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The martensitic transformation as a complementary mechanism of plastic deformation in metallic materials: effects in mechanical properties.

A. A. Hernández*(1) and B. A. Potekhin(2)

(1) Physics and Chemistry Department. University of Cienfuegos. Carretera a Rodas Km 4. Cuatro Caminos, Cienfuegos, Cuba. CP 55400. archdez@ucf.edu.cu.
(2) Technology of Metals Department. Ural State Forest Engineering Academy, Ekaterinburg, Russia. pba-nn@yandex.ru

Abstract

Plastic deformation in metallic materials occurs through recognized mechanisms in crystalline structure. They act in sequence according to the different grade of plastic deformation until the formation and propagation of cracks that finally lies to the rupture. However, some steels with specially designed compositions can exhibit martensitic transformations during the plastic deformation and these transformations serve as a complementary mechanism of deformation for the structure. As a consequence, they show unusual mechanical properties in extreme conditions compare to those materials that follow common deformation mechanisms. In the work are presented the results obtained for a group of austenitic stainless steels.

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