Lead's infinite role in Europe's metal recycling industry

Control room of a plasma fumer installation

Recycled lead flowing out of vacuum furnaces

Non-ferrous metals have been used since the Copper Age, around 5,000 B.C. The most common non-ferrous metals such as lead and aluminium are usually used for their individual characteristics. Non-ferrous metals are typically more malleable and lighter, making them ideal for situations that demand strength without heavy weight: such as in canning or in constructing aircraft. They are used outside due to their high resistance to rust and corrosion, which makes them ideal for things like roofing and road signs. As most non-ferrous metals are not magnetic, they are frequently used for small electronics and wiring.

Metals are infinitely recyclable, making Europe's interconnected metals sector a key player in Europe's circular economy – the home-grown metals recycling industry is in fact one of the most advanced and efficient in the world. As Europe works toward a truly sustainable business environment with its Circular Economy Action Plan, the ability to efficiently recycle metals is becoming increasingly important. Lead in particular plays an essential part in the recovery and recycling of other critical metals and materials from electronics waste, catalytic converters and other complex products. Lead therefore has a pivotal role in Europe's circular economy.

The carrier metal properties of lead make it an efficient and effective enabler for the recycling of a broad range of non-ferrous metals, from the critical raw material gallium used in mobile phones and solar panels, to precious metals including gold, and even platinum used in automotive catalytic converters. It achieves this by maintaining the value of products, materials and resources for as long as possible, returning them into the product cycle at the end of their use, and minimising the generation of waste.

Lead is a key enabler of the circular economy in terms of its use in recycling industry - it is capable of dissolving and carrying a multitude of several critical technology elements. This is based on refining them from lead through well-developed metallurgical processes in which the lead acts as a carrier metal. Molten lead has unique properties that means it can act as an efficient liquid

carrier for critical raw materials such as bismuth and other technology elements such as tellurium and cadmium. Lead is therefore relied upon by other metals recycling industries linked to it.

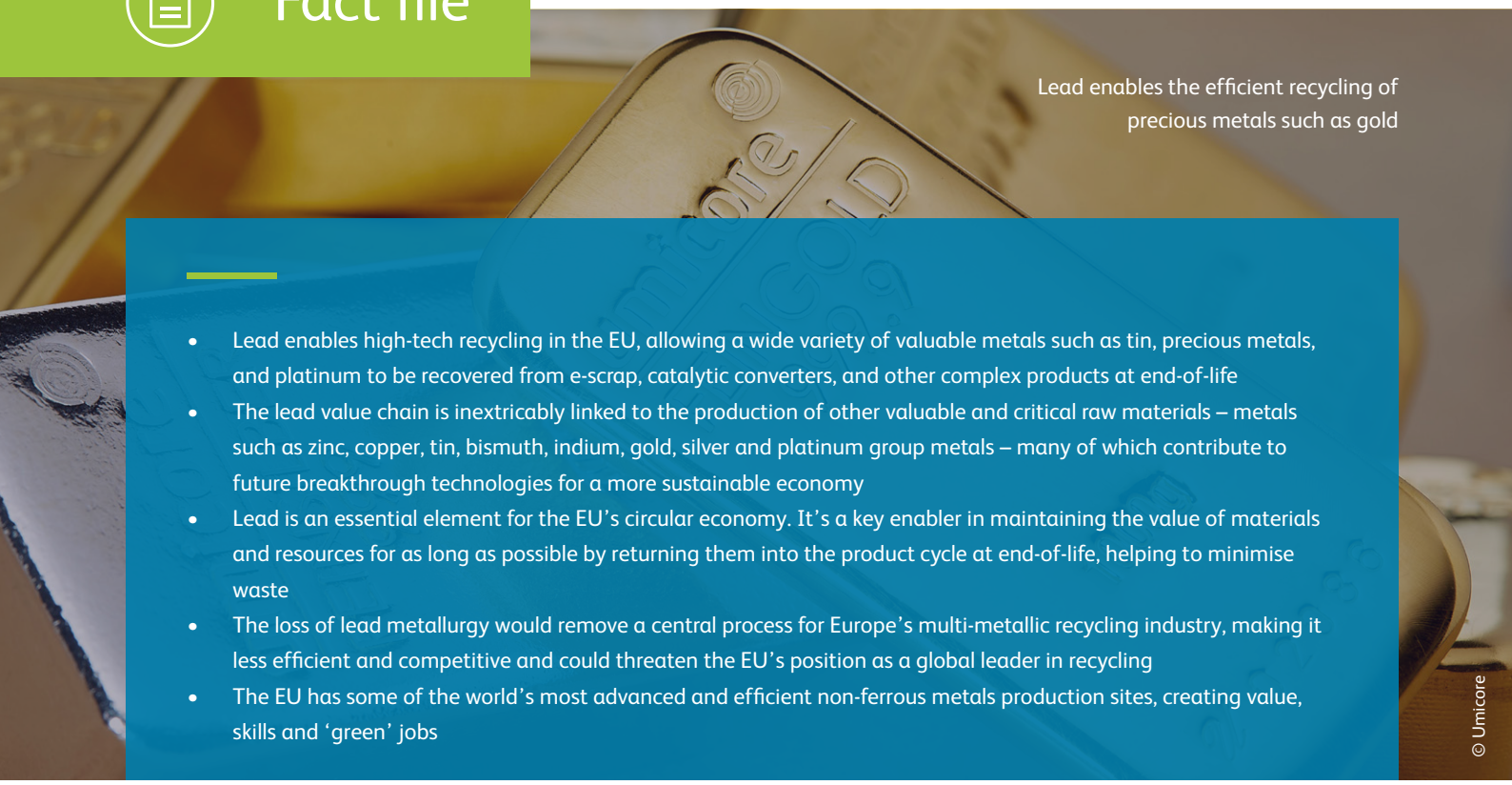
Demand for non-ferrous metals is increasing exponentially, in line with demand for technologies such as batteries, electric vehicles, and solar panels - the World Bank has projected that 300% more metals will be needed by the world's wind turbines by 2050, 200% more for solar panels, and 1,000% more for batteries.

Strict risk management processes are observed when working with lead. There is a long-standing framework of legislation, developed to specifically address the occupational risk of working with lead. This covers the production, use, and end-of-life recovery from waste. In reality, the industry's exposure management performance now far exceeds these minimum legal requirements and has established proactive, voluntary targets for reduced employee exposure.

With a quarter of the world's recycled metals already generated in Europe, lead metallurgy can ensure the security of these high-demand raw materials as well as continuing Europe's global leadership role in the circular economy.

Lead plays an essential part in recovering other critical metals from electronics waste

Fact file



Lead enables the efficient recycling of precious metals such as gold

- Lead enables high-tech recycling in the EU, allowing a wide variety of valuable metals such as tin, precious metals, and platinum to be recovered from e-scrap, catalytic converters, and other complex products at end-of-life
- The lead value chain is inextricably linked to the production of other valuable and critical raw materials – metals such as zinc, copper, tin, bismuth, indium, gold, silver and platinum group metals – many of which contribute to future breakthrough technologies for a more sustainable economy
- Lead is an essential element for the EU's circular economy. It's a key enabler in maintaining the value of materials and resources for as long as possible by returning them into the product cycle at end-of-life, helping to minimise waste
- The loss of lead metallurgy would remove a central process for Europe's multi-metallic recycling industry, making it less efficient and competitive and could threaten the EU's position as a global leader in recycling
- The EU has some of the world's most advanced and efficient non-ferrous metals production sites, creating value, skills and 'green' jobs

Developed in conjunction with Eurometaux, Metallo, Umicore and the European Precious Metals Federation, this case study highlights just one of the many essential applications of lead that provide societal benefits and boost the EU's economy

For Europe's future, lead matters.

Lead Matters