

## SURFACE QUALITY OF PROFILES EXTRUDED FROM VARIOUS FORMS OF ALUMINIUM ALLOYS SCRAP

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## Abstract

Present paper is focused on solid state recycling (SSR) method through hot extrusion of different forms of aluminium alloys scrap such as chips, cans or foils. Common feature of the scraps is highly developed free surface that leads to the substantial material losses during conventional re-melting process. Therefore, SSR was found to be very promising technique for recycling of highly fragmented materials. An important parameter of SSR extruded materials is profiles surface quality. In this work, extrusion factors such as temperature and extrusion speed are discussed with respect to surface quality of obtained profiles. Additionally, charge material morphology and structure are analyzed in relation to the types of surface defects. It was found, that for all processed materials such as 3xxx, 4xxx and 6xxx aluminium alloys, good product quality can be obtained by application of proper extrusion temperature, which was determined to be 400C or above. Structure analysis revealed that main difficulties during SSR are lack of sound bonding between chips (wrought aluminium 3xxx and 6xxx series) and surface cracking due to breaking of hard particles (4xxx alloy series).

Keywords: Hot extrusion, surface quality, recycling

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