



Cendec

ENVIRONMENTAL PRODUCT DECLARATION

In agreement with ISO 14025:2006

PRODUCT CATEGORY RULES AND PCR BASIC MODULE

CPC Division (not available): CONSTRUCTION PRODUCTS

AND

CPC Division 54: CONSTRUCTION SERVICES

2013-02-21 version 1.1.



ENVIRONMENTAL PRODUCT DECLARATION OF PORTLAND CEMENT



REV. 0 Date 20th August 2013

Number: 3013EPD-13-0360

S-P-00461 Portland cement

Organization:	Holcim (Česko) a.s., člen koncernu	Registration No. / VAT 274650/CZ15052320
Address	Tovární 296 Prachovice Czech Republic	
Statutory body	Michael Suter	
EPD representative	Ing. Milena Slepíčková Specialist AFR&Environment	
Contact	Phone: +420 602707682 E-mail: milena.slepickova@holcim.com	www.holcim.cz

Product:	Portland cement
Use:	Preparation of concrete, mortar, grout and other mixtures for building and for the manufacture of construction products
Product lifetime /days/:	The products are under warranty for 90 days.
Hazardous substance contents:	Yes/No
UN CPC:	CPC Division (not available): Construction Products and CPC Division 54: Construction Services



1 PROGRAMME RELATED INFORMATION

1.1 NAME OF THE PROGRAMME AND PROGRAMME OPERATOR

Programme operator for this EPD is Cendec® with affiliation to International EPD®system. Cendec® is Czech Type III environmental declaration operator which is affiliated to the International EPD®system by Memorandum of Understanding signed January 10th 2013.

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1.2 THE REFERENCE PCR DOCUMENT

The reference documents for this EPD are General Programme Instructions (IEC 2008) and Product Category Rules for CPC Division (not available): Construction Products and CPC Division 54: Construction Services (IEC 2012). Product Category Rules (PCR) are specified for specified information modules “cradle-to-gate”, so called core modules. The structure and aggregation level of the core modules is defined by the United Nation Statistics Division - Classification Registry CPC codes (<http://unstats.un.org>).

1.3 REGISTRATION NUMBER

The registration number of this EPD is: 3013EPD-13-0360

1.4 DATE OF PUBLICATION AND VALIDITY

The publication date of this EPD is: 20.8.2013

This EPD is valid until: 20.8. 2016

1.5 GEOGRAPHICAL SCOPE OF APPLICATION OF EPD

The geographical scope of this EPD is international.

1.6 INFORMATION ABOUT THE YEAR OR REFERENCE PERIOD OF THE UNDERLYING DATA TO THE EPD

The reference period to this EPD is year 2011. Data shown below refers to 2011 and have been collected directly from the Holcim (Česko), a.s. Other general data used for LCA calculations from the ILCD and Ecoinvent database were taken.

1.7 REFERENCE TO THE WEBSITE

More information related to The International EPD® System programme is available at www.environdec.com. More information related to Czech type III environmental declaration programme is available at www.cendec.cz.



2 PRODUCT RELATED INFORMATION

Trade name of product: **Portland cement: CEM I 52.5R; CEM I 42.5R; CEM II AS 52.5N; CEM IIA-S 42.5R; CEM II A-LL 42.5R; CEM II B-S32.5R; CEM II B-M (S-V)32.5R; CEM II B-M (S-V-LL)32.5R; CEM III B 32.5N-SV; Doroport TB25 and MC 12.5.**

Unequivocal identification of the product according to the CPC classification system: **CPC Division (not available): Construction Products and CPC Division 54: Construction Services.**

2.1 SPECIFICATION OF THE COMPANY

The Portland cement is produced in Holcim (Česko) a.s., člen koncernu, Tovární ul. 296, CZ - 538 04 Prachovice.

Registration No. / VAT No.: 274650 / CZ15052320

The company is recorded in the Company Register kept by the Regional Court in Hradec Králové, Section B, File 134.

Main activity of the Company is production of Common cements and Soil stabilization products. Holcim (Česko) a.s. is a company having ISO 9001 Quality management system, ISO 14001 Environmental management system and OHSAS 18001 Occupational health and safety management system certificated.

2.2 TECHNICAL DESCRIPTION OF THE PRODUCT

The Portland cements produced in Holcim (Česko) a.s. is the basic building material for the construction of buildings and civil engineering works.

Major use cement as a component of cement concrete covers a wide range of applications, especially in the area of infrastructure (buildings, roads, bridges, dams).

This EPD covers all Holcim (Česko), a.s. portland cements produced by the same technological procedure. This EPD is valid for in table 1 summarized Portland cements:

Table 1: Product description

Trade name	Significant characteristic	Recommended use
CEM I 52.5R	High ultimate strength	Strenuous construction of reinforced concrete
CEM I 42.5R	The rapid increase in initial strength	Production of the highest classes of concrete
CEM IIA-S 42.5R	The rapid increase in initial strength	Production of reinforced and prestressed concrete
CEM II A-LL 42.5R	High final strength comparable to portland cement	Production of reinforced and prestressed concrete
CEM II B-S32.5R	Lower hydration heat during the process of solidification	Concrete mixtures of lower and upper classes
CEM II B-M (S-V)32.5R	Increased resistance to the aggressive environment in direct proportion to the	Bulky and large concreting



	conten of the slag	
CEM II B-M (S-V-LL)32.5R	Production of plain concrete, masonry mortars and plasters	Suitable for the production of underlying screeds and concrete
CEM III B 32.5N-SV	Suitable aggressive environment in water and higher temperature environments	Suitable aggressive environment in the water and higher temperature environments
Doroport TB25	Special hydraulic binder	Suitable for base layers
MC 12.5	Masonry cement	Production of masonry mortars and plasters

2.3 DECLARED UNIT

According to the EN 15804 and PCR (IEC 2012) the declared unit is 1 000 kg of cement.

2.4 DESCRIPTION OF UNDERLYING LCA-BASED INFORMATION

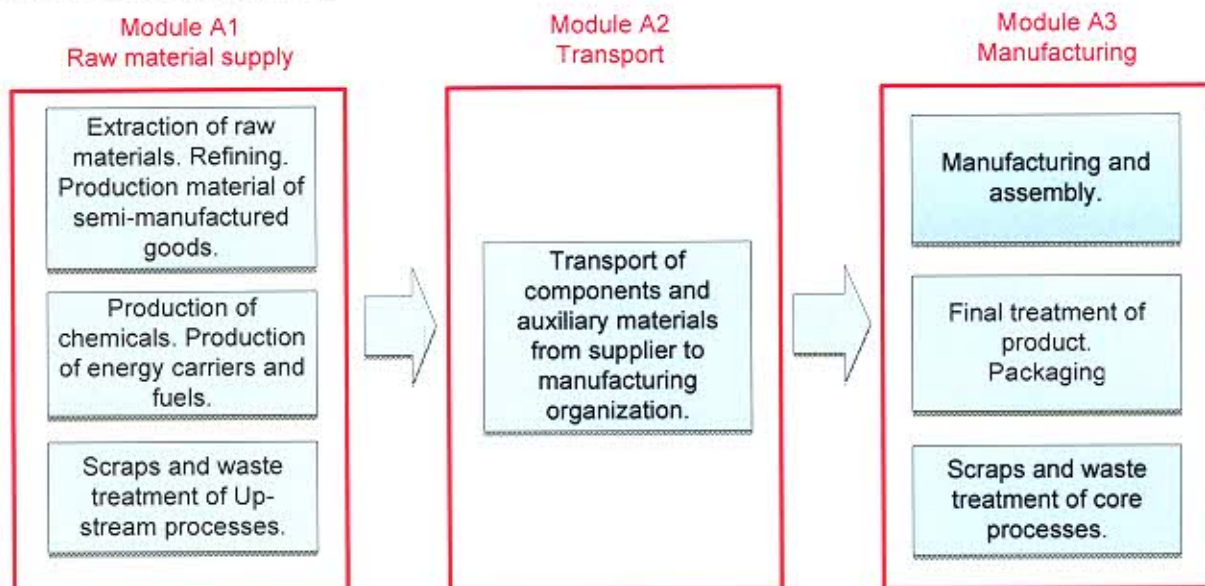
2.4.1 SYSTEM BOUNDARIES

System boundaries of this EPD are cradle to gate. Based on EN 15804 The International EPD® system has adopted an LCA calculations procedure which is separated into different life cycle stages, so called modules A1, A2 and A3:

- Module A1: Upstream processes including fuels and electricity production
- Module A2: Transport of inputs to producer
- Module A3: Core processes including waste processing

Schematic description of system boundaries consisting of up-steam module processes, core processes and down-stream processes is shown on following figure.

Figure 1 System boundaries



Based on PCR (IEC 2012) the downstream module was not included into system boundaries. Transport of final product to a customer is also excluded.



2.4.2 DATA QUALITY

All relevant data are specific data. Data used for calculation were relevant for year 2011. Data set needed for calculation is complete.

2.4.3 LCA STUDY

The LCA calculations rules used for this declaration outlines the overall requirements to follow for The International EPD[®] System. These rules follow the international standards ISO 14040 and ISO 14044 with respect to EN 15804. The product system for this LCA has been described by using specific data when available; generic data have been used in accordance with PCR (IEC 2012) and GPI (IEC 2008) requirements. Underlying LCA study used for this EPD was complete covering all relevant inputs. For LCA study site specific data from producer were used. The LCA was conducted in year 2013. Underlying LCA study was elaborated by LCA studio, www.lcastudio.cz (Kočí 2013).

2.5 CONTENT OF MATERIALS AND CHEMICAL SUBSTANCES

The hazardous chemical substances are not present in the product. The portland cements consist of clinker, slag, fly ash, industry gypsum, dust and limestone. Detailed composition of products is HOLCIM (Česko), a.s. know-how and cannot be published.

3 ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

All environmental performance is reported per declared unit 1 000 kg of cement.

3.1 USE OF NATURAL RESOURCES

Following tables report the main consumption of resources for production of cement. Dominant material resources used are limestone, hard coal and lignit. Use of resources in kg/D.U and in MJ/D.U. is documented in following tables. All energy data are expressed as MJ of net caloric value.

Table 2 Resource consumption (kg) associated with CEM I 52.5R production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	1,57	0,65	0,92	-0,001
Hard coal (resource)	64,35	64,35	0,00	-0,005
Lignite (resource)	87,87	87,87	0,01	-0,004
Natural gas (resource)	2,88	2,81	0,07	-0,003
Limestone (calcium carbonate)	1439	2,19	0,01	1437
Water	137425	136591	166	667

Table 3 Resource (MJ) and electricity consumption associated with CEM I 52.5R production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy resources	3303,4	3261,2	42,6	-0,4
Renewable energy resources	88,33	86,70	1,67	-0,04
Electricity, MJ				589,7



Table 4 Resource consumption (kg) associated with CEM I 42.5R production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	1,65	0,66	0,97	0,019
Hard coal (resource)	60,52	60,52	0,00	0,000
Lignite (resource)	77,47	77,46	0,01	-0,004
Natural gas (resource)	2,62	2,53	0,08	0,008
Limestone (calcium carbonate)	1399	1,93	0,01	1397
Water	120448	119624	175	649

Table 5 Resource (MJ) and electricity consumption associated with CEM I 42.5R production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy resources	3015	2969	45	2
Renewable energy resources	78	76	2	0,01
Electricity, MJ				514,8

Table 6 Resource consumption (kg) associated with CEM II AS 52.5N production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	1,81	0,73	1,08	-0,001
Hard coal (resource)	64,49	64,49	0,00	-0,004
Lignite (resource)	103,84	103,83	0,01	-0,004
Natural gas (resource)	3,24	3,16	0,09	-0,003
Limestone (calcium carbonate)	1380	2,63	0,01	1377
Water	164372	163537	195	640

Table 7 Resource (MJ) and electricity consumption associated with CEM II AS 52.5N production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy resources	3636	3587	50	0
Renewable energy resources	105	103	2	0
Electricity, MJ				709,9

Table 8 Resource consumption (kg) associated with CEM IIA-S 42.5R production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	1,69	0,57	1,12	-0,001
Hard coal (resource)	53,89	53,89	0,01	-0,004
Lignite (resource)	64,27	64,27	0,01	-0,003
Natural gas (resource)	2,24	2,15	0,09	-0,002
Limestone (calcium carbonate)	1222	1,59	0,01	1220



carbonate)				
Water	99312	98544	202	567

Table 9 Resource (MJ) and electricity consumption associated with CEM IIA-S 42.5R production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy resources	2601,1	2549,8	51,6	-0,4
Renewable energy resources	65,3	63,3	2,0	0,0
Electricity, MJ				422,0

Table 10 Resource consumption (kg) associated with CEM II A-LL 42.5R production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	1,46	0,59	0,87	-0,001
Hard coal (resource)	54,52	54,52	0,004	-0,004
Lignite (resource)	65,59	65,59	0,01	-0,004
Natural gas (resource)	2,26	2,19	0,07	-0,003
Limestone (calcium carbonate)	1326	1,62	0,01	1325
Water	101435	100662	158	615

Table 11 Resource (MJ) and electricity consumption associated with CEM II A-LL 42.5R production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy resources	2631,5	2591,6	40,4	-0,4
Renewable energy resources	66,19	64,65	1,58	-0,04
Electricity, MJ				431,2

Table 12 Resource consumption (kg) associated with CEM II B-S32.5R production. Data are referred to D.U.

Kg/DU	Suma	Module A1	Module A2	Module A3
Crude oil (resource)	2,05	0,51	1,54	-0,001
Hard coal (resource)	42,25	42,25	0,01	-0,003
Lignite (resource)	56,74	56,73	0,01	-0,003
Natural gas (resource)	1,95	1,82	0,12	-0,002
Limestone (calcium carbonate)	939	1,42	0,02	937
Water	88744	88031	277	435

Table 13 Resource (MJ) and electricity consumption associated with CEM II B-S32.5R production. Data are referred to D.U.

MJ/DU	Suma	Module A1	Module A2	Module A3
Non renewable energy	2199,3	2128,6	71,0	-0,3



