Environmental Product Declaration

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

Tiger Mortar White Smooth Skim Coat

from

SCG Cement

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0016311
Publication date:	2024-09-03
Valid until:	2029-09-02

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme:	The International EPD® System
EPD Owner:	The Concrete Products and Aggregate Co., Ltd.
Address:	1516 Pracharat 1 Road, Khwaeng Wong Sawang, Khet Bang Sue, Bangkok 10800 Thailand
Website:	https://www.scg.com/landing/index_en.html
Products:	Mortar Product

Third-party verification

Name and organization of verifier:	EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.
Date and location:	89 Chlois and Likovriseos Str. Metamorfosi 144 52, Athens / Greece
Signature:	Lead Verifier: Ioannis Sotirakis, EUROCERT S.A. 
This declaration is based on the European standard - EN 15804:2012+A2:2019/AC:2021 Independent verification of the declaration and data, according to EN ISO 14025 ☐ Internal ☒ External	
Reference standards:	ISO 14025:2006, ISO 14020:2000, EN 15804:2012+A2:2019 /AC:2021, PCR 2019:14 Construction-products and services, version 1.3.4
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by accredited certification body Third-party verification: EUROCERT S.A. is an approved certification body accountable for the third-party verification. The certification body is accredited by: Hellenic Accreditation System SA (E.S.Y.D), Accreditation number 21	

LCA Information

Title:	Life Cycle Assessment of Cement production of The Concrete Products and Aggregate Co., Ltd: 1,000 kg average Cement
Date of Issue:	Aug 2024
Preparer:	Monwikan Kajohnboon – Environment & Social Manager Juthamard Jitchuen – Environment & Social Assistant Manager Environment & Social Management Department Email: monwikak@scg.com, juthamaj@scg.com The Concrete Products and Aggregate Co., Ltd. 1516 Pracharat 1 Road, Khwaeng Wong Sawang, Khet Bang Sue, Bangkok 10800 Thailand

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

EPDs within the same product category but from different program may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

This report presents the aggregated results per indicator and per life cycle stage, as per PCR 2019:14 Construction products version 1.3.4 (EN 15804: A2)

Note that above paragraphs concern grouping of similar products, but not grouping of identical products (e.g., produced at different manufacturing sites or at different production lines at one site). Identical products here refer to products which are not marketed as different products and/or are in no other way distinguishable by a downstream customer (e.g., by colour, size, content or configuration). For identical products, variations due to, for example, manufacturing at several sites shall be treated as any other variation in production, by averaging over (normally) 1 year of production (and in such cases, variations above 10% are allowed also if compliance with ISO 21930 is claimed). However, the variation in GWP-GHG results for modules A1-A3 between sites shall still be reported in the EPD, if the variation is above 10%. The reported variation may be the difference between the declared results and the results of each of the included sites, or the difference between the declared results and the results of the sites with the highest and lowest results, respectively.

Company Profile

SCG was established in 1913 following a Royal Decree by His Majesty King Rama VI as a means to reduce the nation's reliance on the import of cement. Since its foundation, the company has expanded its business and grown steadily into SCG, one of Thailand's leading industrial conglomerates.

With more than 100 years of experience and know-how, SCG, the manufacturer and supplier of SCG, has committed itself to developing and leveraging the standards of products in the market to ensure the excellent quality of its cement products that best address every application need and contribute to the development of the construction industry in Thailand.

The Cement and Green Solution business is a core business unit of SCG which The Concrete Products and Aggregate Co., Ltd. as an own legal entity.
While SCG Cement is represented as the branding used for external communications of cement and mortar products for construction industry in Thailand.

We are committed to reducing greenhouse gases and aim for net zero by 2050. Our key strategies include: (1) Reducing fossil fuel use and increasing the use of alternative fuels (AF) such as biomass and refuse-derived fuel (RDF) (2) Increasing the proportion of renewable energy (RE) usage, such as waste heat recovery and solar power, as well as exploring new technologies like energy storage (3) Developing low-carbon products to reduce CO_2 emissions from clinker usage (4) Developing carbon capture, utilization and storage (CCUS) technologies and (5) Implementing carbon sinks through natural climate solutions.

SCG Cement focused on developing green products, following Thailand's Net Zero Roadmap, which is one of the business priorities. SCG Cement’s mortar manufacturers in Thailand receive "Carbon Reduction Label" for its achievement to reduce greenhouse gas emissions through the development of low-carbon products.

Additionally, the company became a member of the Global Cement and Concrete Association (GCCA), collaborating with GCCA and Thai Cement Manufacturers Association (TCMA) to drive the Thailand 2050 Net zero cement and concrete roadmap, aiming to guide Thailand's cement and concrete industry towards Net zero 2050.

Furthermore, the company has previously proclaimed "Mission 2023", on behalf of the association's members in the Thai Cement Manufacturers Association (TCMA), as part of the efforts to advance towards carbon neutrality on industrial processes and product use, including clinker replacement measures by driving for the manufacturing of hydraulic cement in Thailand.

Company information

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). 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 seven mortar production plants in Thailand, as listed below:

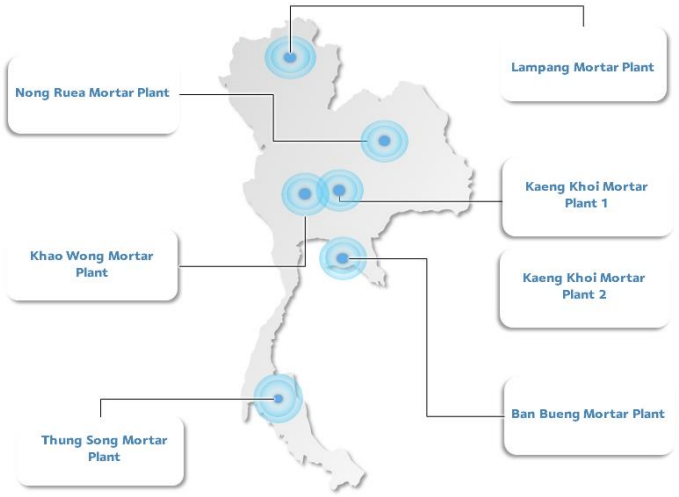

Figure 1: SCG Cement's mortar production plants

Table 1: Mortar production address located in Thailand

Plant	Address
Plant 1	**Kaeng Khoi Mortar Plant 1** 110 Moo.1, Ban Pa Subdistrict, Kaeng Khoi District, Saraburi Province 18110
Plant 2	**Kaeng Khoi Mortar Plant 2** 110 Moo.1, Ban Pa Subdistrict, Kaeng Khoi District, Saraburi Province 18110
Plant 3	**Nong Ruea Mortar Plant** 186 Moo.7, Nong Ruea Subdistrict, Nong Ruea District, Khon Kaen Province 40210
Plant 4	**Ban Bueng Mortar Plant** 999/1 Moo.8, Khlong Kiew Subdistrict, Ban Bueng District, Chonburi Province 20220
Plant 5	**Khao Wong Mortar Plant** 12/2 Moo.8, Khao Wong Subdistrict, Phra Phutthabat District, Saraburi Province 18120
Plant 6	**Thung Song Mortar Plant** 317 Moo.7, Thi Wang Subdistrict, Thung Song District, Nakhon Si Thammarat Province 80110
Plant 7	**Lampang Mortar Plant** 279 Moo.5, Ban Sa Subdistrict, Chae Hom District, Lampang Province 52120

Company certifications, awards and standards

SCG cement has achieved several awards and certifications and standards, each standard highlights our commitment to high industry standards. Certifications demonstrate our rigorous quality control, best practices in sustainable development, and ongoing improvements. Awards enhance our reputation as a top manufacturer in Thailand and reflect our dedication to excellence, innovation, and environmental stewardship. By complying to these achievements, SCG Cement not only provides superior products but also supports environmental conservation, strengthen our role as a trusted and responsible leader manufacturer in the industry.
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)

Carbon Footprint Reduction Labels
from Thailand Greenhouse Gas Management Organization (Public Organization)

Thai Green Labels
from Thailand Business Council for Sustainable Development

Industry awards

Green Industry Level 5 (Highest level) Green Network
from Department of Industrial Works, Ministry of Industry

The Prime Minister's Industry Award
from Department of Industrial Works, Ministry of Industry

Investing rater awards

A- level in climate change
from Carbon Disclosure Project

Rated AAA in the SET ESG Ratings
from the Stock Exchange of Thailand

The highest score in the Construction Materials Industry
from the Dow Jones Sustainability Indices

Association goal groups

Global Cement and Concrete Association member

Thai Cement Manufacturers Association member

Near Term Target has been validated
by Science Based Targets initiative

International Standards
All plants are Green Industry Level 5 (The highest level)
Certified by the Department of Industrial Works.

- ISO 9001:2015 Quality Management System (QMS)
- ISO 14001:2015 Environmental Management System (EMS)
- ISO 45001:2018 Occupational Health and Safety Management System (OHSMS).

Product information

Product name
Tiger Mortar White Smooth Skim Coat

Product description
Skim coat is specially formulated to provide a smooth surface finish in white colour, suitable for finishing surfaces with a thickness of 1-3 mm. It can cover imperfections on plaster walls, concrete walls, precast walls, and other walls.

Production plant
This product is generally produced in 1 mentioned plant;
Kaeng Khoi Mortar Plant 1.

Standard

- The United Nations Central Product Classification (UN CPC)

Table 2: The United Nations Central Product Classification (UN CPC) code 375 for Non-refractory mortars and concretes

Group	Class	Subclass	Title	Coresponding		
				HS 2007	CPC 2	ISIC 4
375	3751	37510	Non-refractory mortars and concretes	3824.50	37510	2395

- Thailand Industrial Standard (TIS) 3056 – 2563

Table 3: Mortar properties according to TIS 3056 – 2563

Specifications			Spec.	Actual
	TIS Standard	Unit	Plant Standard	Min-Max
Compressive strength 28D	≥ 5.0	MPa	≥ 5.0	3.68-7.70
Bonding strength 28D	≥ 0.8	MPa	≥ 0.8	0.80-1.05
Water retention	≥ 90	%	≥ 90	100.5-101.4
Time of setting				
- Initial set	≥ 45	min	≥ 45	495-565
- Final set	≥ 45	min	≥ 45	900-960

LCA information

Functional unit / declared unit:

The declaration is established product of these manufacturing plants. The average is based on the accounted production volume of each plant. The declared unit is 1 ton (1,000 kg).

Reference service life:

Not relevant due to the cradle-to-gate boundary conditions.

Time representativeness:

The data used in this study cover the reporting year of 2022.

Database(s) and LCA software used:

Database is collected from all Cement plants in Thailand follow methodology - GCCA Industry EPD Tool for Cement and Concrete (v4.2, International version, 18 December 2023)
This LCA was modelled with the program EPD Tool v.4.2 from GCCA (Global Cement and Concrete Association) with the scope of A1-A3, cradle-to-gate.

Key assumption & allocations:

Data collection for production, energy consumption, water usage, air emissions and waste produced was be collected from actual data at each facility.
The study does not include the followings:

- Capital equipment production
- Equipment maintenance
- Human labor and employee transport

Due to the similarity in production processes and manufacturing technologies among seven mortar plants, data collection for production, energy consumption, and waste produced will be collected from actual data at each facility and weighted average by mass for each product.

Allocation was minimized wherever feasible. Production was divided into four subprocesses: Drying, Sieving & Crushing, Mixing, and Packing. Data for inputs and outputs were recorded separately for each subprocess. When electricity, waste could not be directly attributed to a specific product, they were allocated by mass. No by-products are generated during mortar production, eliminating the need for allocation in by-products.

For transportation, the payload was defined by the automated ERP system (SAP) used by the company, and the distance was calculated as an average distance (weight average).

GWP-GHG of the electricity mix used is 0.6605 kg CO_2eq./kWh calculated from national database on power generation from different resources in reference with the Annual Report 2022, the Electricity Generating Authority of Thailand (EGAT) and the Annual Report 2022, the Energy Policy and Planning Office (EPPO), the Ministry of Energy, Thailand. This also complies with PCR 1.3.4 section 4.8.1 (Residual electricity mix on the market).

Comparability:

EPD performance for construction products that they do not comply with EN 15804 may not be comparable. EPDs from separate programs but within the same product category may not be comparable as well.

Cut-off rules:
The PCR: Section 4.4 and ISO 21930: Section 7.1.8 cut-off criteria were complied with. Every necessary set of input/output data was gathered and incorporated into the LCI modeling. Within the framework of this EPD, no compounds with toxic or hazardous qualities that may harm human health or the environment were found.

Description of underlying LCA – Based information

The mortar production process of all SCG Cement's mortar plants in the following the steps as shown in Figure 2:

1. **Drying**
   Limestone, the primary raw material for mortar production, is initially loaded into the drying hopper using a loader. Consequently, the limestone undergoes a drying process, where moisture is removed through diesel combustion. The dried limestone is then subjected to crushing and sieving, preparing it for the subsequent stages of production.

2. **Crushing & Sieving**
   The dried limestone undergoes to crusher to form fine crushed limestone dust. During the screening stage, the dust is sieved based on particle size. All sizes of limestone dust are then stored in designated silos.

3. **Mixing**
   Next, in the mixing phase, raw materials from the silo, including limestone dust, cement, sand, dust, and additives, are precisely dosed gravimetrically and mixed thoroughly in specific formulations and proportions tailored for each product using a mixer in mixing process.

4. **Packing**
   After mixing, the product is conveyed to a silo for storage and then packaged into bags. Finally, the packaged final products are ready for delivery to customers and dealers.

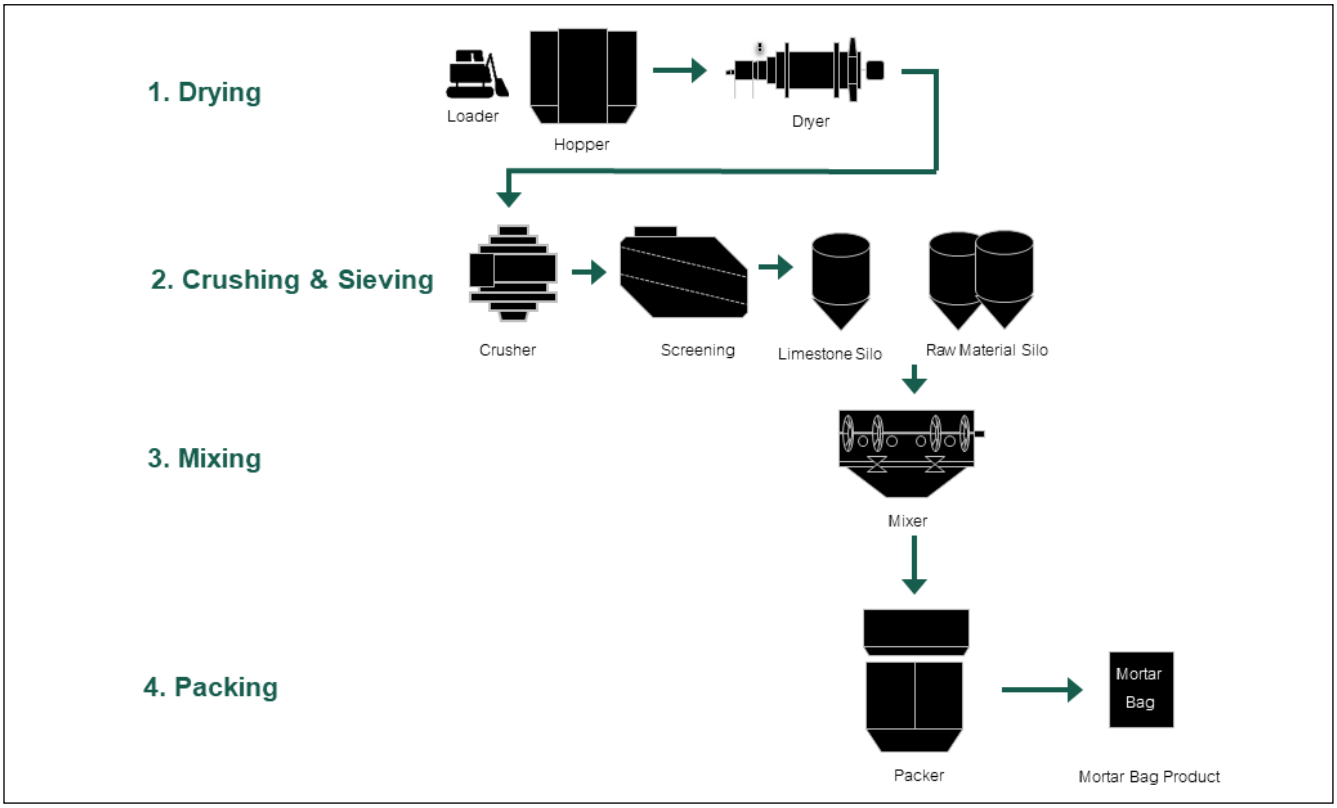

Figure 2: Mortar production process

A1: Raw Material Supply

The primary raw materials utilized in the mortar production process consist of limestone and cement sourced from SCG quarry and SCG cement plant. And Sand, Dust (CC Powder) and Additives sourced from suppliers.

A2: Transport

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

Limestone sourced from SCG quarry is transported to the mortar plant via trucks. Cement from the SCG cement plant is primarily transported by truck. Sand, Dust (CC Powder) and Additives from various suppliers are also delivered by truck.

Upon arrival at the various SCG mortar plants, Cement, Sand, Dust, Additives are stored in raw material silos excepts the limestone is stored in outdoor or/and indoor building, awaiting the next phase of the production process.

A3: Manufacturing

The manufacturing process begins with drying, crushing, and sieving, followed by the precise weighing of the raw materials. Next, the materials are mixed and transferred to specially designed chambers to achieve the desired final composition. The final stage of the process concludes with the packaging. The detailed steps are as follows:

Initially, crushed limestone is transported into hopper by loader and subjected to a dryer where moisture is eliminated through the combustion of diesel, resulting in dried limestone. Subsequently, the dried limestone undergoes to crusher to form fine crushed limestone or limestone dust. During the screening stage, the dust is sieved based on particle size. All sizes of limestone dust are then stored in designated silos.

Next, in the mixing phase, raw materials from the silo, including limestone dust, cement, sand, dust, and additives, are precisely dosed and mixed thoroughly in specific formulations and proportions tailored for each product using a mixer.

After mixing, the product is conveyed to a silo for storage and then packaged into bags. Finally, the packaged final products are ready for delivery to customers and dealers.
The electricity used in the mortar production process is sourced from the national grid of Thailand

Table 4: 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	Thailand			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

This section presents the aggregated results per indicator and per life cycle stage, as per PCR 2019:14 Construction products version 1.3.4 (EN 15804: A2), including i) core environmental impact indicators (13 indicators), ii) additional environmental impact indicators (6 indicators), iii) parameters describing resource use (10 indicators), iv) other environmental information describing waste categories (3 indicators) and environmental information describing output flows (4 indicators).

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 EN 15804:2012+A2:2019, about the exclusion of modules C1-C4 and D. The stage included in the study is just product stage (A1-A3), since the product fulfils the three conditions required:

- 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.

Product Components

Composition	
Limestone	62 – 64 %
Cement	34 – 36 %
Additives	0 – 2 %

Packaging materials weight per 1,000 kg product average

Product Name	Weight	Packaging materials		
		Paper	PE-film	Total
Tiger White Smooth Skim Coat	Weight, kg	-	2.97 - 3.63	2.97 - 3.63
	Weight-% (versus the product)	-	0.297 - 0.363 %	0.297 - 0.363 %

Environmental Information

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 1.3.4 Construction products (EN 15804: A2)

Impact per 1,000 kg average

Potential environmental impact – mandatory indicators according to EN 15804

Indicator	Unit	Total A1-A3
Global Warming Potential, GHG	kg CO_2 eq.	4.06E+02**
Global Warming Potential, total	kg CO_2 eq.	4.06E+02*
Global Warming Potential, fossil fuels	kg CO_2 eq.	4.05E+02*
Global Warming Potential, biogenic	kg CO_2 eq.	1.31E-01*
Global Warming Potential, land use and land use change	kg CO_2 eq.	7.91E-02
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	1.10E-05
Acidification potential, Accumulated Exceedance	mol H^+ eq.	1.50E+00
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	7.70E-02
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq.	5.30E-03
Eutrophication potential, Accumulated Exceedance	mol N eq.	3.24E+00
Formation potential of tropospheric ozone	kg NMVOC eq.	8.50E-01
Abiotic depletion potential for non- fossil resources	kg Sb eq.	3.14E-04***
Abiotic depletion potential for fossil resources potential	MJ, net calorific value	3.03E+03***
Water (user) deprivation potential,deprivation-weighted water consumption	m^3 world eq. deprived	7.75E+01***

* 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 4.00E+02 kg CO_2–eq. The net GWP-fos is 4.00E+02 kg CO_2-eq. The net GWP-bio is 8.89E-02 kg CO_2-eq.

** 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 4.00E+02 kg CO_2–eq.

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

Additional environmental impact indicators

Indicator	Unit	Total A1-A3
Potential incidence of disease due to PM emissions	Disease incidence	1.15E-05
Potential Human exposure efficiency relative to U235	kBq U235 eq.	5.97E+00
Potential Comparative Toxic Unit for ecosystems	CTUe	9.91E+01
Potential Comparative Toxic Unit for humans - cancer	CTUh	1.86E-06
Potential Comparative Toxic Unit for humans - non-cancer	CTUh	2.35E-05
Potential soil quality index	dimensionless	1.09E+03

Parameters describing resource use

Indicator	Unit	Total A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	1.24E+02
Use of renewable primary energy resources used as raw materials	MJ	0.00E+00
Total use of renewable primary energy resources	MJ	1.24E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	2.88E+03
Use of non-renewable primary energy resources used as raw materials	MJ.	1.58E+02
Total use of non-renewable primary energy resources	MJ	3.03E+03
Use of secondary materials	kg	4.79E+01
Use of renewable secondary fuels	MJ	6.07E+01
Use of non-renewable secondary fuels	MJ	5.38E+01
Net use of fresh water	m^3	1.90E+00

Other environmental information describing waste categories

Indicator	Unit	Total A1-A3
Hazardous waste disposed	kg	0.00E+00
Non-hazardous waste disposed	kg	3.69E-02
Radioactive waste disposed	kg	3.69E-02

Environmental information describing output flows

Indicator	Unit	Total A1-A3
Components for re-use	kg	0.00E+00
Material for recycling	kg	1.26E-02
Materials for energy recovery	kg	0.00E+00
Exported electrical energy	MJ per energy carrier	0.00E+00
Exported thermal energy	MJ per energy carrier	0.00E+00

Other environmental information

SCG announced target to achieve Net Zero Emissions refer to Science Base Target initiative (SBTi) by 2050 and 25% greenhouse gases reduction by 2030 from base year 2020. In 2022, SCG achieved a reduction of 4.13 million tons CO_2eq in greenhouse gases emissions or 12.05% from base year 2020 by enhancing alternative fuels usage such as biomass from agricultural wastes and refuse derived fuel (RDF) for cement productions. In addition, our cement plants attempt to increase a proportion of renewable energy by using solar energy and waste heat recovery. The Company also made research and investment in deep technologies such as carbon capture utilization and storage (CCUS) technology, calcined clay cement and alternative supplementary cementitious material (SCMs). Furthermore, SCG has also managed to reforest as a carbon sink in response to the Natural Climate Solutions (NCS) projects.

As a member of Thai Cement Manufacturers Association (TCMA), SCG joined the Association in announcing “Mission 2023” as part of the efforts to advance towards carbon neutrality on Thailand’s cement industry by using low carbon cement product to achieve GHG emissions reduction of 1,000,000 tons CO_2eq by 2030.

Differences versus previous versions

This is the first EPD version – No previous versions

References

1. American Society for Testing and Materials (2020) - Standard Performance Specification for Hydraulic Cement
2. Electricity Generating Authority of Thailand (2022) – Annual power consumption report.
3. Energy Policy and Planning Office (2022) - Annual report.
4. Energy Regulatory Commission of Thailand (2022) - Annual report.
5. EPD INTERNATIONAL (AB) (2024) Product Category Rules (PCR) 2019:14 - Construction Products; version 1.3.4
6. European Committee for Standardization (2021) EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
7. Global Cement and Concrete Association (2023) - GCCA Industry EPD Tool for Cement and Concrete
    - User Guide (v4.2, International version, 18 December 2023)
    - LCA Model (v4.2, International version, 18 December 2023)
    - LCA Database (v4.2, 18 December 2023)
    - Verification Report (18 December 2023)
8. Office of Natural Resources and Environmental Policy and Planning (2022) – Annual Power data report.
9. United Nations (2015) United Nations Central Product Classification (UN CPC); version 2.1

EPD®