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Application of Polytetrafluoroethylene (PTFE) Membrane

Polytetrafluoroethylene (PTFE) membrane filter is made of polytetrafluoroethylene, which is expanded and stretched to form a microporous membrane. PTFE membrane filter is laminated on various fabrics or papers by a special process on the substrate, it becomes a new type of filter material with small and uniform pore size and large porosity. While maintaining air circulation, it can filter all dust particles including bacteria. To achieve the purpose of sterilization and purification and air circulation.

Hydrophobic PTFE membrane filters are made of PTFE, which is completely natural and permanently hydrophobic. Even under a very low-pressure difference, it can ensure the unobstructed passage of moist air or

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other gases, while the aqueous solution cannot pass through. Its performance is just the opposite of that of the hydrophilic membrane. Hydrophobic PTFE membrane filter can effectively filter all kinds of strong corrosive chemicals or samples.

The [polytetrafluoroethylene \(PTFE\) membrane](#) is an inlet membrane, a hydrophobic membrane filter, which is treated with ethanol or isopropanol to become a hydrophilic membrane filter. The hydrophobic membrane cannot be naturally wetted, and the hydrophilic membrane can be naturally wetted.

Polytetrafluoroethylene (PTFE) membranes are resistant to high temperatures, strong acids, strong alkalis, organic solvents, and oxidants. PTFE membranes and [hydrophilic membrane filter](#) are chemically compatible and resistant to most chemical solvents. PTFE membrane is chemically stable and inert, suitable for chemically corrosive organic solvents, aqueous solutions, and gases, and has resistance to most acids, alkalis, and solutions.

Application of PTFE Membrane Filter

Food and
drink
Steam
filtration
Water
treatment
Chemical



industry

Pharmaceutical industry

For water, solvent sterilization filtration

Electronic industry high-purity gas filtration

Gas sterilization filtration and vacuum filtration

Sterile exhaust filtration of fermentation tanks, storage tanks, and batching tanks in the food industry, aqueous solution, especially strong corrosive solution.

What Are PTFE Filter Membrane Used For?

PTFE membrane is a microporous membrane made of polytetrafluoroethylene as raw material, using special technology, through calendering, extrusion, biaxial stretching, and other methods. There are different types of PTFE membranes based on their uses. The PTFE membrane has a fibril-like microporous structure with a porosity of more than 85%, 1.4 billion micropores per square centimeter, and a pore size range of 0.02 μ m-15 μ m.

Main structure of PTFE membrane filter

1. The surface morphology of the PTFE microporous membrane is a spider web-like microporous structure. Pores are formed between the microfibers, and the arrangement direction of the microfibers is basically parallel to the stretching direction; the connection of the fiber bundles is the node, which is formed by the entanglement and connection of many microfibers.
2. PTFE membrane is an asymmetric membrane, and the size of the micropores on the front and back of the membrane is different.
3. The micropore size of the cross-section of the membrane is larger than that of the surface, and the size

of the longitudinal and transverse micropores is also different, and the longitudinal micropores are larger than the transverse direction.

4. The cross-section of the membrane is a network structure. There are very complex changes in the three-dimensional structure of the pores, such as network connection, pore inlay, pore channel bending, etc. There may be multiple micropores to form a channel, and there may be a micropore with Multiple channels connected.

Classification and application

1. PTFE garment membrane

Using the pore-forming properties of polytetrafluoroethylene plastic resin, the microporous membrane is made by the biaxial stretching method. The membrane surface can reach more than one billion micropores per square centimeter, and the diameter of each micropore ($0.1\mu\text{m}$ - $0.5\mu\text{m}$) is several hundred times smaller than the diameter of water molecules ($20\mu\text{m}$ - $100\mu\text{m}$) and smaller than that of water vapor molecules ($0.0003\mu\text{m}$ - $0.0004\mu\text{m}$) is tens of thousands of times larger, so that water vapor can pass through, but water droplets cannot pass through. Using this microporous structure can achieve excellent waterproof and moisture-permeable functions; in addition, because the pores are extremely small and irregularly arranged in the longitudinal direction, the wind cannot pass through. Through it, it has the characteristics of wind resistance and warmth. After compounding with other fabrics, it is widely used in military clothing, medical clothing, casual clothing, special protective clothing such as fire protection, anti-virus, flooding operations, outdoor sports

clothing, and so on.

2. PTFE air filter membrane

Using PTFE microporous membrane unique node fibrillary, smooth surface, chemical resistance, air permeability, and water resistance, large air permeability, flame retardant, high-temperature resistance, strong acid, and alkali resistance, and non-toxicity, it can be used for air purification, atmospheric dust removal, and so on. The products made of the membrane have high filtration efficiency, up to 99.99%, near zero emission; low operating resistance, fast filtration speed; long service life, which can be reused, thus reducing operating costs. It is mainly used for flue gas filtration of various industrial furnaces such as the chemical industry, iron, and steel, metallurgy, carbon black, power generation, cement, and waste incineration. In the Polytetrafluoroethylene filter membrane, the pore size of the membrane can be controlled between 0.2~15 μm , and the porosity can reach more than 85%.

3. PTFE air purification membrane

Made of polytetrafluoroethylene, the air purification membrane is stretched to form a microporous membrane. With a special process, laminated on various fabrics and substrates, this membrane is to become a new type of filter material. The membrane has a small pore size (0.05~0.45 μm), uniform distribution, and large porosity, which can achieve purification and ventilation, by filtering all dust particles including bacteria, while maintaining air circulation. The common use is in medical, biochemical, and other industries.

[Click here to know About The Features And Applications Of Hawach PTFE Filter Membrane, Membrane Filtration](#)

Principle, PVDF vs PTFE, Do You Know How To Choose A Membrane Filter.

December 5th, 2018

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