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Effect of preliminary heat treatment on change in microstructure of brass CuZn36 during pressing in equal channel step matrix

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ABSTRACT

The effect of the pre-heat treatment and equal channel angular pressing (ECAP) in step matrix to the microstructure and properties of brass CuZn₃₆ was researched. The laws of transformation of macro-crystalline brass structure into ultra micro-grained under the influence of ECAP. It is shown that in the equal channel step matrix, the pressing can be conducted only at high temperatures; at room temperature, during the first pass, the samples already are destroyed. As the destruction of the samples is due to the solid β -phase, the brass should be heated till 500°C during the pressing, as when it is heated above 450°C, β -phase is converted to a disordered solid solution β^l , wherein greater plasticity than the β -phase is. It was determined that the increase of cycles of deformation increases the amount of β -phase, and as a result, after three passages, the samples are destroyed.

KEYWORDS: brass, microstructure, destruction, preliminary heat treatment, equal channel angular pressing