Acktar Black™
World’s Blackest Coatings
By Industrial Vacuum Deposition Technology

Absorbs 99% EUV- UV, VIS, NIR-FIR
Fits to all Metals, Glass, Plastics
Coating Service – High Performance Black Light-Absorbing Thin-Film Coatings

Acktar is the world’s largest manufacturer of black coatings. Its coatings are the standard of excellence in the field. Acktar coats all types of opto-mechanical parts submitted by customers and also undertakes build-to-print manufacture of the parts and assembly after coating. Since 1993 Acktar has been dedicated to providing the best-in-industry black coatings for applications ranging from satellite optics and endoscopes to automotive IR cameras and smart phones.

BRDF Metal Velvet™ - 532 nm

Hemispherical Reflectance

Characteristics of Acktar Black Coatings

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Magic Black™</th>
<th>Vacuum Black™</th>
<th>Fractal Black™</th>
<th>Ultra Black™</th>
<th>Metal Velvet™ (foil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational wavelength</td>
<td>EUV-NIR</td>
<td>EUV-SWIR</td>
<td>VIS-FIR</td>
<td>MWIR-LWIR</td>
<td>EUV-FIR</td>
</tr>
<tr>
<td>Coating thickness, nm</td>
<td>3 - 5</td>
<td>4 - 7</td>
<td>5 - 14</td>
<td>13 - 25</td>
<td>5 - 7</td>
</tr>
<tr>
<td>Working temperature, °C</td>
<td>-269 to 350</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight of coating, mg/cm²</td>
<td>1.1 - 1.6</td>
<td>0.7 - 1.1</td>
<td>1.6 - 3.2</td>
<td>3.3 - 6.5</td>
<td>1.4 - 3.2</td>
</tr>
<tr>
<td>Abrasion resistance</td>
<td>light</td>
<td>moderate</td>
<td>moderate</td>
<td>moderate</td>
<td>light</td>
</tr>
<tr>
<td>Adhesion to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metals, Glass, Ceramics, Plastic</td>
<td>Coated pieces withstand scotch tape test (3M#33 Crystal clear tape, strength of 13N per 25mm), without any evidence of coating removal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outgassing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CVM 0.001%, RML 0.2%</td>
</tr>
<tr>
<td>Chemical content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% inorganic</td>
</tr>
<tr>
<td>Surface resistivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In the dissipative range</td>
</tr>
<tr>
<td>Cleanability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coated pieces withstand cleaning with ethanol, IPA or acetone with no change in optical and technical characteristics.</td>
</tr>
</tbody>
</table>
Sensors & Imaging
Where signal-to-noise determines the quality of images or the sensitivity of sensors Acktar coatings provide superior stray light suppression across the spectrum from EUV through the IR.

Space & Science
Satellite-borne optics typically require the highest level of stray light suppression combined with space compatible conditions. Acktar space-qualified coatings combine superior optical performance with a unique mix of features and advantages such as wide-range thermal stability, essentially zero outgassing, vacuum compatibility, and survival under space radiation. The maintenance of knife edge geometry in star-tracker baffles is an example where Acktar provides a significant performance boost.

Lasers & Inspection
Acktar coatings are particularly advantageous in high energy density laser applications because they offer high Laser Induced Damage Thresholds (LIDT) in addition to their unique mix of optical performance and other features and advantages. A typical example: Magic Black coated aluminium - LIDT > 800 watts/sqcm for 532nm quasi CW.

Acktar’s Black™ Coating Capabilities Include:
- High emissivity: >99% (at 3-10 microns); > 94% (at 3-30 microns)
- Thickness tolerances +/-0.6 microns
- Ideally conforms to knife edge of baffle vanes - radius < 15 microns
- Zero fluorescence
- Space qualified (ATOX, radiation, thermal cycling, outgassing)
- UHV compatible: 10⁻¹¹ mbar
- Paternally by conventional photolithography etching & lift off
- Tailorable electrical conductivity
- Extremely low molecular contamination MOC < 10⁻⁹ g/cm²
- Clean room compatible class 10
- High vibration stability
- Biocompatible

AS 9100D  ISO 9001:2015 Certified  RoHS COMPLIANT

### 4 Coating Categories to Define When You Order Acktar Black

<table>
<thead>
<tr>
<th>Coating Code</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Primary coated area</td>
</tr>
<tr>
<td></td>
<td>Black coating fully compliant with specifications</td>
</tr>
<tr>
<td>Red</td>
<td>Secondary coated area</td>
</tr>
<tr>
<td></td>
<td>Relaxed specifications with regards to blackness</td>
</tr>
<tr>
<td>Green</td>
<td>No requirement</td>
</tr>
<tr>
<td></td>
<td>Not coated, coated or partially coated at Acktar’s discretion</td>
</tr>
<tr>
<td>Yellow</td>
<td>Uncoated (masked) area</td>
</tr>
<tr>
<td></td>
<td>Area which must be free of any Acktar coating</td>
</tr>
</tbody>
</table>

**Example:**

![Example Image](image)

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- Specifications presented in this brochure are for information only.
- Binding specifications will be as agreed between Acktar and a customer in each case.
- Acktar reserves the right to change the characteristics and/or specifications of its products at any time without prior notice.