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

GB/T 31590-2025

Replacing GB/T 31590-2015

**Analytical methods for the chemical composition of flue gas
DeNOx catalysts**

烟气脱硝催化剂化学成分分析方法

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**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document supersedes GB/T 31590-2015 "Analysis Method for Chemical Composition of Flue Gas Denitrification Catalysts" and is consistent with GB/T 31590-2015. Compared to previous versions, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- The method for determining the barium mass fraction has been removed from the "Scope" section (see Chapter 1 of the.2015 edition);
- Added content on terms and definitions (see Chapter 3);
- The requirements for "General Provisions" have been changed, and the references to GB/T 601 have been removed (see Chapter 4, Chapter 3 of the.2015 edition);
- The wording of "principle" has been changed (see Chapter 5, 5.1 of the.2015 edition);
- The requirements for oxides in "Reagents or Materials" have been changed (see Chapter 6, 5.2 of the.2015 edition); mixed fluxes and requirements have been added. (See 6.9), Material requirements for molds (see 6.12); Lithium metaborate, anhydrous lithium tetraborate, and barium oxide have been removed (see.2015 edition). 5.2.1, 5.2.2 and 5.2.11);
- The requirements for drying ovens, platinum crucibles, muffle furnaces, analytical balances, and tablet presses in the "Instruments and Equipment" section have been revised (see 7.2, 7.3, and 7.5). Versions

7.7 and 7.9 (and 5.3.2, 5.3.3, 5.3.5, 5.3.6, and

5.3.8 in the 2015 edition) added requirements for melting furnaces and platinum molds. and its requirements (see

---The normative references for sampling have been revised (see 8.1, Chapter

1 Scope

GB/T 31590-2025 is the Chinese national standard covering assaying an SCR catalyst - the titanium, vanadium, tungsten and molybdenum that make it work, and the alkali, arsenic and phosphorus that poison it, which is how a spent catalyst is judged for regeneration or disposal. Issued on 2 December 2025, it has been in force since 1 July 2026, replacing GB/T 31590-2015.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 603 Preparation of reagents and products used in chemical reagent test methods

GB/T 6003.1 Technical requirements and inspection of test sieves - Part

GB/T 6679 General Rules for Sampling of Solid Chemical Products

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 16597 General Rules for X-ray Fluorescence Spectrometry in Metallurgical Products

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 bulk sample The homogeneous sample obtained after being stripped from the flue gas denitrification catalyst and thoroughly ground.

3.2 surface sample The sample after being peeled off and surface-treated from the honeycomb flue gas denitrification catalyst.

4 General Provisions

Unless otherwise specified, all reagents used in this document shall be of analytical grade or higher, and all preparations and products used shall conform to GB/T 603. The water used in the experiment should be prepared in accordance with the specifications for Grade

III water in GB/T 6682.

5 Principles

When the atoms of the element to be tested are excited by high-energy radiation, their inner-shell electrons undergo transitions, simultaneously emitting X-rays with a certain characteristic wavelength. X-rays are used to perform quantitative, qualitative, and semi-quantitative analysis of the analyte based on the wavelength and intensity of the measured spectral lines.