Abstract：Polytetrafluoroethylene (PTFE) films with a void structure are prepared by a sintering process. Such void PTFE films are piezoelectric after proper corona charging. The quasi-static piezoelectric d_{33} coefficients up to 250 pC/N are achieved for the samples which were made of compact and biaxial-tension porous PTFE layers. Pre-ageing treatment is an effective method to further improve the thermal stability. For the samples with pre-ageing treatment, the reduction of the d_{33} coefficients is around 2% per day when exposed to 120 °C.