

VANTABLACK®

S-VIS

S P A C E

ULTRA-BLACK, SPRAY APPLIED
COATING

DATASHEET

WWW.SURREYNANOSYSTEMS.COM





Reducing instrument launch weight and footprint are critical for space based instrument designers. Space qualified Vantablack S-VIS and S-IR coatings are able to significantly reduce package size for baffle systems, blackbody calibration systems and lens assemblies where critical stray light control measures are needed for optimal performance in the harshest of environments.

Vantablack S-VIS offers the lowest possible reflectivity across a wide range of viewing angles with exceptional performance from UV to THz.

TYPICAL APPLICATION AREAS

Baffle systems (star-trackers and general optical baffles)

- Reduce baffle weight and footprint whilst retaining or improving optical performance

Black body calibration

- Improved calibration accuracy
- Lower mass cavity or source plates
- Simple absorber surface minimises machining complexity and potential areas for failure seen with traditional coatings

Infrared Imaging

- Reduce thermal ghosting from sunlight and other thermal sources
- Reduce cold shield mass and complexity

Lens assemblies

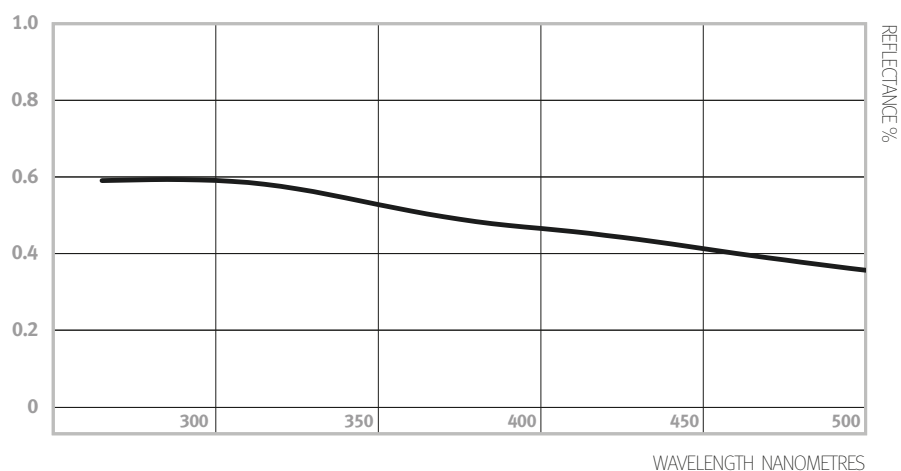
- Improved image contrast with significant reduction in ghost artefacts from sunlight

KEY FEATURES

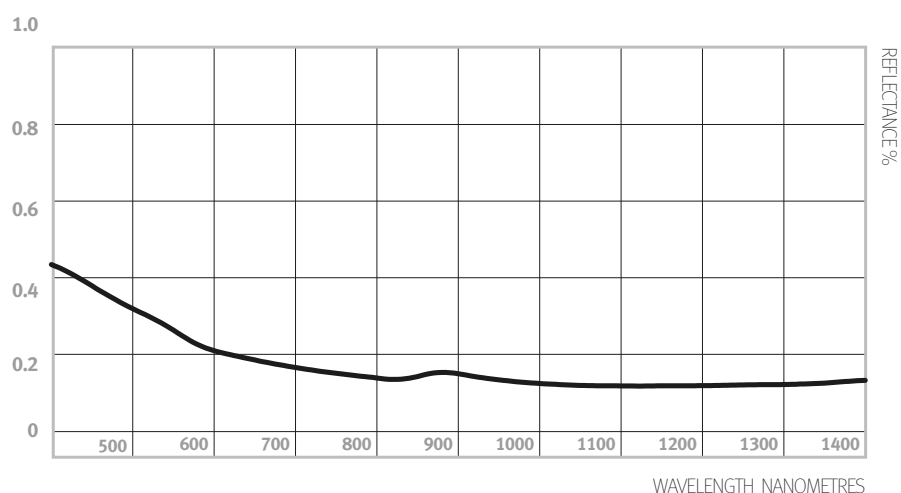
- Best available optical absorption in a commercial coating
- Suitable for knife edges
- Spectral range 0.2µm to 600µm
- Exceptional BRDF and TIS performance enables simplified designs
- Resistant to low earth orbit environment
- Resistant to launch, staging and deployment shock
- Existing LEO space heritage
- Very low levels of outgassing and contamination
- Minimal degradation to UV radiation
- Predictable performance to atomic oxygen (ATOX)
- Two step application process using spray and vacuum post processing
- Applied through our UK production facility unless volume requirements demand on site application
- No ROHS listed materials used in its manufacture (ROHS compliant)
- Not notifiable under EU REACH regulations

VANTABLACK S-VIS PERFORMANCE

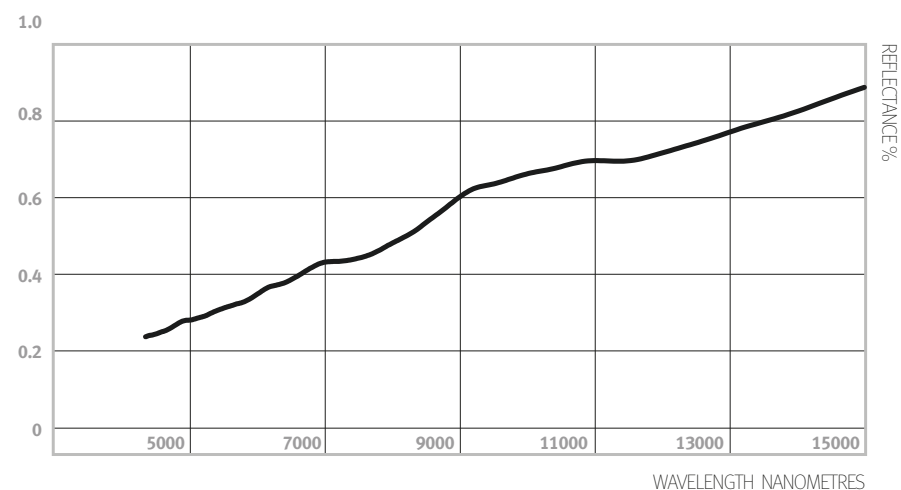
Ultraviolet
Hemispherical
reflectance



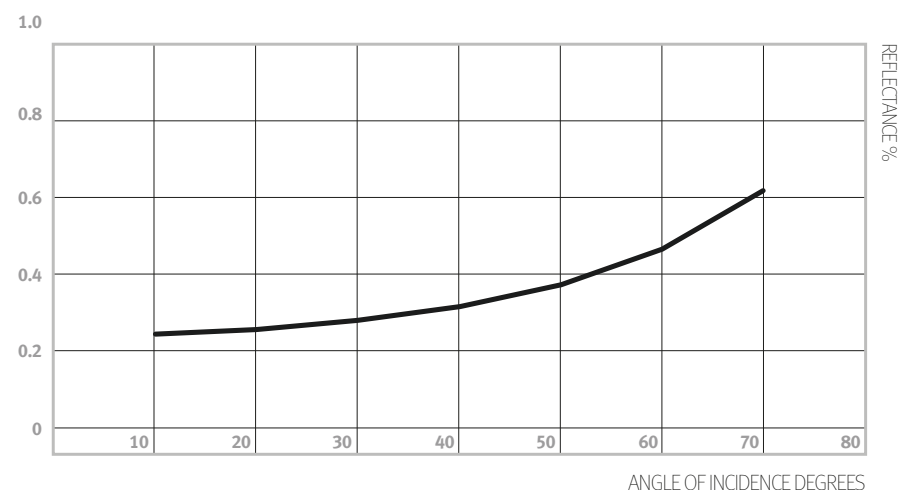
Visible to near-infrared
Hemispherical
reflectance



Infrared
Hemispherical
reflectance



**Angle dependent
reflectance**
300 - 800
nanometres



SPACE PERFORMANCE DATA

Temperature range in air	-271°C to 300°C (long term) / 350°C (short term - 48 hrs)
UV exposure resistance	Resistant
Gamma and proton radiation	Tested to 4 Mrad combined gamma and proton with no change
Outgassing	ASTM E-595 - TML - 0.5% CVCM - 0.005 RML - 0.0
Damp heat ageing	No detectable change
Vibration resistance	80 grms random vibration in 3 axis
Water/Humidity resistance	Resistant to humidity and wetting
Coating thickness	~250µm
Abrasion resistance	Not suitable for direct contact
Suitable substrates	Metals, glass and ceramics

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OTHER CHARACTERISTICS

Chemical resistance	Not resistant to solvents, strong alkaline or acidic liquids
Composition	Nanostructured material made from carbon and fluorine
Limitations	Not resistant to direct impact or abrasion, so should only be used in packaged systems
Export control	Some applications may require an export licence

SAFETY DATA

Materials safety data sheet	www.surreynanosystems.com/resources
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