

Environmental and social responsibility for the 21st Century

Power and Protection

The uses of lead

The total amount of lead used each year around the world is about 8 million tonnes, and this quantity is growing steadily.

Today the largest use of lead by far is the lead acid battery, which accounts for about 80% of all lead used each year. The lead acid battery is in fact a very versatile and durable product for the storage of electricity. It can be recharged thousands of times for a variety of specialist applications. A familiar use for most people is the “SLI” battery found in every gasoline or diesel-engine vehicle, which provides the electricity needed for starting (S) the vehicle, for lighting etc. (L) and for igniting (I) the fuel in the engine. For some vehicles, lead acid batteries act as the only energy source – powering electric vehicles such as fork-lift trucks, golf carts and in the increasing numbers of low-emission electric cars and bikes. Moreover, a whole new generation of vehicles is now being developed, known as “hybrid electric” vehicles, which employ both a conventional petrol or diesel combustion engine and an electric motor. Advanced lead acid batteries are being developed to meet the very special demands of this new energy-efficient mode of transport.

Lead acid batteries also have important applications outside the vehicle market, such as in the vital role of providing emergency stand-by power, e.g. for emergency lighting and medical equipment. Telecommunications and computer networks are dependent on lead acid batteries to ensure these essential services continue to operate even when mains power fails. Energy storage in locations without mains electricity can be crucial for many communities. Solar power can generate green electricity that is then stored in lead acid batteries to bring the benefits of modern society to such communities.

Lead also has many important non-battery uses. One of the largest is lead sheet for building purposes, in which the metal is used for roofing, for water-proof flashings, for damp-proof courses and for sound insulation. Because of its unrivalled ability to absorb radiation, lead sheet is widely used for radiation shielding of x-ray equipment used by the dental and medical professions.

Lead is a vital component in underwater power cables, which are used to connect island communities to mainland power networks. Such lead containing cables are essential to the delivery of renewable energy, where they transfer the power generated from offshore wind farms to land. The lead is necessary to make the cables watertight and the extra weight also helps to keep them in place in strong currents.

Lead crystal glass is a familiar, attractive and functional product used in many homes, while lead-containing ceramic glazes are encountered widely on products as diverse as a family’s best dining plates and the bathroom sink. Lead compounds are added to some plastics to protect them from the damaging effects of sunlight, while others are used to provide the bright and distinctive colours of roadside warning signs. Because of its high density, lead is used for many weighting applications ranging from precision balance weights to mighty yacht keels.

Lead has a multitude of valuable uses in modern society and is encountered by everybody, whether consciously or otherwise, in virtually every aspect of their daily lives.

