Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

SCG OPC 20 Kg Bag in sling 2 MT

from

SCG Cement

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer
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An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

General EPD Information

Programme information	
Programme:	The International EPD System
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Website:	www.environdec.com
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Product Category Rules (PCR)
CEN standard EN 15804+A2 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 – Construction Products – Version 2.0.1
PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available at www.environdec.com. **Chair of the PCR review:** Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat at www.environdec.com/support.
Complementary Product Category Rules: PCR 2019:14-c-PCR-001 Cement and building lime (EN 16908) (c-PCR to PCR 2019:14) (1.0.0)

Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ Individual EPD verification with a pre-verified EPD Tool Third-party verifier: Jonas Bengtsson Edge Impact Greenhouse, Level 3 180 George Street Sydney NSW 2000 Australia Email: jonas.bengtsson@edgeimpact.global Approved by: International EPD System Pre-verified LCA Tool: GCCA's Industry EPD Tool for Cement and Concrete (V5.2), International version Approval year: 2014 Valid until: 2030-04-07 Tool verifier: Ugo Pretato and Elia Rillo Studio Fieschi & Soci Srl.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programs, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterization factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

Information about EPD owner

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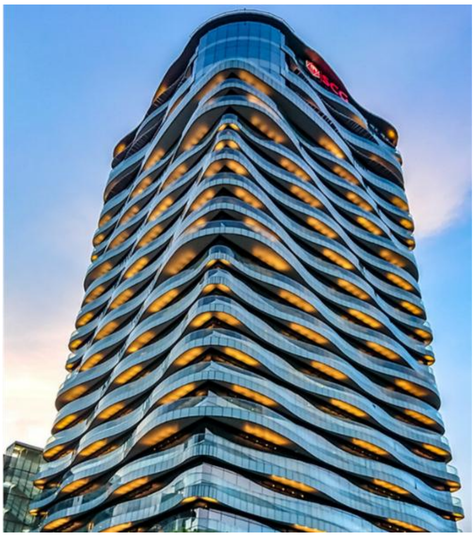

SCG was established in 1913 under a Royal Decree of His Majesty King Rama VI to reduce Thailand's reliance on imported cement. With more than 100 years of experience, SCG has developed extensive expertise in cement manufacturing and has grown into one of Thailand's leading industrial conglomerates.

The Cement and Green Solution business is a core business unit of SCG, with The Concrete Products and Aggregate Co., Ltd. operating as an independent legal entity. SCG Cement is the brand used for external communications of cement and mortar products for the construction industry in Thailand.

SCG is committed to reducing greenhouse gas emissions and has set a target to achieve net zero emissions by 2050. Key strategies include reducing fossil fuel consumption through increased use of alternative fuels, expanding the share of renewable energy, developing low-carbon cement products to reduce clinker-related CO_2 emissions, and advancing carbon capture, utilization and storage (CCUS) technologies. SCG Cement aligns its product development with Thailand's Net Zero Roadmap and has been recognized as the first cement manufacturer in Thailand for its achievement in developing low-carbon cement products.

SCG Cement actively collaborates with national and international organizations to support the transition toward low-carbon cement and concrete. The company is a member of the Global Cement and Concrete Association (GCCA) and the Thai Cement Manufacturers Association (TCMA), and its near-term greenhouse gas reduction targets have been validated by the Science Based Targets initiative (SBTi).

SCG has received several industry and sustainability recognitions, including the Prime Minister's Industry Award from the Department of Industrial Works, Ministry of Industry. In addition, SCG has achieved strong performance in sustainability investment ratings, being rated AAA in the SET ESG

Ratings by the Stock Exchange of Thailand and receiving the highest score in the Materials Industry from the Dow Jones Sustainability Indices (DJSI).

All SCG cement plants operate under internationally recognized management systems and national environmental standards. All plants are certified as Green Industry Level 5 (the highest level) by the Department of Industrial Works and are certified to ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System), and ISO 45001:2018 (Occupational Health and Safety Management System).
Our company focuses on excellence and honor to have received several esteemed awards, certifications, and quality standards as follows:

Green product labels

Carbon Footprint Product Labels
from Thailand Greenhouse Gas Management Organization (Public Organization)
TGO CFP FY23-125-03-1006

Carbon Footprint Reduction Labels
from Thailand Greenhouse Gas Management Organization (Public Organization)
TGO CFR FY23-025-02-0122

Industry awards

Green Industry Level 5 (Highest level) Green Network
from Department of Industrial Works, Ministry of Industry
5-052/2562 The Siam Cement (Kaeng Khoi) (Green Network)
5-049/2562 The Siam Cement (Ta Luang - Khao Wong) (Green Network)

** The company is registered with Science Based Initiatives*
** Certified by THE SIAM CEMENT PUBLIC COMPANY LIMITED.*

The production process of SCG Cement to the standards of product manufacturing with quality control at every step. It ensures quality from the selection of raw materials to the final stage of product manufacturing before distribution, ensuring that the produced products meet the specified standards such as American Society for Testing and Materials (ASTM), International Organization for Standardization (ISO); ISO 9001 (2015), ISO 14001 (2015), ISO 45001 (2018) and Thailand Industrial Standard (TIS). Many of SCG Cement products also received Carbon Footprint Product Labels and Carbon Footprint Reduction Labels by Thailand Greenhouse Gas Management Organization.

Currently, SCG Cement has a total of 5 grey cement production plants in Thailand, as listed below:

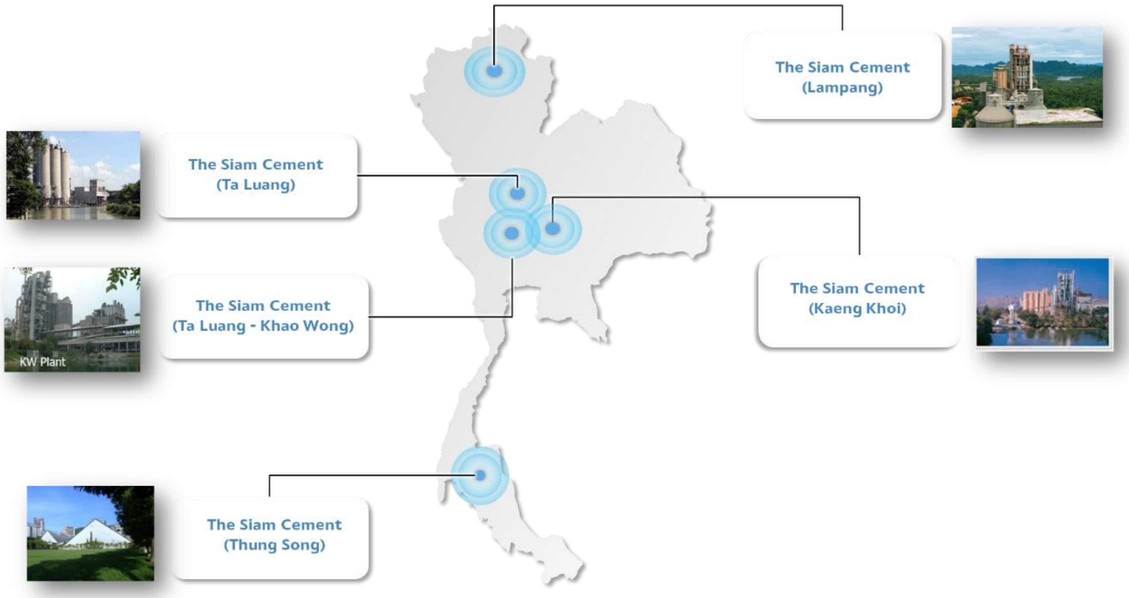

Figure 1: cement plant of The SCG Cement in Thailand

Table 1: Cement production address located in Thailand

Plant	Address
Plant 1	**The Siam Cement (Kaeng Khoi)** 33/1 Moo 3, Mittraphap Road Ban Pa Sub-District, Kaeng Khoi District, Saraburi 18110
Plant 2	**The Siam Cement (Ta Luang - Khao Wong)** 28 Moo 4, Na Pralan-Ban Krua Road Khao Wong Sub-District, Praputtabath District, Saraburi

Product information

Product name
SCG OPC 20 Kg Bag in sling 2 MT

Product Standard

- American Society for Testing and Materials (ASTM) C150 TYPE I
- European Committee for Standardization (CEN) EN 197-1 – CEM I

SCG OPC 20 Kg Bag in sling 2 MT is identified according to the United Nations Central Product Classification (UN CPC) scheme system.

Table 2: The United Nations Central Product Classification (UN CPC) code 374 for Cement, lime and plaster

Group	Class	Subclass	Title	Corresonding		
				HS 2007	CPC 2	ISIC 4
374	3744	37440	Portland cement, aluminous cement, slag cement and similar hydraulic cements, except in the form of clinkers	2523.21-.90	37440	2394

Product description
SCG OPC 20 Kg Bag in sling 2 MT - Innovative Cement for Ultimate Structural Works. This SCG OPC 20 Kg Bag in sling 2 MT is an ideal for concrete construction that required high strength such as estates, high rise buildings, roads, expressways, stadiums, airports. It is also suitable for concrete products e.g. foundations, columns, beams, and slabs.

Manufacturing Process
Cement manufacturing involves the preparation of raw meal from limestone, clay, and other mineral components through crushing, grinding, and homogenization. The raw meal is preheated, calcined, and sintered in a rotary kiln at approximately 1,450 °C to produce clinker. The clinker is then cooled, ground with gypsum and additives, and finally stored, packaged, and distributed.

Content Declaration

Table 3: Content declaration of the product:

Product Components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% of product	Biogenic material, kg C / declared unit
Clinker	8.74E+02 to 9.66E+02	0%	0%	0
Gypsum	4.64E+01 to 5.12E+01	0%	0%	0
Limestone	2.95E+01 to 3.26E+01	0%	0%	0
Organic chemicals	8.55E-02 to 9.45E-02	0%	0%	0
Sodium hydroxide, liquid	1.71E-01 to 1.89E-01	0%	0%	0
Sum	**1.00E+03 to 1.01E+03**	**0%**	**0%**	**0**

Clinker percentage of this product is 90 - 92%

Table 4: Content declaration of packaging:

Packaging materials	Weight, kg	Weight-% (versus the product)	Biogenic material, kg C / declared unit
Paper bags	1.62E+00	0.162 %	8.10E-02
Plastic film	1.79E+00	0.179 %	0.00E+00
Total packaging materials	**3.41E+00**	**0.341 %**	**8.10E-02**
Plastic bag (for transport)	2.50E+00	0.25 %	0.00E+00

The permissible soluble chromium VI content of the cement, when hydrated, is less than 2 mg/kg (0.0002%) of the total dry weight of the cement. Packaging materials weight per 1 000 kg product average
Substances in the Candidate List of Substances of Very High Concern (SVHC) are not exceed the limits for registration with the European Chemicals Agency (the substance constitutes less than 0.1% of the weight of the product).

LCA information

Production:
Thailand

Declared unit:
The declared unit is 1 000 kg of cement products.

Reference service life:
Not relevant due to the “cradle-to-gate” boundary conditions.

EPD system boundary:
Cradle to gate (A1–A3).
A cradle-to-gate system boundary has been adopted because cement is an intermediate construction material that becomes permanently integrated into concrete and cannot be practically separated at end-of-life.

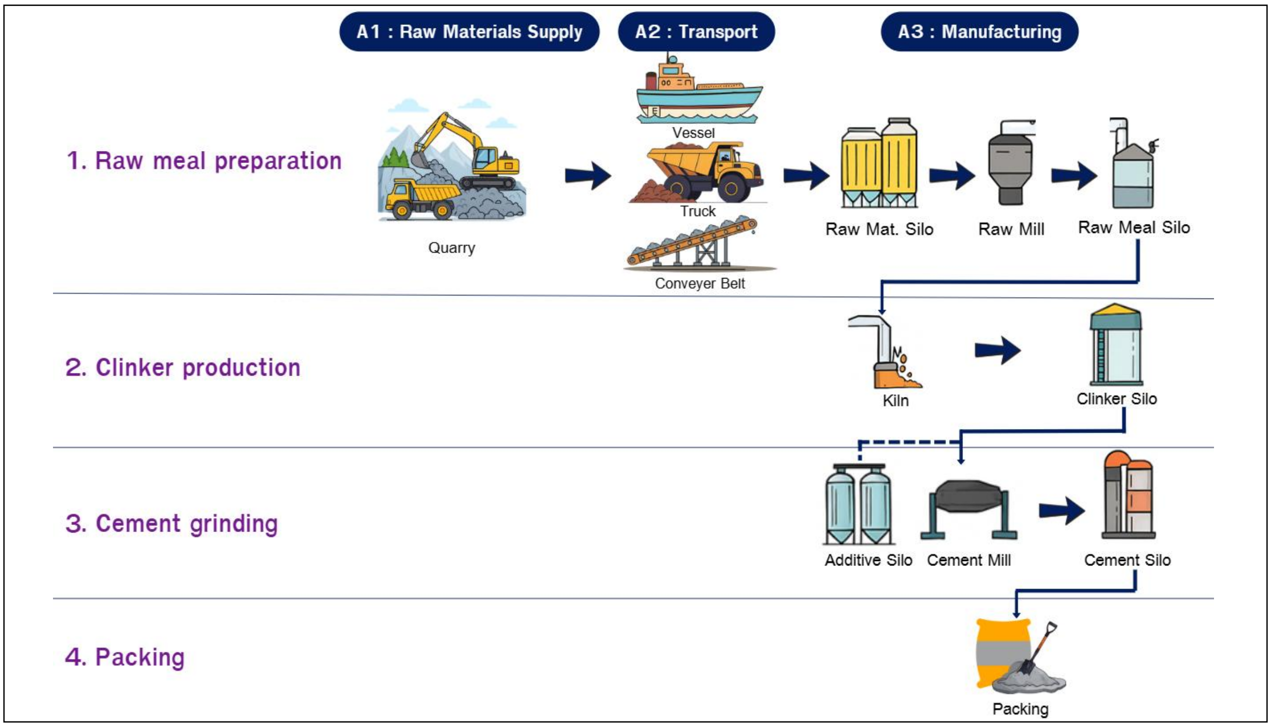

Figure 2: Cement production process

Production process overview

1. **Raw Meal Preparation**
   The main raw materials for cement production include limestone, clay, shale, and additional minerals such as fly ash and slag etc. These raw materials are crushed to be ground and mixed together in appropriate proportions into the homogenized material called “raw meal”.

2. **Clinker Production**
   The raw meal is transported to the cyclone preheater from the top to the bottom to exchange heat with the hot air from the kiln and when the temperature reaches around 800 – 900 ºC, limestone undergoes a process called Decarbonization, where it decomposes into Calcium oxide (CaO) and carbon dioxide (CO_2). After that, these materials are fed into the rotary kiln for be burned with temperatures reaching up to 1,450 ºC. Important compounds such as tricalcium silicate (C_3S), dicalcium silicate (C_2S), tricalcium aluminate (C_3A), and tetracalcium aluminoferrite (C_4AF) are formed which melt together to form “clinker”. The clinker flows out of the kiln through a clinker cooler to rapidly reduce its temperature to about 100 ºC before being transported to the storage in the clinker silo.

3. **Cement Grinding**
   Clinker will be conveyed into the cement mill for grinding, mixed with gypsum, limestone, and special additives in proportions designed to be suitable for the type of cement. The grinding process of cement involves stringent quality control, both chemically and physically, to ensure a consistently high-quality product that meets customer requirement.

4. **Packing**
   The cement is conveyed to the silo for storage, awaiting further packaging and transportation. It can be packaged both in bulk form, in big-bags and in bags before being transported to various retailers, factories, or construction sites etc.

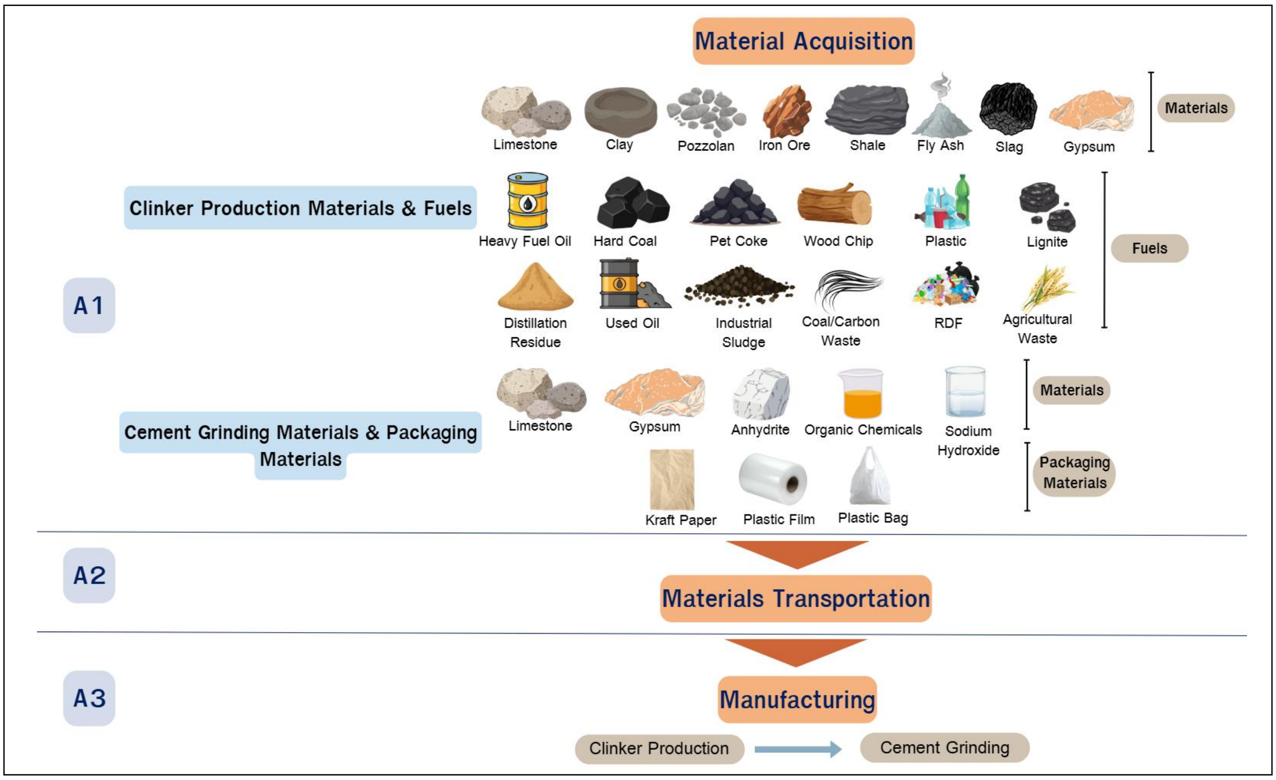

Figure 3: System Diagram

Time representativeness:

The data used in this study cover the LCA of reporting year 2022 (2022-01-01 to 2022-12-31).

Database(s) and LCA software used:

Database is collected from The Siam Cement (Kaeng Khoi) & The Siam Cement (Ta Luang - Khao Wong) in Thailand follow methodology;
1) GCCA Industry EPD Tool for Cement and Concrete (v5.2), International version with the scope of A1-A3, “cradle-to-gate”.
2) Database used: ecoinvent v3.10
The LCA was modelled with following standards;
1) PCR 2019:14 – Construction Products – Version 2.0.1
2) PCR 2019:14-c-PCR-001 Cement and building lime (EN 16908) (c-PCR to PCR 2019:14) (1.0.0)
The EN 15804 reference package based on EF 3.1 is used.

Data quality assessment:

Primary data are collected directly from the cement plant using a weighted average to consolidate the data into the declared units.
Background data from the GCCA EPD Tool are considered good in terms of geographical and technological representativeness, and very good in terms of temporal representativeness.

Table 5: Declaration of sources and share of primary data of SCG OPC 20 Kg Bag in sling 2 MT.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of clinker	Collected data	EPD owner	2022	Primary data	89.58%
Generation of electricity used in manufacturing of product	Database	Electricity Generating Authority of Thailand and ecoinvent v3.10	2022	Primary data	2.02%
Transportation of raw material to manufacturing	Database	ecoinvent v3.10	2022	Primary data	0.11%
Production of Limestone	Collected data	EPD owner	2022	Primary data	0.01%
Others	Database	ecoinvent v3.10	2022	Secondary data	0%
Total shared of primary data, of GWP-GHG results for A1-A3					91.72%

Key assumption & allocations:

- Data for production, energy, water, emissions, and waste in cement plants are collected from actual measurements at each facility. These data are then calculated as a mass-weighted average for each product.
- Transportation distances for fuels and raw materials were calculated using Google Maps for trucks and SeaRates for vessels. The final values were determined as weighted average distances.
- Input and output data were recorded individually for each subprocess. Water usage and air emissions that couldn't be directly assigned to specific products were allocated based on mass.
- Fly ash consumption is allocated using the Zero Burden Approach. The same method is applied to fuels such as agricultural waste and refuse-derived fuels (RDF/plastic).
- No by-products are generated during clinker and cement production, eliminating the need for allocation in by-products.
- The rotary kiln uses 2 types of secondary fuels; renewable fuels (wood waste, industrial sludge) and non-renewable fuels (RDF/Plastic, used tires. Used oil, distillation residues).
- Waste from operation and packaging which can be turn into a fuel were transfer to a refuse-derived fuels (RDF/plastic) or rubber/used tires for a clinker rotary kiln.
- The (background) infrastructure/capital goods are included by default in the ecoinvent life cycle inventory database that used in the GCCA tool.

Exclusions:

❑ The study does not include the followings:
- Capital equipment production
- Equipment maintenance
- Human labor and employee transport

Cut-off rules:

❑ LCA data shall account for a minimum of 95% of total mass and energy inflows per module, with extrapolation used to ensure 100% completeness.

❑ This guidance has been used to account for all inflows and outflows.

Table 6: Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	TH			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Share of Primary Data	91.72%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	N/A			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The scope of this study is “cradle-to-gate” covering the product stage (modules A1-A3), since the product fulfils the three conditions required by PCR 2019:14 – Construction Products – Version 2.0.1. The stage included in the study is product stage (A1-A3), whilst the product fulfils the conditions:

▪ the product or material is physically integrated with other products during installation so they cannot be physically separated from them at end of life.

▪ the product or material is no longer identifiable at end of life as a result of a physical or chemical transformation process.

▪ the product or material does not contain biogenic carbon.

Since the packaging contains less than 5% biogenic carbon, module A5 is not included at least for balancing out the emission of this carbon.

A1: Raw Material Supply

The production process commences with the raw material supply, encompassing the extraction and processing of raw materials and the generation of electricity and fuels necessary for manufacturing process.

The primary raw materials in the production process which mainly composed of calcite, alumina, silicate and ferrite. These materials are extracted using drilling, blasting techniques and crushing before transported to clinker burning process.

A2: Transportation

The transportation of primary raw materials to the manufacturer involves sourcing from SCG's quarry, as well as from suppliers to the entrance of SCG's cement plant. Conveyors and Trucks are employed to transport raw materials from various regions to each of SCG's cement plants.

Limestone sourced from SCG's quarry is transported to the cement plant via conveyors belt to keep the pile with stacker.
Additionally, other raw materials, other alternative raw material and additives are transported via trucks and stored in the outdoor or/and indoor building.

A3: Manufacturing

The raw material will be transported into Feed Hopper and the forward to Raw Mill. The raw materials grinding will extract hot air from the burning process (Kiln) to unused heated material at the pre-heater tower which has a temperature of approximately 325 ºC to moisture out of the material during the grinding in the Raw mill. The raw material powder is stored in Blending Silo and enters to the clinker burning process.

The manufacturing process overview begins with the grinding material (Raw meal) is conveyed out of Blending Silo to the cyclone preheater from the top to the bottom to exchange heat with the hot air from the kiln which the grinding material is heated and has a temperature of about 800 – 900ºC and flows to Pre-Calciner and transferred to Rotary Kiln for burning process with temperatures reaching up to 1,450 ºC. This process used diesel, coal-fired, pet coke, wood chip fuel as the main fuel and RDF (Refuse-derived fuel), Industrial waste and Biomass (such as wood waste, industrial sludge) as the secondary fuels (alternative).

The waste heat from the pre-calciner and kiln processes will be reused in the raw material preparation process to reduce the moisture content of the materials and will be sent to the AQC boiler to generate electricity. The hot air will then pass through the bag filter and electrostatic precipitator (EP) before being vented into the atmosphere.

After the clinker burning process, the clinker will be conveyed into the cement mill for grinding with gypsum, limestone, fly ash and special additives in proportions designed to be suitable for the type of cement.
Following mixing and grinding, the cement is conveyed to the silo for storage and packaged into bags or bulk containers. Finally, the packaged final products are ready for delivery to customers and dealer.

For the electricity used in the cement production process, it sourced from the national grid of Thailand by the Provincial Electricity Authority (PEA) of Thailand is generated from a mix of fossil fuel–based power generation and renewable energy sources (Electricity Generating Authority of Thailand, Thailand Independent Power Producer, Thailand Small Power Producer, imported electricity from Laos and imported electricity from Malaysia). A portion of the renewable electricity generated for PEA is separately allocated and sold as Renewable Energy Certificates (RECs), while the remaining portion is incorporated into the overall electricity mix as mentioned above.
From GCCA Industry EPD Tool for Cement and Concrete LCA Database (v5.2) default electricity mixes. The emission factor for mentioned electricity mixed used in the LCA = 6.37E-01 kg CO_2 eq./kWh
Therefore, the energy proportions presented below have already been adjusted to exclude the REC portion, and the remaining sources are allocated as detailed in the table.

No waste requiring external treatment or disposal is generated during the clinker and cement production processes. Used lubricating oil is utilized as alternative fuel in the kiln, and process water (e.g. cooling water) is recirculated within the production system.

Table 7: Residual electricity mix base on the annual report from Energy Policy and Planning Office of Thailand:

Sources	Type of Source	Percentage
Natural gas	Non-Renewable Fuels for Residual Grid Mix	49.30%
Lignite		12.09%
Coal		7.91%
Fuel oil		0.59%
Diesel		4.35%
Hydro	Renewable Fuels for Residual Grid Mix	15.60%
Geothermal		0.01%
Biogas		0.47%
Biomass		3.70%
Solar		3.65%
Waste		0.91%
Wind		1.42%
Total Non-Renewable Fuels		74.25%
Total Renewable Fuels		25.75%
Total		**100%**

Environmental performance

This section presents impact categories (indicators 1-14 and 15-20) for each indicator and per life cycle stage, as per PCR 2019:14 version 2.0.1 Construction products (EN 15804+A2) and complementary PCR c-PCR-001 Cement and building limes.
The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The 'Water deprivation potential' (WDP) indicator is characterized according to global characterization factors and not local ones.

Results of the environmental performance indicators

Impact per 1 000 kg average

Mandatory impact category indicators according to EN 15804+A2

Indicator	Unit	A1 – A3
GWP-tot[1]	kg CO_2 eq.	8.36E+02
GWP-fos	kg CO_2 eq.	8.36E+02
GWP-bio	kg CO_2 eq.	3.48E-01
GWP-luc	kg CO_2 eq.	6.95E-02
ODP	kg CFC 11 eq.	1.99E-06
AP	mol H^+ eq.	2.19E+00
EP-fw	kg P eq	4.98E-02
EP-mar	kg N eq.	2.29E-01
EP-ter	mol N eq.	8.42E+00
POCP	kg NMVOC eq.	2.04E+00
ADPE[2]	kg Sb eq.	2.06E-03
ADPF[2]	MJ, net calorific value	4.13E+03
WDP[2]	m^3 world eq. Deprived	2.25E+01

[1] The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-tot (excluding the emissions from the incineration of secondary fuels at clinker production) is 799.6 kg CO_2–eq. The net GWP-fos is 799.3 kg CO_2-eq. The net GWP-bio is 0.2305 kg CO_2-eq.
[2] Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The GCCA tool uses global characterisation factors for WDP and does not use the regionalised Australian catchment level data.

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1 – A3
GWP-GHG[3]	kg CO_2 eq.	8.36E+02
PM	Disease incidence	2.04E-05
IRP[4]	kBq U235 eq.	2.32E+00
ETP[5]	CTUe	8.81E+02
HTPC[5]	CTUh	1.81E-04
HTPNC[5]	CTUh	8.71E-06
SQP[5]	dimensionless	1.28E+03

[3] The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-GHG (excluding the emissions from the incineration of secondary fuels at clinker production) is 799.6 kg CO_2–eq.

[3] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

[4] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

[5] The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Resource use indicators

The energy balancing as per PCR 2019:14 Construction Products v2.0.1 is performed according to Option B (see Annex 3 of the PCR).

Disclaimer: No energy balancing is performed in modules A1-A3 for the resource use indicators, in order to avoid double counting in case such EPD is used as input in another EPD. It is recommended to proactively indicate the quantities and qualities (bio-based and fossil-based) of packaging materials in the EPD report so interested parties have the relevant information at hand to perform the energy balancing downstream.

Indicator	Unit	A1 – A3
PERE	MJ	2.16E+02
PERM	MJ	2.75E+01
PERT	MJ	2.44E+02
PENRE	MJ	3.92E+03
PENRM	MJ.	2.05E+02
PENRT	MJ	4.13E+03
SM	kg	6.72E+01
RSF	MJ	2.44E+02
NRSF	MJ	4.11E+02
FW	m^3	7.80E-01

Waste indicators

The ‘Non-hazardous waste disposed’ (NHWD) and ‘Hazardous waste disposed’ (HWD) indicators in the tool relate only to the foreground of the clinker, cement and concrete, where cement inherits the impacts from clinker and concrete inherits the impacts from cement.

Indicator	Unit	A1 – A3
HWD	kg	0.00E+00
NHWD	kg	0.00E+00
RWD	kg	5.75E-04

Output flow indicators

Indicator	Unit	A1 – A3
CRU	kg	0.00E+00
MR	kg	1.15E-01
MER	kg	3.40E-02
EEE	MJ per energy carrier	0.00E+00
EET	MJ per energy carrier	0.00E+00

Version History

This is the first EPD version – No previous versions

Abbreviations

Abbreviations	Unit
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
Environmental Performance Indicators (EN 15804)	
GWP-total	Total Global Warming Potential
GWP-fossil	Global Warming Potential fossil fuels
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential, Accumulated Exceedance
EP-freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment
EP-marine	Eutrophication potential, fraction of nutrients reaching marine end compartment
EP-terrestrial	Eutrophication potential, Accumulated Exceedance
POCP	Formation potential of tropospheric ozone
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources
ADP-fossil	Abiotic depletion for fossil resources potential

Abbreviations	Unit
WDP	Water (user) deprivation potential, deprivation-weighted water consumption
GWP-GHG	Global Warming Potential GHG
PM	Potential incidence of disease due to PM emissions
IRP	Potential Human exposure efficiency relative to U235
ETP	Potential Comparative Toxic Unit for ecosystems
HTPC	Potential Comparative Toxic Unit for humans – cancer
HTPNC	Potential Comparative Toxic Unit for humans – non-cancer
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 materials
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Net use of fresh water
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MR	Material for recycling
MER	Materials for energy recovery
EEE	Exported electrical energy
EET	Exported thermal energy
Other relevant Terms	
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent

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