



Fluor & Energy
Materials

Localizing Supply of Critical Battery Materials

Presentation at NAATBatt 2025

Miki Oljaca

1A-11 Orbia

Tuesday, Feb 18th, 4:20 PM – 5:50 PM

Orbia is a global chemicals company with an integrated fluorine supply chain in North America



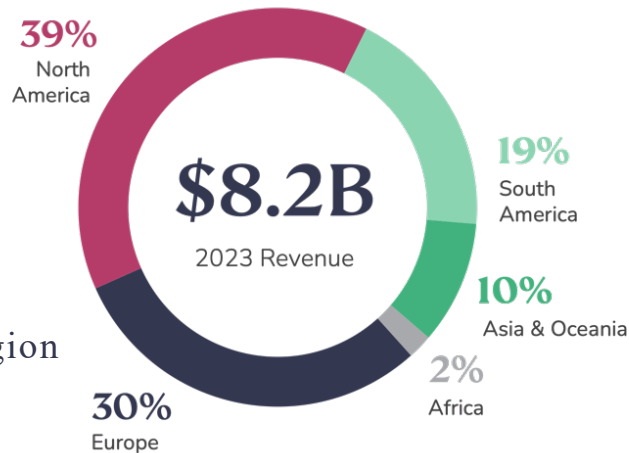
1953
Founded

24,000+
Employees

\$8.2B
Revenue

100+ countries
Comercial Footprint

50+ countries
Operations Footprint



Revenue¹ by Region

1. As of 12/31/22



Fluor & Energy Materials



Fluorine mines



Metspar

Applications

Performance steels & cements



Acidspar



Refrigerant

Heating & cooling: residential, commercial, food storage, automotive



Hydrofluoric acid (HF)



Medical propellants

Metered-dose inhalers for asthma and other pharma use



Salts & solvents

Batteries for automotive, ESS, specialty applications



Aluminum fluoride

Production of aluminum and steel for automotive, food and other applications



Orbia is enabling USA supply of LiPF_6 - key electrolyte salt

Progressing with the build of the first USA LiPF_6 plant in St Gabriel LA, vertically integrated raw materials

Longer shelf-life allows supply chain flexibility and reduces overstock loss potential.

Controlled material properties enable optimal manufacturing productivity & reduced product variability.

LiPF_6 property	Orbia F&EM	Others
Purity	Fewer impurities	High metal content High acid content
Powder properties	Uniform crystal size	Crystal size is uneven Lots of fine powder
Flowability	Material flows well	Hoppers clog
Filterability	No filter clogging	High insolubles Filter clogged
Stability	Less variation per lot. Traceable manufacturing	Significant variability



Safety



Improved Productivity

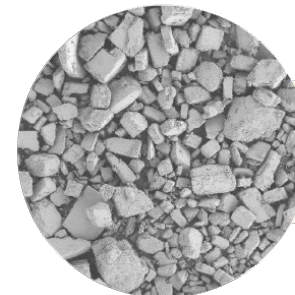


Quality Stability

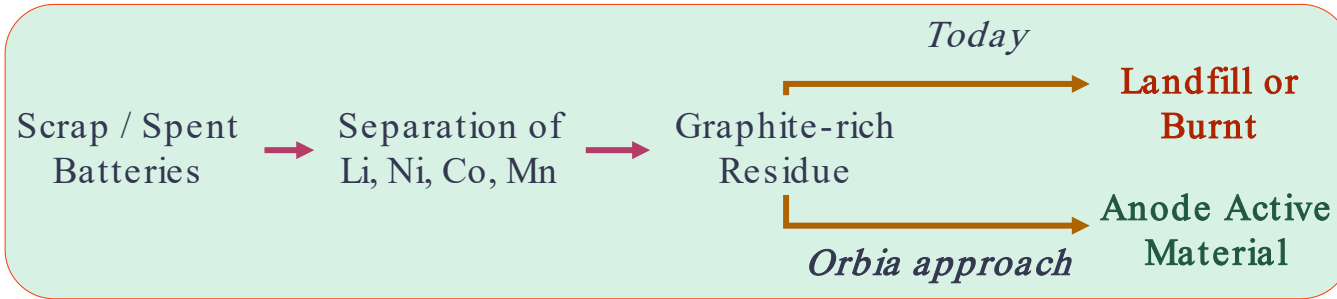
Orbia F&EM
 LiPF_6



Company A
 LiPF_6



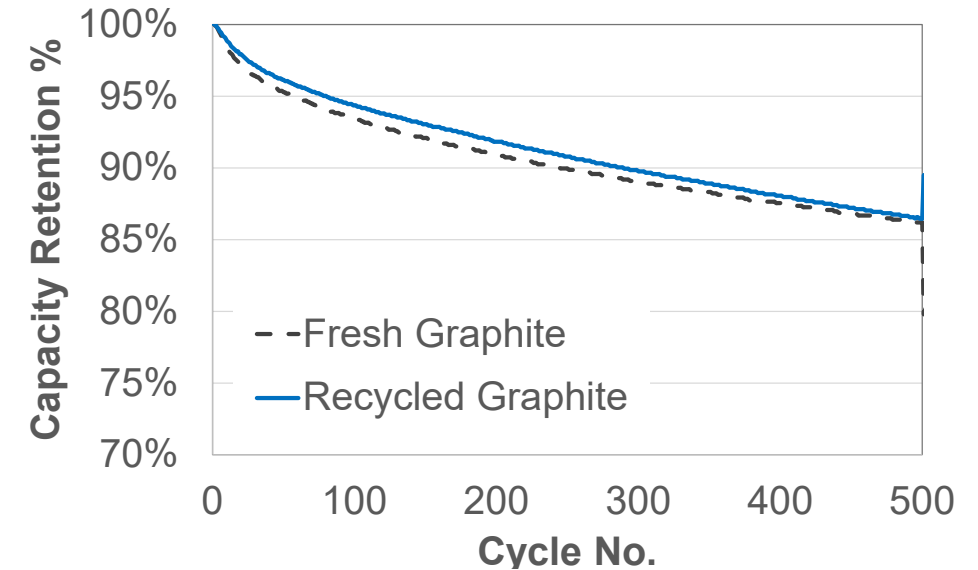
We are commercializing production of sustainable graphite anodes from recycled batteries*



Recycled graphite meets the battery grade anode requirements

	Fresh Graphite AAM	Recycled Graphite AAM
Particle Size D50 um	11-13.5	11-13
Tapped Density g/ml	>1	>1
Surface Area m ² /g	<3	<3
Purity %	>99.9%	>99.9%
Reversible capacity mAh/g	368	367

Recycled graphite meets the cycle life requirements



Example of cycle life of recycled graphite compared to fresh graphite measured in 100 mAh pouch cell. LFP Cathode, 1C charge/discharge 3.6 V – 2V, 45°C

*Collaboration with Ascend Elements

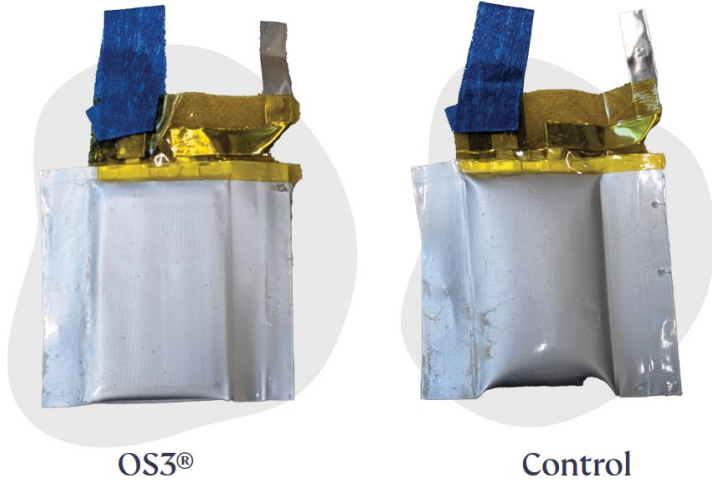


We supply custom electrolytes from a new US plant

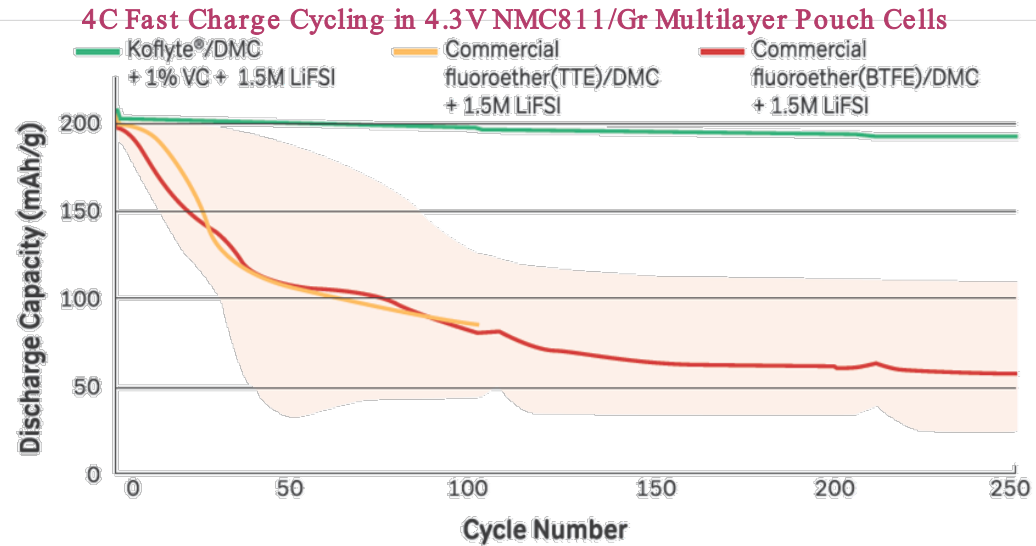
- ✓ Produced in Madison, WI
- ✓ Fast lead time from R&D to commercial scale
- ✓ High quality, full quality control lab
- ✓ Formulation expertise and access to wide range materials
- ✓ Novel fluorinated additives and solvents for improved performance



OS3[®] Organosilicon additive improves high temperature cycling and reduces gas generation in Si-anode cells



Koflyte[®] fluorinated materials improve fast-charge performance



Thank You!

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