LEAD ACID BATTERY RECYCLING
The Battery Recycling Process

Components of a Lead Acid Battery

The main components of the battery are lead (Pb) electrodes and lead dioxide (PbO2) electrodes immersed in a solution of water and sulphuric acid. These are generally contained in a plastic case made from polypropylene.

The Recycling Process

The lead, plastic and electrolyte (sulphuric acid) in used lead acid batteries (ULAB) is recycled. The most common processes are shown below. Around 98% of the material in each battery is recycled. The recycling process generally involves the following steps:

- The used batteries are drained and broken apart in a hammer mill or another type of crushing machine.
- The pieces are processed through various tanks, where the different densities of the materials cause some to sink (lead) and some to float (rubber and plastics). From here the materials are separated and treated individually.
- The plastic from the cases is transported to a specialist plastic recycler. The recycler melts the plastic using an injection moulding process to produce plastic pellets. These are generally sold to a battery manufacturer to manufacture new battery cases.
- The plastic or fibreglass separators can be separated from the polypropylene cases and either recycled or used as a fuel supplement.
- The lead grids and lead oxide are either sold to a secondary lead smelter or processed on-site in a smelter to produce lead ingots. Some processes combine the waste lead streams, while others feed the paste to a smelter furnace to recover soft lead and feed the grids and terminals to a melting furnace to produce hard lead. The lead is either exported or sold locally to produce new batteries.

The sulphuric acid can be either:

- neutralised on-site for safe disposal (not the preferred option)
- reused on-site for other applications
- treated to produce sodium sulphate, which is sold to laundry detergent manufacturers
- treated to produce calcium sulphate (gypsum), which is sold to plasterboard and cement manufacturers.

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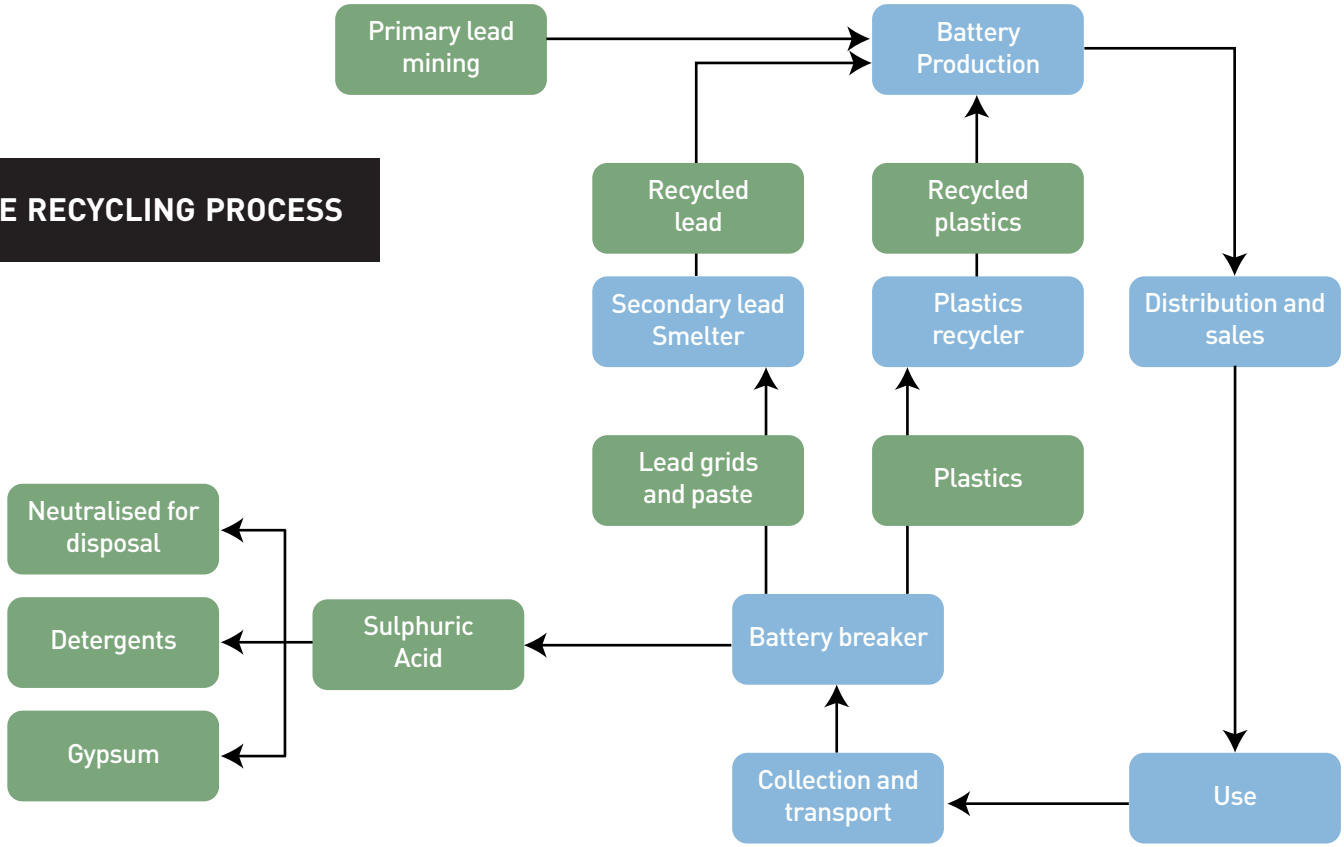
THE RECYCLING PROCESS



The Benefits of Recycling Lead Acid Batteries

- Recycling minimises the potential for lead to disperse in the environment after use. Lead is a toxic heavy metal and poses a risk to the environment and human health if disposed of inappropriately or to landfill.
- Recycling helps to conserve non-renewable resources, particularly lead.
- Producing recycled lead from batteries requires 35-40% of the energy needed to produce new lead from ore[1] .

To find a recycler visit

www.batteyrecycling.org.au/recycling/automotive-batteries

[1]Iain Thornton, Radu Rautiu and Susan Brush (2001), Lead, the facts: an independent report on lead and its industry, ICON, cited in Recycling used lead acid batteries, www.worldwidehelpers.org/wwhweb/uploads/files/KnO-100398_Recycling%20batteries.pdf

Australian Battery Recycling Initiative

The Australian Battery Recycling Initiative is a not-for-profit association established in 2008 to promote responsible environmental management of batteries at end of life. More information on battery recycling can be found on their website at www.batteryrecycling.org.au.

NOTE: The information provided here is general in nature and provided for educational purposes only. Organisations must do their own research to understand their legal obligations and to ensure that they are compliant with all relevant laws and regulations. ABRI does not accept responsibility for any loss or damage occasioned by any person acting or refraining from action as a result of reliance on this document.

ABRI Value Over Impact

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