EWG (00) 048

Environmental Declaration of Building Materials

Instructions / guidelines for self-declaration of building materials[1]

July 1999

[1] On 10 May 2000, this document was submitted as a proposal for a new work item to ISO/TC59 Building Construction / SC3 / WG12 by the Norwegian representative.

CONTENT

INTRODUCTION

The construction industry has traditionally been a large consumer of energy and raw materials and has contributed to significant quantities of waste and emissions. Construction materials' environmental characteristics and their influence on a building's indoor air quality, etc. have however received much attention from authorities as well as consumers. Subsequently, there is currently little discussion about the necessity of the construction industry itself taking an active environmental responsibility.

Environmental data will be useful in many ways when it gives:

- Basis for choice of materials and solutions that give minimal environmental impact.
- Basis for the manufacturer to improve the product and the production process.
- Basis for an approval system.

Environmental consciousness within the construction industry is increasing, and private and public building owners have begun to set environmental requirements in conjunction with planning, design, construction, operation, maintenance and demolition of buildings. In this way environmental friendliness has become a competitive factor for many companies in the construction industry.

In recent years, the authorities have placed the construction industry in focus. Environmental friendliness in connection with a building's lifecycle has received much weight in the new plan and building legislation with accompanying Building Code.

The market seeks out a neutral environmental declaration for construction materials with a description of environmentally related impacts such that laws and regulations can more easily be followed.

ASSUMPTIONS BEHIND THE DECLARATION

1.1 Technical properties

Environmental declaration does not include a material's or product's technical qualities or use areas. These are covered in the supplier's product documentation (MSDS) and other specifications.

1.2 Working environment

The label for environmental declaration of materials and constructions does not cover the work environment during manufacture of products because that is assumed to be covered by appropriate laws and regulations. Similarly, there is no particular emphasis placed on the work environment under construction of a building as construction site safety is also assumed to be covered by appropriate laws and regulations.

1.3 ISO-standards

The form and declaration are based on the proposed ISO-standards. This includes both terminology and generally accepted routines and methods.

The environmental declaration and form is based on several standards that come under the term 'environmental marking'. These standards are found in the ISO 14000 series:

ISO 14020	Environmental labels and declarations– General principles
ISO 14021	Environmental labels and declarations – Self-declared environmental claims.
ISO 14024	Environmental labels and declarations – Environmental labelling Type I – Guiding principles and procedures
ISO 14025	Environmental labels and declarations – Environmental labelling Type III – Guiding principles and procedures

Further relevant standards and proposals for standards in the ISO 14040 series include:

ISO 14040 Principle and framework
ISO 14041 Goal and scope definition and inventory analysis
ISO 14042 Life cycle impact assessment
ISO 14043 Life cycle interpretation

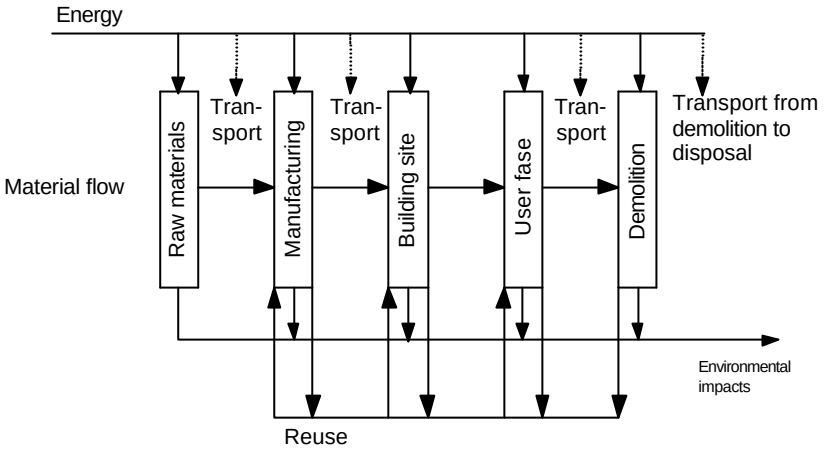
FORMATS FOR ENVIRONMENTAL DECLARATION OF MATERIALS AND CONSTRUCTIONS.

The form that is presented in this report can be used to collect data both for individual materials and entire constructions. Collected data will be an integration of current knowledge.

Data pertaining to the external as well as the inner environment are included in the form and associated environmental declaration.

1.4 Phases in the life cycle

Environmental declaration is meant to be performed for the entire life cycle of materials and constructions, in other words from 'cradle to grave'. The figure below shows the life cycle with respect to material transport, energy and environmental impacts in the different phases of a product's lifetime.



Below is a schematic presentation of the parameters included in an environmental declaration of building materials. A shaded field indicates that the listed environmental impact is not relevant in determining the given life cycle phase. An example is that there is no solid waste associated with the transport phase. This is of course a simplified presentation, as automobiles, boats, etc. are eventually scrapped. In this declaration, we have chosen to set system limits in a way that makes the problem addressable for most manufacturing companies.

Phases / Impacts	Raw-materials	Transport	Production	Transport	Building site	Use	Demolition	Transport	Burial
Energy									
Resources									
Release to air									
Release to water									
Solid wæste									
Indoor climate									

1.4.1 Transport

There will be a need for transport of raw materials, materials and products between most phases of the life cycle. The environmental impacts are dependent upon transport form, distances and quantities that must be transported. It is therefore important to include transport in the environmental declaration.

Transport will occur between the following phases.

- Raw material extraction - Manufacturing (production)
- Production – Building site
- Demolition - Burial

Transport within the different phases, for example use of forest machinery for the actual logging operation, is included in the phase for raw material extraction.

Raw materials

Raw material extraction is the first stage in the life cycle and can be defined as 'the cradle' in the life cycle. Wood products are taken from the forest, while minerals are extracted from mines, gravel pits, etc. Some raw materials used in Norway come from internal natural resources, while others are imported. Environmental impacts in connection with raw material extraction can include energy for recovery, use of dynamite, etc. Some raw materials are taken for example from local forest areas and require little energy expenditure, while other raw materials are recovered with large energy consumption (for example oil). Transport during raw material extraction will be included as an environmental impact in that phase.

Reuse and recycling of materials reduces the environmental impacts of raw material extraction. An example of this production of reinforced steel from scrap.

1.4.2 Production

Environmental impacts from production of a material or construction will primarily be in the form of energy consumption and releases to air, water or soil. The end of this phase can be called 'the gate' in a 'cradle to gate' declaration

1.4.3 Building site

One element of a construction's life cycle is the actual production of the structure. It is important in this phase to utilise excess/scrap materials. Scrap materials can be used at the site, be recycled to raw materials or the production phase or used in another product, for example reinforced steel from scrap metal. The environmental impacts from this phase are primarily energy used to build the structure and some transport that will occur within the phase.

1.4.4 User phase

The largest environmental impacts in a building's life cycle occur in the user phase. Many materials and constructions must receive periodic maintenance and in some cases replacement once or several times in the course of a building's life cycle. These points must be addressed when the environmental impact of a construction is evaluated.

<u>Operation</u>

The greatest environmental impacts here arise from the large amounts of energy required to maintain a comfortable indoor climate in a building. Energy of operation can be kept out of an environmental comparison of two products in the event that the two constructions have the same U-values.

1.4.5 Demolition

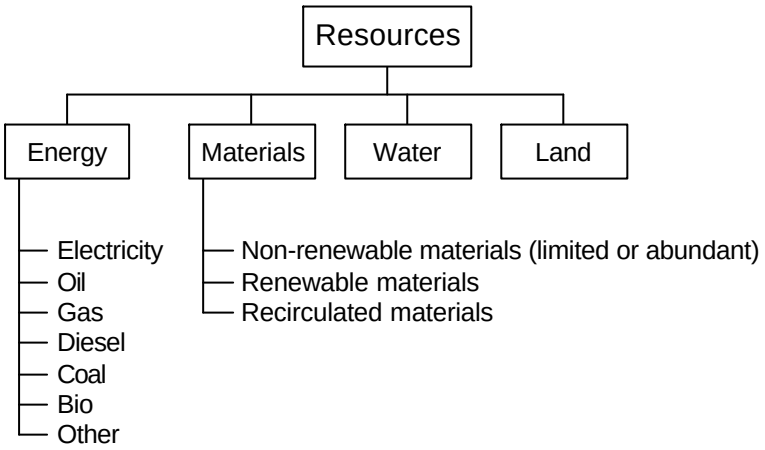
Demolition requires a certain amount of energy and the act of demolishing a structure can in some cases involve other environmental impacts

1.5 Environmental impacts

The environmental impacts here are divided primarily into resource consumption and ecological and health related impacts.

Use of resources

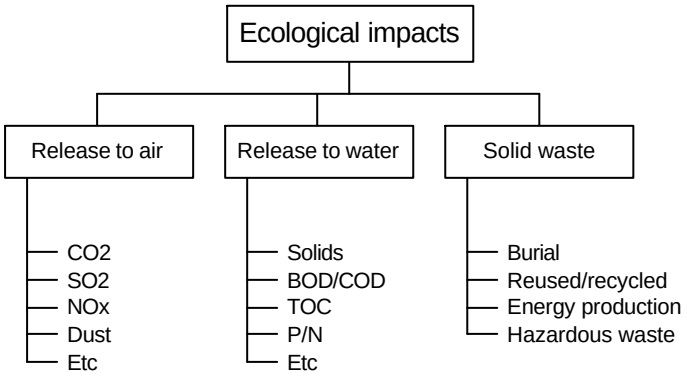
Resources are divided into *energy, materials, water and land.*



Use of *energy* involves increased environmental impact in the form of releases to air. It is especially important to reduce consumption of polluting non-renewable energy. Consumption of *materials* involves environmental impact in the form of raw material extraction, transport, deposition, etc. It is particularly important to reduce consumption of raw materials with a finite supply, those that will be depleted within the next 100 years (World Resources Institute). *Water consumption* involves a requirement for capacity in the water network as well as possible treatment of water, and therefore should be kept to a minimum. Consumption of *land* refers to sand pits, quarries, mines, landfills etc.

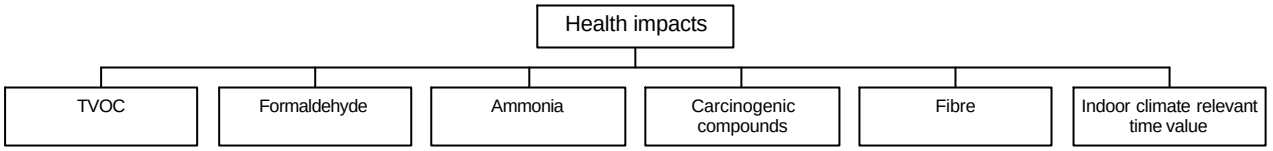
Ecological impacts

Releases that occur in the different phases of the life cycle can impact air, water and soil.



Releases to air are related to energy consumption as well as the types of materials that are used in production. It is important in this part of the declaration to include all emissions thought to be of environmental importance, and supplement the list as necessary.

Health impacts
The declaration shall also include indoor climate impacts for the products that can influence the indoor environment. Current technology and knowledge shall be used to determine the health-related impacts from the materials.



Other
Environmental impact from materials also includes how the material can be reused, recycled or possibly utilised as an energy source. This can be difficult to anticipate in the event that the material is expected to have a long lifetime. One should therefore list possibilities with current technology along with how development in these areas is expected to be.

1.6 Unit

1.6.1 Functional unit

In evaluating solutions over the entire life cycle, it is important that the product has the same functional unit such that comparisons are real. Functional unit describes the qualities of the product over a given time period. This means that if two walls are to be compared, they must for example have the same U-value, sound, fire or load-bearing properties looked at over the same lifetime. In the environmental declaration of a product, the functional unit shall be given for the products principal function over the entire life of the construction, in other words from 'cradle to grave'. This implies that maintenance, replacement, etc. shall be included in the functional unit. The lifetime of a construction is set to 60 years in an environmental declaration. The functional unit shall therefore be given for a corresponding period.

In connection with an environmental declaration of a product from 'cradle to grave', assumptions must be made with respect to construction, operation, maintenance and demolition of the structure. The functional unit of a product is therefore attached to a particular product or construction and not to a material that can be used in many types of products or constructions.

1.6.2 Product-unit

For a number of products it is difficult to assign environmental data for the entire life cycle when it is not known how the product will actually be used. This could for example be a steel product that has many possible uses or a wood panel in which the maintenance frequency is very dependent on climate. The solution in these cases can be to declare the product from 'cradle to gate' or 'cradle to construction site'. Typical units for the product can be per piece, kg, m^2, m^3 or ton.
In a declaration from 'cradle to gate', the time frame shall be included and set to 60 years.

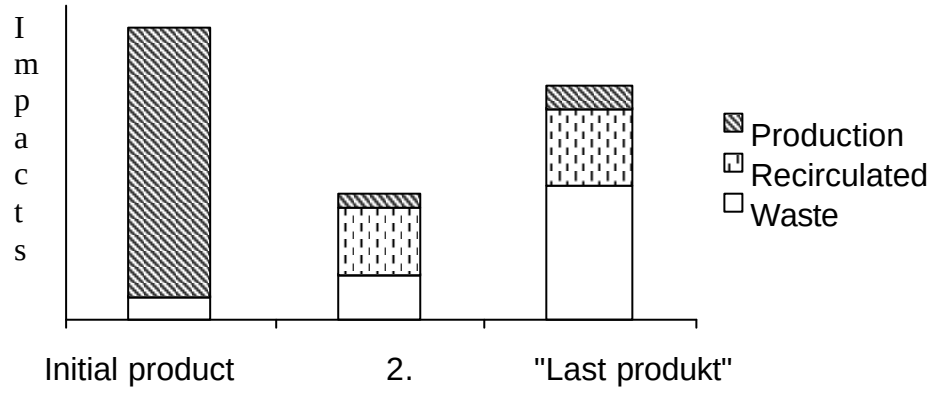
It is important in the evaluation of a product's environmental declaration to pay attention to how large a part of the life cycle the environmental declaration is valid for and what lifetime is expected for the product. This means that products to be compared must have the same functional unit.

1.6.3 Maintenance

Maintenance and replacement are dependent to a large degree on conditions that are difficult to anticipate on a general basis. The effect of climate is an important parameter that will vary considerably for many products. Furthermore, one and the same product can have many use areas that require different technical solutions. The project report "Annual Costs for Buildings", NBI reports or corresponding documents can be used to evaluate assumed intervals and lifetime. Other intervals can be used if the manufacturer believes that they are more representative, as long as this is documented. Even though there is a large degree of uncertainty associated with lifetimes and intervals, this type of information at least gives an indication of the environmental impacts through a structure's lifetime. The environmental impacts associated with this post will become more certain as knowledge about lifetimes and maintenance intervals improves.

1.7 Allocation principals

A so-called 'cut off method' is used as an allocation principal, in other words as a means for collection and structuring of energy data, releases, waste, etc. for a product.



All impacts in connection with raw materials, manufacturing and operation in combination with the transport phases are assigned to the primary product. Waste that is used in a 2nd generation product is assigned to that product as 'recycled' material and not as waste for the primary product. Waste that is not recycled is assigned to the primary product. The 2nd generation product is assigned any new raw materials, any new impacts in connection with the recirculation process for that product as well as any waste that is not recycled. The final product in the cycle is assigned the total remaining waste quantity.

The method is simple and straightforward to use. Recyclability is rewarded, both for the primary product and products based on reuse of earlier products. The primary product is assigned a minimal amount of waste when the discarded product is reused, but is assigned the full impact in connection with its manufacture. The final product in the cycle is assigned the total remaining waste quantity, but no environmental impact related to the primary production.

1.8 Life cycle data – Subproducers/distributors

A product usually consists of many raw materials/component products. It will therefore in most cases be necessary to obtain energy and environmental data for these raw materials also. In the same way as for the manufacturer of the main product, distributors must obtain documented environmental data for their products. Here there will always be a question of how far back in the production chain these distributors/subproducers should go to find the relevant data. Distributors shall obtain environmental data from 'cradle to grave'.

Ideally it would be desirable for the subproducers at level 2 to go back to their own subproducers to obtain environmental data. In the example above, this means that the binding agent manufacturer must collect the environmental documentation for his five distributors. Whether this is practical or not must be evaluated in each individual situation.

Distributors of component products that are included in a principal product are expected to fill out a simplified form (Format 2) that is used to develop a more or less complete overview over energy and environmental data for the product. These distributors shall in the same way as the principal producers also supply energy and resource consumption information as well as releases to air and water. If possible, environmental data in the form of impact categories can be given.

ENVIRONMENTAL DECLARATION

1.9 Content

The collected environmental data for the product creates a basis for an environmental declaration. The environmental declaration should contain sufficient information within the principal areas of Resource Consumption, Ecological Impacts and Health Related Impacts. The environmental data will be information in addition to the use-related qualities that the product has. The declaration says nothing about whether the product is good or bad from an environmental perspective, but is merely a presentation of the environmental impacts within the named areas.

The environmental declaration gives quantitative information about resource consumption and the ecological profile of the product. It consists of a general part where the manufacturer and production site will be listed, as well as the estimated lifetime of the product and which units the data are expressed in.

The declaration shall also contain information about how many raw materials are included as well as relevant background information about these in general and specific data. Resource consumption is given for use of total energy and distribution between electric, fossil and bioenergy. Material consumption is divided percentwise between non-renewable or scarce resources and large reserves, renewable materials and recycled materials.

The environmental impacts are presented in the form of impact categories. These are: greenhouse effect, destruction of the ozone layer, acid rain, creation of photooxidants (near surface ozone), overfertilizing, human toxicity and ecological toxicity. The first two are global effects, while the remaining are regional or local effects. The contributions from transport are presented as percentages such that they can be taken out if desired. In this way the declaration can be compared with other declarations that do not include transportation.

Waste from the product is divided into waste to landfill, waste to recycling/reuse and waste to incineration and hazardous waste.

In addition, data for indoor climate relevant time values and emissions of volatile organic compounds (TVOC), formaldehyde, ammonia and cancer causing substances. This presentation applies only for products that have relevance for indoor climate.

The environmental declaration also lists which chemicals (substance list) the product contains and in what quantities. A reference is given to the chemical's CAS number (Chemical Abstract Service) for comparison against a listing of hazardous substances from the State Pollution Protection Authority (SFT). A good place to start is the 'OBS list' available from SFT from fall 1999.

1.10 Use of declaration

Through an environmental declaration the manufacturer/distributor presents environmental data in a way that the consumer/user of the product has the ability to evaluate possible environmental impacts the product may be responsible for. It is then up to each user to determine whether the product is good enough with respect to the requirements the user himself sets. Architects, building owners and contractors are typical users in the building sector.

In time it is expected that the results of environmental declarations will be used in many connections. For example, to compare similar products to see which are the most environmentally friendly, or as a part of a construction or building where it is desired to survey the total environmental impact from the construction or building. This can again in time create a basis for the establishment of public requirements for maximum values for the environmental impacts of a building. In this connection, data will be input in the design phase to evaluate whether the environmental impacts of a structure are within acceptable limits.

Use of the results in the form of impact categories as presented here can cause problems for non-experts where they must be looked at in connection with environmental political goals or used in existing methods. There are currently many methods available for evaluating total environmental impact, and the main collection form (Format 1) for environmental declaration is presented such the data can be used in these methods. Examples of these methods are the Swedish EPS method, the Swiss Eco-point method and the Dutch ECO-indicator method.

The work of collecting environmental data also gives the manufacturer knowledge about his own process and possible potential for improvements.

1.11 Detail levels and different types of environmental declaration

Environmental declarations can be divided into many detail levels. Detail level 1 could be a qualitative declaration without quantifying the energy and environmental impacts. A declaration at detail level 2 is when quantitative information is collected concerning energy, resources, ecological and health related impacts. This level of declaration requires more work from the manufacturer than a declaration at level 1, but the data is more useful for evaluation of the product. This report is a guide for collection of data for a qualitative and quantitative self-declaration (Type II environmental marking).

According to ISO's environmental management system (ISO-14000-series), environmental product declarations can be divided into two principal types:

- Self-declared environmental declarations (Type II environmental marking), which this project is an example of.
- Independently investigated and certified environmental product declarations (Type III environmental marking), which is a comprehensive system tied to an official approval system.

In addition, there is a system for simpler environmental marking, where the Scandinavian swan marking is an example (Type I environmental marking).

A certified environmental declaration shall follow Technical Guideline 14025 from ISO and is also based on the requirements for a life cycle evaluation as defined in ISO 14040-43. This is to ensure that comparisons between different competing product solutions shall be as much as possible objective and credible. A proposal for a Norwegian system for environmental product declaration is under development. This system will give Norwegian companies an opportunity for certified environmental declarations with reference to ISO 14025.

Self-declared environmental declarations often have a simpler format and are not based on the same requirements of method and database from life cycle evaluations as the certified systems. Format 1 will create the foundation for a certification, but where one must also follow requirements of a life cycle evaluation as defined in ISO 14040-43 in the form of documented data foundation, methodology, conditions, etc.

1 Main product

Format 1.01.10.99

Manufacturer		**Contact person**			**Telephone**	**Fax**	
Address					**e-mail**		
ISO 14001/EMAS certified							
Organisation no.		**Licence**					
Functional unit	per kg and 60 years	**Used raw materials**		kg/kg including losses		**weight**	
Use		**Thickness**		mm			
Data quality	Year	**Scope**	Cradle to grave				
Service life of product	Years	**Conditions**			**Service life of building**	60 years	
Installation		**Dismantling**					
Place of production							
Marked area							

2 Functional unit - Unit

Cradle to grave	kg	and 60 years		
Cradle to gate	kg	Conversion factor from "Cradle to gate" to "Cradle to grave" =	1	kg/kg
Cradle to building site	kg	and 60 years exclusive maintenance, demolition and disposal		

Buildings with service life different from 60 years 60 years **OBS ! Standard lifetime for a building is normally set to 60 years**

		km	Transport Trucks	km	Transport Boat	km	Transport Train
Transport Raw materials-Manufacturer	see Material 1 - Material 10						
Transport Manufacturer-Building site			Large truck > 20 t		Boat > 3000 t		Train Electr Norway
Transport Building site - Disposal			Large truck > 20 t		Boat > 3000 t		Train Electr Norway

3 Resources

Energy

Production	Building site	Use	Demolition	Disposal		Unit	Raw materials	Transport	Manufac.	Cradle to gate	Transport	Building site	Cradle to building site	Use	Demolition	Transport	Disposal	Cradle to grave
							Functional unit: per kg and 60 years											
									Cradle to gate (per kg)			Cradle to building site (per kg)						Cradle to grave (per kg)
Belgian	Norwegian	Norwegian	Norwegian	Norwegian	**Electricity**	kWh												
Light oil	Light oil	Light oil	Light oil	Light oil	**Oil**	kWh												
Propane	Propane	Natural gas	Natergas	Propane	**Gas**	kWh												
Black coal	Steam in kg				**Coal**	kWh												
					Steam	kWh												
					Bio energy	kWh												
					Feedstock (fossil)	kWh												
					Feedstock (bio)	kWh												

Materials	Type																
New materials		kg															
	F = renewable materials	kg															
	K = non renewable materials, but shortage	kg															
	U = non renewable materials, but abundant	kg															
		kg															
		kg															
		kg															
		kg															
		kg															
		kg															
Recycled materials	Type																
	F = renewable materials	kg															
	K = non renewable materials, but shortage	kg															
	U = non renewable materials, but abundant	kg															
		kg															
		kg															
		kg															
		kg															
		kg															
		kg															
		kg															

		Unit	Raw materials	Transport	Manufac.	Cradle to gate	Transport	Building site	Cradle to building site	Use	Demolition	Transport	Disposal	Cradle to grave
Materials that radiate		kg												
Use of chemicals (Obs-list) in production	CAS-	g												
	CAS-	g												
	CAS-	g												
	CAS-	g												
Water	Potable water	kg												
	Other water	kg												
Land		m²a												
4 Ecological burdens														
Emissions to air	CO2	g												
	CO	g												
	SO2	g												
	NOx	g												
	NMVOC	g												
	Particles	g												
	CH4	g												
	N2O	g												
	NH3	g												
	Pb	g												
	Cd	g												
	Hg	g												
	Ni	g												
	Zn	g												
	As	g												
		g												
		g												
		g												
		g												
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		g												
		g												
Discharge to water	Particles	g												
	COD	g												
	BOD	g												
	P	g												
	N	g												
		g												
		g												
		g												
		g												
		g												
Solid waste treatment	Disposal	g												
	Reuse/recycling	g												
	Energy production	kWh												
	Special disposal	g												
	Embodied energy	kWh												

5 Health impacts	Not relevant		Unit	Raw materials	Transport	Manufac.	Cradle to gate	Transport	Building site	Cradle to building site	Use	Demolition	Transport	Disposal	Cradle to grave
Indoor environment		TVOC	µg/h												
		VOC_1	µg/h												
		VOC_2	µg/h												
		VOC_3	µg/h												
		VOC_4	µg/h												
		VOC_5	µg/h												
Emissions indoor environment		Formaldehyde H_2CO	µg/h												
		Ammonia NH_3	µg/h												
		Carcinogenic compounds	µg/h												
		Indoor climate relevant time value	uker												
		Fibre	g/m³												
		Other													
Working environment		Noise	dB(A)												
		Dust	g												
		TVOC	µg/h												
		Odour													
		Ergometric/Lift													
Emission during fire		To air													
		To water													
6 Others															
Accessories	Not included		g												
	Not included		g												
	Included	Overlap	mm												
Returned arrangement															
Packaging	Not included	Reuse of own packaging	No	Plastic	kg										
			No	Cardboard	kg										
			No	Wood	kg										
			No	Steel	kg										
Returned arrangement packaging															
Storing															
		Temperature	°C												
		Humidity	%												
		Time	days												

Raw material manufacturer - supplier

Format 2/01.10.99

Main product

Manufacturer					**Production place:**		
Product:					**Data year:**		
Data only for manufacturing process			or cradle to gate		**Type of data:**	Data missing	
Transport			Distance				
			km		**Transport form**	Large truck > 20 t	
			km		**Transport form**	Boat > 3000 t	
			km		**Transport form**	Train Electr Norway	
	Unit given as: per kg				Converting factor =	1,00 kg/kg	
Energy		**Quantity**	**Unit**	**Comments**			
European	Electricity		kWh/kg				
Lettolje	Oil		kWh/kg				
Naturgass	Gas		kWh/kg				
Steinkull	Coal		kWh/kg				
	Steam		kWh/kg	Steam	kg/kg		
	Bio energy		kWh/kg				
	Feedstock (fossil)		kWh/kg				
	Feedstock (bio)		kWh/kg				
	Diesel		kWh/kg	Transport			
Resources			kg/kg				
			kg/kg				
			kg/kg				
			kg/kg				
Chemicals (Obs-list)	CAS-		g/kg				
	CAS-		g/kg				
	Water		kg/kg				
	Land		m²/year and kg				
						Transport	
Emission to air	CO2		g/kg	CO2			g/kg
	CO		g/kg	CO			g/kg
	SO2		g/kg	SO2			g/kg
	NOx		g/kg	NOx			g/kg
	NMVOC		g/kg	NMVOC			g/kg
	Part.		g/kg	Part.			g/kg
	CH4		g/kg	CH4			g/kg
	N2O		g/kg	N2O			g/kg
	NH3		g/kg	NH3			g/kg
	Pb		g/kg	Pb			g/kg
	Cd		g/kg	Cd			g/kg
	Hg		g/kg	Hg			g/kg
	Ni		g/kg	Ni			g/kg
	Zn		g/kg	Zn			g/kg
	As		g/kg	As			g/kg
			g/kg				
			g/kg				
			g/kg	**Handling of used packaging materials**			
			g/kg		Not included		
			g/kg	**Material**	**Use**	**Unit**	**Quantity**
					Disposal	kg/kg	
Discharge to water	Substance/fibre		g/kg		Disposal	kg/kg	
	COD		g/kg		Disposal	kg/kg	
	BOD		g/kg		Disposal	kg/kg	
	P		g/kg				
	N		g/kg	**For energy production**			
			g/kg	**Material**		**Unit**	**Heating value**
			g/kg			kWh/kg	
			g/kg			kWh/kg	
						kWh/kg	
Solid waste	Til deponi		g/kg			kWh/kg	
	Til gjenbruk/gjenv.		g/kg				
	Til energi		kWh/kg				
	Spesialavfall		g/kg				

* All materials in the process which are > 2 weight %

kg per kg

ENVIRONMENTAL DECLARATION OF

Product description			
Manufacturer			
Organisation no.			
ISO 14001/EMAS certified			
Functional unit	per kg and 60 years		
Basert på data fra		**Service life of building**	60 years
Service life of product	years		
Place of production			
Marked area			
Scope	Cradle to grave	**Packaging**	Not included

Use of resources and Ecoprofile

Scope of raw materials	% of raw materials are "Cradle to gate" data
Prosentage of total materials included in this declaration	% of all raw materials
Prosentage of raw materials with environmental data	% of total weight of all raw materials
Prosentage of raw materials with specific environmental data	% of total weight of all raw materials

Resources, raw materials	**Quantity**	**Unit**	**Main content**			
Total energy consumption		kWh				
Electric energy		kWh		kWh		kWh
Fossil energy (Feedstock incl.)		kWh	Feedstock fossil		Transp.	
Steam		kWh				
Bio energy (Feedstock incl.)		kWh	Feedstock bio		Packaging	
Non-renewable materials (abundant)		%				
Non-renewable materials (limited)		%				
Renewable materials		%				
Recycled materials		%	Renewable:	Limited:	Abundant:	

Environmentally impacts	**Quantity**	**Unit**	**Transport**	**Comments**
Global warming		kg CO_2-eqv.		
Ozone depletion		kg ODP		
Acidification		kg SO_2-eqv.		
Formation of photo-oxidants		kg POCP		
Eutrophication		kg PO_4-eqv.		
Human toxicity		kg		
Ecotoxicity		m^3		

Disposal treatment	**Quantity**	**Unit**	**Main contribution from**
Waste to deposit		kg	
Reuse/recycle		kg	
Energy production		kWh	
Hazardous waste to treatment		kg	

Indoor environment			**Not relevant for this product**
Emissions indoor environment			

Chemicals, see also sheet Chemicals			**No chemicals from the Obs-list are used**