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

GB/T 32151.41-2024

**Greenhouse gas emission accounting and reporting
requirements - Part 41: Industrial silicon production enterprises**

温室气体排放核算与报告要求 第41部分：工业硅生产企业

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting is required. This document is Part 41 of GB/T 32151. GB/T 32151 has been published in the following parts.
--Greenhouse gas emissions accounting and reporting requirements Part

1. Power generation companies; -- Greenhouse gas emissions accounting and reporting requirements Part

2. Power grid companies; -- Greenhouse gas emissions accounting and reporting requirements Part

3. Magnesium smelting enterprises; -- Greenhouse gas emissions accounting and reporting requirements Part
4. Aluminum smelting enterprises; -- Greenhouse gas emissions accounting and reporting requirements Part
5. Iron and steel production enterprises; -- Greenhouse gas emissions accounting and reporting requirements Part
6. Civil aviation enterprises; -- Carbon emission accounting and reporting requirements Part
7. Flat glass production enterprises; -- Carbon emission accounting and reporting requirements Part
8. Cement production enterprises; -- Carbon emission accounting and reporting requirements Part
9. Ceramic production enterprises; -- Carbon emissions accounting and reporting requirements Part
10. Chemical production enterprises; -- Greenhouse gas emissions accounting and reporting requirements Part
11. Coal production enterprises; -- Greenhouse gas emissions accounting and reporting requirements Part
12. Textile and clothing enterprises; -- Carbon emission accounting and reporting requirements Part

1 Scope

China's national requirements for greenhouse gas emission accounting and reporting by industrial silicon producers. It is Part 41 of GB/T 32151 and specifies the accounting boundary, the calculation steps and methods, the data quality management, and the content and format of the report, with informative annexes giving a corporate emission report format template and default values for the relevant parameters. Industrial silicon, also called metallurgical grade silicon, is made by reducing quartz with carbon in a submerged arc furnace at around two thousand degrees Celsius. It is the feedstock for silicones, for aluminium alloys, and above all for the polysilicon from which solar cells are made - which is why China's industrial silicon capacity has grown so rapidly and why its emissions have become a subject of policy attention. Its emission profile is dominated by two terms and they pull in different directions. The first is electricity: a submerged arc furnace consumes on the order of ten thousand kilowatt hours per tonne of silicon, which places industrial silicon among the most electricity-intensive products made anywhere, and which is why the industry has concentrated in provinces with cheap hydro or coal power. The second is the carbon reductant. Reducing quartz to silicon consumes carbon stoichiometrically, and every

atom of it leaves as carbon dioxide - so a large process emission is inherent in the chemistry and cannot be removed by any change of energy supply. What can change it is the source of that carbon: charcoal and wood chips are widely used alongside coal and petroleum coke, and biogenic carbon is accounted for differently from fossil carbon. The consumption of the carbon electrodes themselves adds a third, smaller term. Issued on 29 September 2024 and in force since 1 April 2025.

This document specifies the accounting boundaries, accounting steps and methods, data quality management, Report content and format. This document applies to the accounting and reporting of greenhouse gas emissions of companies whose main business is industrial silicon production.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 213 Method for determination of calorific value of coal

GB/T 384 Determination of calorific value of petroleum products

GB/T 22723 Determination of energy of natural gas

GB/T 32150 General principles for accounting and reporting of greenhouse gas emissions from industrial enterprises

3 Terms and definitions

The terms and definitions defined in GB/T 32150 apply to this document.

4 Calculation boundaries

4.1 General The reporting entity shall be a corporate legal person or an independent accounting unit deemed to be a legal person, and shall calculate and report the greenhouse gas emissions generated by its production system. The production system includes the main production system, auxiliary production system and the subsidiary production system that directly serves the production. The production system includes power, power supply, water supply, testing, machine repair, warehouse, transportation, etc. The auxiliary production system includes the production command system (factory headquarters) and the factory Departments and units within the area that provide production services (such as staff canteens, workshop bathrooms, health centers, etc.). The scope of greenhouse gas emissions accounting and reporting for industrial silicon

production enterprises should include some or all of the following emissions according to their production process. Emissions from fossil fuel combustion, process emissions, and emissions from purchased and exported electricity and heat. Greenhouse gas emissions from industrial silicon production enterprises The schematic diagram of the accounting boundary is shown in Figure 1.

20 Furniture manufacturing enterprises; --Part

21. Foundries; -- Part

22. Livestock and poultry breeding enterprises; -- Part

23. Plantation industry institutions; --Part

24. Electronic equipment manufacturing enterprises; -- Part

25. Food, tobacco, alcohol, beverage and refined tea enterprises; --Part

26. Paper and paper products manufacturing enterprises; -- Part

27. Land transportation enterprises; --Part

28. Mining enterprises; --Part

29. Machinery and equipment manufacturing enterprises; -- Part

30. Water transport enterprises; -- Part

31. Wood processing enterprises; --Part

32. Coatings manufacturers; --Part

33. Pigment manufacturers; --Part

34. Carbon material production enterprises; --Part