

# Uzimet takes the *green route* from scrap to sheet lead



Despite having often received a bad 'green' press, it should be remembered that lead has a good environmental story to tell in many ways. For example, it enjoys a scrap collection rate of 95% which is thought to be higher than that for any of the other main non-ferrous metals. Calder Group subsidiary Uzimet knows all about the plus points of scrap lead, as Recycling International discovered.

This lead elephant is an eye-catching feature of Uzimet's yard.

## The sheet production process

Trucks bring lead scrap to Uzimet's yard where it is inspected or sampled. It is then loaded on to a conveyor belt which takes it to the lead ovens. From there, it is poured into 6000 kg slabs which are carried to a mill for processing into lead sheets. This finished product is then stored ready for transportation to end users operating mainly in the construction and roofing industries.



Ask the man in the street what he thinks about lead and there is a good chance that you'll hear phrases like 'heavy metal', 'poisonous' or 'not good for the environment'. However, these opinions represent a very narrow perspective: lead is one of the most widely-used non-ferrous metals after aluminium and copper, and is vital to our every-day lives.

'Lead is a classic example of the "cradle-to-cradle" approach,' declares Kamiel van Wijk, International Business Manager at Dutch sheet lead manufacturer Uzimet. 'It can be used over and over again. That is not the case with plastic, which is sometimes used instead of sheet lead. Sheet lead is the ideal material to make waterproof sealings; it is water- and UV-resistant, heavy and yet flexible, and very long-lasting. And what's more, it can be infinitely recycled.'

### Environmental friendliness

Lead enshrines the unique properties of high density, malleability and corrosion resistance. These properties make lead a vital industrial material that is used safely in a range of applications including, for example, radiation shielding not only in the nuclear and defence industries but also in medical fields where the use of X-ray and radio-pharmaceutical scanning technologies is becoming increasingly widespread. Owing to its density, lead offers excellent noise-proofing qualities and is used widely for sound attenuation in, for instance, high-density housing. The high recovery rate of scrap lead makes this a very green metal: indeed, life-cycle analyses have concluded that the environmental credentials of sheet lead are better than those of any available substitute product.

Uzimet and its fellow Calder Group companies are committed to responsible environmental management policies. Uzimet's policy is geared towards carrying out the entire production process in the most environmentally-friendly way

possible. Among other pluses, its internal environment management system guarantees that it meets the requirements of the environmental licence. New environmental demands are closely monitored and, wherever necessary, the company's production process or machinery is adapted to satisfy these new requirements.

### Dismantled and transported

In May 2009, Uzimet took over the sheet lead activities of Belgian non-ferrous company Umicore and production machinery was subsequently dismantled and transported to the Netherlands. 'But even before, we had already installed a flue gas cleaning system with an afterburner to prevent odour from the process,' explains Uzimet's Plant Manager Albert van Buuren. 'We have also installed a water purification system.' Uzimet is the only sheet lead producer in the Netherlands. Established in 1860, it now boasts a staff of 35 and annually converts approximately 24 000 tonnes of used lead into new, pure sheet. The company operates a lead refinery which provides the business with 100% of its material requirements from recycled scrap lead.

The company distributes rolled lead sheet as well as ancillary products to customers throughout the Netherlands. It also exports to a global customer base, including fellow EU countries. Its products are used mainly in radiation shielding applications although the company also manufactures pre-fabricated lead sheet designed to reduce construction site labour costs. Apart from sheet lead, Uzimet also produces large lead blocks - known as 'Jumbos' - for its own use and for other Calder companies.

As mentioned above, Uzimet's production capacity amounts to 24 000 tonnes per year. However, as a result of the impact of the global economic crisis, the company is currently producing only around 20 000 tonnes per annum. 'But we want to grow and we will apply for a

## Calder Group at a glance

Uzimet is part of the Calder Group of companies based at Chester in north-west England. A pan-European engineering group with eight operating subsidiaries located in five European countries, Calder supplies customers in a broad spectrum of industries including: oil and gas exploration; aerospace; mining and construction; nuclear; radio-pharmaceutical; electronics; marine; hydraulics; and defence. The group is comprised of a precision engineering division and a lead products division.

The Calder Group is the European market leader in both the manufacture and distribution of lead sheet and ancillary roofing products, as well as in the design and supply of technical lead products to a diverse range of industrial markets worldwide.

Calder runs lead subsidiaries in five European countries - the UK, Germany, France, the Netherlands and Ireland - and employs more than 400 people. It operates two lead recycling facilities - Uzimet in the Netherlands and Metal Processors in Ireland - and sources 100% of its metal requirements from recycled materials.

[www.caldergroup.eu](http://www.caldergroup.eu)



The Uzimet yard near the city of The Hague is located next to a golf course.





Uzimet's Plant Manager Albert van Buuren (left) and International Business Manager Kamiel van Wijk.



The mill produces lead rolls to every required length and width.



On these foundations, the new rolling mill will be installed. In the back, the afterburner can be seen.

new permit to process up to 32 000 tonnes per annum,' observes Mr Van Wijk.

### Old for new

Uzimet uses old metal as its raw material: in the sheet lead production process, used lead is melted and, following an initial separation, is then refined such that the end product is lead that meets the EN12588 standard. The refined lead is cast in blocks which are rolled out according to required thicknesses. Next, the material is processed into rolls of widths up to a maximum of 240 cm.

'Worldwide, there is 9 billion kg of lead per annum available to the lead processing industries - of which 80% finds its way into the car battery industry,' explains Mr Van Wijk. 'Only 5% is destined for the sheet lead and radiation shielding industry.'

Uzimet sources the around 2200 tonnes per

month of lead scrap and lead blocks used by its refining/smelting business from mainly north-west European countries such as the Netherlands, Belgium, Germany and France. Scrap constitutes some 80% of this total. The lead blocks - which are made of lead from car batteries - are sourced from all over the world, including the Middle East.

### Purity is the issue

As regards the quality of scrap demanded by the company, Mr Van Buuren says: 'Tar and paper are the most dangerous contaminants because they are highly flammable and can cause damage to our smelting ovens. So we need lead that is practically free of tar and paper.' All incoming lead is visually inspected and all blocks are analysed.

For Uzimet, continuity is a major factor when buying lead scrap. 'That's why we have many suppliers with whom we have been working for many years,' comments Mr Van Wijk. 'Price is less important for us; purity is the important issue. The scrap is delivered to us usually in 25-tonne trucks on a monthly basis. We do not buy much on the spot market.'

The leading applications for Uzimet's lead sheet product are the waterproof sealing of two building parts and protection against radiation and noise. The sectors in which its products are used vary from housebuilding and public utilities such as hospitals and dental practices, to night clubs and shipbuilding. The lead is also used in engineering products such as battery poles, isotope pots and lead anodes.

### New developments

Despite the long history of sheet lead, there are always new developments in this field. For example, pre-fabricated products such as counters and cavity lead are made exactly to specification by the company for ease and speed of installation. Another innovation is colour-coated sheet lead: manufactured to the same exacting quality as ordinary sheet lead, this range of products lends itself to a more creative range of construction applications such as façade cladding, canopies, roofs and dormer windows. When it comes to recycling, the coating does not impact in any way on the environment and on the next end product. Uzimet's sheet lead is sold mainly into the Dutch and Belgian markets. However, through fellow Calder Group companies, its products are marketed throughout Europe and around the world. □

## Radiation shielding

Lead is an extremely efficient material for the purpose of radiation shielding. Its target application areas include medical facilities where X-ray equipment is used, such as dental practices and hospitals.

Lead boasts several properties that make it highly suitable as a shield medium, including a high density and atomic number which means that it does not absorb any radiation. Secondly, lead is extremely malleable and flexible, making it easy to process quickly; the costs of processing lead are also lower than for alternative products. And in contrast to concrete, for example, lead panels can easily be disassembled and relocated when construction or restructuring work is being carried out.

The Calder Group is Europe's leading manufacturer of radiation shielding products, with experience in, among other fields, the nuclear power industry (power generation, decommissioning and waste storage); nuclear medicine (for the safe transport and storage of radioactive isotopes used in modern scanning technologies); hospitals, doctors' surgeries and dental practices, or wherever else X-ray facilities are in use; electronics and industrial applications (for example, in linear accelerators or NDT X-ray equipment); research establishments; and defence (nuclear submarines).

Uzimet produces plaster-clad lead panels that are available from stock. The panels can be cut to size and clad with other sheet materials such as wood, MDF, steel and synthetics. Furthermore, the panels can be finished in any colour. Uzimet also offers a broad range of lead radiation shielding products produced by its European sister companies which, together with Uzimet, make up the Calder Group.

