

ENVIRONMENTAL DECLARATION ISO 14025 and ISO 21930



Steel structures of HSQ, ISQ and HSK sections

EPD

Foundation for Environmental
Declarations in Industry



NEPD no.: 076

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Bjørn Green

Independent verification of conformity

We confirm that this environmental declaration has been carried out according to ISO 14044, ISO 14025 and ISO 21930, and Product category rules (PCR) of Steel as construction materials. The documentation has been carried out with the EcoDec-tool.

The declaration has been prepared by:

SINTEF Byggforsk SINTEF

Sune Fosshol

Oslo : 15.08.2007

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Manufacturer

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ISO 14001/EMAS etc. : ISO 14001: 2003-OSL-SYMI-8195
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Background information

Scope
Year of study
Expected service life of building
Service life of product

Cradle to grave
2005
60 years
100 years

Functional unit (FU)

kg building frame structure with a service life of 60 years

Product description

HSQ, ISQ og HSK sections are made of welded hot-rolled steel plates used in building frame structures. Plates are made by European manufacturers. Sections are prefabricated and erected on-site by Norwegian steel contractors.
Dimensions: H = 150-600, B1 = 110-600, B2 = 140-700, d = 5-12, t1/t2 = 6-60. The requirements of the EN 10025 standard are applied. The standard steel grade is S355. Density of steel: 7,850 kg/m³.

Product specification

	Part %	Quantity (kg/FU)
Steel sections	99,8 %	1,00
Paint (Alkyde)	0,2 %	0,00
SUM	100,0 %	1,00

Environmental Indicators

Global warming	1,5	kg CO2 equiv.
Energy use	58,5	MJ
Recycled materials	89	%
Recovery Rate steel	96	%
Indoor air classification (Classification according to CR 1752:1999)	No information	

Use of resources

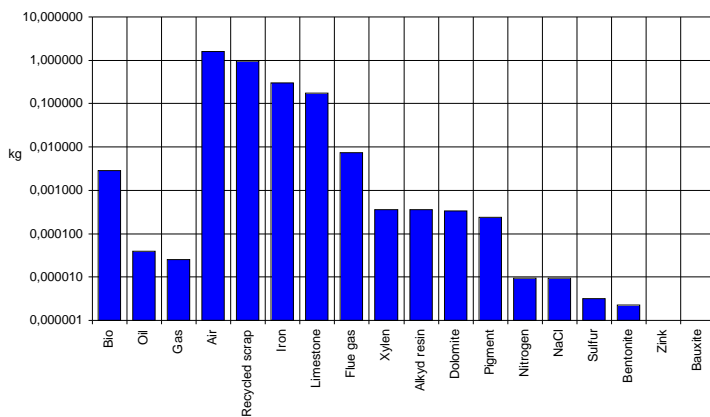
Material resources

R = Recycled materials
* = Feedstock

All figures refer to functional unit (FU)

	Type	Unit	Raw materials	Manufacturing + packaging	Building site	Use	Demolition/ Disposal	Transport	Total
Renewable materials									
Bio	*	kg		2,9E-03					2,9E-03
Non-renewable materials									
Oil	*	kg		4,0E-05					4,0E-05
Gas	*	kg		2,6E-05					2,6E-05
Air		kg	1,6E+00						1,6E+00
Recycled scrap	R	kg	9,7E-01						9,7E-01
Iron		kg	3,0E-01						3,0E-01
Limestone		kg	1,7E-01						1,7E-01
Flue gas		kg	7,3E-03						7,3E-03
Xylen		kg	3,6E-04						3,6E-04
Alkyd resin		kg	3,6E-04						3,6E-04
Dolomite		kg	3,3E-04						3,3E-04
Pigment		kg	2,4E-04						2,4E-04
Nitrogen		kg	9,3E-06						9,3E-06
NaCl		kg	9,3E-06						9,3E-06
Sulfur		kg	3,1E-06						3,1E-06
Bentonite		kg	2,3E-06						2,3E-06
Zink		kg	8,2E-07						8,2E-07
Bauxite		kg	4,4E-07						4,4E-07

Material resources total



Renewable materials 0 %, Non-renewable materials 100 %, Recycled materials 89 %

The product does not contain tropical wood.

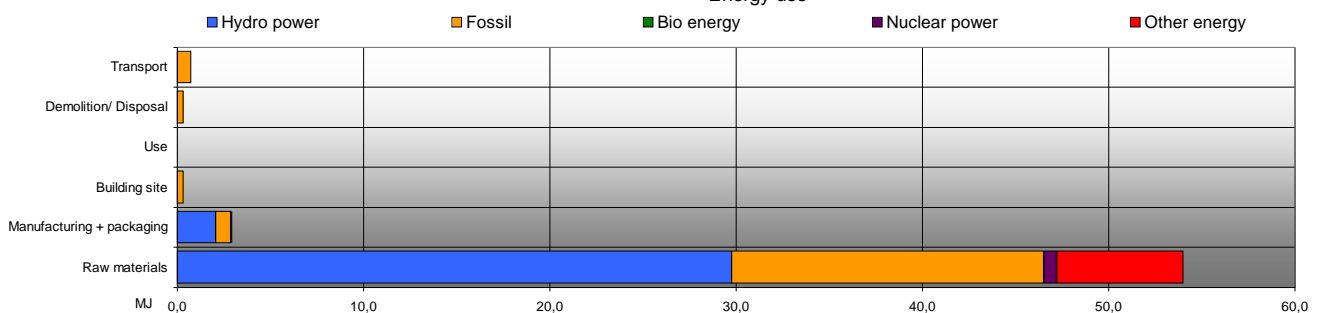
Consumption of chemicals on the Norwegian observation list

CAS-number	Risk phrases	Quantity	Unit
64742-95-6	10, 37, 51/53	7,1E-02	g
			g
			g
			g
			g
			g
Total		7,1E-02	g

Energy resources

	Unit	Raw materials	Manufacturing + packaging	Building site	Use	Demolition/ Disposal	Transport	Total
Renewable energy								
Hydro power	MJ	3,0E+01	2,1E+00					3,2E+01
Bio energy	MJ		6,8E-03					6,8E-03
Non-renewable energy								
Oil	MJ	1,7E-01	5,9E-01	3,6E-01		3,6E-01	7,5E-01	2,2E+00
Gas	MJ	4,0E+00	2,1E-01					4,2E+00
Coal	MJ	1,3E+01	2,4E-02					1,3E+01
Nuclear power	MJ	6,8E-01	5,1E-02					7,3E-01
Other energy	MJ	6,8E+00	1,2E-02					6,8E+00
Total								5,8E+01

Energy use



Water

Potable water 1,2E-02 m³

Land

Land used 0,00 m²

5 sep 2027 / version 100

H50 ISO HSK steel structures E 76 Corrigé V10 GP.xls

Emissions and environmental impacts

Environmental impacts

	Unit	Raw materials	Manufacturing + packaging	Building site	Use	Demolition/ Disposal	Transport	Total
Climate change	kg CO ₂ - equiv.	1,3E+00	7,4E-02	2,9E-02		2,9E-02	5,6E-02	1,5E+00
Ozone depletion	kg ODP - equiv.	4,9E-13	6,5E-12	4,0E-12		4,0E-12		1,5E-11
Acidification	kg SO ₂ - equiv.	4,4E-03	1,9E-04	9,9E-05		9,9E-05	4,2E-04	5,2E-03
Formation of photochemical oxidants	kg POCP- equiv.	4,4E-04	9,9E-04	7,0E-06		7,0E-06	5,0E-05	1,5E-03
Eutrophication	kg PO ₄ - equiv.	3,6E-04	1,4E-05	5,8E-06		5,8E-06	7,4E-05	4,6E-04

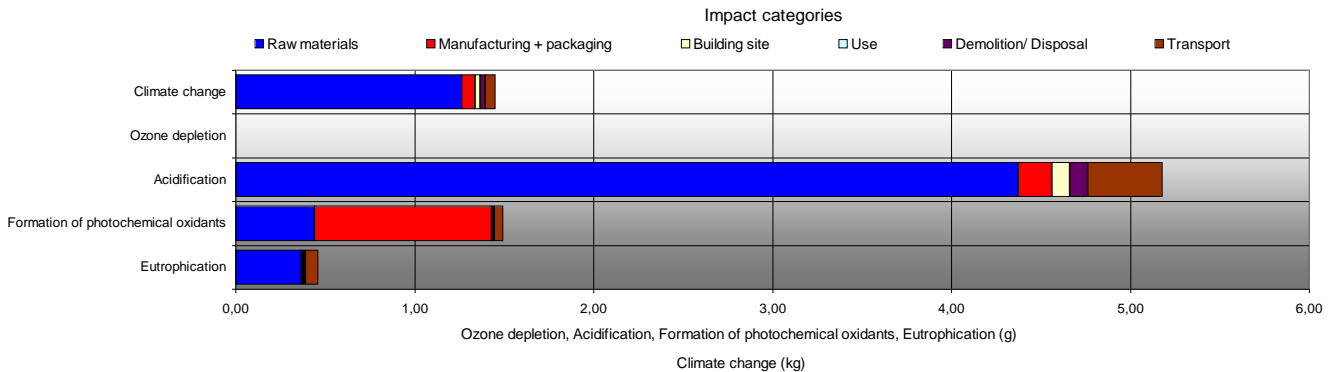
All figures refer to functional unit (FU)

Emissions to air

	Unit	Raw materials	Manufacturing + packaging	Building site	Use	Demolition/ Disposal	Transport	Total
CO ₂	g	1,2E+03	7,3E+01	2,9E+01		2,9E+01	5,5E+01	1,4E+03
CO	g	6,2E+00	3,0E-02	6,3E-03		6,3E-03	2,5E-01	6,5E+00
SO ₂	g	2,5E+00	1,2E-01	6,8E-02		6,8E-02	2,1E-02	2,8E+00
NO _x	g	2,6E+00	1,0E-01	4,4E-02		4,4E-02	5,7E-01	3,3E+00
NMVOG	g	1,7E-01	2,4E+00	5,5E-03		5,5E-03	6,5E-02	2,6E+00
Particles	g	1,4E+00	4,2E-03	5,4E-04		5,4E-04	4,3E-02	1,4E+00
CH ₄	g	1,2E+00	3,3E-02	1,4E-03		1,4E-03	2,6E-03	1,3E+00
N ₂ O	g	9,2E-02	7,9E-04	2,0E-04		2,0E-04	6,5E-04	9,4E-02
NH ₃	g	1,0E-03	4,3E-04	2,2E-04		2,2E-04		1,9E-03
Pb	g	9,6E-04	1,4E-07				1,9E-06	9,6E-04
Hg	g	1,7E-04	1,4E-07					1,7E-04
HF	g	2,8E-07	2,9E-06	1,8E-06		1,8E-06		6,8E-06
HCl	g	4,9E-02	7,2E-06	2,0E-06		2,0E-06		4,9E-02
Benzene	g	4,6E-07	3,4E-08				1,3E-03	1,3E-03
KCFC-22	g	1,4E-08	1,9E-07	1,2E-07		1,2E-07		4,4E-07
H ₂ S	g	4,1E-02						4,1E-02
Zn	g	1,3E-02						1,3E-02
Cd	g	3,9E-05						3,9E-05

Emissions to water

COD	g	6,0E-02	1,8E-04					6,0E-02
BOD	g	1,8E-06	4,3E-05					4,5E-05
Phosphorus P	g	3,4E-03	1,4E-07					3,4E-03
Nitrogen N	g	1,6E-02	2,5E-07					1,6E-02
Fe	g	4,9E-02						4,9E-02
Pb	g	4,6E-04						4,6E-04
Cr	g	6,6E-05						6,6E-05



Indoor environment

TVOC	No information	µg/m ² h	Measured after 28 days
Formaldehyde	No information	µg/m ² h	Measured after 28 days
Ammonia	No information	µg/m ² h	Measured after 28 days
Carcinogenic compounds	No information	µg/m ² h	Measured after 28 days
Classified as category	No information		Classification according to CR 1752:1999

Noise	No information	dB(A)
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The paint used have not been classified, but according to the manufacturer it is expected there will be no impact on the indoor environment.

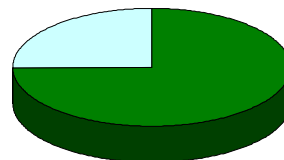
Waste treatment

All figures refer to functional unit (FU)

	Unit	Raw materials	Manufacturing + packaging	Building site	Use	Demolition/ Disposal	Total
Reuse/ recycling	kg		4,6E-02			9,6E-01	1,0E+00
Energy production	kg		3,0E-06				3,0E-06
Waste to land fill	kg	2,9E-01	1,1E-02			4,2E-02	3,4E-01
Hazardous waste	kg	4,4E-05	3,1E-04				3,6E-04
Radioactive waste	g		6,0E-04				6,0E-04

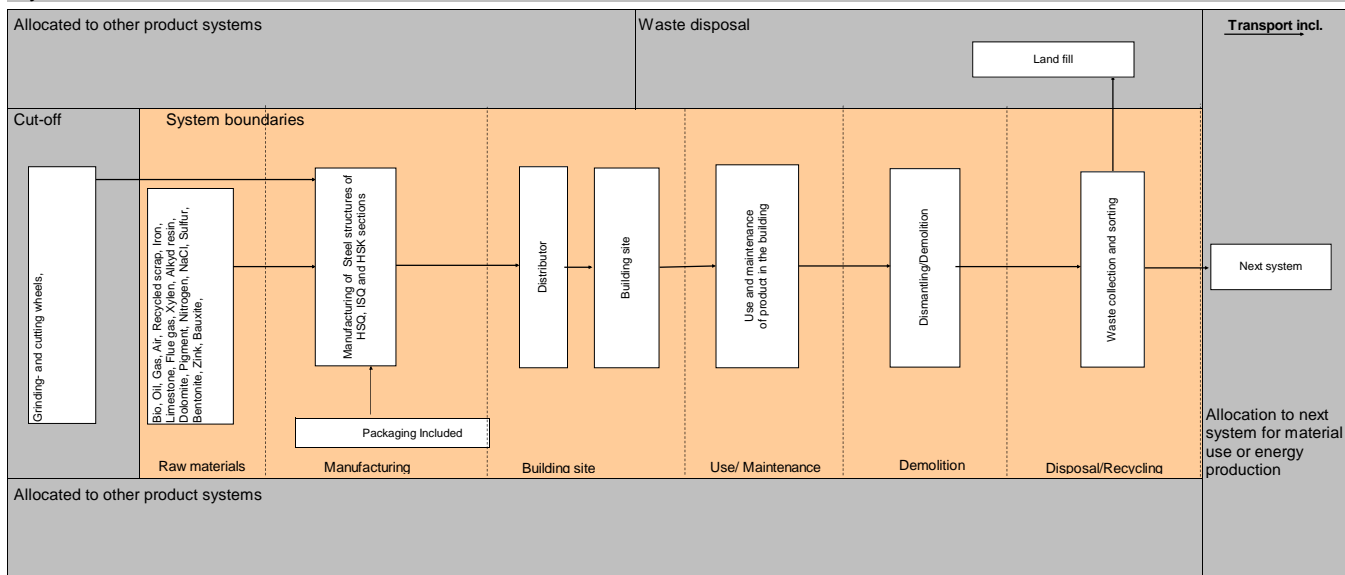
Waste treatment

The whole building frame structure will be reused/recycled.



■ Reuse/ recycling
■ Waste to land fill
■ Energy production
■ Hazardous waste

System boundaries



Uncertainty	±	10 %
Scope of data (average)		100 %
Materials with product specific data		7 %
Cut-off		0,04 %

References: Sintef Byggeforsk Report 20958

Contiga AS is manufacturing steel and concrete products in Oslo, Moss, Fredrikstad, Kongsvinger, Flisa and Stjørdal.

This EPD is based on the manufacturing process in Kongsvinger.

Contiga AS is certified according to ISO 9001, certificate no: 95-OSL-AQ-6299 and ISO 14001, certificate no: 2003-OSL-SYMI-8195 from Det Norske Veritas.