

HJ

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**Technical specifications for arsenic-containing solid waste
stabilization**

(English Translation)

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Foreword

To implement the "Environmental Protection Law of the People's Republic of China" and "The Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste" and other laws and regulations, prevent and control environmental pollution, improve the quality of the ecological environment, regulate the construction and operation management of arsenic slag stabilization Set this standard.

This standard specifies the overall requirements, process design, main process equipment and materials, testing and Technical requirements for process control, main auxiliary engineering, labor safety and occupational health, construction and acceptance, operation and maintenance.

This standard is a guiding standard.

This standard is issued for the first time.

This standard was formulated by the Department of Science, Technology and Finance, and the Department of Regulations and Standards of the Ministry of Ecology and Environment.

The main drafting organizations of this standard. Central South University, Sainz Environmental Protection Co., Ltd., Hunan Academy of Environmental Protection Sciences.

This standard was approved by the Ministry of Ecology and Environment on January 13,

2020.

This standard will be implemented on January 14, 2020.

This standard is interpreted by the Ministry of Ecology and Environment.

Technical specifications for arsenic slag stabilization and disposal engineering

1 Scope of application

This standard specifies the overall requirements, process design, main process equipment and materials, testing and Process control, main auxiliary engineering, labor safety and occupational health, construction and acceptance, operation and maintenance, etc.

This standard applies to non-ferrous metal smelting processes that do not have economic recovery value and belong to the final entry of hazardous waste.

The stabilization and disposal of arsenic-containing solid waste in the landfill can be used as the environmental impact assessment and feasibility of the non-ferrous metal smelting construction project Research and technical basis for arsenic slag stabilization treatment project design and construction, completion acceptance, operation and management after completion.

2 Normative references

The content of this standard refers to the terms in the following documents. For undated reference documents, their valid versions (including amendments) are applicable to this standard.

GB 3096 Acoustic Environmental Quality Standard GB 5085.1 Identification Standard of Hazardous Waste Corrosion Identification GB 5085.3 Identification Standard for Hazardous Wastes Identification of Extractive Toxicity GB 5085.6 Identification standard for hazardous waste identification of toxic substance content GB 8978 Integrated Wastewater Discharge Standard GB 12348 Environmental Noise Emission Standard at the Boundary of Industrial Enterprises GB/T 12801 General Principles of Safety and Health Requirements for Production Process GB/T 14848 Groundwater Quality Standard GB 16297 Comprehensive Emission Standard of Air Pollutants GB 18597 Pollution Control Standard for Hazardous Waste Storage GB 18598 Pollution Control Standard for Hazardous Waste Landfill GB 50015 Code for Design of Building Water Supply and Drainage GB 50016 Code for fire protection of building design GB 50019 Design Code for Heating, Ventilation and Air Conditioning of Industrial Buildings GB 50034 Architectural Lighting Design Standard GB 50037 Building Ground Design Code GB 50052 Code for Design of Power Supply and Distribution System GB 50054 Low Voltage Power Distribution Design Code GB 50187 General Layout Design Specification for Industrial Enterprises GB 50194 Safety Code for Power Supply and Use at Construction Site GB/T 50326 Construction Project Management

Code GB 50988 Non-ferrous metal industry environmental protection engineering design
 code GB J 22 Factory and Mine Road Design Code GBZ 1 Hygienic Standard for Design of
 Industrial Enterprises GBZ 2.1 Occupational Exposure Limits for Hazardous Factors in the
 Workplace Part 1: Chemical Hazardous Factors HJ/T 20 Technical Specification for
 Sampling and Sample Preparation of Industrial Solid Waste HJ/T 298 Technical
 Specification for Identification of Hazardous Wastes HJ 2020 General Technical
 Specification for Bag Dust Removal Engineering HJ 2025 Technical specification for
 hazardous waste collection, storage and transportation HJ 2042 Technical Guidelines for
 Hazardous Waste Disposal Engineering "Measures for Completion Inspection and
 Acceptance of Construction Projects (Engineering)" (Ji Jian Jian [1990] No. 1215)
 "Regulations on Environmental Protection Management of Construction Projects" (Guo
 Decree No. 682) "Interim Measures for the Acceptance of Environmental Protection of
 Construction Projects" (National Environmental Planning and Environmental Assessment
 [2017] No. 4)

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 Arsenic-containing solid waste

The non-ferrous metal smelting process produces arsenic-containing solid wastes that do not have economic recovery value and are hazardous wastes.

3.2 Arsenic-containing solid waste stabilization

Through physical, chemical or the synergy of the two, the arsenic and other heavy metals in the arsenic slag are transformed into a stable form or fixed in a dense inclusion with a certain strength, it can reduce the mobility of arsenic and other heavy metals and reduce the risk of environmental pollution by arsenic slag.

Arsenic slag stabilization includes arsenic slag mineralization stabilization, arsenic slag gel coagulation stabilization, and the combined stabilization of the two.

3.3 Arsenic-containing solid waste mineralization

The arsenic and other heavy metals in the arsenic slag form stable compounds through the synergistic effect of chemical agents and mechanical forces, making it have the chemical stability, leaching toxicity and corrosiveness of natural minerals meet the requirements of relevant standards and realize stabilization.

3.4 Arsenic-containing solid waste gelling solidification

Use inorganic or organic gelling agents to physically wrap the arsenic and other heavy metals in the arsenic slag, combined with chemical adsorption and ion Exchange, precipitation reaction, etc., fix arsenic and other heavy metals in dense inclusions of a certain strength, leaching toxicity and corrosiveness Meet the requirements of relevant standards and achieve stabilization.

4 Source and classification of arsenic residue

4.1

Arsenic slag is mainly derived from the smelting process of non-ferrous metals. According to the main occurrence of arsenic, it is divided into oxide arsenic slag and arsenate Arsenic slag, sulfide arsenic slag and their mixtures.

4.1.1

Oxide-type arsenic slag is produced by pyrometallurgical processes such as roasting, smelting, blowing, and pyro-refining, mainly including slag.

4.1.2

Arsenate arsenic slag is produced by the process of lime neutralization, lime-iron salt treatment of arsenic-containing waste acid and wastewater, or by crude antimony concentrate the process of arsenic removal mainly includes neutralization slag, primary arsenic alkali slag, and secondary arsenic alkali slag.

4.1.3

Sulfide arsenic slag is produced by the process of treating arsenic-containing waste acid by the sulfidation method, and mainly includes arsenic filter cake and arsenic sulfide residue.

4.2

The main occurrence form, leaching toxicity, corrosivity (pH), and arsenic content of arsenic in arsenic slag should be sampled and analyzed before engineering design.

Analyze and use the test results as an important basis for the stabilization engineering design.

5.1 General provisions

5.1.1

The design of the arsenic slag stabilization treatment project should comply with the relevant provisions of the current national laws, regulations, standards and specifications.