

SAFETY DATA SHEET

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4

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product code **STAR-720-86-5L**
Product name **Ultimate White UV Inkjet**
Product category **High Build Inkjet Inks**

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

Recommended use Industrial Printing Operations

1.3 Details of the supplier of the safety data sheet

Ultimate Solutions Ltd
24 Donnington Road
Burton Latimer
Kettering NN15 5WL
Tel: 07970357338

For further information, please contact

Contact person

E-mail address

1.4 Emergency telephone number

Section 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

According to Regulation (EC) No 1272/2008

Skin Corrosion/Irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 1 - (H318)
Skin sensitization	Category 1A - (H317)
Reproductive toxicity	Category 2 - (H361)
Specific target organ toxicity (repeated exposure)	Category 2 - (H373)
Acute aquatic toxicity	Category 1 - (H400)
Chronic aquatic toxicity	Category 2 - (H411)

2.2 Label elements



Signal Word

Danger

Hazard Statements

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H361f - Suspected of damaging fertility

H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H411 - Toxic to aquatic life with long lasting effects

EUH211 - Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist

Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P202 - Do not handle until all safety precautions have been read and understood

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

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P314 - Get medical advice/attention if you feel unwell

P273 - Avoid release to the environment

2.3 Other Hazards**General Hazards**

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.2 Mixtures**

Component	EC No	CAS-No	Weight %	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH No.	Note
Hexamethylene diacrylate (HDODA)	235-921-9	13048-33-4	10 - 30	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Skin Sens. 1 (H317) Aquatic Acute 1 (H400) Aquatic Chronic 2 (H411)	01-2119484737-22-xxxx	
Titanium Dioxide	236-675-5	13463-67-7	10 - 30	Carc. 2 (H351) [Inhalation]	01-2119489379-17-xxxx	1, 10
Dipropylene glycol diacrylate	260-754-3	57472-68-1	10 - 30	Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Skin Sens. 1 (H317)	01-2119484629-21-xxxx	
N-vinylcaprolactam	218-787-6	2235-00-9	5 - 10	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Eye Irrit. 2A (H319) Skin Sens. 1B (H317) STOT RE 1 (H372) [liver, respiratory system]	01-2119977109-27-xxxx	
Neopentylglycol propoxylate diacrylate	-	84170-74-1	5 - 10	Skin Sens. 1B (H317) Aquatic Chronic 2 (H411)	01-2119970213-43-xxxx	
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	278-355-8	75980-60-8	5 - 10	Repr. 2 (H361f)	01-2119972295-29-xxxx	
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)-	423-340-5	162881-26-7	1 - 5	Skin Sens. 1A (H317) Aquatic Chronic 4 (H413)	01-2119489401-38-xxxx	
Polyurethane resin	-	NOT ESTABLISHED	1 - 5	Skin Irrit. 2 (H315) Eye Irrit. 2A (H319)	No data available	
Glycerol propoxy triacrylate (GPTA)	500-114-5	52408-84-1	1 - 5	Eye Irrit. 2 (H319) Skin Sens. 1 (H317)	01-2119487948-12-xxxx	

Note

REACH No: Registration number(s) may not be provided because substance(s) are exempted or not yet required to be registered under REACH 1. Substance with a Community workplace exposure limit

10. Titanium Dioxide; [in powder form containing 1% or more of particles with aerodynamic diameter $\leq 10 \mu\text{m}$] - The classification as a carcinogen by inhalation applies only to mixtures in powder form containing 1 % or more of titanium dioxide which is in the form of or incorporated in particles with aerodynamic diameter $\leq 10 \mu\text{m}$.

Component	EU - CLP (1272/2008) - Annex VI - Table 3 - Acute Toxicity Estimates (ATEs)	Specific concentration limit (SCL)	M-Factor (acute)	M-Factor (chronic)
Hexamethylene diacrylate (HDODA) 13048-33-4			1	1
Neopentylglycol propoxylate diacrylate 84170-74-1				1
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)- 162881-26-7				1

Full text of H- and EUH-phrases: see section 16

Section 4: FIRST AID MEASURES

4.1 Description of first aid measures

General Advice	Show this safety data sheet to the doctor in attendance.
Eye Contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention if irritation develops and persists.
Skin Contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. If irritation (redness, rash, blistering) develops, get medical attention.
Inhalation	Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration. Get medical attention immediately.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

None under normal use conditions.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
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Section 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media

Foam. Carbon dioxide (CO₂). Dry chemical. Water spray. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

No information available.

5.2 Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. May emit toxic fumes under fire conditions. Hazardous polymerization may take place during a fire due to heat. Closed containers could violently rupture.

5.3 Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool containers / tanks with water spray. Sealed containers may rupture when heated.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Ventilate the area. Avoid contact with eyes, skin and clothing. Avoid breathing dust or vapor. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Keep out of drains, sewers, ditches and waterways. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Use clean non-sparking tools to collect absorbed material.

6.4 Reference to other sections

See Section 12 for more information.

Section 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Use personal protective equipment as required. Do not eat, drink or smoke when using this product. Ensure adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities

Keep at temperatures between 18°-32°C (65°-90°F). Keep containers tightly closed in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep out of the reach of children. Protect from direct sunlight. Keep away from open flames, hot surfaces and sources of ignition.

7.3 Specific end use(s)

Exposure scenario

No information available.

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters**Exposure limits**

Component	The United Kingdom
Titanium Dioxide 13463-67-7	STEL: 30 mg/m ³ total inhalable STEL: 12 mg/m ³ respirable TWA: 10 mg/m ³ total inhalable TWA: 4 mg/m ³ respirable
Component	France
Titanium Dioxide 13463-67-7	TWA/VME: 10 mg/m ³
Component	Germany
Titanium Dioxide 13463-67-7	TWA/MAK: 0.3 mg/m ³ respirable fraction TWA/AGW: 1.25 mg/m ³ respirable fraction TWA/AGW: 10 mg/m ³ inhalable fraction Peak: 2.4 mg/m ³ respirable fraction
Component	Spain
Titanium Dioxide 13463-67-7	TWA/VLA-ED: 10 mg/m ³
Component	Portugal
Titanium Dioxide 13463-67-7	TWA/VLE-MP: 10 mg/m ³
Component	Denmark
Titanium Dioxide	TWA: 6 mg/m ³

13463-67-7	
Component	Austria
Titanium Dioxide 13463-67-7	STEL/KZW: 10 mg/m ³ alveolar dust, respirable fraction TWA/TMW: 5 mg/m ³ alveolar dust, respirable fraction
Component	Switzerland
Titanium Dioxide 13463-67-7	TWA/MAK: 3 mg/m ³ respirable dust
Component	Poland
Titanium Dioxide 13463-67-7	TWA/NDS: 10 mg/m ³ inhalable fraction
Component	Norway
Titanium Dioxide 13463-67-7	TWA: 5 mg/m ³
Component	Ireland
Titanium Dioxide 13463-67-7	TWA: 10 mg/m ³ total inhalable dust TWA: 4 mg/m ³ respirable dust STEL: 30 mg/m ³ respirable dust STEL: 12 mg/m ³
Component	Australia TWA
Titanium Dioxide 13463-67-7	TWA: 10 mg/m ³ inhalable dust

Derived No Effect Level (DNEL)

Component	DNEL - Dermal (Workers)	DNEL - Inhalation (Workers)
Hexamethylene diacrylate (HDODA) 13048-33-4	2.77 mg/kg (Systemic long term)	24.5 mg/m ³ (Systemic long term)
Dipropylene glycol diacrylate 57472-68-1	2.77 mg/kg (Systemic long term)	24.48 mg/m ³ (Systemic long term)
N-vinylcaprolactam 2235-00-9	0.7 mg/kg (Systemic long term)	4.9 mg/m ³ (Systemic long term) 0.17 mg/m ³ (Local long term)
Neopentylglycol propoxylate diacrylate 84170-74-1	3.33 mg/kg (Systemic long term) 117 µg/cm ³ (Local acute/short term)	11.75 mg/m ³ (Systemic long term)
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide 75980-60-8	1.1 mg/kg (Systemic long term)	3.5 mg/m ³ (Systemic long term)
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)- 162881-26-7	3 mg/kg (Systemic long term)	21 mg/m ³ (Systemic long term)
Glycerol propoxy triacrylate (GPTA) 52408-84-1	1.04 mg/kg (Systemic long term)	3.7 mg/m ³ (Systemic long term)

Predicted No Effect Concentration (PNEC) No information available.

8.2 Exposure controls**Engineering Measures**

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Users are advised to consider national Occupational Exposure Limits or other equivalent values. In case of insufficient ventilation, wear suitable respiratory equipment.

Personal protective equipment**Eye/Face Protection**

Wear safety glasses with side shields (or goggles). If splashes are likely to occur: Wear suitable face shield. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye Protection

Safety glasses with side-shields. Goggles. Face-shield. Avoid contact with eyes. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin Protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Hand Protection	Chemical resistant protective gloves. Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding >480 minutes of permeation time): eg. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), polyvinylchloride (0.7 mm) and other Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers. Taking into account the varying conditions, the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Due to different glove types, the manufacturer's directions for use should be observed. Replace gloves immediately when torn or any change in appearance is noticed such as dimension, color, flexibility.
Respiratory Protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. Wash hands before eating, drinking or smoking. Wash contaminated clothing before reuse. Avoid contact with eyes, skin and clothing. Wear suitable gloves and eye/face protection. Regular cleaning of equipment, work area and clothing is recommended.
Environmental exposure controls	No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

9.1 Information on basic physical and chemical properties			
Physical State	Liquid	Color	Colored
Odor	Mild Sweet Acrylic		
<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>	
Melting Point / Freezing Point		No data available	
Boiling Point / Boiling Range	> 149 °C / 300 °F		
Flammability Limit in Air			
Upper flammability limit		No data available	
Lower flammability limit		No data available	
Flash Point	> 94 °C / > 201 °F		
Autoignition Temperature		No data available	
Decomposition temperature		No data available	
pH		No data available	
Kinematic viscosity		No data available	
Water Solubility		No data available	
Solubility in other solvents		No data available	
Partition coefficient: n-octanol/water		No data available	
Vapor Pressure		No data available	
Specific Gravity	1.27		
Vapor Density		No data available	
<u>9.2 Other information</u>			
Explosive Properties	No data available		
Oxidizing Properties	No data available		

Section 10: STABILITY AND REACTIVITY

10.1 Reactivity

No information available.

10.2 Chemical Stability

Stable under normal conditions.

10.3 Possibility of Hazardous Reactions

None under normal processing. Do not store for longer periods at temperatures above 93 °C (200 °F).

10.4 Conditions to avoid

Temperatures above 93 °C / 200 °F. Protect from direct sunlight. Keep away from open flames, hot surfaces and sources of ignition.

10.5 Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents. Reducing agent.

10.6 Hazardous decomposition products

Thermal decomposition can lead to release of irritating gases and vapors. Carbon dioxide (CO₂). Carbon monoxide.

Section 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity

Inhalation	Specific test data for the substance or mixture is not available.
Eye Contact	Specific test data for the substance or mixture is not available.
Skin Contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Unknown Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	5,127.00
ATEmix (dermal)	17,433.00

Unknown Acute Toxicity

- 0 % of the mixture consists of ingredient(s) of unknown toxicity.
- 0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
- 0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).
- 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Component	Oral LD50
Hexamethylene diacrylate (HDODA) 13048-33-4	= 5 g/kg (Rat)
Titanium Dioxide 13463-67-7	> 10000 mg/kg (Rat)
Dipropylene glycol diacrylate 57472-68-1	= 4600 mg/kg (Rat)
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)-	> 2000 mg/kg (Rat)

162881-26-7	
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Component	Dermal LD50
Hexamethylene diacrylate (HDODA) 13048-33-4	= 3600 mg/kg (Rabbit)
Dipropylene glycol diacrylate 57472-68-1	> 2000 mg/kg (Rabbit)
N-vinylcaprolactam 2235-00-9	= 1700 mg/kg (Rabbit)
Neopentylglycol propoxylate diacrylate 84170-74-1	> 2000 mg/kg (Rat)
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide 75980-60-8	> 2000 mg/kg (Rat)
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)- 162881-26-7	> 2000 mg/kg (Rat)
Glycerol propoxy triacrylate (GPTA) 52408-84-1	> 2000 mg/kg (Rabbit)

Component	Inhalation LC50
Titanium Dioxide 13463-67-7	= 5.09 mg/L (Rat) 4 h
N-vinylcaprolactam 2235-00-9	> 1.6 mg/L (Rat) 8 h
Neopentylglycol propoxylate diacrylate 84170-74-1	> 2.25 mg/L (Rat) 4 h

Skin corrosion/irritation

Specific test data for the substance or mixture is not available. Causes skin irritation (pain, redness and swelling). (based on components).

Eye damage/irritation

Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components).

Sensitization

Specific test data for the substance or mixture is not available. May cause an allergic skin reaction. (based on components).

Mutagenic Effects

Specific test data for the substance or mixture is not available.

Carcinogenic effects

Specific test data for the substance or mixture is not available.

Reproductive Effects

Specific test data for the substance or mixture is not available. Suspected of damaging fertility. (based on components).

CMR, categories 1 and 2

This product contains one or more substances which are classified in the EU as carcinogenic, mutagenic and/or reprotoxic

Component	CMR, categories 1 and 2
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide 75980-60-8	Repr. 2

STOT - single exposure

Specific test data for the substance or mixture is not available.

STOT - repeated exposure

Specific test data for the substance or mixture is not available. May cause damage to organs through prolonged or repeated exposure. (based on components).

Target Organ Effects

Liver, Respiratory system.

Aspiration hazard

Specific test data for the substance or mixture is not available.

11.2 Information on other hazards

No information available

Section 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Specific test data for the substance or mixture is not available. Very toxic to aquatic life. (based on components). Toxic to aquatic life with long lasting effects.

Unknown Aquatic Toxicity

0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Component	Fish
N-vinylcaprolactam 2235-00-9	96h LC50 Danio rerio: = 307 mg/L (static)
Neopentylglycol propoxylate diacrylate 84170-74-1	96h LC50 Danio rerio: = 2.7 mg/L (static)
Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)- 162881-26-7	96h LC50 Danio rerio: > 90 µg/L (semi-static)
Glycerol propoxy triacrylate (GPTA) 52408-84-1	96h LC50 Danio rerio: = 5.74 mg/L (static)

12.2 Persistence and degradability

No information available.

12.3 Bioaccumulative potential

No information available

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Endocrine disrupting properties.

This product does not contain any known or suspected endocrine disruptors.

12.7 Other adverse effects

No information available.

Section 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Waste from residues/unused products Contain and dispose of waste according to local regulations.

Contaminated Packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

Section 14: TRANSPORT INFORMATION**Note:**

This information is not intended to convey all specific transportation requirements relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation information can be found in the specific regulations for your mode of transportation. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

ADR

Not Regulated
ADR Special Provision 375 applies only to environmentally hazardous substances, UN3077 and UN3082. These items may be shipped as "not regulated" if in quantities of 5L or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids and the packaging used meets the defined standards.

ICAO / IATA / IMDG / IMO

Not Regulated
ICAO/IATA Special Provision A197 applies only to environmentally hazardous substances, UN3077 and UN3082. These items may be shipped as "not regulated" if in quantities of 5L

or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids and the packaging used meets the defined standards.

IMDG code 2.10.2.7 applies only to marine pollutants. These items may be shipped as "not regulated" and no marine pollutant mark is required if in quantities of 5L or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids and the packaging used meets the defined standards.

Section 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

European Union

International Inventories

For further information, please contact: Supplier (manufacturer/importer/downstream user/distributor)

Regulation (EC) No. 1907/2006 (REACH), Article 57

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (Regulation (EC) No. 1907/2006 (REACH), Article 59).

15.2 Chemical Safety Assessment

No information available.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H361f - Suspected of damaging fertility
H372 - Causes damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H411 - Toxic to aquatic life with long lasting effects
H413 - May cause long lasting harmful effects to aquatic life

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)
STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value

Revision Date Nov-02-2021

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its

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publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet