

## PRODUCT PROFILE

# Trinohex<sup>®</sup> Ultra

High-performance electrolyte additive

## High-performance electrolyte additive

Trinohex<sup>®</sup> Ultra, a product that once contributed CO<sub>2</sub> emissions as a fuel, is now used to increase the cycle life of EVs and support renewable energy storage. By forming a protective film on the cathode, Trinohex Ultra improves battery safety, performance and cycle life.

Trinohex Ultra prevents the dissolution of metal ions, suppresses the decomposition of electrolytes and inhibits the attack of hydrogen fluoride.



See how Trinohex Ultra works









#### **Molecular Structure**

• High-purity 1,3,6 hexanetricarbonitrile

#### **Unique Nitrile**

- >99% purity
- Highly hydroscopic
- Non-aquatic toxic (DOT)

#### Versatility

- 408°C boiling point
- -23°C melting point
- Performs across cathode chemistries
- · Performs at high and low voltages

#### Safety

- Reduces harmful gas generation
- Slows the accumulation of transition metal onto anode

- Non-hazardous
- Non-flammable
- 247°C flash point
- 487°C auto-ignition point

#### Performance

- Forms stable CEI; protects cathode from degradation
- Reduces impedance growth
- Improves capacity retention
- Supports cycling in extreme temps
- Supports fast charging

#### **Technical Data Sheet**

View our online technical data sheet here.

(LFP/graphite, 40°C, C/5 CCV charge, C/2 CC discharge, 3.7V)

#### Low Gas Formation





#### Improved Capacity Retention

Lithium-ion battery charge/discharge cycles cause degradation over time. Slowing this degradation lengthens the service life of the battery. In real-world terms, higher capacity retention over time means that EVs, energy storage and personal electronic devices last longer - producing less waste and warranty liabilities. In LFP batteries, adding Trinohex Ultra to the electrolyte has been shown to improve capacity retention over 1,600 cycles.



#### Reduced Impedance Growth

Another marker of battery health and longevity is impedance over time. Higher impedance limits a battery's ability to efficiently charge and discharge electricity, and naturally occurs as the battery is cycled over its lifetime. In LFP batteries, adding Trinohex Ultra to the electrolyte leads to about 15% lower impedance growth over 1,600 cycles.



# **NMC-811**

(NMC/graphite, 40°C, C/5 CCV charge, C/2 CC discharge, 3.7V)

## **Reduced Gas Formation**

When used with NMC cathodes, Trinohex Ultra stabilizes the reactions and **reduces gas formation by around 40%**. When used in conjunction with propane sultone, gas formation is effectively halved.



#### **High Capacity Retention**

Trinohex Ultra shows **stable capacity retention of 85% over 3,500 cycles** with NMC cathodes. This high capacity retention leads to longer cycle life and limits battery warranty liabilities.



### **Reduced Impedance Growth**

Trinohex Ultra also **reduces impedance growth over 3,500 cycles**. That means lower voltage slippage and longer cycle life for NMC batteries.



# About Ascend

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#### **North America**

Houston, TX United States

+1 713 315 5700

#### Europe

Mont-Saint-Guibert Belgium +32 10 608 600

#### Asia

Shanghai China +86 21 2315 0888

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