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Homogeneous electrodialysis membrane

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

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1 Scope

GB/T 45010-2024 specifies homogeneous ion exchange membranes for electrodialysis. Unlike the heterogeneous membranes made by pressing resin powder into a binder, a homogeneous membrane carries its fixed charges on a single continuous polymer, which gives it a much lower area resistance and a higher permselectivity and lets electrodialysis compete on energy with reverse osmosis for desalination, salt production, acid and alkali recovery and the treatment of high-salinity industrial effluent. The standard sets the classification and coding of the membranes and then the technical requirements - appearance and the performance indicators - with the test methods for each: the test conditions and sampling, appearance, relative thickness deviation, surface resistance, transport number, ion exchange capacity, water content, burst strength, dimensional change and water permeability under a pressure difference, followed by the inspection rules and the packaging, marking, transport and storage provisions. It takes effect on 1 June 2025.

This document specifies the classification and coding, technical requirements, test methods, inspection rules, and marking, packaging, and transportation of homogeneous electrodialysis membranes. and storage. This document applies to the research, development, production and application of homogeneous electrodialysis membranes. This document does not apply to monovalent selective anion membranes, monovalent selective cation membranes, hydrogen ion blocking anion membranes and hydroxide ion blocking cation membranes.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 4456 Polyethylene blown film for packaging

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 9174 General technical requirements for general cargo transport packaging

GB/T 9969 General principles for instructions for use of industrial products

GB/T 12464 Ordinary wooden box

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Homogeneous ion exchange membrane An ion exchange membrane with uniform cross-sectional structure, uniformly distributed chemical composition, and functional groups and membrane matrix connected by chemical bonds.

3.2 Homogeneous ion exchange membranes for electrodialysis processes.

3.3 anion exchange membrane anion membrane The membrane body fixed group is positively charged and can selectively pass anions. [Source: GB/T 20103-2006, 3.1.3, modified]

3.4 Cation exchange membrane Cation membrane The membrane body fixed group is negatively charged and can selectively pass cations. [Source: GB/T 20103-2006, 3.1.2, modified]