



# SAFETY DATA SHEET

Issuing Date 13-May-2015

Revision Date 13-May-2015

Revision Number 0

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

### GHS product identifier

Product Name X-77

### Other means of identification

Product Code(s) 400609

UN-Number UN3082

Synonyms None

### Recommended use of the chemical and restrictions on use

Recommended Use Etch Resist Ink

Uses advised against No information available

### Supplier's details

#### Supplier Address

Taiyo America, Inc.  
2675 Antler Drive  
Carson City, NV 89701  
TEL: 775-885-9959

### Emergency telephone number

Emergency Telephone Number 775-885-9959

## 2. HAZARDS IDENTIFICATION

### Classification

This chemical is considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200)

Carcinogenicity	Category 2
Flammable liquids	Category 4

### GHS Label elements, including precautionary statements

### Emergency Overview

Signal Word	Warning
Hazard Statements	
• Suspected of causing cancer	
• Combustible liquid.	

**Appearance** Black**Physical State** Viscous liquid.**Odor** Strong Solvent**Precautionary Statements****Prevention**

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.
- Keep away from heat/sparks/open flames/hot surfaces - No smoking.

**General Advice**

- If exposed or concerned: Get medical attention/advice

**Fire**

- In case of fire: Use CO2, dry chemical, or foam for extinction.

**Storage**

- Store locked up.
- Store in a well-ventilated place. Keep cool.

**Disposal**

- Dispose of contents/container to an approved waste disposal plant.

**Hazard Not Otherwise Classified (HNOC)**

Not applicable

**Other information**

Toxic to aquatic life with long lasting effects

55.42% of the mixture consists of ingredient(s) of unknown toxicity.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade secret
Talc	14807-96-6	10-30	*
Barium sulfate	7727-43-7	10-30	*
Naphtha (petroleum), heavy aromatic	64742-94-5	10-30	*
1-Butoxy-2-propanol	5131-66-8	<10	*
Carbon black	1333-86-4	1-5	*
Naphthalene	91-20-3	1-5	*

\*The exact percentage (concentration) of composition has been withheld as a trade secret.

### 4. FIRST AID MEASURES

**Description of necessary first-aid measures****General Advice**

If symptoms persist, call a physician. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing.

**Eye Contact**

Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

<b>Skin Contact</b>	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Consult a physician if necessary.
<b>Inhalation</b>	Move to fresh air. If symptoms persist, call a physician. If breathing is difficult, give oxygen.
<b>Ingestion</b>	Rinse mouth. Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.
<b>Protection of First-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**Most important symptoms/effects, acute and delayed****Most Important Symptoms/Effects** No information available.**Indication of immediate medical attention and special treatment needed, if necessary****Notes to Physician** Treat symptomatically.**5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**Water spray. Carbon dioxide (CO<sub>2</sub>). Dry powder. Dry chemical.**Unsuitable Extinguishing Media** No information available.**Specific Hazards Arising from the Chemical**

Combustible liquid. Vapors may travel to source of ignition and flash back. Risk of ignition In the event of fire and/or explosion do not breathe fumes. Keep product and empty container away from heat and sources of ignition.

**Explosion Data****Sensitivity to Mechanical Impact**

None.

**Sensitivity to Static Discharge**

Yes.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

**Personal Precautions** Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Take precautionary measures against static discharges. Pay attention to flashback. In case of insufficient ventilation wear suitable respiratory equipment.

**Environmental Precautions**

**Environmental Precautions** Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Avoid release to the environment. Collect spillage. Dispose of contents/container to an approved waste disposal plant. See Section 12 for additional Ecological Information.

**Methods and materials for containment and cleaning up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for Cleaning Up** Dam up. Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

**7. HANDLING AND STORAGE**

**Precautions for safe handling****Handling**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). In case of insufficient ventilation, wear suitable respiratory equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Use only in area provided with appropriate exhaust ventilation. Keep away from heat, sparks and open flame. No smoking. Do not take internally.

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

Keep in properly labeled containers. Keep away from heat and sources of ignition. Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Incompatible Products**

Strong oxidizing agents. Strong acids. Strong bases.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Control parameters****Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Talc 14807-96-6	TWA: 2 mg/m <sup>3</sup>	(vacated) TWA: 2 mg/m <sup>3</sup>	IDLH: 1000 mg/m <sup>3</sup> containing no asbestos and <1% quartz TWA: 2 mg/m <sup>3</sup>
Barium sulfate 7727-43-7	TWA: 5 mg/m <sup>3</sup> inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica	TWA: 15 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable fraction (vacated) TWA: 10 mg/m <sup>3</sup> total dust (vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction	TWA: 10 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable dust
Carbon black 1333-86-4	TWA: 3.5 mg/m <sup>3</sup>	TWA: 3.5 mg/m <sup>3</sup> (vacated) TWA: 3.5 mg/m <sup>3</sup>	IDLH: 1750 mg/m <sup>3</sup> TWA: 3.5 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup> Carbon black in presence of Polycyclic aromatic hydrocarbons PAH
Naphthalene 91-20-3	TWA: 10 ppm S*	TWA: 10 ppm TWA: 50 mg/m <sup>3</sup> (vacated) TWA: 10 ppm (vacated) TWA: 50 mg/m <sup>3</sup> (vacated) STEL: 15 ppm (vacated) STEL: 75 mg/m <sup>3</sup>	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m <sup>3</sup> STEL: 15 ppm STEL: 75 mg/m <sup>3</sup>

*Immediately Dangerous to Life or Health. ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH:*

**Other Exposure Guidelines**

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

**Appropriate engineering controls****Engineering Measures**

Showers  
Eyewash stations  
Ventilation systems

**Individual protection measures, such as personal protective equipment****Eye/Face Protection**

Safety glasses with side-shields.

**Skin and Body Protection**

Lightweight protective clothing. Protective gloves.

**Respiratory Protection**

If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

**Hygiene Measures**

When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Keep away from food, drink and animal feeding stuffs. Wash hands before breaks and immediately after handling the product. Wash thoroughly after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

<b>Physical State</b>	Viscous liquid	<b>Appearance</b>	Black
<b>Odor</b>	Strong Solvent	<b>Odor Threshold</b>	No information available

<b><u>Property</u></b>	<b><u>Values</u></b>	<b><u>Remarks/ - Method</u></b>
<b>pH</b>	No data available	None known
<b>Melting Point/Range</b>	No data available	None known
<b>Boiling Point/Boiling Range</b>	No data available	None known
<b>Flash Point</b>	70 °C / 158 °F	None known
<b>Evaporation rate</b>	No data available	None known
<b>Flammability (solid, gas)</b>	No data available	None known
<b>Flammability Limits in Air</b>		
upper flammability limit	No data available	
lower flammability limit	No data available	
<b>Vapor Pressure</b>	No data available	None known
<b>Vapor Density</b>	No data available	None known
<b>Specific Gravity</b>	1.46	None known
<b>Water Solubility</b>	No data available	None known
<b>Solubility in other solvents</b>	No data available	None known
<b>Partition coefficient: n-octanol/water</b>	No data available	None known
<b>Autoignition Temperature</b>	No data available	None known
<b>Decomposition Temperature</b>	No data available	None known
<b>Viscosity</b>	No data available	None known

**Flammable Properties** Combustible material: may burn but does not ignite readily.

**Explosive Properties** No data available

**Oxidizing Properties** No data available

**Other information**

<b>VOC Content (%)</b>	27
<b>VOC (g/l)</b>	400 gm/l

## 10. STABILITY AND REACTIVITY

**Reactivity**

No data available.

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

None under normal processing.

**Hazardous Polymerization**

Hazardous polymerization does not occur.

**Conditions to avoid**

Incompatible products. Heat, flames and sparks.

**Incompatible materials**

Strong oxidizing agents. Strong acids. Strong bases.

**Hazardous decomposition products**

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Sulfur oxides.

**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure****Product Information**

<b>Inhalation</b>	There is no data available for this product.
<b>Eye Contact</b>	There is no data available for this product.
<b>Skin Contact</b>	There is no data available for this product.
<b>Ingestion</b>	There is no data available for this product.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Naphtha (petroleum), heavy aromatic	> 5000 mg/kg ( Rat )	> 2 mL/kg ( Rabbit )	> 590 mg/m <sup>3</sup> ( Rat ) 4 h
1-Butoxy-2-propanol	= 5660 µL/kg ( Rat )	= 3100 mg/kg ( Rabbit )	-
Carbon black	> 15400 mg/kg ( Rat )	> 3 g/kg ( Rabbit )	-
Naphthalene	= 1110 mg/kg ( Rat ) = 490 mg/kg ( Rat )	= 1120 mg/kg ( Rabbit ) > 20 g/kg ( Rabbit )	> 340 mg/m <sup>3</sup> ( Rat ) 1 h

**Symptoms related to the physical, chemical and toxicological characteristics**

**Symptoms** No information available.

**Delayed and immediate effects and also chronic effects from short and long term exposure**

<b>Sensitization</b>	No information available.
<b>Mutagenic Effects</b>	No information available.
<b>Carcinogenicity</b>	May cause cancer. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Carbon black	A3	Group 2B	-	X
Naphthalene	A3	Group 2B	Reasonably Anticipated	X

**ACGIH: (American Conference of Governmental Industrial Hygienists)**

A3 - Animal Carcinogen

**IARC: (International Agency for Research on Cancer)**

Group 2B - Possibly Carcinogenic to Humans

**NTP: (National Toxicity Program)**

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

**OSHA: (Occupational Safety & Health Administration)**

X - Present

<b>Reproductive Toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Chronic Toxicity</b>	May cause adverse liver effects. May cause adverse effects on the bone marrow and blood-forming system.
<b>Target Organ Effects</b>	Liver. Kidney. Respiratory system. Eyes. Skin. Central nervous system (CNS). Blood. Gastrointestinal tract (GI).
<b>Aspiration Hazard</b>	No information available.

**Numerical measures of toxicity - Product****Acute Toxicity** 55.42% of the mixture consists of ingredient(s) of unknown toxicity.*The following values are calculated based on chapter 3.1 of the GHS document:***LD50 Oral** 10336 mg/kg; Acute toxicity estimate**LD50 Dermal** 9572 mg/kg; Acute toxicity estimate**Inhalation****dust/mist** 1 mg/L; Acute toxicity estimate**Vapor** 20 mg/L; Acute toxicity estimate**12. ECOLOGICAL INFORMATION****Ecotoxicity**

The environmental impact of this product has not been fully investigated.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Talc 14807-96-6		LC50 96 h: > 100 g/L semi-static (Brachydanio rerio)		
Naphtha (petroleum), heavy aromatic 64742-94-5	EC50 72 h: = 2.5 mg/L (Skeletonema costatum)	LC50 96 h: = 19 mg/L static (Pimephales promelas) LC50 96 h: = 2.34 mg/L (Oncorhynchus mykiss) LC50 96 h: = 1740 mg/L static (Lepomis macrochirus) LC50 96 h: = 45 mg/L flow-through (Pimephales promelas) LC50 96 h: = 41 mg/L (Pimephales promelas)		EC50 48 h: = 0.95 mg/L (Daphnia magna)
Carbon black 1333-86-4				EC50 24 h: > 5600 mg/L (Daphnia magna)
Naphthalene 91-20-3	EC50 72 h: = 0.4 mg/L (Skeletonema costatum)	LC50 96 h: 5.74 - 6.44 mg/L flow-through (Pimephales promelas) LC50 96 h: = 1.6 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: 0.91 - 2.82 mg/L static (Oncorhynchus mykiss) LC50 96 h: = 1.99 mg/L static (Pimephales promelas) LC50 96 h: = 31.0265 mg/L static (Lepomis macrochirus)		LC50 48 h: = 2.16 mg/L (Daphnia magna) EC50 48 h: = 1.96 mg/L Flow through (Daphnia magna) EC50 48 h: 1.09 - 3.4 mg/L Static (Daphnia magna)

**Persistence and Degradability** No information available.**Bioaccumulation**

Chemical Name	Log Pow
Naphtha (petroleum), heavy aromatic	2.9 - 6.1
Naphthalene	3.3

**Other Adverse Effects**

No information available.

**13. DISPOSAL CONSIDERATIONS****Waste Disposal Methods** Dispose of in accordance with federal, state, and local regulations**Contaminated Packaging** Do not re-use empty containers.**US EPA Waste Number** U165

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
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Naphthalene - 91-20-3	U165	Included in waste streams: F024, F025, F034, F039, K001, K035, K060, K087, K145		U165
<b>Component</b>	<b>RCRA - Halogenated Organic Compounds</b>	<b>RCRA - P Series Wastes</b>	<b>RCRA - F Series Wastes</b>	<b>RCRA - K Series Wastes</b>
Naphthalene 91-20-3 ( 1-5 )			Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
Naphthalene	Toxic

#### 14. TRANSPORT INFORMATION

##### Note:

According to 49 CFR §173.150(f)(1), this material should be reclassified as NA1993, Combustible Liquid, NOS if it is shipped in bulk.

##### DOT

UN-Number UN3082  
 Proper shipping name Environmentally hazardous substance, liquid, n.o.s.  
 Hazard Class 9  
 Packing Group III  
 Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (<TND00711>), 9, III, Marine Pollutant  
 Emergency Response Guide Number 171

UN-Number UN3082  
 Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s.  
 Hazard Class 9  
 Packing Group III  
 Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, 1,2,4-trimethylbenzene), 9, III, Marine Pollutant

UN-Number UN3082  
 Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s.  
 Hazard Class 9  
 Packing Group III  
 Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, 1,2,4-trimethylbenzene), 9, III

UN-Number UN3082  
 Proper shipping name Environmentally hazardous substance, liquid, n.o.s.  
 Hazard Class 9  
 Packing Group III  
 Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, Naphtha (petroleum), heavy aromatic), 9, III

##### IATA

Not regulated

<b>UN-Number</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard Class</b>	9
<b>Packing Group</b>	III
<b>ERG Code</b>	9L
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, Naphtha (petroleum), heavy aromatic), 9, III

<b>IMDG/IMO</b>	Not regulated
<b>UN-Number</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard Class</b>	9
<b>Packing Group</b>	III
<b>EmS No.</b>	F-A, S-F
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, Naphtha (petroleum), heavy aromatic), 9, III, Marine Pollutant

<b>UN-Number</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard Class</b>	9
<b>Packing Group</b>	III
<b>Classification Code</b>	M6
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, Naphtha (petroleum), heavy aromatic), 9, III

<b>UN-Number</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard Class</b>	9
<b>Packing Group</b>	III
<b>Classification Code</b>	M6
<b>Tunnel Restriction Code</b>	(E)
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, Naphtha (petroleum), heavy aromatic), 9, III, (E)

<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard Class</b>	9
<b>Packing Group</b>	III
<b>Classification Code</b>	M6
<b>Special Provisions</b>	274, 335, 601
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Naphthalene, 1,2,4-trimethylbenzene), 9, III
<b>Limited Quantity</b>	5 L

## 15. REGULATORY INFORMATION

### International Inventories

<b>TSCA</b>	Complies
<b>EINECS</b>	Complies
<b>ELINCS</b>	Complies

### Legend

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

### U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Diethylene glycol monoethyl ether acetate	112-15-2	1-5	1.0
Naphthalene	91-20-3	1-5	0.1

### SARA 311/312 Hazard Categories

<b>Acute Health Hazard</b>	No
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Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

**Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Naphthalene	100 lb	X	X	X

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Naphthalene	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ

**U.S. State Regulations****California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Carbon black	1333-86-4	Carcinogen
Naphthalene	91-20-3	Carcinogen

**U.S. State Right-to-Know Regulations**

"X" designates that the ingredients are listed on the state right to know list.

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Talc	X	X	X		X
Barium sulfate	X	X	X		
Carbon black	X	X	X	X	X
Naphthalene	X	X	X	X	
Silicon dioxide	X	X	X		

**U.S. EPA Label Information**

**EPA Pesticide Registration Number** Not applicable

**16. OTHER INFORMATION**

<b><u>NFPA</u></b>	<b>Health Hazard 1</b>	<b>Flammability 2</b>	<b>Instability 0</b>	<b>Physical and Chemical Hazards -</b>
<b><u>HMIS</u></b>	<b>Health Hazard 1*</b>	<b>Flammability 2</b>	<b>Physical Hazard 0</b>	<b>Personal Protection X</b>

*\*Indicates a chronic health hazard.*

**Prepared By**

Product Stewardship  
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Latham, NY 12110  
1-800-572-6501

**Issuing Date**

13-May-2015

**Revision Date**

13-May-2015

**Revision Note**

Initial Release.

**General Disclaimer**

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

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End of Safety Data Sheet