

HJ

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Technical specifications of fenton oxidation process for wastewater treatment (English Translation)

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Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and "Water Pollution Prevention Law of the People's Republic of China" and other laws and regulations, Prevent and control water pollution, improve the quality of ecological environment, standardize the construction and operation management of Fenton oxidation wastewater treatment project, and make Set this standard.

This standard specifies the overall requirements, process design, main process equipment and materials, Fenton oxidation wastewater treatment project Technical requirements for inspection and process control, 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.

1 Scope of application

This standard specifies the overall requirements, process design, main process equipment and materials, Fenton oxidation wastewater treatment project Technical requirements for

inspection and process control, construction and acceptance, operation and maintenance.

This standard is applicable to the design, construction, acceptance, and acceptance of wastewater treatment projects containing refractory organics by Fenton oxidation Operation and maintenance.

2 Normative references

The content of this standard refers to the following documents or their clauses. For undated reference documents, the latest version applies in this standard.

GB/T 534 Industrial sulfuric acid GB/T 1616 Industrial hydrogen peroxide GB 3096 Acoustic Environmental Quality Standard GB/T 3797 electrical control equipment GB/T 4942.2 Low-voltage electrical enclosure protection class GB 5085.7 General Rules for Identification Standards of Hazardous Wastes GB 5226.1 Electrical Safety of Machinery Electrical Equipment of Machinery Part 1: General Technical Conditions GB 6944 Dangerous goods classification and article number GB/T 10531 Water treatment agent ferrous sulfate GB 12268 List of Dangerous Goods 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 15603 General rules for the storage of commonly used dangerous chemicals GB/T 17514 Water treatment agent anionic and non-ionic polyacrylamide GB 18597 Pollution Control Standard for Hazardous Waste Storage GB 18598 Pollution Control Standard for Hazardous Waste Landfill GB 18599 Pollution control standard for general industrial solid waste storage and disposal sites GB/T 22627 water treatment agent polyaluminum chloride GB 50014 Outdoor Drainage Design Code GB 50016 Code for fire protection of building design GB/T 50046 Design standard for corrosion protection of industrial buildings GB 50053 20kV and below substation design code GB/T 50087 Industrial Enterprise Noise Control Design Code GB 50108 Technical code for waterproofing of underground engineering GB 50141 Code for construction and acceptance of water supply and drainage structures GB 50160 Code for fire protection design of petrochemical enterprises GB 50187 General Layout Design Specification for Industrial Enterprises GB 50204 Code for Acceptance of Construction Quality of Concrete Structure Engineering GB 50205 Code for Construction Quality Acceptance of Steel Structure Engineering GB 50212 Construction Code for Anti-corrosion Engineering of Buildings GB 50231 General specification for construction and acceptance of mechanical equipment installation engineering GB 50235 Construction Code for Industrial Metal Pipeline Engineering GB 50268 Code for construction and acceptance of water supply and drainage pipeline engineering GB 50275 Specification for construction and acceptance of fan, compressor and pump installation engineering 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 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 GBZ 2.2 Occupational Exposure Limits for Hazardous Factors in the Workplace Part 2: Physical Factors AQ 3018 General Rules for Operation Safety of Hazardous Chemicals Storage Tank Farm AQ 3047 Specification for Safety Warning Signs in Chemical Workplaces CJJ 60 Technical Regulations for Operation, Maintenance and Safety of Urban Sewage Treatment Plant CJJ/T 120 Technical Standard for Electrical and Automation Engineering of Urban Drainage System HG/T 20507 Automation Instrument Selection Design Specification HG 20520 glass fiber reinforced plastic/polyvinyl chloride (FRP/PVC) composite pipe design regulations HJ/T 91 Technical specification for surface water and sewage monitoring HJ/T 298 Technical Specification for Identification of Hazardous Wastes HJ.2006 Technical Specification for Sewage Coagulation and Flocculation Treatment Engineering HJ.2007 Technical Specification for Wastewater Air Flotation Treatment Engineering HJ 2021 Technical specification for sewage treatment engineering of internal circulation aerobic biological fluidized bed HJ 2025 Technical specification for hazardous waste collection, storage and transportation SH/T 3024 Petrochemical Environmental Protection Design Specification "National Directory of Hazardous Wastes" (Order No. 39 of the Ministry of Environmental Protection) "Regulations on the Safety Management of Hazardous Chemicals" (State Council Order No. 344) "Interim Measures for Environmental Protection Acceptance of Construction Projects Completed" (Guo Environmental Guidance and Environmental Assessment [2017] No. 4) "Construction Project (Engineering) Completion Inspection and Acceptance Measures" (Ji Jian Jian [1990] No. 1215) "Technical Requirements for Environmental Protection Completion Acceptance Monitoring of Construction Projects" (Huanfa [2000] No. 38)

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 Fenton reagent fenton reagent

Refers to a homogeneous liquid system composed of ferrous ions (as a catalyst) and hydrogen peroxide (as an oxidant).

3.2 Fenton oxidation

Refers to the process in which Fenton's reagent generates hydroxyl radicals under acidic conditions, destroys the structure of organic matter, and finally oxidizes and decomposes organic matter.

3.3 Acid dosing process

Refers to the process of adding concentrated sulfuric acid or dilute sulfuric acid to adjust the pH value of wastewater to acidity, so that the pH value of wastewater is suitable for

Fenton oxidation reaction.

3.4 Catalyst mixing process

Refers to the process of adding catalyst and fully mixing the catalyst (ferrous salt, usually ferrous sulfate) with wastewater.

3.5 Oxidation process

Refers to the addition of oxidant (hydrogen peroxide) to fully mix the oxidant and wastewater, and generate Fenton oxygen under the action of the catalyst the process of oxidizing and decomposing organic matter in wastewater.

3.6 Neutralizing process

Refers to the process of adjusting the pH value of the effluent from the oxidation reaction tank to meet the subsequent processing requirements or discharge requirements.

Adjust the pH value to 7-9.

4.1 General rules

4.1.1

Fenton oxidation method can be used as a pretreatment process before biochemical treatment of wastewater, and it can also be used as advanced treatment after biochemical treatment of wastewater Craft.

4.1.2

Fenton oxidation method is mainly suitable for the treatment of wastewater containing refractory organic matter, such as paper industry wastewater, dyeing and finishing industry wastewater, Coal chemical wastewater, petrochemical wastewater, fine chemical wastewater, fermentation industrial wastewater, landfill leachate and other wastewater and industrial parks Centralize the treatment of wastewater from wastewater treatment plants.

4.1.3

The removal rate of pollutants by Fenton oxidation method should be determined through experiments or by referring to similar cases in the same industry.

4.2 Design water volume

4.2.1

The design water volume shall be designed according to the highest daily waste water volume. When setting the conditioning tank before the Fenton oxidation process, the maximum water volume design for the Fenton oxidation process after the average volume of the saving pond.