

# **Optimization of the design of a double-cup specimen using the finite element method for testing adhesive bonds under tensile loads**

M.A. Martínez Casanova; P. Muñoz; J. Abenojar Buendia; F. Velasco López; J.C. Real Romero

## **Abstract-**

**The aim of this research was to optimize the geometry of a double-cup specimen for tensile testing of adhesive bonds. For this purpose, the influence of the geometry of the double-cup specimen on the stress distribution when subjected to static tensile loads was studied through the finite element method. The work was divided into three stages: construction of a finite element model representative of double-cup test, selection of the appropriate parameters for the design of the double cup, and finally the use of the specimen optimized geometry for tensile strength estimation of three different adhesive bonds in order to validate the model. The results obtained show that the tensile strength of an adhesive bond as well as its stress distribution can be determined.**

**Index Terms-** Adhesive bonds, tensile testing, finite element model, stress distribution

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Journal of Adhesion Science and Technology, you can download the paper from the journal website:

[Access to the Journal website](#)

## **Citation:**

*Martínez, M.A.; Muñoz, P.; Abenojar, J.; Velasco, F.; del Real-Romero, J.C. "Optimization of the design of a double-cup specimen using the finite element method for testing adhesive bonds under tensile loads", Optimization of the design of a double-cup specimen using the finite element method for testing adhesive bonds under tensile loads, vol.23, no.10-11, pp.1357-1368, July, 2009.*