

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 1094-2020

**Technical specifications for petroleum refining industry waste
gases treatment
(English Translation)**

Issued on: January 1, 1970

Implemented on: January 13, 2020

Issued by: Ministry of Ecology and Environment

Table of Contents

Foreword

- 1 Scope of application
- 2 Normative references
- 3 Terms and definitions
- 4 Pollutants and pollution load
- 5 General requirements
- 6 Waste gas treatment process design
- 7 Main process equipment and materials
- 8 Inspection and Process Control
- 9 Main auxiliary projects
- 10 Work Safety and Occupational Health
- 11 Project construction and acceptance
- 12 Operation and maintenance

Foreword

To implement the "Environmental Protection Law of the People's Republic of China", "The Air Pollution Prevention Law of the People's Republic of China" and other laws and regulations, Pollution, improve the quality of the ecological environment, standardize the construction and operation management of waste gas treatment projects in the petroleum refining industry, and formulate this standard.

This standard specifies the overall requirements, process design, testing and process control, construction and acceptance, Technical requirements for operation management.

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.

Drafting organizations of this standard. China Petroleum & Chemical Corporation Dalian Research Institute of Petroleum and Chemical Industry, Beijing Quanhua Environmental Technical Standard Research Heart, Beijing China Electric Union Environmental Protection Co., Ltd.

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 Waste Gas Treatment Engineering in Petroleum Refining Industry

1 Scope of application

This standard specifies the technical requirements for the design, construction, acceptance and operation management of waste gas treatment projects in the petroleum refining industry.

This standard is applicable to waste gas treatment projects in the petroleum refining industry, and can be used as an environmental impact assessment for petroleum refining construction projects.

Technical basis for gas treatment engineering consultation, design, construction, acceptance, and 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 all Some amendments) apply to this 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 13347 Petroleum gas pipeline flame arrester GB 14554 Emission Standard of Odor Pollutants GB/T 16157 Determination of particulate matter in exhaust from stationary sources and sampling method for gaseous pollutants GB 31570 Pollutant Emission Standard for Petroleum Refining Industry GB 50058 Code for design of electrical installations in explosive atmospheres GB 50160 Design fire protection standard for petrochemical enterprises GB 50264 Industrial equipment and pipeline insulation engineering design code GB 50493 Design code for the detection and alarm of combustible gas and toxic gas in petrochemical industry GB 50650 Lightning protection design specification for petrochemical equipment GB 50726 Industrial equipment and pipeline anti-corrosion engineering construction code GB 50727 Code for acceptance of construction quality of industrial equipment and pipeline anti-corrosion engineering GB 50759 Code for Design of Oil and Gas Recovery Facilities of Oil Loading System GB 50984 Code for layout design of petrochemical plants GB 51284 Design standard for flue gas desulfurization process GBZ 1 Hygienic Standard for Design of Industrial Enterprises HJ/T 1 Fixed position device for gas parameter measurement and sampling HJ 75 Technical

Specification for Continuous Monitoring of Smoke (SO₂, NO_x, Particulate Matter) Emissions from Stationary Pollution Sources HJ 76 Technical requirements and detection methods of continuous monitoring system for emission of stationary pollution source flue gas (SO₂, NO_x, particulate matter) HJ/T 386 Technical Requirements for Environmental Protection Products Industrial Waste Gas Adsorption Purification Device HJ/T 387 Technical requirements for environmental protection products, industrial waste gas absorption and purification devices HJ/T 389 Technical Requirements for Environmental Protection Products Industrial Organic Waste Gas Catalytic Purification Device HJ 462 Industrial boiler and furnace wet flue gas desulfurization engineering technical specifications HJ 562 Thermal Power Plant Flue Gas Denitration Engineering Technical Specification Selective Catalytic Reduction Method HJ 732 Air bag method for sampling volatile organic compounds in exhaust gas from stationary sources HJ 733 Leakage and open liquid level emission of volatile organic compounds detection technology guide HJ 880 Technical Guide for Self-monitoring of Pollutant Discharge Units Petroleum Refining Industry HJ 1013 Technical requirements and testing methods for continuous monitoring system of non-methane total hydrocarbons in waste gas from stationary sources HJ 2026 Technical specification for industrial organic waste gas treatment engineering by adsorption method HJ 2027 Technical Specification for Industrial Organic Waste Gas Treatment Engineering by Catalytic Combustion Method SH/T 3007 Petrochemical Storage and Transportation System Tank Farm Design Specification SH 3009 petrochemical flammable gas exhaust system design specification SH 3011 Specification for layout design of petrochemical process equipment SH/T 3015 Design Specification for Petrochemical Water Supply and Drainage System SH/T 3024 Petrochemical Environmental Protection Design Specification SH 3047 Occupational Safety and Health Design Specification for Petrochemical Enterprises SH/T 3060 Design Specification for Power Supply System of Petrochemical Enterprises SH/T 3146 Design Code for Noise Control in Petrochemical Industry "Regulations on the Safety Management of Dangerous Chemicals" Order No. 645 of the State Council of the People's Republic of China "Regulations on Environmental Protection Management of Construction Projects" Order No. 682 of the State Council of the People's Republic of China "Interim Measures for the Environmental Protection Acceptance of Construction Projects Completed" Guohuan Gui Environmental Assessment (2017) No. 4

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 Fluid catalytic cracking flue gas

Refers to the flue gas generated during the catalytic cracking process from the coking regeneration of the catalyst. The main pollutants in the flue gas are sulfur dioxide (SO₂), Nitrogen oxides (NO_x), particulate matter, nickel and its compounds, carbon monoxide (CO), etc.

3.2 Process heating furnace flue gas

Refers to the flue gas produced by the process heating furnace burning oil or gas. The main pollutants in the flue gas are sulfur dioxide, nitrogen oxides, particulates.

3.3 Sulfur recovery tail gas

Refers to the tail gas discharged from the by-product hydrogen sulfide gas of a petroleum refining enterprise after elemental sulfur is recovered by a sulfur recovery device. The main tail gas is Pollutants include hydrogen sulfide (H₂S), sulfur dioxide, carbonyl sulfide (COS), and carbon disulfide (CS₂).

3.4 Oxidized asphalt tail gas

Refers to the tail gas discharged during the reaction between residual oil and air in the oxidized bitumen plant to generate oxidized bitumen.

Pollutants include benzene series, oxygenated organic matter, asphalt smoke, organic sulfides, fused ring aromatic hydrocarbons, and benzo(a)pyrene (BaP).

3.5 S Zorb flue gas S Zorb flue gas

Refers to the flue gas generated during the regeneration process of the adsorption desulfurization catalyst on the S Zorb gasoline adsorption desulfurization device. The flue gas contains high Concentration of sulfur dioxide.

3.6 Catalyst regeneration flue gas of catalytic reforming process

Refers to the flue gas generated during the catalyst regeneration process of the oil reformer. The main pollutants are hydrogen chloride (HCl), volatile Sexual organic matter (VOCs).

3.7 Oxidation sweetening process tail gas oxidation sweetening process tail gas

Refers to the tail gas produced in the process of catalytic oxidation of liquid hydrocarbons or gasoline fractions with air, and the tail gas of liquid hydrocarbons the main pollutants in the exhaust gas are dimethyl disulfide and other organic sulfides. The main pollutants in the tail gas of gasoline oxidative desulphurization are dimethyl disulfide.

Disulfide and other organic sulfur compounds and gasoline oil and gas.

3.8 Flare gas

Refers to the flue gas emitted from the combustion of the torch. The main pollutants are carbon black particulate matter, sulfur dioxide, nitrogen oxide, carbon monoxide, Hydrogen sulfide, ammonia (NH₃) and volatile organic compounds, etc.