Application for exemption from EU REACH PFAS control for PTFE microporous membranes

Subject: Apply for a permanent exemption for PTFE microporous membranes
Basis：First, PTFE microporous membranes are widely used in chemical solution filtration in semiconductor manufacturing.

Second：a porous PTFE membrane filter that has excellent chemical resistance, heat resistance, and non-elution properties is an essential component for the filtration of acidic or alkaline chemical solutions used in the manufacturing processes of semiconductor wafers, liquid crystal panels, and other electronic components.

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A porous PTFE membrane filter that has excellent chemical resistance, heat resistance, and non-elution properties is an essential component for the filtration of acidic or alkaline chemical solutions used in the manufacturing processes of semiconductor wafers, liquid crystal panels, and other electronic components. In the semiconductor industry, in particular, the development of higher density chips and wafers with a larger diameter increases the necessity of obtaining higher-purity chemical solutions to clean wafers. The need for porous PTFE membrane filters, which can remove minute foreign substances, has been increasing. We have developed a new technology that can replace the conventional stretching technology to create nanoporous PTFE membranes. This paper describes this unique technology for generating pores with a diameter of less than 50 nm, which cannot be generated by conventional technology.

As IC chip technology trends in the semiconductor industry are moving towards a finer pitch, the need for porous membranes with smaller pores for filtering chemical solutions have been increasing. We have developed a new porous PTFE technology that generates nanopores with a diameter of 50 nm or less, which cannot be achieved by conventional porous PTFE technology. This technology enables us to produce a porous PTFE membrane filter with a double-layer structure. The structure comprises a filter layer, which is 2 μm or less in thickness and has pores of 4-50 nm in diameter, and a support layer, which is 30-100 μm in thickness and has pores of 50 nm or larger in diameter. The filter will find wide applications including water treatment and food processing, as well as the filtration of chemical solutions in semiconductor manufacturing.

Hydrogen fluoride solution, ammonia and hydrogen peroxide, and hydrochloric

acid and hydrogen peroxide are used as washing agents in the removal process of a silicon oxide layer on the surface of wafers, the removal process of organic particles, and the removal process of metal particles, respectively, to clean silicon wafers in semiconductor manufacturing.To reduce the volume of waste fluid, foreign substances in the chemical solutions are filtered after the cleaning process and the solutions are recycled. As filters must be resistant to acidic, alkaline or heated chemical solutions used for cleaning, and must prevent the elution of the components to solutions, porous PTFE membranes, which satisfy these requirements, are used as filters.

Reference documents：Next-Generation Nanoporous PTFE Membrane