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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Greenhouse gases - Quantification method and requirements
for the carbon footprint of products - Cement**

温室气体 产品碳足迹量化方法与要求 水泥

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Foreword

4.1 Correlation The data and methods selected are suitable for evaluating the GHG emissions generated by the quantified system.

4.2 Integrity The carbon footprint quantification of cement products includes all direct and indirect emissions from the raw material production stage, the raw material transportation stage, and the product manufacturing stage. The total emissions should be calculated to avoid double counting or omissions.

4.3 Consistency Throughout the entire process of quantifying the carbon footprint of cement products, the same assumptions, methods, and data sources are used to obtain results consistent with the objectives and scope. in conclusion.

4.4 Uniformity Adopting internationally recognized methods, standards, and guidelines already applied to specific product categories to improve the compatibility of the carbon footprint of cement products. Comparison of sexes.

4.5 Accuracy The quantification of the carbon footprint of cement products is accurate, verifiable, relevant, and non-misleading, and aims to minimize bias and uncertainty. Qualitative analysis.

4.6 Transparency Document all relevant issues using an open, comprehensive, and understandable method of information presentation. Disclose all relevant assumptions and, appropriately, the methods used. The methods and data sources.

5. Quantification Objectives This document quantifies the carbon footprint of cement products at selected stages of their life cycle, expressed in carbon dioxide equivalents

(CO₂e). The purposes of quantifying carbon footprints include, but are not limited to, the following.

- a) Used for communication of greenhouse gas emissions information between producers and upstream/downstream supply chains or consumers;
- b) Used for producers to design and improve products to reduce their carbon footprint and for comparison with similar products;
- c) Used for information exchange regarding product carbon footprint.

6 Quantification range

6.1 Product Description Describe the product system and its functions according to the corresponding product standards for cement, and clearly describe the product name, product definition, and product implementation standards. Information such as specifications, component materials, and strength grade.

6.2 System Boundary

6.2.1 The system boundary for quantifying the carbon footprint of cement products includes the raw material production stage, the raw material transportation stage, and the product production stage, see [link to relevant documentation]. Figure 1.

6.2.2 The raw material and auxiliary material production stage begins with the extraction of primary resources from nature and ends when the raw materials and auxiliary materials arrive at the cement plant, including raw material production (such as...). Limestone mining, silica-alumina raw material mining and processing, correction raw materials, gypsum, mixed materials, etc., and auxiliary material production (such as packaging material processing).

6.2.3 The raw material transportation stage begins when the raw materials and auxiliary materials are transported from the place of origin to the cement plant and ends when they arrive.

6.2.4 The product manufacturing stage begins when raw materials and auxiliary materials arrive at the cement plant and ends when the product leaves the factory, including raw material pretreatment, raw meal preparation, Coal powder preparation, clinker calcination, co-processing, waste heat power generation, cement grinding, packaging and shipping, and in-plant transportation.

6.3 Declaration of Unit The unit for declaring the carbon footprint of cement products is "1 ton of cement product of a certain strength grade and type". The carbon footprint of cement clinker... The unit of measurement is "1 ton of cement clinker of a certain strength grade and type".

6.4 Selection Criteria The material (energy) data in this document should comply with the

following selection criteria.

- a) All energy inputs (electricity, fuel, heat) must be listed;
- b) Both raw materials and auxiliary materials must be listed. If they meet the requirements of
- c) and d), they can be ignored.
- c) Neglected individual material (energy) flows or unit processes contribute no more than 1% to the product's carbon footprint;
- d) The total contribution of all neglected material (energy) flows and unit processes to the product's carbon footprint does not exceed 5%, and this contribution is not reflected in the product's carbon footprint report. This will be explained in the report;
- e) Construction of infrastructure such as roads and factory buildings, manufacturing of equipment used in various processes, consumption and emissions of personnel and living facilities within the factory area. Both can be ignored.

7.1 Data Quality Requirements

7.1.1 The data and data quality shall meet the relevant requirements of 6.3.6,

6.3.8 in GB/T 24067-2024.

7.1.2 The activity data must meet the following requirements.

- a) Completeness. The system should be checked for any missing unit processes or input/output substances in accordance with the data selection criteria (see 6.4). Activity data should ideally be collected from the company's production statistics for one calendar year or 12 consecutive months.
- b) Accuracy. Energy and raw material consumption data in the activity data should be derived from the company's actual production statistics records. All activity data should be accurate. It should be converted to be based on the declared unit, and relevant activity data, data sources, calculation processes, etc. should be recorded in detail.

7.1.3 The carbon footprint factor meets the following requirements.

- a) Representativeness. Field data or emission factor data provided by suppliers should be used first; secondly, the latest data published by the state should be used. And relevant database data that has been evaluated; finally, publicly published literature data and industry statistical recommendations are used;
- b) Completeness. This should cover all unit processes defined at the system boundaries.

7.2 Data Collection and Verification

7.2.1 The following data should be collected during the raw material and auxiliary material production stage.

---The consumption of raw materials and auxiliary materials is uniformly converted into mass (t);

---Consumption of purchased cement clinker is uniformly converted to mass (t);

---The carbon footprint of the production process of purchased cement clinker;

--- Carbon footprint factor of raw material and auxiliary material production process.

Note. When the limestone in the raw materials comes from our own mine, the consumption of explosives, lubricating oil, diesel oil, etc. is collected and converted into mass (t).

7.2.2 The following data should be collected during the raw material transportation stage.

---The transport weight and consumption of raw materials and auxiliary materials are uniformly converted into mass (t);

---Transportation distance and mode of transport for raw materials and auxiliary materials. If there are multiple suppliers of raw materials and auxiliary materials, a weighted average transportation distance can be used. The weight is the transport weight of raw materials and auxiliary materials;

---Carbon footprint factors for different modes of transportation.

7.2.3 The following data should be collected during the product manufacturing stage.

---The volume, distance, and mode of transport for fuels (alternative fuels); if multiple suppliers exist, a weighted average transport distance can be used. The weight is the weight of the transported goods.

---Consumption of energy sources such as electricity, fuel (alternative fuels), and heat;

---The lower heating value of fuels (alternative fuels);

7.4 Allocation

7.4.1 During system boundary settings or data collection, if it is found that at least one unit process's inputs and outputs contain multiple products, then... Distribute the allocation.

7.4.2 The allocation method is as follows:

a) Avoid data allocation by collecting data from detailed unit processes, such as using metering or statistical data by process or time period to replace data allocation across the entire plant. Annual statistics;

b) If data allocation cannot be avoided, prioritize allocation based on physical relationships, such as product quality;