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„International Conference of Experimental and Numerical Investigations and New Technologies“

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04 – 07 July 2023

Zlatibor, Serbia

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Engineering Materials

EEFFECTS OF ALLOYING ELEMENTS ON THE PROPERTIES OF HSLA STEEL

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Abstract

The first industrial application of elevated and high-strength steel in the form of hot-rolled strips and sheets was the manufacture of pipes and vessels under pressure, as it was possible to reduce the thickness, i.e. to reduce the weightof welded structures. The high-strength low-alloy steels used today are usually obtained by suitable chemical composition and thermomechanical treatment.

Our investigated steel NIOMOL 490 K belongs to the class of molybdenum microalloyed steels, where the microalloying with molybdenum serves to increase the heat resistance of the steel and at the same time strengthen the influence of other alloying elements. This steel grade is designed for the manufacture of welded pressure vessels fabrication and is mainly used for dynamic loading conditions at low operating temperatures.

In the present paper, the tensile and hardness tests were used to determine the effects of alloying elements on the mechanical properties of NIOMOL 490K steel in the temperature range from -60°C to +60°C.

Keywords

Alloying elements, NIOMOL 490 K, Mechanical Properties, High strength low alloy steel.

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