



Recycling of Aluminum Chips by Hot Extrusion

By Volkan Güley

Shaker Verlag Jan 2014, 2014. Buch. Book Condition: Neu. 211x152x15 mm. Neuware - Recycling of aluminum chips by hot extrusion is a metal forming technique, which requires considerably less energy than conventional recycling by remelting. The aluminum chips sorted by alloy type were first chemically washed in a mid-alkaline bath and then completely dried in an industrial furnace, compacted to billets, heated up to extrusion temperature and directly extruded into finished products without remelting. This method utilizes not only significantly less energy compared to conventional recycling by remelting but also prevents the material loss that is typical in remelting of fine aluminum scrap in the form of chips. The main aim of this research was to investigate hot extrusion of aluminum chips including principles of operation, process technology and equipment, and to develop this process further by solving the encountered problems to allow its application in industry. First the effect of extrusion process parameters on the microstructure and mechanical properties of the profiles recycled from chips was investigated. It was shown that the extrusion parameters like extrusion ratio, die design and the billet temperature predominantly define the properties of the recycled profiles. The mechanism of chip welding during aluminum extrusion...



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New recycling process of magnesium alloy machined chips by hot extrusion. Journal of Japan Institute of Light Metals, Vol. 57, Issue. 6, p. 250. 13Aizawa, T., Luangvaranunt, T. and Kondoh, K., Solid state recycling of recyclable aluminum wastes with in-process microstructure control. Mater. Trans. Aluminum recycling is the process through which scrap aluminum is reprocessed to be used in products after its initial production. Aluminum producers and recyclers in the aluminum industry work with individuals, businesses, and communities. This is where all the decorations are detached from the shredded pieces. The decoater then blows very hot air through the tiny pieces of shreds and the coatings, paintings and inks vaporize. The hot gases are then removed and cleaned. 6. The Decoated Shreds Are Then Fed Into the Furnace. Traditionally, the furnace is heated up to 7000C; this is the lowest melting point for certain metals. During this process of melting, certain chemicals are added into the molten aluminum to make it have the correct composition.

Aluminum producers and recyclers in the aluminum industry work with individuals, businesses, and communities. It blows hot air on the shredded pieces. In turn, every painting, ink, or coating immediately vaporize. The pile then gets cleaned with the hot gas removed.

Step 6: Melting. Here, the pile that is now free of steel and coatings gets transferred into a furnace. Amazing Benefits of Aluminum Recycling. So next up is why you should recycle aluminum. While you now know that it is possible to recycle it, you might just need some convincing. New recycling process of magnesium alloy machined chips by hot extrusion. Journal of Japan Institute of Light Metals, Vol. 57, Issue. 6, p. 250. Aizawa, T., Luangvaranunt, T. and Kondoh, K., Solid state recycling of recyclable aluminum wastes with in-process microstructure control. Mater. Trans. Hot press was proposed as a novel direct recycling technique which results in astoundingly low energy usage in contrast with conventional recycling. The aim of this study is to prove the technical feasibility of this approach by characterizing the recycled samples. For this purpose, AA6061 aluminium chips were recycled by utilizing hot press process under various operating temperature ($T_s = 430, 480, \text{ and } 530 \text{ }^\circ\text{C}$) and holding times ($t_s = 60, 90, \text{ and } 120 \text{ min}$). Fogagnolo, J.; Ruiz-Navas, E.; Simón, M.; Martínez, M. Recycling of aluminium alloy and aluminium matrix composite chips by pressing and hot extrusion. J. Mater. Process. In Proceedings of the International Aluminum Extrusion Technology Seminar, Chicago, IL, USA, 16-19 May 2000. [Google Scholar]. Aluminum recycling represents the circular economy at its finest. Nearly 75 percent of all aluminum that has been produced is still in use. Aluminum is recycled by being shredded into chips and fed through an infrared sorter to remove any plastic, glass, or other contaminants, followed by a magnet which picks up any scraps of steel. The aluminum chips are then melted down at a temperature of approximately $1,221 \text{ }^\circ\text{F}$ ($660.3 \text{ }^\circ\text{C}$) into molten aluminum, and poured into large molds to create ingots. During the remelting process the paint and lacquer on the cans are vaporized, and an aluminum oxide called dross is produced when the aluminum chips melt and reacts with air.