

EFCA ENVIRONMENTAL DECLARATION WATERPROOFING ADMIXTURES – DECEMBER 2005.

WATERPROOFING ADMIXTURES

Admixtures are an important component of concrete, together with the cement, water, aggregates and, where applicable, reinforcing steel.

Waterproofing admixtures, more correctly called water resisting admixtures currently make up about 2% of all admixtures sold in Europe.

Waterproofing admixtures are based on salts of oleic acid, stearic acid, caprylic acid and fatty acid soaps. They may also contain water reducing admixtures to make the concrete denser and less porous.

Waterproofing admixtures are used to decrease the amount of water which is adsorbed by the hardened concrete by reducing the capillary suction.

This Eco-profile is valid for waterproofing admixtures based on salts of oleic acid, stearic acid, caprylic acid and other fatty acid soaps, which may be factory blended with other chemicals to give carefully targeted properties.

Waterproofing admixtures are usually dissolved in water and typically contain 10-43% active matter. Some waterproofing admixtures are sold in powder form in which case, the active content and nature of any carrier should be requested before this EPD is used for LCA calculations.

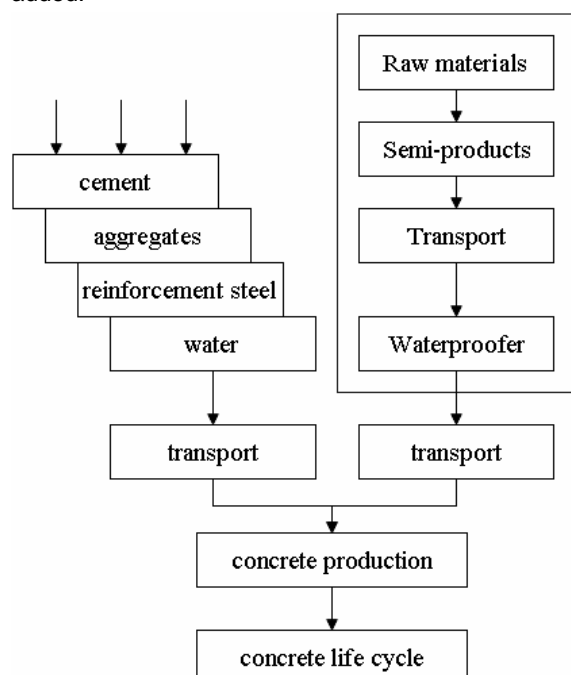
SCOPE OF THE ECO-PROFILE

The Eco-profile covers cradle-to-gate production of waterproofing admixtures in Europe. Transport of waterproofing admixtures from manufacturer to customer is not included.

Members of EFCA, the European Federation of Concrete Admixtures Associations collected manufacturing data for synthesis and blending of waterproofing admixtures in 2005. This environmental declaration is based on the figures from four of Europe's largest admixture producers and is an average of the waterproofing admixture types detailed above. The variation between these types and between manufacturers leads to relatively small differences in LCA's of concrete, however the figures should not be taken as absolute values for any one manufacturer or waterproofing admixtures type.

ENVIRONMENTAL IMPACT

The figure below reveals how the Eco-profile for waterproofing admixtures fits in a concrete life cycle. This Eco-profile includes processes shown within the dotted line. To complete the life cycle, environmental data from other materials and processes should be added.



**ECO-PROFILE WATERPROOFING
ADMIXTURES**

**Eco-profile for 1 kg waterproofing admixtures,
10-43% solids**

<i>Raw materials - input</i>	<i>Unit</i>	<i>Value</i>
coal, brown	g	14
coal, hard	g	22
crude oil	g	42
natural gas	m3	0.037
<i>Emissions to air</i>		
CO ₂	kg	0.25
CO	g	0.57
N ₂ O	g	0.20
NO _x	g	1.6
SO _x	g	0.88
Butane	mg	3.4
Ethene	mg	1.3
Hexane	mg	39
Methane	g	2.8
Pentane	mg	4.7
Benzene	mg	2.8
PAH	µg	47
Ammonia	g	0.15
Dioxins	µg	0.039
Arsenic (As)	µg	44
Chromium VI (Cr)	µg	17
Mercury (Hg)	µg	9.2
Nickel (Ni)	mg	0.42
Vanadium (V)	mg	1.2
CFC-10	µg	1.1
Halon-1211	µg	1.6
Halon-1301	µg	1.4
<i>Emissions to water</i>		
Chemical Oxygen Demand	g	1.7
Oils, unspecified	g	0.40
Nitrogen	g	0.24
Nitrate	g	8.6
Phosphorus	mg	12
Phosphate	mg	38
Barite	mg	14
Nickel (Ni)	mg	3.7
PAH's	µg	28

Indicators for 1 kg waterproofing admixtures, 10-43% solids

<i>Emissions to soil</i>	<i>Unit</i>	<i>Value</i>
Chromium VI (Cr)	µg	27
Mercury (Hg)	µg	5.3
Oils, unspecified	g	0.17
Cypermethrin	µg	3.0
Linuron	mg	6.0
Metolachlor	mg	43
<i>Solid waste</i>		
Non-hazardous waste	mg	24
Hazardous waste	mg	74
<i>Total energy</i>		
Total energy	MJ	5.6

ACCOUNTABLES

The Eco-profile is derived from primary data supplied by EFCA and its member organisations.

An independent consultancy from The Netherlands, INTRON, verified primary data and computed the Eco-profile.

Additional information for LCA practitioners:

- The Eco-profile on this sheet is valid for admixtures in a range of solids percentages. Even though this percentage may vary substantially it is not a major contributor to the total Eco-profiles and individual admixtures will all be within an acceptable range. The average profile should therefore not be related to the solids percentage of an individual admixture.
- INTRON used literature data on raw material production primarily based upon the Eco-Invent (v1.2) database. Close proximity substitution has been applied.
- Eco-Invent data contain capital goods.
- LCI data for electricity production are based on the European fuel mix.
- Substances that contribute more than 1% to the environmental impact on any of the following environmental categories have been included in the Eco-profile: ADP, GWP, ODP, HTP, TETP, FAETP, POCP, AP and EP.

The substances in the Eco-profile typically amount to at least 90-95% of the environmental impact in any category.

The membership of EFCA, the European Federation of Concrete Admixture Associations, currently consists of the following national associations:

Belgium	FIPAH		
France	SYNAD	Norway	NCCA
Germany	DB	Spain	ANFAH
Italy	ASSIAD	Sweden	SACA
Netherlands	VHB	Switzerland	FSHBZ
United Kingdom	CAA		

EFCA does its best to ensure that any advice, recommendations or information it may give is accurate. However, no liability or responsibility of any kind (including liability for negligence) is accepted in this respect by EFCA, its staff or members.

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