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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 16543-2025

Replacing GB 16543-2008

Safety specification for explosion prevention and protection on bituminous coal injection system into blast furnace

高炉喷吹烟煤系统防爆安全规范

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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 replaces GB 16543-2008 "Safety Regulations for Explosion-proofing of Blast Furnace Pulverized Coal Injection Systems". Compared with GB 16543-2008, except for the structure... Aside from adjustments and editorial changes, the main technical changes are as follows:

---The definitions of the terms "pulverized coal," "pulverized coal conveying system," and "pulverized coal injection system" have been revised (see 3.1, 3.4, and 3.5,.2008 edition). 3.1, 3.4, 3.5);

---The terms "single-pipeline injection process", "valve safety position", "multi-pipeline injection process", "granular coal", "inert gas", and "raw coal storage" have been removed.

"Transportation system" and "explosion relief conduit" (see 3.13-3.15, 3.17-

3.20 in the.2008 edition);

---Added requirements for identifying dust explosion risks in blast furnace pulverized coal injection systems, establishing relevant safety management systems and safe operating procedures for dust explosion prevention. Find the answer (see

---The requirements for the design, construction, approval, and new construction, renovation, and expansion of blast furnace pulverized coal injection systems have been removed (see section

4.4 of the.2008 edition). 4.6, 4.8);

---The requirement for fire prevention and explosion protection training for operators of blast furnace pulverized coal injection systems has been removed (see

4.9 of the.2008 edition);

---The requirements for explosion-proof safety, fire hazard classification, and electrical design of factory buildings have been revised (see 5.1,

5.2 in the.2008 edition);

---The requirements for the debris removal device on the raw coal bunker conveyor have been changed (see 5.2.2, see

5.1.6 in the.2008 edition);

1 Scope

China's mandatory safety specification for explosion prevention and protection in blast furnace pulverised coal injection systems. Injecting pulverised coal into a blast furnace replaces expensive coke with cheap coal and is standard practice in modern ironmaking - and it means grinding coal to a powder and moving it pneumatically through a plant, which is one of the most explosive combinations in heavy industry. A coal dust cloud within its explosive range needs only an ignition source, and the mill itself provides several: friction, hot surfaces, and the smouldering deposits that form in dead spots and become the ignition source hours later. The specification covers inerting with flue gas or nitrogen to keep the oxygen below the level that supports combustion, the temperature and carbon monoxide monitoring that detects a smouldering fire before it becomes an explosion, the explosion venting and suppression, and the isolation that stops an explosion propagating through the pipework.

This document specifies the general measures for preventing and protecting against pulverized coal explosions in blast furnace injection systems and mixed coal injection systems in ironmaking plants. The requirements, including detailed requirements for

buildings and structures, process systems and equipment, explosion control measures, and operational safety management, describe the relevant requirements. The corresponding verification method. This document applies to the design of pulverized coal explosion prevention and protection measures in blast furnace injection bituminous coal systems and blast furnace mixed coal injection systems in ironmaking plants. Production, maintenance, repair and management.

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 3836.35 Explosive Atmospheres - Part

35.Classification of Explosive Dust Atmospheres

GB 12158 General requirements for the prevention of electrostatic discharge accidents

GB 15577 Safety Regulations for Dust Explosion Prevention

GB/T 15604 Dust Explosion Prevention Terminology

GB 15605 Dust Explosion Relief Standard

GB 39800.1 Specifications for the Configuration of Personal Protective Equipment Part

3 Terms and Definitions

The terms and definitions defined in GB/T 15604 and the following terms and definitions apply to this document.

3.1 An aggregate of dry, ash-free coal particles with a volatile matter content higher than 10%, capable of being suspended in an airflow.

Note. Abbreviated as "pulverized coal".

3.2 The entire production system includes raw coal storage and transportation, drying, pulverized coal preparation, pulverized coal transportation, and pulverized coal injection into the blast furnace after the raw coal enters the pulverized coal injection area of the ironmaking plant.

3.3 The process begins with the raw coal bunker, then moves to the heating furnace and its gas supply system, and finally to the pulverized coal silo, where raw coal is dried, ground into pulverized coal, and then collected and stored.