



ALUMINIUM DUFFEL
mind over metal

Internship for

Materials Science/Chemical Engineers

What is so special about aluminum?

Aluminum is strong, light, durable, flexible, extremely versatile, impermeable, corrosion resistant, an excellent conductor of electricity, non-magnetic, non-flammable, an abundant element in the earth's crust and infinitely recyclable.
Aluminum has unlimited potential to be part of solutions that move society forward.
Its freedom enables people and businesses to create a better future by innovatively using the versatility that aluminum offers.

Your field of work

Since the innovation center is linked to the factory, there is a close collaboration between R&D and production. We can already offer you an insight into different positions where an engineer can end up in industry (R&D, quality service, technical customer support, process technology, etc.).

We can offer you interesting research topics that will help us make our products even better.

Some examples include corrosion studies coupled with electrochemical measurements, MSA analysis of certain measuring equipment, mapping of influence factors on color and gloss of anodized material, effect of method of quenching after annealing on mechanical properties, etc.

Your duties and requirements

- Gather information, both from literature and through collaborators, usually coupled with lab tests or attending industrial trials.
- Analytical mindset and able to work systematically in a team environment.
- Good knowledge of Dutch and English.

Interested?

Then send your CV attn.
Els Verboom (Manager R&D),
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Aluminium Duffel B.V.

is a European leader in manufacturing and marketing aluminum rolling products for a wide variety of markets (automotive, architectural, construction, consumer products, etc.) worldwide. It has state-of-the-art technology, including the widest cold rolling mill in the whole of Europe and a CALP (Continuous Annealing Line with Pre-Treatment) production line.

The Innovation Center in Duffel, Belgium, therefore focuses on segments such as the automotive and industrial sectors.

Time-temperature controlled precipitation of 2nd phases during cool down from homogenization temperatures in AA6xxx alloys

Internship for student in Master level

Location: Aluminium Duffel, Duffel, Belgium

A large proportion of the coils, sheets and plates produced at Aluminium Duffel belong to the AA6xxx series aluminium alloys. In those alloys the main alloying elements are Mg and Si, which form the soluble Mg_2Si and Si phases. The temperature of the applied industrial processes controls the precipitated fraction of those phases, while the time (cooling time, soak time) controls their size distribution.

In a large-scale industrial production process, a precise time and temperature control over the whole metal volume is not always possible. As a result, thermal gradients are formed, which also lead to formation of gradients in distribution of second phase particles. Those further interact with the processes of plastic deformation, recrystallization and grain growth, and in turn have an influence on homogeneity of microstructure and properties.

This study will concentrate on investigating the effects of thermal gradients formed in a thick slab during rapid cooling from homogenization temperature, followed by reheating and soaking, on gradients in distribution of 2nd phase particles in two 6xxx automotive alloys. The study will include several experimental and analytical parts: (i) literature review on the problem; (ii) lab simulation of industrial high-temperature processes; (iii) metallographic characterization; (iv) digital image analyses; (v) regression modelling; (vi) summary and reporting.