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

HJ 579-2010

**Technical specifications for membrane separation process in
wastewater treatment
(English Translation)**

Issued on: October 12, 2010

Implemented on: January 1, 2011

Issued by: Ministry of Ecology and Environment

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Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and the "Water Pollution Prevention and Control Law of the People's Republic of China" this standard is formulated for the construction and operation management of engineering, prevention of environmental pollution, protection of the environment and human health.

This standard specifies the design parameters, system installation and commissioning, project acceptance, operation management and pre-treatment of the membrane separation wastewater treatment project.

The choice of rational and post-treatment processes.

Appendix A to Appendix C of this standard are informative annexes.

This standard was formulated by the Science and Technology Standards Department of the Ministry of Environmental Protection.

This standard is mainly drafted by. Jiangxi Jindalai Environmental Research and

Development Center Co., Ltd., Huazhong University of Science and Technology, Beijing Environmental Protection Science Research Research Institute.

This standard was approved by the Ministry of Environmental Protection on October 12, 2010.

This standard has been implemented since January 1, 2011.

This standard is explained by the Ministry of Environmental Protection.

Membrane separation method sewage treatment engineering technical specification

1 Scope of application

This standard specifies the design parameters, system installation and commissioning, project acceptance, operation management, and pre-treatment of membrane separation wastewater treatment engineering.

The choice of processing and post-treatment processes.

This standard is applicable to wastewater treatment and deep treatment and reuse by membrane separation method. It can be used as environmental impact assessment and environmental protection.

The technical basis for the design and construction, project completion environmental protection acceptance and operation and management after completion. The membrane separation method referred to in this standard is.

Microfiltration, ultrafiltration, nanofiltration and reverse osmosis membrane separation technology.

This standard does not apply to membrane separation projects using membrane bioreactor methods and charged membranes for wastewater treatment and reuse.

2 Normative references

The contents of this standard refer to the terms in the following documents. For undated references, the valid version applies to this standard.

GB 50235 Industrial metal pipeline engineering construction and acceptance specifications
GB/T 985.1 Recommended groove for gas welding, electrode arc welding, gas shielded welding and high energy beam welding
GB/T 1804 General tolerances for linear and angular dimensions of tolerances
GB/T 3797 electrical control equipment
GB 5226.1 Mechanical electrical safety machinery and electrical equipment - Part 1. General technical conditions
GB/T 19249 reverse osmosis water treatment equipment
GB/T.20103 Membrane Separation Technology Terminology
HJ/T 270 environmental protection product technical requirements
reverse osmosis water treatment device
JB/T 2932 water treatment

equipment technical conditions HG 20520 FRP/PVC (PRP/PVC) composite pipe design regulations Measures for the Administration of Environmental Protection Acceptance for Completion of Construction Projects (Order No. 13 of the State Environmental Protection Administration)

3 Terms and definitions

The terms defined in the Membrane Separation Technology Terminology (GB/T.20103) and the following terms and definitions apply to this standard.

Membrane separation

A method in which a solvent is used as a driving force and a membrane is used as a filter medium to separate a solvent from a solute.

Membrane degradation the process by which the membrane is oxidized or hydrolyzed to cause a decrease in membrane performance.

Membrane fouling

Refers to the process of membrane degradation due to the deposition of organic pollutants, microorganisms and their metabolites.

Membrane fouling

Refers to the concentration of salts above the precipitation of their solubility on the membrane surface.

4.1 Influent water quality requirements

4.1.1

When designing the membrane system, the water inlet requirements should be met and the appropriate membrane elements should be selected.

4.1.2

Internal pressure type hollow fiber microfiltration and ultrafiltration system water inlet, water quality requirements can refer to Table 1.

Table 1 Internal pressure type hollow fiber microfiltration, ultrafiltration system water reference value

Membrane Material	Reference Turbidity/NTU	SS/(mg/L)	Mineral Oil Content/(mg/L)
Polyvinylidene fluoride (PVDF)	≤20	≤30	≤3
Polyethylene (PE)	100	000	Removal of suspended particles, bacteria, partial viruses and large-scale colloids
Drinking water to turbid, water reuse, nanofiltration or reverse osmosis System pretreatment Ultrafiltration (UF)	0.002~0.1	10 000~100 000	Removal of colloids, proteins, microorganisms and macromolecular organics
Drinking water purification, reclaimed water, nanofiltration or			

reverse osmosis System pretreatment Nanofiltration (NF) 0.001 ~ 0.003.200 ~ 1 000
Removal of multivalent ions, partial monovalent ions, and Molecular weight of.200 to 1 000
Daltons Body Remove the hardness, color and radioactive radium of well water, Partial
removal of soluble salts. Process material concentration, etc.

Reverse osmosis (RO) 0.000 4~0.000 6 >100 to remove soluble salts and molecular weight
greater than

100 Daltons Organics Seawater and brackish water desalination, boiler feed water, industry
Pure water preparation, wastewater treatment and special separation

5.1 General provisions

5.1.1

In order to prevent membrane degradation and membrane clogging, suspended solids,
sharp particles, sparingly soluble salts, microorganisms, oxidants, organic Pretreatment of
pollutants such as substances and greases.

5.1.2

The depth of pretreatment shall be determined according to the membrane material, the
structure of the membrane module, the quality of the raw water, the quality requirements of
the produced water and the recovery rate.

5.1.3

Inlet water temperature range. When the pH is 2~10, the operating temperature is 5~45°C;
when the pH value is greater than 10, the operating temperature should be less than 35 °
C.

5.2 Pretreatment of microfiltration and ultrafiltration systems

5.2.1

Removal of suspended particulate matter and colloids in the influent can be carried out by a
coagulation-precipitation-filtration process. Can be added to help increase membrane flux,
and a flocculant compatible with the membrane material.

5.2.2

Fine mesh and disc filters should be installed before microfiltration and ultrafiltration
systems. Disk filter filtration accuracy before internal pressure membrane system it should
be less than 100 µm; before the external pressure membrane system, the filter efficiency of
the disc filter should be less than 300 µm.

5.2.3

When the influent mineral oil exceeds the value of Table 1 or the animal and vegetable oil
exceeds 50 mg/L, the degreasing process should be increased.