BLOOH SOLUTION
LTD.

SCANDIUM ALLOYS FOR

AEROSPACE

INNOVATION IN MATERIAL TECHNOLOGY
FOR AEROSPACE

www.blooh-solution.com

SCANDIUM: THE KEY TO THE NEXT GENERATION OF MATERIALS

Aerospace pushes material science to its limits. Aircraft and spacecraft must endure extreme stress, drastic temperature fluctuations, and the relentless pursuit of fuel efficiency. In this field, every gram counts—and the search for lighter, stronger materials is ongoing.

Traditional aluminum alloys have long dominated aerospace manufacturing due to their lighter weight compared to steel and solid mechanical strength. But modern designs demand more: higher strength at lower weight, improved corrosion resistance, enhanced weldability, and thermal tolerance—without compromising structural integrity.

BLOOH Solution Ltd. meets these demands with cutting-edge scandium-based aluminum alloys, custom-engineered for aerospace applications.

BS-BREAKTHROUGH

Our expertise in the lithium sector laid the foundation for exploring synergistic elements like scandium. BLOOH Solution recognized the exceptional potential of scandium early on and strategically integrated it into our R&D roadmap for aerospace-grade materials.

Lightweight

Durable

Groundbreaking

Scandium transforms conventional aluminum into a new class of high-performance alloys that are ultra-lightweight. Even small amounts of scandium significantly enhance grain refinement, strength, fatigue resistance, and weldability.

ENGINEERED FOR FLIGHT

Our scandium-aluminum alloys are ideal for:

- Wing spars and structural reinforcements in aircraft
- Heat shields and panels in spacecraft
- Satellite frames and support structures
- Load-bearing aerospace joints

These materials empower engineers to maximize modern flight concepts—from reduced launch weights to lighter orbital structures with lower fuel requirements.

Responsibly Innovative

BLOOH Solution's scandium supply chain is tightly integrated with our lithium recovery processes. This closed-loop system enables sustainable, cost-efficient sourcing—fully aligned with our commitment to innovation through ecological responsibility.

PORTFOLIO

SC-AL 2.5 – HIGH-STRENGTH BASE ALLOY

This alloy offers significantly increased strength at minimal weight—ideal for load-bearing aerospace structures. With 2.5% scandium, it achieves excellent fatigue resistance and weldability, making it the first choice for structural components in aircraft manufacturing.

TECHNICAL SPECIFICATION

Scandium Content: 2.5%

Tensile Strength: 510–530 MPa

Yield Strength: 460–480 MPa

Elongation: 10–12%

Density: ~2.77 g/cm³

Weldability: Excellent (no risk of hot cracking)

Fatigue Strength: High (over 10^7 cycles at 60% of UTS)

Thermal Expansion Coefficient: ~22 µm/m·K

Available Forms: Sheets, profiles, rolled products

Application Areas: Wing spars, fuselage structures, aerospace struts

PORTFOLIO

SC-AL-MG – CORROSION & TEMPERATURE-RESISTANT ALLOY

This heat-resistant alloy combines aluminum, magnesium, and scandium to deliver maximum resistance to high temperatures and saline environments. It is ideal for structures near engines and spacecraft exposed to fluctuating pressure and thermal loads.

TECHNICAL SPECIFICATION

Composition: Al–Mg–Sc alloy

Tensile Strength: ~480 MPa

Yield Strength: ~430 MPa

Elongation: 11–13%

Corrosion Resistance: Excellent (resistant to pitting and stress corrosion cracking)

Thermal Stability: Maintains shape up to 315°C

Creep Behavior: High dimensional stability under thermal cycling

Surface Finishing: Suitable for anodizing and powder coating

Available Forms: Forgings, castings, profiles

Application Areas: Engine housings, hatches, satellite exterior components

PORTFOLIO

SC-AL-POWDER – ADDITIVELY PROCESSABLE POWDER ALLOY

Specifically developed for additive manufacturing, this scandium-based powder alloy enables highly precise, weight-optimized aerospace components with complex geometries. It ensures a uniform microstructure and high part density.

TECHNICAL SPECIFICATION

Particle Size: 15–45 µm

Processes: LPBF, DMLS, SLM

Tensile Strength (Printed): ~500 MPa

Yield Strength: ~450 MPa

Elongation: 8–10%

Part Density: ≥99.5% of theoretical density

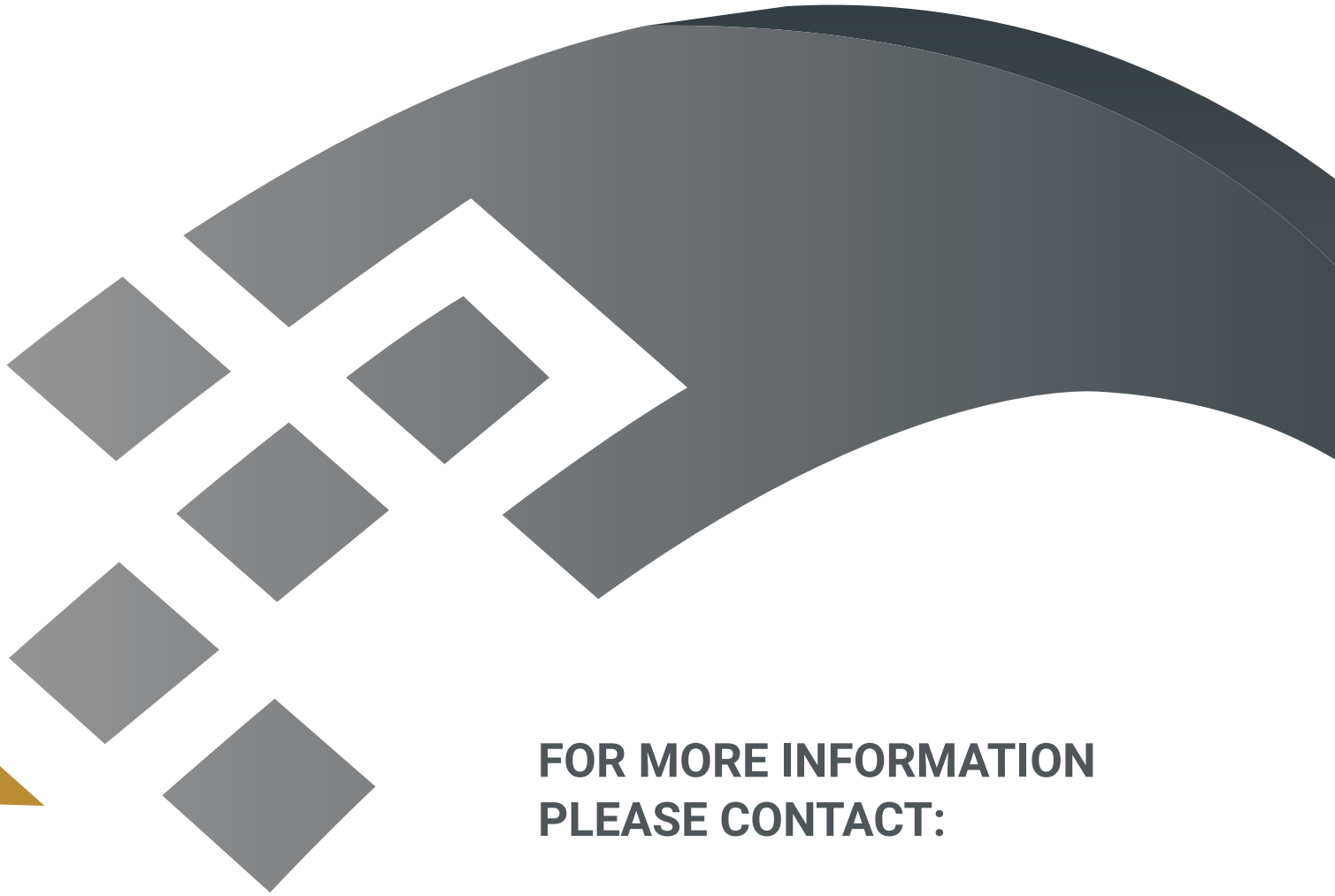
Surface Roughness: <10 µm Ra

Available Forms: Spherical powder

Microstructure: Fine-grained, no solidification cracks

Application Areas: Brackets, cooling channels, antenna mounts, prototypes

DRIVING INNOVATION FORWARD!



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