New technologies of components assembling in car and aircraft industries and requests on improved mechanical and corrosion properties of metallic materials in the packing industry activate the utilization of highly innovative and unconventional manufacturing processes. There are only a limited number of processing, that retain the original material thickness and in an appropriate manner modify material properties. These are different types of annealing, severe plastic deformation methods or combination of both. In recent years constrained groove pressing (CGP) was developed with this method the grain size can be reduced from tens of micrometers to sub-micrometers. The present work is focused on a study of evolution of microstructure and mechanical properties of two alloys based on EN AW 3003 after CGP deformation and subsequent annealing.