Internal combustion engine with volumetric film mixture formation is equipped with an injector nozzle with holes for supplying fuel to the combustion chamber and an aluminum alloy piston with a combustion chamber that has an edge, a side surface and a bottom and contains low-thermal-conductive sections made so that the outer surface of each low-thermal-conductive section forms part of the side surface of the combustion chamber, the height of each low-thermal-conductive section is 5-20 mm and does not exceed the distance from the edge to the bottom of the combustion chamber, the length of each low-thermal-conductive section is 5-30 mm, and the number of low-thermal-conductive sections corresponds to the number of holes in the injector nozzle. The outer surface of each low-thermal-conducting section on the sweep of the side surface of the combustion chamber is limited by an outer contour in the form of an ellipse, the major axes of the ellipses are directed in the circumferential direction of the side surface of the combustion chamber, while the sum of the lengths of all low-thermal-conducting sections does not exceed the perimeter of the combustion chamber at the intersection of the major axes of the ellipses, and the thickness of each low-thermal-conducting section decreases from the largest at the position of one of the foci of the ellipse to zero on the outer contour, with the largest thickness of each low-thermal-conducting section being 0.1-0.5 mm.