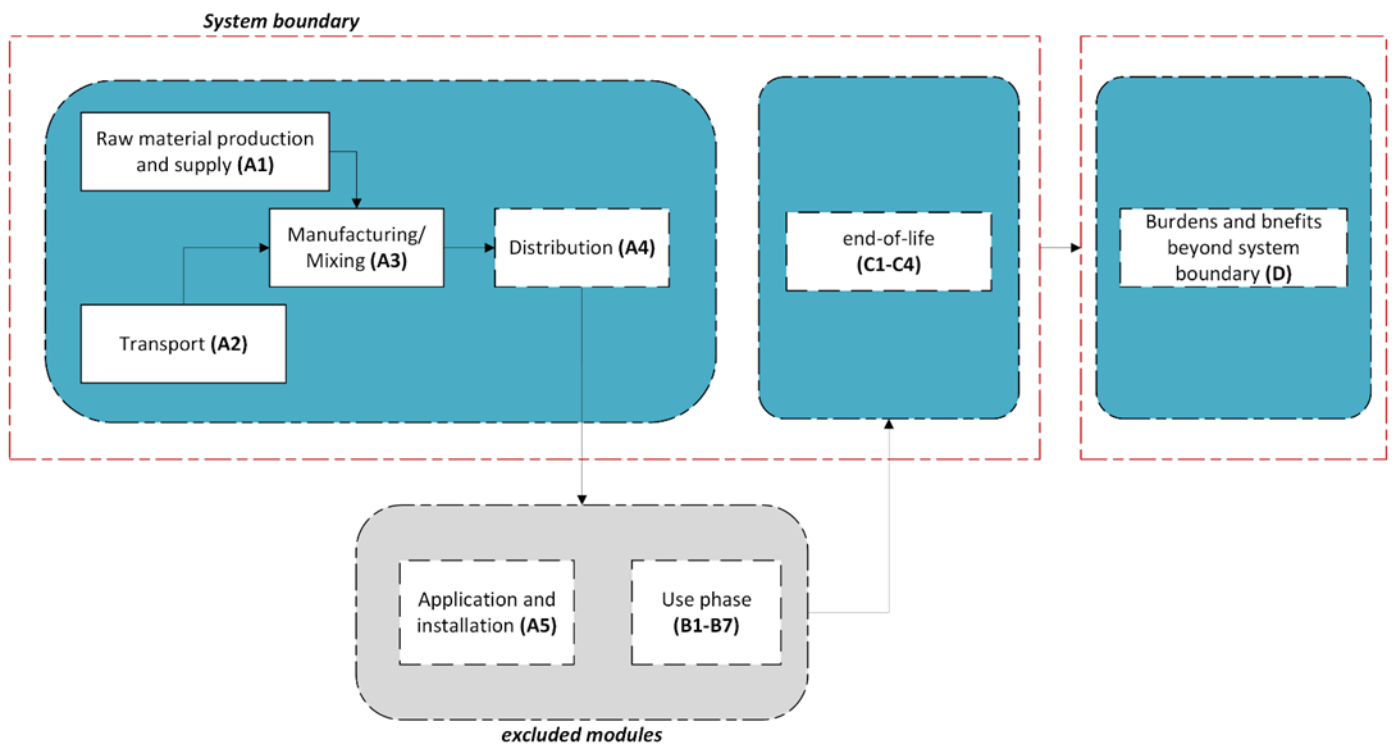
Cut-off criteria:

All major raw materials and essential energy are included. The production processes for raw materials and energy flows with less than 1% contributions are excluded. This cut-off criteria do not apply for hazardous materials and substances. Machines and facilities or capital goods required to produce the declared unit are excluded.

System boundary:

The scope of this analysis is cradle-to-grave. The modules covered include extraction and semi-processing of raw required raw materials (A1), transportation of the materials to production site (A2), processing/production of the studied products (A3), transportation of finished products to potential customers (A4), handling of waste at end-of-life (C1-C4), and potential loads and benefits associated with the products (D). The end-of-life impacts are described in the Norwegian context.

Figure 1 System boundaries (cradle-to-fate with options)



System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage								End of life stage				Benefits & loads beyond system boundary
Raw materials	Transport	Manufacturing	Transport	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	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

LCA: Scenarios and additional technical information

Product stage is reported in one model A1-A3. The considered scenarios after gate are described as follows. It is assumed that the manufactured products are transported by truck to a potential customer located 300 km away. The recovered material is transported by truck to a waste processing facility 50 km from the demolition site. The collected waste is managed according to the Norwegian management practices of construction and demolition waste such as bricks and concrete and other heavy building materials ([Statistics Norway, 2021](#)). Detailed information for the scenarios is summarized as follows.

Transport from production site to potential customer (A4)	Capacity (%)	Distance (km)	Fuel/Energy efficiency	Unit	Value (L/t)
truck, lorry>32 metric ton, EURO6	53.30%	100	0.023	l/tkm	2.30

Deconstruction/Demolition (C1)	Unit	Value
Demolition of building per kg of product	kg	1.00

Transport from production site to potential customer (C2)	Capacity (%)	Distance (km)	Fuel/Energy efficiency	Unit	Value (L/t)
truck, over 32 tones, EURO 5	53.30%	20.00	0.023	l/tkm	0.46

Waste Processing (C3)	Unit	Value
Waste treatment of products after demolition	kg	0.70

Disposal (C4)	Unit	Value
Substitution of primary aggregates with crushed recycled inert products	kg	0.30

Re-use, recovery, and recycling potential (D)	Unit	Value
Gravel, crushed, production (avoided)	kg	0.70

LCA: Results

The LCA results are for 1 kg of Lim (Adhesive for tiles and stones) for various environmental indicators are presented as follows.

Core environmental impacts

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO2 eq	2.64E-01	4.89E-02	2.25E-04	1.76E-02	4.12E-03	6.94E-04	-2.23E-03
GWP - fossil	kg CO2 eq	2.67E-01	4.88E-02	2.25E-04	1.75E-02	4.10E-03	6.88E-04	-2.15E-03
GWP - biogenic	kg CO2 eq	-3.63E-03	8.65E-05	1.85E-07	5.39E-05	1.33E-05	5.09E-06	-7.91E-05
GWP - luluc	kg CO2 eq	1.66E-04	2.02E-05	2.43E-08	4.77E-06	9.01E-07	7.14E-08	-1.79E-06
ODP	kg CFC11 eq	1.06E-08	1.13E-08	4.79E-11	1.73E-08	8.85E-10	1.47E-10	-2.90E-10
AP	molc H+ eq	6.54E-04	1.39E-04	2.28E-06	1.36E-04	4.25E-05	7.03E-06	-1.89E-05
EP- freshwater	kg P eq	1.38E-05	3.22E-06	1.09E-08	1.08E-06	1.91E-07	2.22E-08	-4.99E-07
EP -marine	kg N eq	2.61E-04	2.82E-05	1.00E-06	1.75E-05	1.86E-05	3.10E-06	-5.42E-06
EP - terrestrial	molc N eq	1.13E-02	3.07E-04	1.10E-05	1.91E-04	2.03E-04	3.40E-05	-7.26E-05
POCP	kg NMVOC eq	1.38E-03	1.15E-04	2.99E-06	7.54E-05	5.53E-05	9.26E-06	-1.66E-05
ADP - M&M	kg Sb-Eq	4.43E-07	1.66E-07	1.45E-10	3.65E-08	1.24E-08	3.66E-10	-4.20E-08
ADP - fossil	MJ	5.50E+00	7.45E-01	3.09E-03	1.03E+00	5.65E-02	9.40E-03	-3.55E-02
WDP	m3	1.42E-01	3.59E-03	9.41E-06	8.96E-04	4.86E-03	2.58E-05	-9.95E-03

GWP-total: Global Warming Potential; 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; See "additional requirements" for indicator given as PO4 eq. EP-marine: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-terrestrial: Eutrophication potential, Accumulated Exceedance; POCP: Formation potential of tropospheric ozone; ADP-M&M: Abiotic depletion potential for non-fossil resources (minerals and metals); ADP-fossil: Abiotic depletion potential for fossil resources; WDP: Water deprivation potential, deprivation weighted water consumption.

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PM	Disease incidence	4.62E-09	3.09E-09	6.00E-11	1.09E-09	5.07E-09	1.89E-10	-3.77E-10
IRP	kBq U235 eq.	4.86E-03	3.82E-03	1.41E-05	4.73E-03	3.18E-04	4.37E-05	-6.28E-04
ETP-fw	CTUe	2.44E-02	2.48E-02	1.77E-05	7.76E-03	4.47E-04	5.26E-05	-5.13E-04
HTP-c	CTUh	2.16E-11	1.58E-11	9.28E-14	6.00E-12	1.31E-12	1.78E-13	-3.42E-12
HTP-nc	CTUh	1.23E-09	9.19E-10	1.25E-12	2.71E-10	3.77E-11	3.00E-12	-1.14E-10
SQP	Dimensionless	3.93E-01	6.28E-01	9.61E-05	2.20E-02	1.75E-03	2.72E-02	-4.80E-02

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality

Resource use

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
RPEE	MJ	3.60E-01	7.97E-03	2.01E-05	2.63E-03	1.52E-02	6.07E-05	-8.08E-03
RPEM	MJ	2.06E-01	2.62E-03	5.39E-06	9.73E-04	2.13E-04	2.23E-04	-2.41E-03
TPE	MJ	5.66E-01	1.06E-02	2.55E-05	3.61E-03	1.54E-02	2.84E-04	-1.05E-02
NRPE	MJ	4.72E+00	7.21E-02	2.63E-04	2.48E-02	4.51E-03	5.37E-04	-1.66E-02
NRPM	MJ	7.79E-01	6.73E-01	2.83E-03	1.01E+00	5.20E-02	8.86E-03	-1.90E-02
TRPE	MJ	5.50E+00	7.45E-01	3.09E-03	1.03E+00	5.65E-02	9.40E-03	-3.55E-02
SM	kg	1.84E-02	7.59E-04	3.51E-06	2.25E-04	7.44E-05	8.40E-06	-7.00E-04
RSF	MJ	3.44E-01	2.26E-04	3.89E-07	6.53E-05	1.29E-05	1.56E-06	-2.28E-04
NRSF	MJ	4.92E-01	9.18E-04	5.86E-07	2.29E-04	5.74E-05	1.10E-06	-3.07E-05
W	m3	3.32E-03	8.55E-05	2.24E-07	2.14E-05	3.99E-05	6.12E-07	-2.33E-04

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non-renewable primary energy resources used as energy carrier; NRPM Non-renewable primary energy resources used as materials; TRPE Total use of non-renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non-renewable secondary fuels; W Use of net fresh water.

End-of-life waste

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HW	kg	3.77E-02	1.66E-02	5.09E-05	5.33E-03	1.02E-03	1.02E-04	-2.71E-03
NHW	kg	2.21E-02	3.84E-02	3.27E-06	4.36E-04	1.30E-04	7.71E-06	-4.43E-04
RW	kg	3.05E-05	1.49E-05	4.22E-08	1.10E-05	1.23E-06	1.19E-07	-5.28E-06

HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed.

End-of-life outflows

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
CR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	1.25E-03	6.31E-04	2.55E-06	1.84E-04	7.00E-01	5.77E-06	-4.37E-04
MER	kg	1.63E-04	1.74E-04	2.04E-06	5.90E-05	2.11E-05	3.38E-06	-7.35E-05
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy.

Reading example: $9,0 \text{ E-03} = 9,0 * 10^{-3} = 0,009$

Biogenic carbon content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	Kg C	0.00E+00
Biogenic carbon content in packaging	Kg C	1.04E-03

Note – 1 kg of carbon is equivalent to 44/12 kg CO₂.

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

The Norwegian national production mix from import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

National electricity grid	Unit	Value
Norwegian mix (market for electricity, ecoinvent 3.8)	g CO ₂ -eq/kWh	28.53

Dangerous substances

The product does not contain substances from the REACH candidate list (per 6.7.2013) of substances of very high concern, substances on the Norwegian priority list (as of 6/7/2013) and substances that cause the product to be classified as hazardous waste (Avfallsforskriften, Annex III). The chemical content of the product is in accordance with the Norwegian product regulations.

Moreover, Cement reacts with water to form a strong alkaline solution. Skin contact with wet cement, fresh concrete or mortar can therefore cause irritation, eczema or burns. May cause damage to products made of aluminum or other non-precious metals.

Name	CAS/ EC no.	Value
Portland cement	65997-15-1/266-043-4	30.00 – 40.00%

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contains dangerous substances, more than 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see table.

Indoor environment

Not relevant






Additional environmental information

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ eq	2.66E-01	4.89E-02	2.25E-04	1.76E-02	4.12E-03	6.94E-04	-2.23E-03

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. To increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation

Bibliography

ISO 14025:2006	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017	Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
NPCR PART A	Construction products and services (v.2.0)
NPCR 009	Part B for Technical - Chemical products for building and construction industry
Statistics Norway	Waste from building and construction (https://www.ssb.no/en/statbank/table/09781/)
NEPD-3948-2907-NO	Norcem Standardsement FA, Brevik - CEM II/B-M (V-L) 42,5 R, Norcem AS, 2022

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