SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Substances: Solvent borne carbon-based paint.

Substance name: VBx Ultra black paint.

CAS No.: N/A
Index No: N/A
EC No: N/A
REACH No: This product is a mixture and therefore not directly subject of the registration requirements under REACH.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses

To be applied as a spray paint in a well-controlled environment under licence and guidance by the manufacturer.

Uses advised against:

Formation of explosive mixtures with air. Do not use in non-ventilated areas; or where there are sources of ignition, or without specific training.

Reasons:

Highly flammable solvent.

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 UK
Telephone +44 1273 515899
E-Mail : enquiries@surreynanosystems.com

1.4 EMERGENCY TELEPHONE NUMBER:

Newhaven: - +44 1273 515899

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:

Product definition: Mixture

Classification according to regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq 2, H225 Highly flammable liquid and vapour.

Ingredients of unknown toxicity: 0%

Ingredients of unknown ecotoxicity: 0%

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:
Acetone

Hazard pictograms

Signal word:
Danger

Hazard statements:

H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.

Precautionary statements:

P210: Keep away from heat/sparks/open flames/hot surfaces and other ignition sources– No smoking.
P261 Avoid breathing mist/ vapours/ spray
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P337+313: Get medical advice/attention.
P403: Store in a well-ventilated place.

Supplementary Precautionary statements:

P233 Keep container tightly closed.
P240 Ground/ bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilation/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.

2.3 Other hazards

None known

SECTION 3.Composition/information on ingredients

3.1 Mixtures

Description of the mixture:
Mixture of synthetic resins, organic solvent and pigments.

Composition/information on ingredients

Substance name	CAS No.	INDEX No.	EC No.	Concentration	Classification according Regulation (EC) No. 1272 [CLP]
Carbon black	***1333-86-4***		***215-609-9***	***10-30%***	-
Binder	***n/a***		***-***	***10-30%***	-
Acetone	***67-64-1***		***200-662-2***	***60-80%***	***Flam. Liq Clas 2***

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.

Following skin contact: Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.

Following eye contact: Remove contact lenses, irrigate copiously with clean, fresh water, holding the eyelids apart for at least 10 minutes and seek immediate medical advice.

Following ingestion: If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.

Self-protection of the first aider: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness.

Solvents may cause some of the above effects by absorption through the skin. Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin.

If splashed in the eyes, the liquid may cause irritation and reversible damage. Ingestion may cause nausea, diarrhoea and vomiting. This takes into account, where known, delayed and immediate effects and also chronic effects of components from short-term and long-term exposure by oral, inhalation and dermal routes of exposure and eye contact.

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

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Recommended: alcohol-resistant foam, CO_2, powders,

Unsuitable extinguishing media: Do not use water

5.2 Special hazards arising from the substance or mixture

Vapours are heavier than air and may spread near the ground, travel a considerable distance to a source of ignition and flash back.
Severe explosion hazard when vapours ignite.
Hazardous combustion products: Fire will produce dense black smoke. Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

5.3 Advice for fire-fighters

Cool closed containers exposed to fire with water. Prevent runoff from entering drains or watercourses.

Additional information: Appropriate breathing apparatus may be required

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Exclude sources of ignition and ventilate the area. Avoid breathing vapour or mist. Refer to protective measures listed in sections 7 and 8.

For emergency responders
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

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

Isolate all ignition sources. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Preferably clean with a water-based detergent. Avoid using solvents.

Other information: If exposed to air, mixture will gel in storage and so will resist high flow rates reducing the rate of spillage

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

Prevent the creation of flammable or explosive concentrations of vapours in air and avoid vapour concentrations higher than the occupational exposure limits. In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard. Mixture may charge electrostatically: always use earthing leads when transferring from one container to another.

Operators should wear antistatic footwear and clothing and floors should be of the conducting type.

Keep away from heat, sparks and flame. Non-sparking tools should be used.

Avoid contact with skin and eyes. Avoid the inhalation of dust, particulates, spray or mist arising from the application of this mixture. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Keep container tightly closed when not in use. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air.

Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

Ensure vapours are not allowed to build up by keeping containers closed and in well ventilated areas. The material can be cleaned off surfaces with warm soapy water or alcohol/water mixtures. Dry powders should be hoovered up using an appropriately rated vacuum cleaner.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions: Store between 0 and 35ºC. Store in accordance with local regulations.

Requirements for storage rooms and vessels: Observe label precautions. Store in a dry, cool and well-ventilated area. Store between 0 and 35ºC. Keep away from heat and direct sunlight. Keep away from sources of ignition. No smoking. Prevent unauthorised access. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

Materials to avoid: oxidising agents, strong alkalis, strong acids.

Seveso Directive - Reporting thresholds (in tonnes)
Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P5c: Flammable liquids 2 and 3 not falling under P5a or P5b	5000	50000
C6: Flammable (R10)	5000	50000

7.3 Specific end uses: to be used as a spray paint coating for aesthetic and engineering applications

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

8.1.1 Occupational exposure limits:

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring.

standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

8.1.2 Exposure limits at intended use:

Occupational Exposure Guidelines for Acetone

OSHA PEL-TWA	1000 ppm
ACGIH TLV-TWA	500 ppm (NIC 200 ppm)
TLV-STEL	750 ppm (NIC 500 ppm)
NIOSH REL-TWA	250 ppm
IDLH	2500 ppm
HSE EH40 approved workplace exposure limits	500 ppm (8-hr TWA), STEL 1500 ppm (15-mins)

8.2 Exposure controls

8.2.1 Appropriate engineering controls: Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapours below the OEL, suitable respiratory protection must be worn.

8.2.2 Personal protective equipment:

Eye / Face protection:
Suitable eye protection: Use safety eyewear designed to protect against splash of liquids.

Other eye protection measures: In the case of high exposures a full-face respirator mask can be used to limit exposure of eyes to vapours.

Skin protection:

Gloves: For prolonged or repeated contact use protective gloves. Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred. Skin should be washed after contact.

Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Recommended gloves: Viton® or Nitrile Breakthrough Time: 480 min.

When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended.

Body protection: Personnel should wear antistatic clothing. This should be made of natural fibres or of high temperature-resistant synthetic fibres.

Other skin protection measures: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators with AX grade filters.

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: High viscosity liquid

	Value	Method	Remark
Melting point/freezing point	**No data available**		
Initial boiling point/boiling range	**56°C**		
Flash point	**-19 °C**	**Closed cup**	
Evaporation rate	**No data available**		
Upper/lower flammability or explosive limits	**2.2-13%**		**(Acetone)**
Vapour pressure	**24kPa**	**At 20^{0}C**	**(Acetone)**
Vapour density	**2.0**	**(air = 1)**	**(Acetone)**
Relative density	**0.84**		
Solubility(ies)	**Miscible**		
Partition coefficient: n-octanol/water	**No data available**		
Auto-ignition temperature	**465^{0}C**		**(Acetone)**
Decomposition temperature	**No data available**		
Viscosity	**No flow**	**ISO 2431**	
Explosive properties	**No information available**		
Oxidising properties	**No information available**		

Physical state: Liquid **Colour:** Black **Odour:** sweet **Odour threshold:** 19.8 ppm

9.2 Assessment / Classification: Flammable liquid, high viscosity. Hazard class 3.

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:
When exposed to high temperatures may produce hazardous decomposition products.

10.5 Incompatible materials:
Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

There are no data on the mixture itself.

Exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. Solvents may cause some of the above effects by absorption through the skin. Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin. If splashed in the eyes, the liquid may cause irritation and reversible damage.
Ingestion may cause nausea, diarrhea and vomiting. This takes into account, where known, delayed and immediate effects and also chronic effects of components from short-term and long-term exposure by oral, inhalation and dermal routes of exposure and eye contact.

11.1.2 Mixtures

Component information

Component	LD50 Oral 4 h	LD50 Dermal	LC50 Inhalation (rat)
Acetone	5800 mg/kg (Rat)	> 15800 mg/kg (rabbit)	> 7400 mg/kg (rat) 76 mg/l
Carbon black	> 2000 mg/kg.	No data	No data
Polymeric resin	> 5000 mg/kg	No data	No data

Hazardous component: Acetone
Toxicologically Synergistic Products: Carbon tetrachloride; Chloroform; Trichloroethylene; Bromodichloromethane; Dibromochloromethane; N-nitrosodimethylamine; 1,1,2-Trichloroethane; Styrene; Acetonitrile, 2,5-Hexanedione; Ethanol; 1,2-Dichlorobenzene

Delayed and immediate effects as well as chronic effects from short and long-term exposure.

Irritation:	Irritating to eyes and skin
Sensitization:	No information available
Carcinogenicity:	Not listed
Mutagenic Effects:	No information available
Reproductive Effects:	No information available.
Developmental Effects:	No information available.
Teratogenicity:	No information available.
STOT - single exposure	Central nervous system (CNS)
STOT - repeated exposure	Kidney Liver spleen Blood
Aspiration hazard	No information available
Symptoms / effects, both acute and delayed:	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. May cause pulmonary edema
Endocrine Disruptor Information:	No information available

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
There are no data available on the mixture itself. Do not allow to enter water drains or courses.
The mixture has been assessed following the summation method of the CLP regulation (EC) No 1272/2008 and is not classified as hazardous to the environment.

12.2 Persistence and degradability
Not available

12.3 Bioaccumulative potential
Not available

12.4 Mobility in soil
Not available

12.5 Results of PBT and vPvB assessment

Not applicable

12.6 Other adverse effects:

Not 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

Waste codes / waste designations according to EWC / AVV:
EWC codes 08 01 11 and 20 01 27

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

SECTION 14 : Transport information

Viscous substance exemption - Special provisions 640G

In pack sizes less than 450 litres, under the terms of 2.3.2.6, this product is not subject to the provisions of ADR

	Land transport (ADR/RID)	Inland waterway transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN No.	1263	1263	1263	1263
14.2 UN Proper shipping name	paint	paint	paint	paint
14.3 Transport hazard class(es)	3	3	3	3
Hazard label(s)	Flam. Liq	Flam. Liq	Flam. Liq	Flam. Liq
14.4 Packing group	3	3	3	3
14.5 Enviromental hazards	none	none	none	none

14.6 Special precautions for user

Transport within user's premises: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

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 restrictions
Authorisations: Not applicable
Restrictions on use: Not applicable

Other EU regulations: None

VOC content 700g/L in compliance with EU Directive 2004/42/CE Special Finish coatings.

15.1.2 National regulations in country of use

Country of destination: Republic of South Korea – Use not restricted according to VOC legislation due to Acetone exemption status MOE Public Notice No. 2004-141 (September 18, 2004); Latest Amendment: MOE Public Notice No. 2007-121 (August 7, 2007)

15.2 Chemical Safety Assessment:

For this mixture a chemical safety assessment is not required.

SECTION 16: Other information

16.1 Relevant R-, H- and EUH-phrases (number and full text):

H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation
H336: May cause drowsiness or dizziness

Precautionary statements:

P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P337+313: Get medical advice/attention.
P403: Store in a well-ventilated place.

16.2 Training advice: Hands on training to be administered by authorised representatives of Surrey Nanosystems Ltd only. Use of the material without training is done so at operator's risk.

16.3 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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