

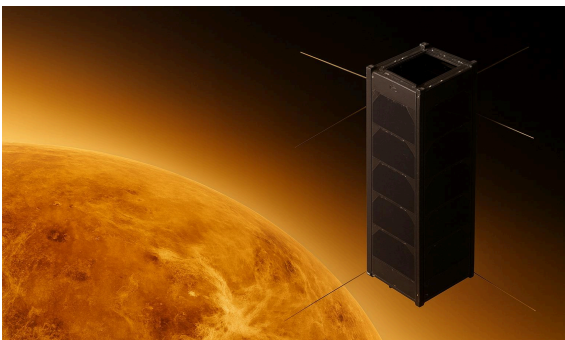
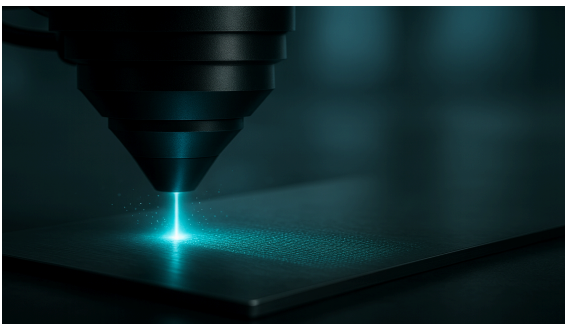
## Overview

Cosmic Black is a femtosecond-laser surface finish that delivers a flat black result with a UV absorptance to IR emissivity ratio ( $\alpha/\epsilon$ ) close to 1. This means a truly black response across the relevant spectral bands for passive thermal control. The finish is intrinsic to the substrate —no extra layers, no build-up, no mass added.

## OLMA fs-laser process

- Applicable to common space alloys: Aluminium 2000/6000/7000 series, titanium, invar, stainless steel, etc.
- ECSS compliant (Qualification campaign)
- Laser-induced finish —permanent, stable finish, no masking required
- Dry, chemical-free, REACH compliant, no ESD risk
- Scalable & repeatable on complex geometries

| Property                           | Value                       |
|------------------------------------|-----------------------------|
| UV Absorptivity (ECSS-Q-ST-70-09C) | 0.95-0.98 [-]               |
| IR Emissivity (ECSS-Q-ST-70-09C)   | 0.95 - 0.98 [-]             |
| Temperature Range                  | -200°C to +300°C            |
| Weight                             | None (Zero added mass)      |
| Thickness                          | N/A (no added layer)        |
| Adhesion (ECSS-Q-ST-70-13C)        | N/A (inherent to substrate) |
| Surface Resistivity                | That of the substrate       |
| Outgassing (ECSS-Q-ST-70-20C)      | No outgassing expected      |



## Key advantages

- Black finish:  $\alpha/\epsilon \approx 1$  across solar & thermal ranges
- Etched in performance —no coatings
- Lightweight & clean: no added mass, no adhesion testing, no flake risk
- Durable: stable under thermal cycling, radiation, and AIT operations

## Heritage & roadmap

- Sample phase undergone
- Prototype phase on going
- Independent ECSS qualification planned for 2025–2026
- Typical applications: radiators, thermal control surfaces, stray-light suppression, spacecraft structures

Interested in trialling Cosmic Black? Contact **OLMA Space**

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