

VANTABLACK®


S-IR

SPACE

ULTRA-BLACK, SPRAY APPLIED
COATING

DATA SHEET

www.surreynanosystems.com





Vantablack S-IR is an ultra black absorptive coating based on carbon nanotube technology. It has been designed to give optimal performance from NIR to FIR, with excellent performance to 300µm.

It is applied using a proprietary spray process which permits application to a wide range of substrate materials and to complex shapes.

TYPICAL APPLICATIONS

Vantablack S-IR is used for stray light control and calibration in a wide range of systems.

For example, as a stray light suppression coating in baffles, an absorber layer for thermal and optical sensors, in cavity blackbodies and as a blackbody calibration source.

Infrared cameras and sensors

- Stray light, cold shields, IR sensors, baffles, lens barrels

Electro-optical systems

- Stray light baffles, apertures, housings

Satellite systems

- Cavity blackbodies and thermal control

Astronomy

- Stray light control, apertures, lens barrels, housings

Metrology

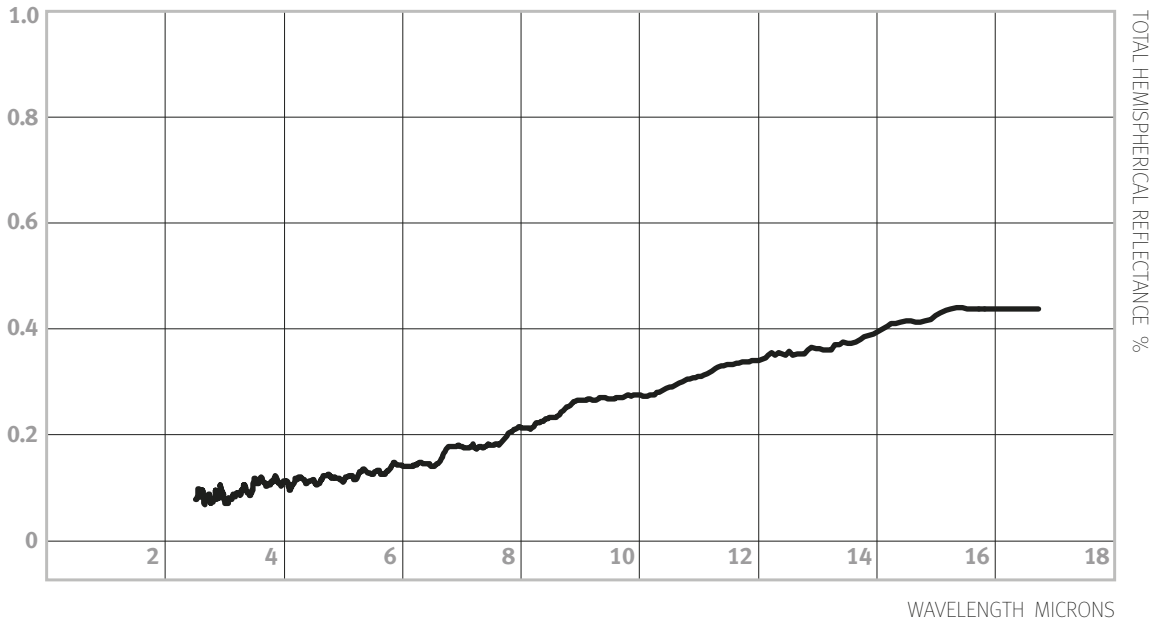
- IR spectrum stray light control for spectrometers, cavity black bodies, and calibration source plates

KEY FEATURES

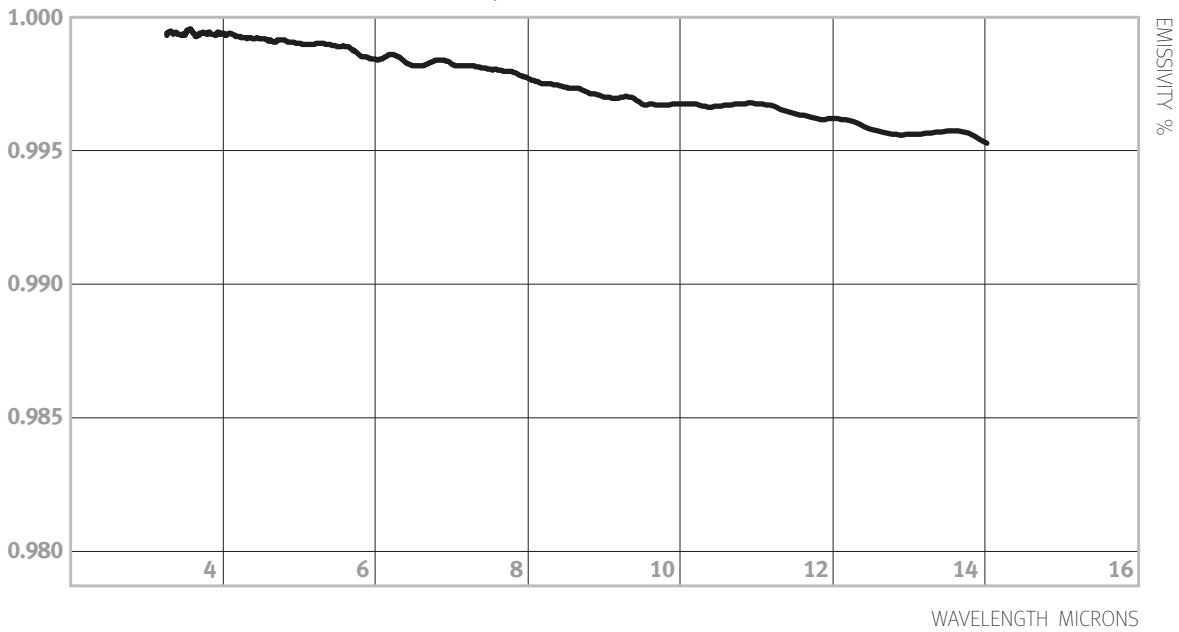
- Best available NIR-FIR optical absorption in a commercial coating
- Suitable for knife edges
- Exceptional BRDF and TIS performance enables simplified designs
- Resistant to low earth orbit environment
- Resistant to launch, staging and deployment shock
- Very low levels of outgassing and contamination
- 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-IR PERFORMANCE

Infrared - Reflectance



Infrared - Effective emissivity (AOI = 7 DEG; 293 K; RANDOM POLARIZATION)



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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