

TECHNICAL DATA SHEET (TDS)

Product: NM-POL Series Nanocomposite Membrane

Manufacturer: NANOMILITARY

Technology Description

This membrane is engineered using polymer nanocomposite technology, integrating an organic matrix with selective functional additives at the nanoscale. The structure features a dense active layer specifically designed for ion-level and molecular-level separation processes.

Technical Characteristics of NM-POL Series Nanocomposite Membranes

The presented membrane series represents a breakthrough in material engineering, utilizing polymer nanocomposites for precise molecular separation. Due to the unique structure of the active layer, these products offer performance that exceeds standard market solutions.

1. Architecture and Permeability

At the core of the membrane is an ultra-thin active layer with a thickness ranging from 50 to 150 nm. This precisely controlled structure allows for high specific water permeability, which, depending on the configuration, ranges from 1.5 to 8.0 L/(m²·h·bar). The use of nanocomposites minimizes hydraulic resistance while maintaining an extremely dense filtration barrier.



2. Selectivity and Retention

NM-POL membranes exhibit exceptional ion separation capabilities. The salt rejection rate (NaCl) remains at a consistently high level, ranging from 98.0% to 99.8%. In terms of organic contaminant removal, the membrane acts as a near-absolute barrier, achieving efficiencies of 99.0% – 99.9%. This enables the effective removal of not only mineral salts but also micropollutants, pesticides, and endocrine-disrupting substances.

3. Operational Stability

The NM-POL series was designed for durability in demanding industrial environments:

- **Chemical Resistance:** The membrane maintains structural stability across a wide pH range (2 to 11), enabling aggressive Clean-in-Place (CIP) procedures and the processing of challenging industrial wastewater.
- **Pressure Resistance:** The design is optimized for high-load operations, supporting operating pressures from 10 up to 70 bar.
- **Thermal Range:** The filtration process can be safely conducted at temperatures from 5°C to 45°C, making it a versatile solution for various climatic zones and technological processes.

Separation Profile

- **Ionic Separation:** High efficiency in removing ions.
- **Fouling Resistance:** Due to the nanocomposite modification, the surface exhibits reduced adhesion of biological contaminants.

