S.A. Cimenteries CBR Cementbedrijven N.V.
attn Mr. F. Vandervelde
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Date
17 February 2023

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Your reference
-

Our reference
A142870/BU20231039/BRo

Subject
Validated environmental data

Dear Mr. Vandervelde,

In 2021 SGS INTRON produced a life cycle assessment (LCA) of various cements produced by CBR for the Belgian market[1]. CBR has asked SGS INTRON to produce documents to be able to share the results with stakeholders.

In this letter the LCA results for CEM I/52,5 R are presented. In the LCA report this cement is also referred to as: G3

Scope and declared unit

In the LCA calculations only the production of the cement is included (EN 15804 modules A1, A2 and A3).

The declared unit in the LCA is:

1 metric ton of cement

[1] B. Roijen, Life Cycle Assessment of Cements produced by Heidelberg Cement for Belgian market Final report including review, SGS INTRON report: A104910/R20201046 d.d. 07-07-2021

Representativity

The environmental profile is representative for cement produced by CBR in Gent, Lixhe and Maastricht.

Procedure

The LCA follows the agreements from the European standard EN 15804, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products[2]. NBN EN 16908:2017 was used as product category rules document (PCR)[3]. This means that the underlying standards ISO 14040 "Environmental management – Life cycle analysis – Principles and framework"[4] and ISO 14044 "Environmental management. Life cycle assessment – Requirements and Guidelines"[5] have been followed. These standards are also based on ISO/DIS 21930 "Sustainability in building construction – Environmental declaration of building products"[6] and ISO/TR 14025 "Environmental labels and declarations – Type III environmental declarations"[7].

Status of the study

This LCA has been reviewed by an external LCA reviewer: Niels Jonkers (Pluk Sustainability)

Review statement by Niels Jonkers:

"The methodology, data collection and report comply with the requirements from the "Assessment Method Environmental Performance Buildings and Construction works" and the underlying standards EN15804+A2 and ISO 14040/44."

[2] NBN EN 15804:2012+A2 : 2019 Duurzaamheid van bouwwerken - Milieuproductverklaringen - Kernregels voor de productcategorie bouwproducten
[3] NBN EN 16908:2017 Cement and building lime - Environmental product declarations - Product category rules complementary to EN 15804
[4] ISO, 2006. "Environmental management. Life cycle assessment - Principles and framework". ISO 14040:2006;
[5]ISO, 2006. "Environmental management. Life cycle assessment – Requirements and Guidelines". ISO 14044:2006;
[6] ISO, 2007 "Sustainability in building construction -- Environmental declaration of building products", ISO 21930:2007;
[7] International Organization for Standardization, ISO/TR 14025, "Environmental labels and declarations – Type III environmental declarations", ISO/TR 14025:2000

Results

The environmental data of product group G3: CEM I/52,5 R for the production of 1 ton of cement are included in the tables below.

	UNIT	A1	A2	A3	TOTAL A1-A3
Climate change	kg CO2 eq	1,02E+01	6,62E+00	7,05E+02	7,22E+02
Ozone depletion	kg CFC11 eq	1,82E-06	1,42E-06	8,48E-06	1,17E-05
Ionising radiation	kBq U-235 eq	4,65E-01	4,33E-01	1,24E+01	1,33E+01
Photochemical ozone formation	kg NMVOC eq	6,14E-02	5,94E-02	1,11E+00	1,23E+00
Particulate matter	disease inc.	1,51E-06	3,95E-07	6,27E-06	8,17E-06
Human toxicity, non-cancer	CTUh	1,29E-07	7,30E-08	5,22E-06	5,42E-06
Human toxicity, cancer	CTUh	6,48E-09	2,87E-09	6,05E-08	6,99E-08
Acidification	mol H+ eq	7,11E-02	5,13E-02	1,35E+00	1,47E+00
Eutrophication, freshwater	kg P eq	3,19E-04	1,12E-04	8,54E-03	8,97E-03
Eutrophication, marine	kg N eq	1,97E-02	2,01E-02	4,07E-01	4,47E-01
Eutrophication, terrestrial	mol N eq	2,48E-01	2,24E-01	5,40E+00	5,87E+00
Ecotoxicity, freshwater	CTUe	249,47	67,99	2857,64	3175,11
Land use	Pt	2,26E+01	7,60E+01	4,25E+02	5,23E+02
Water use	m3 depriv.	8,90E+00	7,38E-01	4,00E+01	4,96E+01
Resource use, fossils	MJ	1,56E+02	9,69E+01	2,46E+03	2,71E+03
Resource use, minerals and metals	kg Sb eq	4,01E-05	1,20E-05	3,84E-05	9,05E-05
Climate change - Fossil	kg CO2 eq	1,02E+01	6,59E+00	7,05E+02	7,21E+02
Climate change - Biogenic	kg CO2 eq	-1,38E-02	1,53E-02	6,20E-01	6,22E-01
Climate change - Land use and LU change	kg CO2 eq	2,44E-03	6,43E-03	9,56E-02	1,04E-01
Human toxicity, non-cancer - organics	CTUh	3,38E-09	6,53E-09	2,46E-08	3,45E-08
Human toxicity, non-cancer - inorganics	CTUh	2,78E-08	1,81E-08	9,86E-08	1,44E-07
Human toxicity, non-cancer - metals	CTUh	9,82E-08	4,86E-08	5,11E-06	5,26E-06
Human toxicity, cancer - organics	CTUh	1,85E-09	1,75E-09	8,38E-09	1,20E-08
Human toxicity, cancer - inorganics	CTUh	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Human toxicity, cancer - metals	CTUh	4,63E-09	1,12E-09	5,21E-08	5,79E-08
Ecotoxicity, freshwater - organics	CTUe	6,46E+00	5,53E+00	6,77E+00	1,88E+01
Ecotoxicity, freshwater - inorganics	CTUe	2,72E+01	1,48E+01	1,51E+02	1,93E+02
Ecotoxicity, freshwater - metals	CTUe	2,16E+02	4,76E+01	2,70E+03	2,96E+03

	UNIT	A1	A2	A3	TOTAL A1-A3
HWD	[kg]	1,33E-04	6,48E-05	1,99E-03	2,19E-03
NHWD	[kg]	5,21E-01	3,59E+00	3,28E+00	7,39E+00
RWD	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

	UNIT	A1	A2	A3	TOTAL A1-A3
PERE	[MJ]	2,88E+00	1,64E+00	1,32E+02	1,37E+02
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,88E+00	1,64E+00	1,32E+02	1,37E+02
PENRE	[MJ]	1,68E+02	1,03E+02	2,62E+03	2,89E+03
PENRM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,68E+02	1,03E+02	2,62E+03	2,89E+03
SM	[kg]	1,81E+02	0,00E+00	1,11E+01	1,92E+02
RSF	[MJ]	0,00E+00	0,00E+00	1,28E+03	1,28E+03
NSRF	[MJ]	0,00E+00	0,00E+00	8,28E+02	8,28E+02
FW	[m^3]	2,12E-01	2,30E-02	1,29E+00	1,52E+00

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Best regards,

B. Roijen, MSc
LCA-expert
SGS INTRON B.V.