

Abstract: The influence of the strain rate and heat treatment on the occurrence of plastic instabilities in extruded AlSi1MgMn (6082) and cold rolled AlMg4.5Mn0.4 (5182) alloys was studied. The samples were uniaxially loaded at various strain rates and at room temperature (RT). The results are discussed using concurrent acoustic emission (AE) monitoring during mechanical testing and the AE parameters are correlated to the microstructure and to the stress-time curves. All samples exhibited the Portevin-Le Châtelier (PLC) effect of different types, dependently on the heat treatment and the applied strain rate. The occurrence of the PLC effect is manifested by burst AE signals with high amplitudes. Statistical analysis of the AE signals has shown the power-law probability distribution.