Interconnected piezoelectric porous ceramics PZT have been tested for possible use in hydrophone applications. These materials consisted of: (1) ceramics with fine porosity having pores from 50 to 100 μm and (2) cellular ceramics having cavities of the order of the millimeters. Porous ceramics are coated with flexible polymer standard polyurethane for the hydrostatics tests. The effect of the size of the pores and porous volume on the sensitivity of the sensor is studied and the performances of the hydrophones devices are presented