

TECHNICAL DATA SHEET

VANTABLACK[®]

320

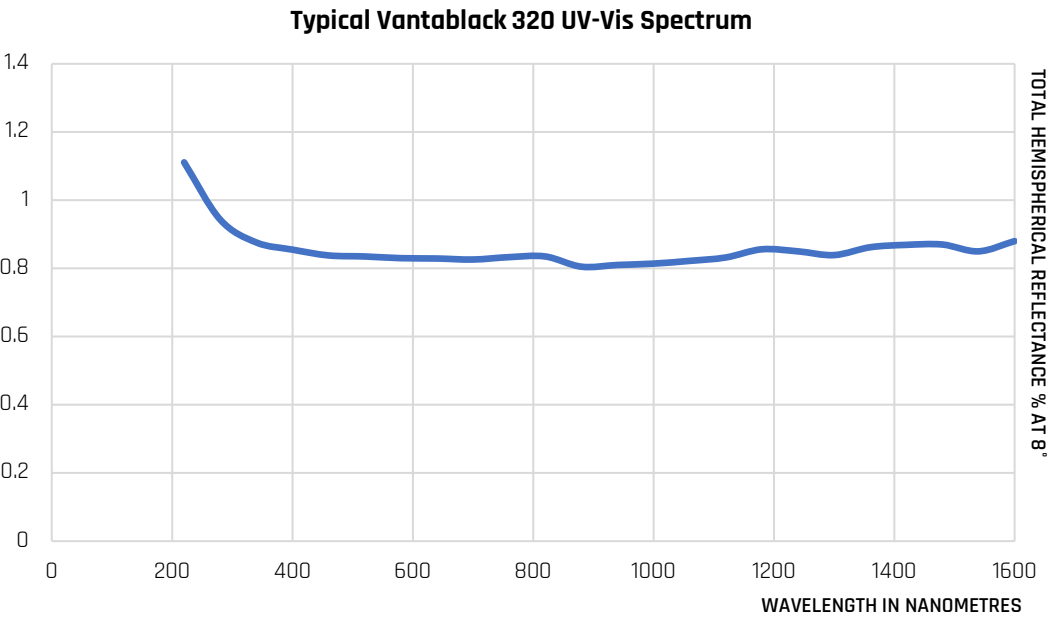
Vantablack[®] 320 Ultra-black Aerospace Coating



PRODUCT DESCRIPTION

Vantablack 320 Series is an ultra-black coating for terrestrial and space applications, offering 1% Total Hemispherical Reflectance. It is engineered to suppress stray light and thermal noise across the visible to infrared spectrum. Applied as a coating service with proprietary technology.

Table 1: Typical Optical Properties of Vantablack 320	
SURFACE APPEARANCE	Matte Ultra-black
TOTAL HEMISPHERICAL REFLECTANCE	
(220 – 1400nm)	~1%
(2 – 8 μm)	< 1%
BRDF	Near Lambertian
EMISSIONIVITY	0.99



Typical Vantablack 320 Series IR Spectrum

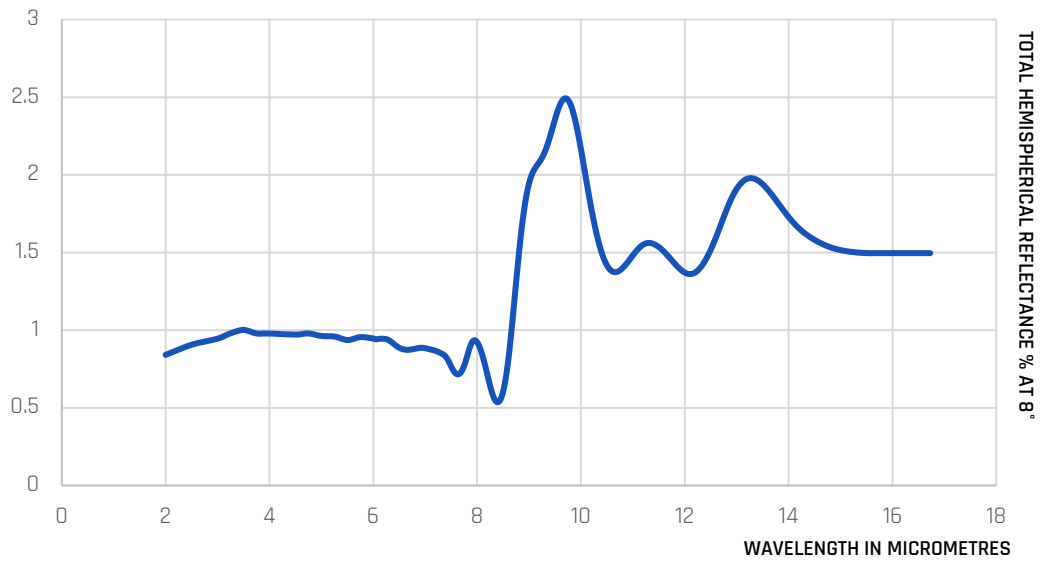


Table 2: Typical Physical Properties of Vantablack 320

OUTGASSING (ASTM E595-77)

%TML < 1.0

%CVCN < 0.1

ATOMIC OXYGEN (After equivalent of 3 years in LEO RAM facing*)

%TML 7.9

%THR 2.8

SHEET RESISTANCE Ω/\square $10^3 - 10^4$ **OPERATIONAL TEMPERATURE RANGE** $-196 - 200^\circ\text{C}$ **COATING MASS** (mg/cm^2)

6

COATING THICKNESS (μm)

Average 100*

ADHESION (ISO 2409)

Grade 1

*Fluence 10^{21} atom/ cm^2

*The dry film is a carbon microstructure, not a standard film paint. Maximum height of film may exceed this

**PRODUCT DESCRIPTION**

Vantablack 320 provides strong adhesion across a wide range of substrates and maintains stability under demanding mechanical and thermal conditions, including shock and vibration typical of launch environments. While the coating is not designed to withstand direct handling, impact, or abrasion, our specialised expertise in developing bespoke tooling enables us to create tailored processing, handling, and shipping solutions. This customised approach ensures protection during all stages of manufacturing and deployment, supporting reliable application on a broad variety of substrates and geometries.



SURFACE PREPARATION

Substrates will be cleaned as part of the coating service. Vantablack 320 must be applied to surfaces that are clean, dry, and free from grease, particulates, or any loosely adhering materials. Vantablack 320 can be applied directly to most substrates and conversion coatings. For some substrates the use of standard pre-treatments may be recommended. Please consult your Vantablack representative for guidance on specific materials.

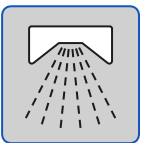


ENGINEERING AND TOOLING

We can provide engineering guidance to help optimize part designs for coating, ensuring the best performance and compatibility with the application process. Because the coating cannot be touched, we design and manufacture custom tooling and fixtures to safely handle parts throughout processing.

Table 3: Typical Processing Parameters of Vantablack 320

MAXIMUM PART DIMENSIONS (contact Vantablack representative for details)	unlimited
PROCESSING TEMPERATURE (low temperature processing available)	120°C
APPLICATION METHOD (line of sight required)	Spray Process
MAXIMUM LENGTH TO DIAMETER RATIO	3:1



APPLICATION

Vantablack 320 is applied using conventional spray systems. It can be applied manually or using an automated system for high volume components.



PACKAGING INFORMATION

We design and manufacture custom packaging to safely ship coated parts, protecting them from physical damage and contamination during transit. Each solution is tailored to the part's geometry.

We also provide handling aids or guidance to ensure the part can be safely unpacked and integrated by the customer without touching or damaging the coated surfaces.



RECOAT

Please consult your Vantablack representative for guidance on recoating.



STORAGE

Coated parts should be stored in a sealed container to avoid any contamination from dust, oils, or particulates.



SAFETY INFORMATION

Before using any Vantablack product, refer to the Material Safety Data Sheet (MSDS) for safe use and handling instructions.

For industrial and commercial use only. Must be handled and applied by trained personnel.



CLEANING THE SURFACE

DO NOT TOUCH THE COATED SURFACE. Compression and contamination of the ultra-black surface will impair optical performance

When handling coated parts, we recommend the use of powder free nitrile/latex gloves.

The surface contamination and dust should be removed using dry compressed air or nitrogen at 1 bar pressure.



TECHNICAL SUPPORT

For further technical support please contact:

- o technicalsupport@surreynanosystems.com