

## Battery recycling: waste is not the end, but the beginning

Sustainable battery recycling needs high-performance metal extraction diluents

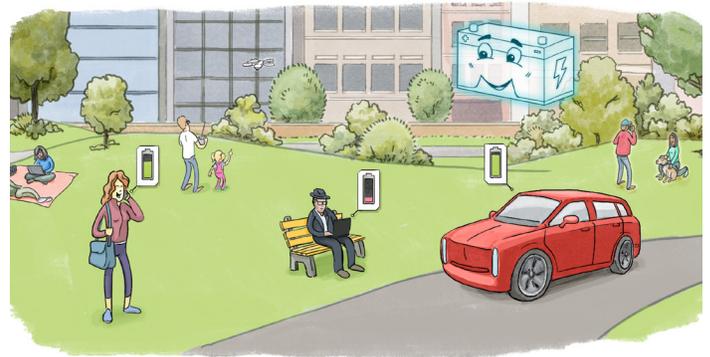


### A coin has two sides

In today's world we are surrounded by electronics bringing convenience, efficiency and portability to our everyday lives. Whether in smart phones, laptop computers or electric vehicles, batteries are the one common enabler.

During the past 30 years lithium-ion batteries have become an attractive choice thanks to their high energy density, long lifespan and light weight, but their developments consume significant amounts of metal resources including cobalt and nickel. The annual global consumption of these raw materials is expected to surge with the ever-increasing use of portable electronic devices and electric vehicles.<sup>1</sup>

This rapid and exciting growth also raises challenges. How do we deal with obsolete products, specifically old batteries? And how do we address the challenge of availability and accessibility of minerals needed for the manufacture of lithium-ion batteries?



### Could recycling be the answer?

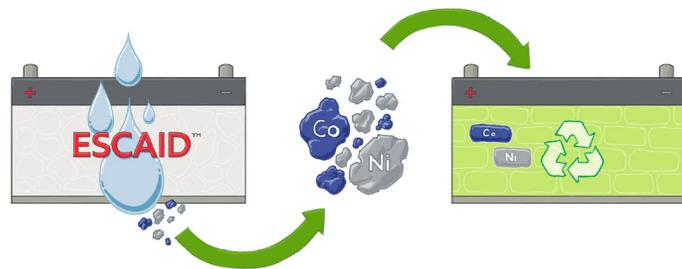
The pollution threat of lithium-ion batteries often lies at the back-end processing after their initial use. A large majority of used batteries contain metals and electrolytes, both of which can introduce contaminants to soil and water through landfill disposal.

In the electric vehicle battery sector the recycling potential is significant. If properly developed, battery recycling should promote the responsiveness of the raw materials sector through safe and controlled industrial processes, limiting the environmental impact in emerging countries.

## Escaid™ fluids help support sustainable battery recycling

Solvent metal extraction is a viable approach to extract metals from used lithium-ion batteries due to high metal recovery rates and high purity of the metals.

Escaid fluids' physical properties and composition show the right balance of good flow and phase separation with minimal diluent losses and reduced fire risks.<sup>2</sup> Diluents with low aromatic content and high flash point also help enhance worker safety and will meet more stringent environmental requirements compared to kerosene-type aromatic-containing diluent.<sup>3</sup>



High purity, quality consistency, improved safety at high temperature conditions and a secure global supply make Escaid fluids an excellent choice for solvent extraction processes.<sup>4</sup>

As the demand for on-the-go power increases across electric vehicles and electronic devices, the need for battery recycling will grow. Escaid fluids meet the performance and safety requirements of more demanding solvent extraction processes, and help the industry to face the dual challenge of meeting the world's growing demand for energy while reducing environmental impact.<sup>5</sup>

**Ganzhou Highpower Technology, a China based company, is dedicated to NEV battery recycling. "We are very satisfied with the results of Escaid fluids", said Mr. Meng Xiao, the chief engineer of China Ganzhou Highpower Technology, "We've used Escaid 110 since 2014. It has provided better performance from safety, environmental protection and cost perspectives compared with other products. It is recommended in solvent metal extraction."**



1 Source: Alves Dias, P., Blagojeva, D., Pavel, C., & Arvanitidis, N. (2018), Cobalt:demand-supply balances in the transition to electric mobility, Publications Office of the European Union, Luxembourg. DOI:10.2760/97710.

2 Source: <https://www.exxonmobilchemical.com/en/solutions-by-industry/industrial-applications/metal-solvent-extraction>, "High-performance diluents for metal extraction" PDF brochure

3 Source: <https://www.exxonmobilchemical.com/en/solutions-by-industry/industrial-applications/metal-solvent-extraction>, "High-performance diluents for metal extraction" PDF brochure

4 Source: <https://www.exxonmobilchemical.com/en/solutions-by-industry/industrial-applications/metal-solvent-extraction>, "Selecting the right diluent" PDF

5 Source: <https://www.exxonmobilchemical.com/en/solutions-by-industry/industrial-applications/metal-solvent-extraction>, "Selecting the right diluent" PDF