

## **LOW-CARBON FOOTPRINT BIO-DILUENTS FOR SOLVENT EXTRACTION IN LITHIUM-ION BATTERY RECYCLING**

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### **ABSTRACT**

TotalEnergies Fluids is a leader in the design, production, and sale of high-purity, biodegradable hydrocarbon solvents. Designed as aliphatic diluents dedicated to the solvent extraction (SX) process in hydrometallurgy, the Elixore range offers a choice of perfectly inert, colorless, and odorless solutions for metal extraction in battery recycling.

From the same plant based in the north of France that pioneered the production of Sustainable Aviation Fuel (SAF) at TotalEnergies for the Aviation Industry, TotalEnergies Fluids now produce a range of bio-hydrocarbon solvents, under the name of Biolife range, coming from bio-feedstocks such as Used Cooking Oil (UCO) which offer low carbon footprint solutions to the industry.

These products have been studied in detail over the last year at the Hydrometallurgical lab of CNRS, University of Lorraine, Nancy, France with the aim to design a single Universal Diluent that can be used in the multiple solvent extraction steps of a hydrometallurgical process of Recycling of EV Batteries for extraction of Cu, Al, Mn, Co, Ni, & Li. The results were recently published in a Technical Paper in the prestigious journal Royal Society of Chemistry\*.

One such low-carbon bio product commercialized in July 2023 after excellent results is “Elixore Biolife EV 205.” This presentation elucidates the distinctive features of this innovative product, emphasizing its remarkably low carbon footprint; a detailed flowsheet illustrating the product's integral role in the hydrometallurgical process of Battery Recycling will be showcased, underscoring its potential to significantly reduce Scope 3 emissions in Battery Recycling plants; and a live industrial project set to use Elixore Biolife EV 205.

*Keywords: biodegradable hydrocarbon solvents, low-carbon bio product, biodegradable hydrocarbon solvents, aliphatic diluents, SX, hydrometallurgy, battery recycling*

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