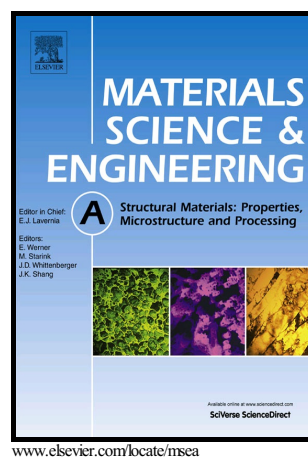


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**The influence of natural aging and repeated solution annealing
on microstructure and mechanical properties of hot extruded alloys
Al 7020 and Al 7175**

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Abstract

This investigation focusses on the influences of natural aging and repeated solution annealing on the microstructure and the mechanical properties of two different 7xxx Al-alloys. The alloys 7020 and 7175 were hot extruded and naturally aged at room temperature for 18 month. The strands were then analyzed in naturally aged condition and after three different repeated solution annealing processes. In a third step they were peak aged and then analyzed regarding their microstructure and mechanical properties. For the analysis of the microstructure a combination of optical, scanning and transmission electron microscopy as well as electron backscatter diffraction has been used. The mechanical properties were measured by compression and tensile tests. Several results can be concluded from these investigations: 1. The repeated solution annealing is affecting the grain morphology at the surface of the strands. 2. In alloy 7175 Al_2CuMg and $\text{Al}_{12}\text{Mg}_2\text{Cr}_2$ particles were formed during the repeated solution annealing processes. 3. Specimens in the repeated solution annealed and subsequent peak aged condition exhibit lower tensile strength values than the naturally aged and subsequent peak aged alloys. 4. Neither

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