

In the present work we formulate a shape optimization problem for the 2D Signorini problem with given friction and a coefficient of friction which depends on the solution. The aim is to find an optimal contact part of an elastic body. A suitable set of admissible domains is given, among which the existence of an optimal one is established for a large class of cost functionals. The shape optimization problem is then approximated. Existence of discrete optimal shapes is proven and convergence analysis is done.