Abstract：In this paper, the influence of charging conditions on permeability of porous PTFE membranes is studied by constant voltage corona charging at room and elevated temperatures and by measuring the flow rate in water when porous PTFE electret films are used as a filter membrane. We found that charging field and charging temperature strongly affect the flow rate of water, but charging time does not influence the flow rate markedly. The structure of porous PTFE film, investigated by a scanning electron microscope, is important for understanding the influence of charging conditions on the membrane permeability. The increase of the ratio of the bulk charge density to the surface charge density of the porous electret films is performed by thermal treatment during charging. Such porous films may be employed as electret filter membranes with high efficiency to purify dielectric liquids.