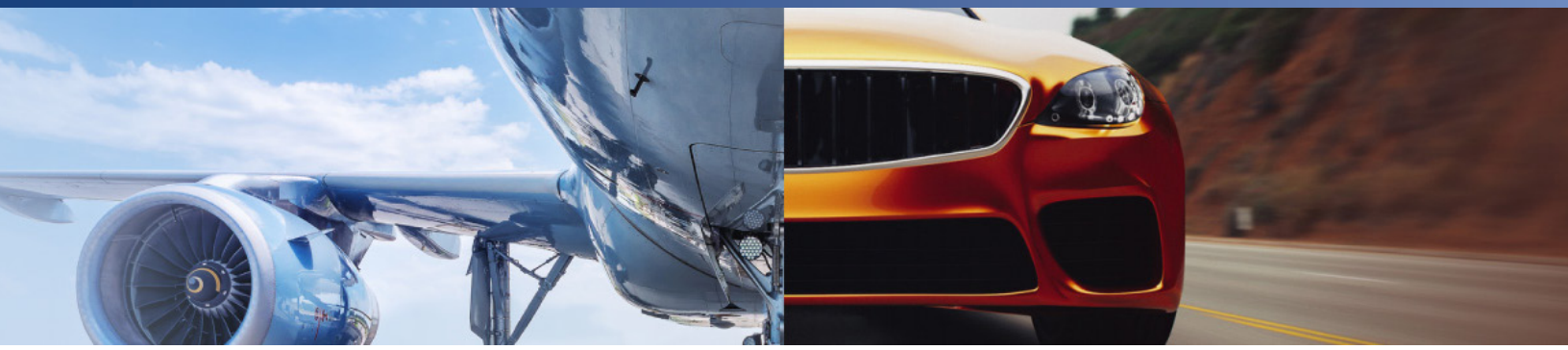
XTALIC



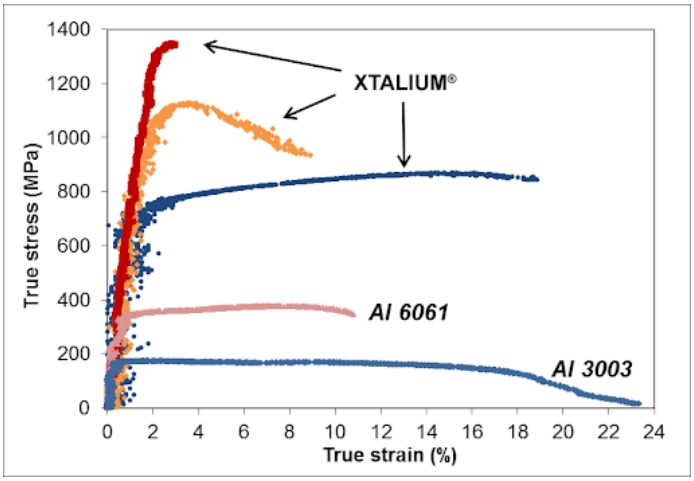
XTALIUM®

Advanced Nanostructured Aluminum Alloys for Lightweighting

XTALIUM® is a breakthrough in electroplated aluminum technology, delivering unmatched strength, corrosion resistance, and lightweight efficiency. Engineered with a unique nanostructure, XTALIUM combines the strength of steel with the lightweight benefits of aluminum. The supersaturated solid solution nature of the alloys boost corrosion and eliminate stress corrosion cracking. Developed with Xtalic's proprietary materials design platform, XTALIUM is transforming key industries by improving product performance and reducing environmental impact.

Key Features

Superior Strength	Matches the strength of steel while remaining lightweight.
Exceptional Corrosion Resistance	Protects aluminum, magnesium, and other substrates from degradation in harsh environments.
Scalable Thickness	Ranges from 50 nanometers to 1 millimeter for various applications.
Thermal Stability	Thermodynamically engineered to withstand temperatures up to 300°C.
Electrically Conductive	Approximately 10% IACS for electrical application needs.

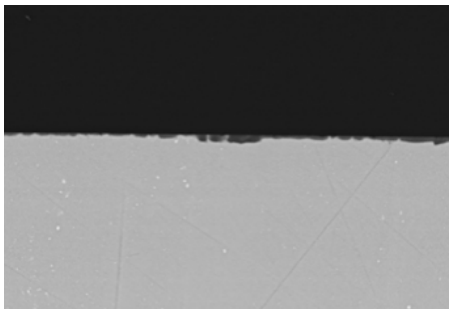


XTALIUM Advantage

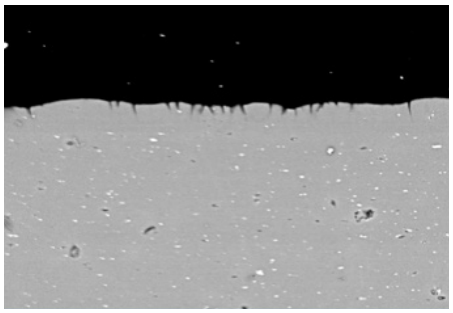
Three versions of XTALIUM nanostructured aluminum alloys configured for various mechanical property profiles, each with strengths far exceeding those available from traditional aluminum alloys.

Corrosion Resistant

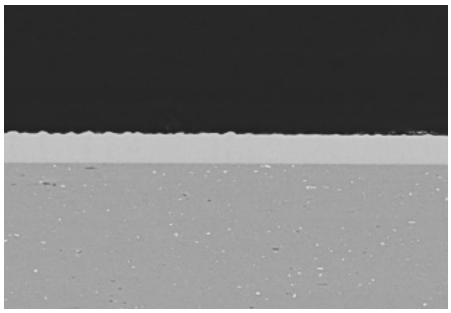
After 3000 hours of ASTM B117 salt spray testing, XTALIUM shows no evidence of corrosion, outperforming both bulk UNS A96061 aluminum (which shows shallow broad pitting) and pure aluminum (which shows deep vertical pitting up to 10 µm).



Bulk UNS A96061 – shallow but broad pitting



Pure Al Electroplate – vertical pitting 8-10um deep.



XTALIUM (Al-Mn) coating shows no evidence of corrosion.

Benefits

Lightweighting for Performance	Reduces overall component weight, improving feel in consumer applications and boosting fuel efficiency in automotive and aerospace applications.
Durability and Corrosion Protection	Provides a tough protective layer on top of susceptible alloys, like magnesium and corrosion prone duel phase aluminum, extending product lifespan.
Versatile Manufacturing Capabilities	Can be applied as a coating or electroformed into complex shapes for structural applications.
Sustainable	Aluminum-based alloys offer a low carbon footprint, reduce material waste, and support recyclability—delivering sustainable performance with lighter, more efficient coatings.

Applications

Automotive
Improves fuel efficiency and structural integrity in lightweight vehicle components.

Aerospace
Reduces weight in critical structural parts while maintaining strength.

Consumer Electronics
Enables durable, corrosion resistant and lightweight designs for mobile phones and wearables.

Industrial Applications
Protects corrosion-prone metals in harsh environments.

Manufacturing Capabilities

Precise Grain Structure Control
Achieves nanostructured coatings with superior mechanical properties.

Soluble Anode Technology
Maintains alloy consistency for high-performance applications.

Versatile Application Methods
Supports barrel and rack plating for scalable production.

Safe Operating Conditions
Operates at bath temperatures below 60°C and without harmful or dangerous solvents.