



surrey nanosystems

**Safety Data Sheet**  
**REACH) according to Regulation**  
**(EC) No 1907/2006**

Ref R&amp;D-SDS-001

Title Vantablack S-VIS S-IR

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Substances:** MWCNT (multi-walled carbon nanotubes)**Substance name:** Vantablack S-VIS and S-IR**CAS No.:** 308068-56-6**EC No:** 936-414-1**REACH No:** The substance does not meet the minimum volume threshold for registration.**1.2. Relevant identified uses of the substance or mixture and uses advised against****Relevant identified uses:** Improving imaging technology

Reducing light scatter

Aesthetic uses

**Uses advised against:** In areas where abrasion may occur.**Reasons:** May damage product and optical properties.**1.3 Details of the supplier of the safety data sheet:****Supplier:****Name:** Surrey Nanosystems Ltd.**Address:** Unit 24  
Euro Business Park  
New Road  
Newhaven  
BN9 0DQ  
United Kingdom**Information contact:****E-Mail:** enquiries@surreynanosystems.com**1.4 EMERGENCY TELEPHONE NUMBER: Newhaven +44 1273 515899**

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**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture:****Product definition: Classification according to regulation (EC) No. 1272/2008 [CLP/GHS]****Note** only if item is scratched and mis-handled allowing dust to become aerosolised

Eye irritation (Cat 2)

Specific target organ toxicity – single exposure (Cat 3)

(This means Transient target organ effects. This category only includes narcotic effects (dizziness, drowsiness) and respiratory tract irritation (sore throat, cough). These effects, while adversely altering human function, are of short duration after exposure, and do not result in significant alterations of structure or function following recovery.)

**Classification according to EU Directives 67/548/ECC or 1999/45/EC**

Irritating to eyes and respiratory system

**Additional information:**

Full text of H- and EUH-phrases: see SECTION 16.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]****Product identifier:****Hazard components for labelling: MWCNT****Hazard pictograms****Signal word:** Warning**Hazard statements:**

H319: Causes serious eye irritation

H335: May cause respiratory irritation

**Precautionary statements:**

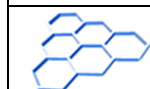
P261: Avoid breathing dust/fume/mist/vapours/spray.

P262: Do not get in eyes, on skin, or on clothing.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P280: Wear protective gloves/protective clothing/eye protection/face protection

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Caution – Substance not yet tested completely.

2.3 Other hazards: None known

### SECTION 3. Composition/information on ingredients

#### 3.1 Substances (Coating only)

Description of the Substance: Hydrophobic MWCNT

Composition/information on ingredients

Substance name	CAS No.	EC No.	Concentration	Classification according Regulation (EC) No. 1272 [CLP]
<i>Multiwalled CNT</i>	308068-56-6	936-414-1	<i>80-83%</i>	<i>H320</i> <i>H335</i>

Additional information:

**Full text of H- and EUH-phrases: see SECTION 16.**

*This mixture does not contain further substances fulfilling the criteria of hazard class "acute toxicity" according to CLP regulation.*

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

**General information:** In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and seek medical advice.

**Following inhalation:** Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Consult a doctor.

**Following skin contact:** Wash off with soap and water. Consult a doctor.

**Following eye contact:** Rinse well with plenty of water for at least 15 minutes and consult a doctor.

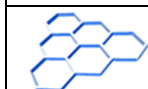
**Following ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a doctor. Do not induce vomiting.

**Self-protection of the first aider:** No action shall be taken involving any personal risk or without suitable training.

#### 4.2 Most important symptoms and effects, both acute and delayed

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

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**4.3 Indication of any immediate medical attention and special treatment needed**

Notes for the doctor: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Special treatment: No specific treatment

**5: Firefighting measures****5.1 Extinguishing media:**

**Suitable extinguishing media:** Use water spray, foam, dry chemical or carbon dioxide.

**5.2 Special hazards arising from the substance or mixture:** Carbon oxides.**5.3 Advice for fire-fighters**

Wear self-contained breathing apparatus for firefighting if required.

**Additional information:** Appropriate breathing apparatus may be required

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

Use PPE as required. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

**6.2 Environmental precautions:**

Do not allow to enter drains or watercourses. If the product contaminates lakes, rivers, or sewers, inform the appropriate authorities in accordance with local regulations.

**6.3 Methods and material for containment and cleaning up**

Pick up and arrange disposal without creating dust. If using brush and shovel, wet material first to reduce atomising dust, otherwise use HEPA filtered vacuum cleaner. Keep in a suitable, closed container for disposal.

**6.4 Reference to other sections****Additional information:**

See Section 1 for emergency contact information.

See Section 8 for information on appropriate personal protective equipment.

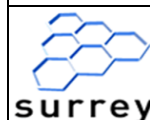
See Section 13 for additional waste treatment information.

**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

For coating – avoid contact with coated surface.

Avoid contact with skin by wearing gloves if handling exposed coated part (double-gloving recommended).

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Avoid formation of dust and aerosols by not directly touching coated part.  
 Normal measures for preventative fire protection.

**7.2 Conditions for safe storage, including any incompatibilities**

Avoid contact with coated surface when storing as may damage surface.

**7.3 Specific end uses:** Data not available.**SECTION 8: Exposure controls/personal protection**

*The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.*

**8.1 Control parameters****Components with workplace control parameters**

There are currently no UK statutory workplace exposure limits (WELs) specifically for nanomaterials.

NIOSH currently have a Recommended Exposure limit (REL) of 1 µg/m<sup>3</sup> over an 8-hour TWA during a 40-hour work week for aerosolised CNT's.

ECHA currently have a Derived No Effect Level (DNEL) of 0.05 mg/m<sup>3</sup> as a benchmark.

**8.2 Exposure controls****8.2.1 Appropriate engineering controls N/A****8.2.2 Personal protective equipment:****Eye/face protection**

No special eye protection is required when handling coated parts, however precaution may be to wear eye protection to stop accidentally touching eyes with gloves which may be contacted with coated surface. Safety glasses with side-shields conforming to EN166 are recommended.

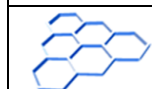
**Skin protection**

Handle with gloves if handling exposed coated part. Inspect gloves prior to use. Use proper glove removal technique to avoid skin contact with this material. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected gloves must satisfy the specifications of EU directive 89/686/EEC and the standard EN 374 derived from it. Double-gloving is recommended.

**Body protection**

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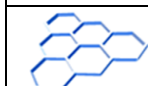
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No special body protection is required when handling coated parts.

**Respiratory protection**

Use masks as a precaution to prevent any accidental ingestion or inhalation of dust when handling parts coated with the material (mask/respirator type P3 (EN 143)).

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**8.2.3 Environmental exposure controls:**

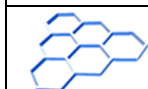
Do not allow to enter drains or watercourses.

**SECTION 9. Physical and chemical properties****9.1 Information on basic physical and chemical properties****Appearance:** Solid black coating

	<b>Value</b>	<b>Method</b>	<b>Remark</b>
<b>Melting point</b>	>3,000 °C		
<b>Initial boiling point/boiling range</b>	No data available		
<b>Flash point</b>	Not applicable		
<b>Evaporation rate</b>	Not applicable		
<b>Flammability (solid, gas)</b>	Not a flammable <sup>1</sup>		
<b>Upper/lower flammability or explosive limits</b>	No data available		
<b>Vapour pressure</b>	Not applicable		
<b>Vapour density</b>	Not applicable		
<b>Relative density</b>	2.5 mg/cm <sup>3</sup>		
<b>Solubility</b>	Insoluble		
<b>Partition coefficient: n-octanol/water</b>	No data available		
<b>Auto-ignition temperature</b>	No data available		
<b>Decomposition temperature</b>	Not applicable		
<b>Viscosity</b>	Not applicable		
<b>Explosive properties</b>	No data available		
<b>Oxidising properties</b>	None		

**Physical state:** Solid **Colour:** Black **Odour:** Odourless **Odour threshold:** N/A<sup>1</sup>Not a flammable solid, per test method N.1 as described in Part III, sub-section 33.2.1 of the UN recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria**9.2 Assessment / Classification:** None

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**SECTION 10: Stability and reactivity****10.1 Reactivity:**

No specific test data related to reactivity available for this product or its ingredients

**10.2 Chemical stability:**

Stable under recommended storage and handling conditions (see Section 7).

**10.3 Possibility of hazardous reactions:**

Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid:** No data available.**10.5 Incompatible materials:** Oxidising agents**10.6 Hazardous decomposition products:**

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information****Acute toxicity:** No data available**Skin corrosion/irritation:** No data available**Serious eye damage/eye irritation:** No data available**Respiratory or skin sensitization:** No data available**Germ cell mutagenicity:** No data available**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity:** No data available**Specific target organ toxicity – single exposure**

Inhalation – May cause respiratory irritation

**Specific target organ toxicity – repeated exposure**

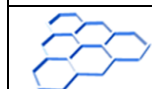
No data available

**Aspiration hazard:** No data available**Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation
<b>Ingestion</b>	May be harmful if swallowed
<b>Skin</b>	May cause skin irritation
<b>Eyes</b>	Causes serious eye irritation

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**Signs and symptoms of exposure**

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

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**SECTION 12: Ecological information**

Do not allow the mixture to enter drains or watercourses. The mixture and its components are not classified as hazardous to the environment.

**12.1 Toxicity:** No data available**12.2 Persistence and degradability:** No data available**12.3 Bio accumulative potential:** No data available**12.4 Mobility in soil:** No data available**12.5 Results of PBT and vPvB assessment:** No data available**12.6 Other adverse effects:** No data available**Additional ecotoxicological information:** Not available**SECTION 13: Disposal considerations****13.1 Waste treatment methods**

**Product / Packaging disposal:** The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer.

Hazard Codes are HP4 and HP5 in very small % of product.

**Waste codes / waste designations according to EWC / AVV:**

EWC codes N/A due to product being a very small % of part coated, EWC code would be for coated part.

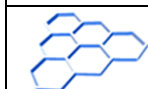
**Packaging:** The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Using information provided in this safety data sheet, advice should be obtained from the relevant waste authority on the classification of empty containers. Empty containers must be scrapped or reconditioned. Dispose of containers contaminated by the product in accordance with local or national legal provisions.

**Waste treatment options:**

**Other disposal recommendations:** Do not allow to enter drains or watercourses. Dispose of according to all federal, state and local applicable regulations. If this product is mixed with other wastes, the original waste product code may no longer apply and the appropriate code should be assigned. For further information, contact your local waste authority.

**Additional information:** None

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**SECTION 14 : Transport information****14.1 UN Number**

ADR/RID: -

IMDG: -

IATA: -

**14.2 UN Proper shipping name**

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

**14.3 Transport hazard class**

ADR/RID: -

IMDG: -

IATA: -

**14.4 Packaging group**

ADR/RID: -

IMDG: -

IATA: -

**14.5 Environmental hazards**

ADR/RID: no

IMDG: Marine Pollutant: no

IATA: no

**14.6 Special safety precautions for user**

No data available

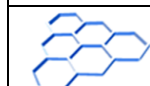
**SECTION 15: Regulatory information****15.1** Safety, health and environmental regulations/legislation specific for the substance or mixture.**15.1.1 EU regulations**

Not a hazardous substance according to the summation method of Regulation (EC) 1272/2008 (CLP), its various amendments and adaptations and Directive 67/548/EEC.

**Authorisations and/or restrictions on use:** No restrictionsAuthorisations: Not applicableRestrictions on use: Not applicable**Other EU regulations:** None**15.2 Chemical Safety Assessment:**

For this mixture a chemical safety assessment is not required.

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**SECTION 16: Other information**

16.1 Full text of H-statements referred to in Section 2 and 3.

H319: Causes serious eye irritation

H335: May cause respiratory irritation

**16.2 Further information:**

**IMPORTANT NOTE** The information in this data sheet is not intended to be exhaustive and is based on the present state of our knowledge and on current laws: any person using the product for any purpose other than that specifically recommended in the technical data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. It is always the responsibility of the user to take all necessary steps to fulfil the demands set out in the local rules and legislation.

Always read the Material Data Sheet and the Technical Data Sheet for this product if available. All advice we give or any statement made about the product by us (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing otherwise, we do not accept any liability whatsoever for the performance of the product or for any loss or damage arising out of the use of the product. All products supplied and technical advice given are subject to our standard terms and conditions of sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is subject to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to verify that this data sheet is current prior to using the product.

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