Statement of Verification

BREG EN EPD No.: 000155 Issue 2

This is to verify that the

Environmental Product Declaration

provided by:

ROMCIM S.A.

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

1m³ of ROMCIM S.A. Ready Mix Mortar

Company Address

15 Charles de Gaulle Plaza
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Romania

ROMCIM
A CRH COMPANY

Signed for BRE Global Ltd	Emma Baker Operator	06 January 2022 Date of this Issue
02 May 2017 Date of First Issue		01 May 2022 Expiry Date

BRE Global Verified EPD

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General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Global Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
ROMCIM S.A., Piata Charles de Gaulle nr15, et 1 si 2, sector 1, cod 011857, Bucuresti, Romania	BRE LINA
Declared/Functional Unit	**Applicability/Coverage**
1 m^3 of Ready Mix Mortar	Product Average.
EPD Type	**Background database**
Cradle to Gate	ecoinvent

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Fei Zhang
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy use	Operational Water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		☐

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Progresu, Drumul Bercenarului 2-4, Sector 4, Bucuresti, Romania

Bragadiru, Soseaua de Centura 2-8, JUD Ilfov, Romania (Dissolved)

Baneasa, Soeseaua Buceresti-Ploiesti 42-44, Sector 1, Bucharest, Romania

Construction Product:

Product Description

This product covers M10 ready mix mortars (covering standard and special types) used in construction within non-structural or structural elements, as (but not limited to): renderings, masonries works, infill to double leaf masonry walls and infill in hollow masonry elements etc.

Technical Information

Property	Value, Unit
Density (SR EN 1015-6:2001/A1:2007)	1900 - 1950 kg/m^3
Tensile Strength (SR EN 1015-11:2002/A1:2007)	1 - 5 MPa
Compressive Strength (SR EN 1015-11:2002/A1:2007)	10 - 15 MPa

Main Product Contents

The contents of the table below depicts an average of the three sites:

Material/Chemical Input	%
Sand 0-4	75.7
Cement	14.6
Water	9.6
Additives	0.1

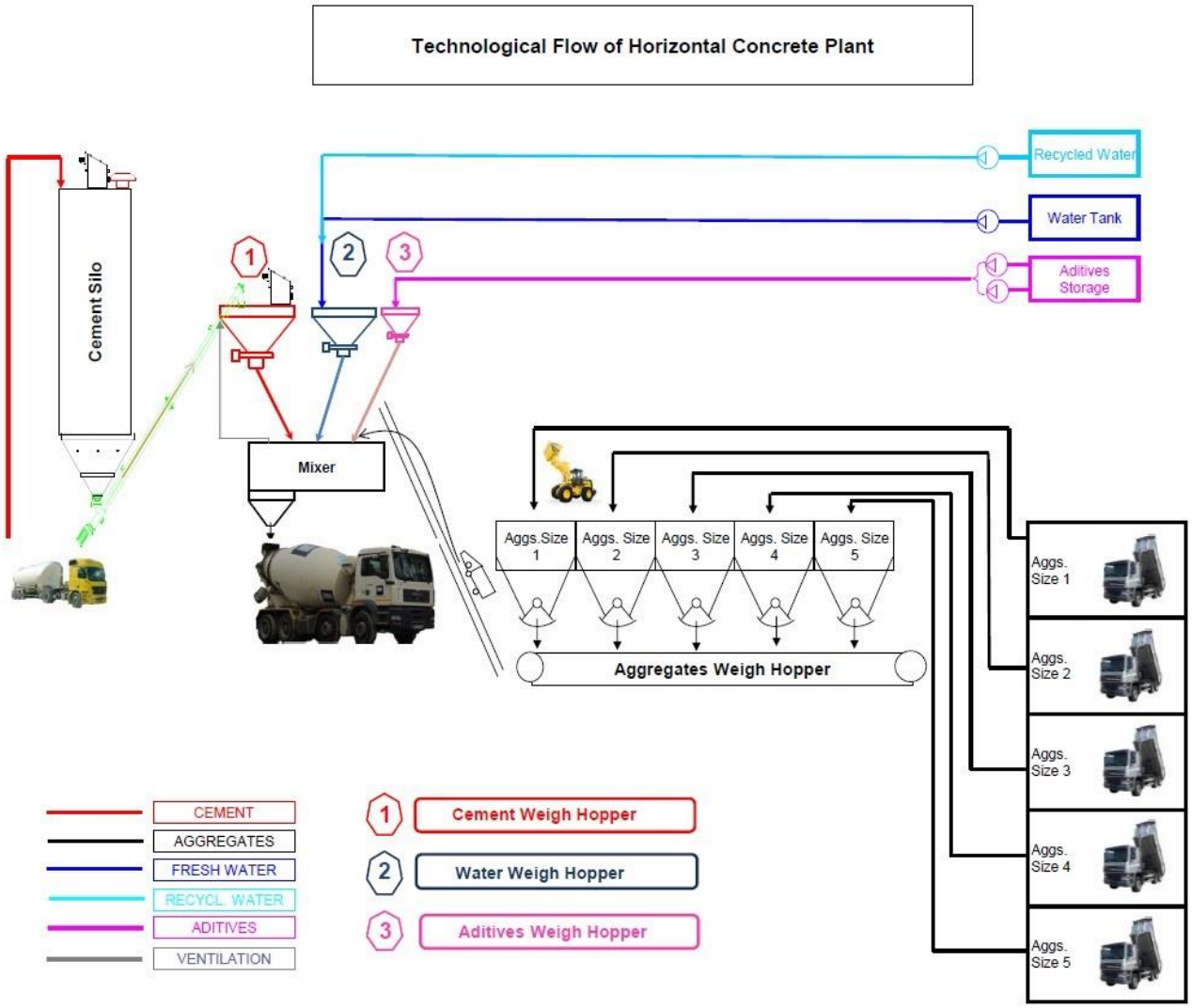
Manufacturing Process

Raw materials are supplied from, received and stored in dedicated storage facilities. Aggregates are transferred from storage facilities toward bunkers by a front loader. At the start of each working day, the conformity check list is inspected and emergency stopper devices are checked, the installation is then started up. Mortar batches are then mixed according to the Quality Manual, mortar constituents are dosed according to the batching recipe by weighing hoppers. The operation of the installation is completely automatic.

Cement constituents added to the mixer using a conveyer and aggregates are added to the mixer via the aggregates hopper, having been weighed by size types according to the recipe. Humidity is monitored throughout the mixing process with humidity correction being processed for each batch, by the adjustment of fine size quantity as well as mix water. Mix water is measured out using a water hopper; water is supplied from two inlet sources (water wells and recycled water from ready mix production, according to SR EN 1008-2002.) Additives are weighed out and added to the mix via hopper

The listed constituents are discharged into the mixer according to the Quality Manual. The ready mix concrete, screed, mortar batching cycle is looped until the prescribed quantity is obtained, according to the specific production diagram.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m^3 of ROMCIM S.A. Ready Mix Mortar

System boundary

In accordance with the modular approach as defined in EN 15804:2012, this cradle-to-gate EPD includes the processes covered in the manufacturing sites and product stages A1 to A3.

Data sources, quality and allocation

Specific primary data derived from the ROMCIM S.A production process in Romania have been modelled. In accordance with the requirements of EN15804, the most current available data has been used. The manufacturer-specific data from ROMCIM S.A covers a production period of 1 year (01/01/2015 – 31/12/15). Secondary data has been used for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production). Within LINA, all background LCI datasets have been taken from the ecoinvent database v3.2. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs according to the requirements specified in EN15804. ROMCIM S.A manufactures other finished products at the three production sites in addition to the mortar products covered by this EPD. Calculations were performed to enable allocation of total site energy use, water, waste and emissions to the mortar products. Allocation procedures are according to EN 15804 and are based on the ISO14044 guidance.

Cut-off criteria

All raw materials and consumable item inputs, and associated transport to the plant, process energy and water use, direct production waste and emissions to air and water are included.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	241	8.73E-06	0.476	0.132	0.0513	4.44E-04	1260
	Transport	A2	11.3	2.08E-06	0.0375	0.00994	0.00658	2.99E-05	171
	Manufacturing	A3	2.21	2.42E-07	0.0135	0.0098	0.00152	8.65E-07	34.9
	Total (of product stage)	A1-3	254	1.11E-05	0.527	0.152	0.0594	4.75E-04	1466
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND	MND

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels;

LCA Results (continued)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	72.7	8.65E-04	72.7	1380	0	1380
	Transport	A2	2.32	8.73E-06	2.32	170	0	170
	Manufacturing	A3	2.43	1.15E-06	2.43	37.2	0	37.2
	Total (of product stage)	A1-3	77.5	8.75E-04	77.5	1587	0	1587
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	500	0	0	2.36
	Transport	A2	0	0	0	0.0373
	Manufacturing	A3	0	0	0	0.0999
	Total (of product stage)	A1-3	500	0	0	2.5
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

			HWD	NHWD	TRWD
			kg	kg	kg
Product stage	Raw material supply	A1	0.623	7.40	5.80E-03
	Transport	A2	0.0718	7.97	1.18E-03
	Manufacturing	A3	0.0121	23.1	3.09E-04
	Total (of product stage)	A1-3	0.707	38.5	7.29E-03
Construction process stage	Transport	A4	MND	MND	MND
	Construction	A5	MND	MND	MND
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND
	Transport	C2	MND	MND	MND
	Waste processing	C3	MND	MND	MND
	Disposal	C4	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Total radioactive waste disposed;

LCA Results (continued)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0	0	0	0
	Transport	A2	0	0	0	0
	Manufacturing	A3	0	0	0	0
	Total (of product stage)	A1-3	0	0	0	0
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

CRU = Components for re-use;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

BS EN 1008:2002 Mixing water for concrete. Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete

SR EN 1015-6:2001/A1:2007 Methods of test for mortar for masonry. Part 6: Determination of bulk density of fresh mortar

SR EN 1015-10:2002/A1:2007 Methods of test for mortar for masonry. Part 10: Determination of dry bulk density of hardened mortar

SR EN 1015-11:2002/A1:2007 Methods of test for mortar for masonry. Part 11: Determination of flexural and compressive strength of hardened mortar