Research of the Cause Cracking Hot-Rolled Block Made of AlMg5 Alloys

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The aim of this research work was to determine the causes of the cracking unit rolled at initial hot rolling of the AlMg5 alloy. Failure occurs in the central area of rolled plate. In the alloy was carried out chemical composition of the material in the near the defect and its comparison with the chemical composition of the entire melt, which pointed to a significant reduction of the magnesium content of the area defect. Macroscopic, microscopic and fractography analysis were carried out both in the area of the fracture surface and in the immediate vicinity. The analysis indicated that the fracture surface, and also the structure in the area of the fracture surface show a character oxide inclusions and oxide films or spinel inclusions. The following EDS analysis were carried out on a scanning electron microscope to confirm the presence of oxide inclusions of spinel-type character Al_2MgO_4 on the fracture surface of the rolled material. It could be stated that when casting a gradual burning out of magnesium in casting furnace and thus to reducing it's some 0.5 - 1.0% and the formation of spinel inclusions. Spinel inclusions then initiated cracking during hot rolling.

Keywords: AlMg5Alloy, rolling, fracture surface, oxide inclusions, Al_2MgO_4-type spinel inclusions

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