

Methodology for determination of hardening parameters of ductile materials by an indentation test

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ABSTRACT

Abstract: In this current contribution, it is proposed the determination of the hardening curve of ductile materials through a parametric identification process, having as pillar for this goal an indentation test. In order to determine such material parameters, a combined set of numerical methods that encompasses the golden ratio search, least square method and finite elements are used. First, the tensile test is performed and the hardening parameters are extracted from it through the inverse parameter identification methodology. In the sequence, a Brinell indentation test is performed and then modeled for simulation in a finite element environment. The same routine of parametric identification used for tensile test is then used for the indentation test. With this resources, the method tries to numerically replicate the same indentation mark left in the specimen by the indenter. Finally, a comparison is made between the hardening parameters obtained from tensile and indentation tests.

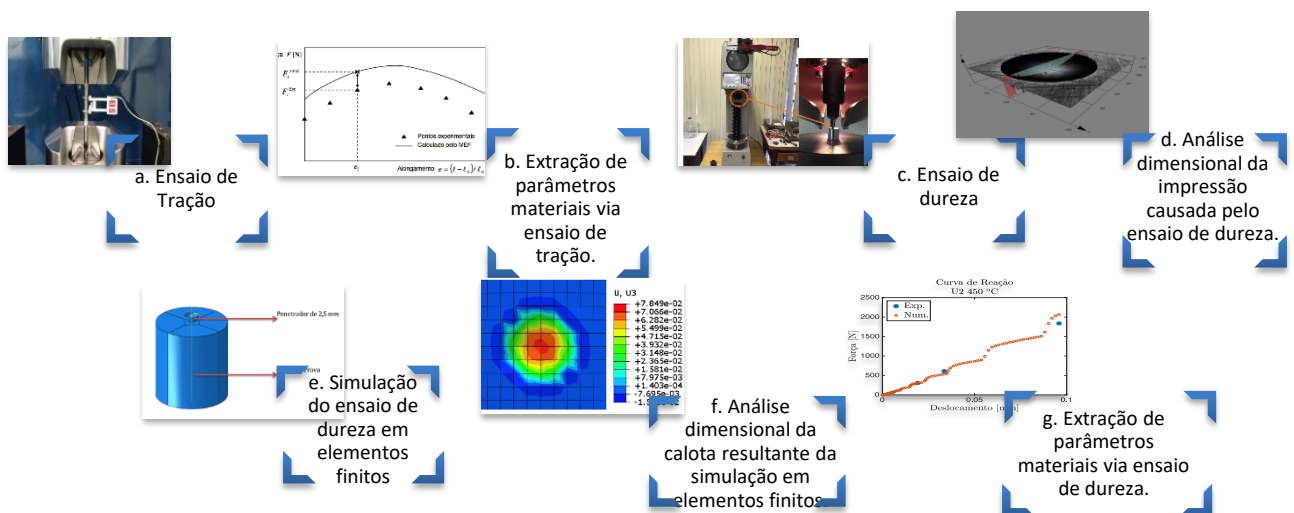


Figura 0. Methodology for determination hardening parameters by an indentation test.

Keywords: parametric identification, indentation test, hardening curve.

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