# Vazo™ 88



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#### **SECTION 1. IDENTIFICATION**

Product name : Vazo™ 88

SDS-Identcode : 130000000407

Manufacturer or supplier's details

Company name of supplier : The Chemours Company FC, LLC

Address : 1007 Market Street

Wilmington, DE 19801 United States of America (USA)

Telephone : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)

Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-

773-2000); Transport emergency: +1-800-424-9300 (outside

the U.S. +1-703-527-3887)

Recommended use of the chemical and restrictions on use

Recommended use : Intermediate

Restrictions on use : For industrial use only.

#### **SECTION 2. HAZARDS IDENTIFICATION**

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Self-reactive chemicals : Type D

Combustible dust

Specific target organ toxicity : Category 3

- single exposure

**GHS label elements** 

Hazard pictograms





Signal Word : Danger

Hazard Statements : H242 Heating may cause a fire.

May form combustible dust concentrations in air.

H335 May cause respiratory irritation.

Precautionary Statements : Prevention:

P210 Keep away from heat, sparks, open flame and hot surfac-

es. - No smoking.

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P220 Keep away from clothing and other combustible materials.

P234 Keep only in original container.

P261 Avoid breathing dust, fume, gas, mist, vapors or spray.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves, eye protection and face protec-

tion.

### Response:

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.

#### Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P411 Store at temperatures not exceeding 50 °C/ 122 °F.

P420 Store away from other materials.

# Disposal:

P501 Dispose of contents and container to an approved waste disposal plant.

#### Other hazards

Risk of explosion if heated under confinement.

Dust contact with the eyes can lead to mechanical irritation.

Contact with dust can cause mechanical irritation or drying of the skin.

#### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Substance

Substance name : 1,1'-Azodicyclohexanecarbonitrile

CAS-No. : 2094-98-6

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
1,1'-Azodicyclohexanecarbonitrile	2094-98-6	>= 90 - <= 100

Actual concentration is withheld as a trade secret

#### **SECTION 4. FIRST AID MEASURES**

General advice : In the case of accident or if you feel unwell, seek medical ad-

vice immediately.

When symptoms persist or in all cases of doubt seek medical

advice.

If inhaled : If inhaled, remove to fresh air.

Get medical attention if symptoms occur.

In case of skin contact : Wash with water and soap.

Get medical attention if symptoms occur.





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If in eyes, rinse well with water. In case of eye contact

Get medical attention if irritation develops and persists.

If swallowed If swallowed, DO NOT induce vomiting.

> Get medical attention if symptoms occur. Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and

delayed

Eye contact may provoke the following symptoms

Irritation Redness Discomfort Lachrymation

Ingestion may provoke the following symptoms:

Lethargy Diarrhea

May cause respiratory irritation.

Contact with dust can cause mechanical irritation or drying of

the skin.

Dust contact with the eyes can lead to mechanical irritation.

Protection of first-aiders First Aid responders should pay attention to self-protection,

> and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician Treat symptomatically and supportively.

#### **SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media Water spray

Alcohol-resistant foam

Unsuitable extinguishing

media

High volume water jet

Specific hazards during fire

fighting

Avoid generating dust; fine dust dispersed in air in sufficient

concentrations, and in the presence of an ignition source is a

potential dust explosion hazard.

Do not use a solid water stream as it may scatter and spread

The product burns violently.

Exposure to combustion products may be a hazard to health.

Hazardous combustion prod: :

ucts

Nitrogen oxides (NOx)

Carbon oxides

Specific extinguishing meth-

ods

Use extinguishing measures that are appropriate to local cir-

cumstances and the surrounding environment. Use water spray to cool unopened containers.

Remove undamaged containers from fire area if it is safe to do

SO.

Evacuate area.

Special protective equipment :

for fire-fighters

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment.

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#### **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protec- :

tive equipment and emer-

gency procedures

Remove all sources of ignition.

Use personal protective equipment.

Follow safe handling advice (see section 7) and personal pro-

tective equipment recommendations (see section 8).

Environmental precautions : Avoid release to the environment.

Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water.

Local authorities should be advised if significant spillages

cannot be contained.

Methods and materials for containment and cleaning up

Clear spills immediately.

Take any precaution to avoid mixing with combustibles.

Soak up with inert absorbent material.

Remove mechanically and with care (e.g. with clean polyethy-

lene plastic shovel).

Sweep up and shovel into suitable containers for disposal. Avoid dispersal of dust in the air (i.e., clearing dust surfaces

with compressed air).

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are relea-

sed into the atmosphere in sufficient concentration.

Isolate waste and do not reuse.

Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine

which regulations are applicable.

Sections 13 and 15 of this SDS provide information regarding

certain local or national requirements.

# **SECTION 7. HANDLING AND STORAGE**

Technical measures : Static electricity may accumulate and ignite suspended dust

causing an explosion.

Provide adequate precautions, such as electrical grounding

and bonding, or inert atmospheres.

Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust

ventilation.

If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventila-

tion.

Advice on safe handling : Avoid breathing dust, fume, gas, mist, vapors or spray.

Do not swallow.

Avoid contact with eyes.

Avoid prolonged or repeated contact with skin.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure as-

sessment

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Non-sparking tools should be used.

Prevent pressure build-up Keep container tightly closed. Protect from contamination.

Keep cool.

Already sensitized individuals should consult their physician regarding working with respiratory irritants or sensitizers.

Minimize dust generation and accumulation.

Keep container closed when not in use.

Keep away from heat, hot surfaces, sparks, open flames and

other ignition sources. No smoking.

Keep away from clothing and other combustible materials. Take precautionary measures against static discharges.

Keep only in original packaging.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage Keep in properly labeled containers.

Store in original container.

Store locked up. Keep tightly closed.

Keep in a dry, cool and well-ventilated place.

Protect from sunlight.

Adhere to recommended storage temperature.

Store in accordance with the particular national regulations.

Keep away from heat and sources of ignition.

Materials to avoid Store away from other materials.

Recommended storage tem- :  $< 122 \, ^{\circ}F / < 50 \, ^{\circ}C$ 

perature

# SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

# Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Hydrogen cyanide	74-90-8	ST	4.7 ppm 5 mg/m <sup>3</sup>	NIOSH REL
		TWA	10 ppm 11 mg/m³	OSHA Z-1
		С	4.7 ppm (Cyanide)	ACGIH
Carbon monoxide	630-08-0	TWA	25 ppm	ACGIH
		TWA	35 ppm 40 mg/m³	NIOSH REL
		С	200 ppm	NIOSH REL





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			229 mg/m <sup>3</sup>	
		TWA	50 ppm 55 mg/m³	OSHA Z-1
Carbon dioxide	124-38-9	TWA	5,000 ppm	ACGIH
		STEL	30,000 ppm	ACGIH
		TWA	5,000 ppm 9,000 mg/m³	OSHA Z-1
		TWA	5,000 ppm 9,000 mg/m³	NIOSH REL
		ST	30,000 ppm 54,000 mg/m <sup>3</sup>	NIOSH REL

### **Engineering measures**

Processing may form hazardous compounds (see section

10).

Minimize workplace exposure concentrations. Apply measures to prevent dust explosions.

Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). If sufficient ventilation is unavailable, use with local exhaust

ventilation.

If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust venti-

lation.

### Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending

on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks

and at the end of workday.

Eye protection : Wear the following personal protective equipment:





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Safety goggles

Skin and body protection : Select appropriate protective clothing based on chemical

resistance data and an assessment of the local exposure

potential.

Wear the following personal protective equipment:

If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic

protective clothing.

Skin contact must be avoided by using impervious protective

clothing (gloves, aprons, boots, etc).

Hygiene measures : If exposure to chemical is likely during typical use, provide

eye flushing systems and safety showers close to the wor-

king place.

When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

#### **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : solid

Color : white

Odor : odorless

Odor Threshold : No data available

pH : 7

Melting point/freezing point : 235.49 °F / 113.05 °C

Do not attempt to verify melting point; decomposition can be

violent.

Initial boiling point and boiling

range

No data available

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : May form explosive dust-air mixture.

Upper explosion limit / Upper

flammability limit

No data available

Lower explosion limit / Lower

flammability limit

0.03 %(V)

Vapor pressure : 3 hPa (180 °F / 82 °C)

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Relative vapor density : Not applicable

Relative density : 1.1 (68 °F / 20 °C)

Solubility(ies)

Water solubility : 0.00336 g/l

Partition coefficient: n-

octanol/water

log Pow: 3.3

Autoignition temperature : 608 °F / 320 °C

Decomposition temperature : The product is a self-reactive substance or mixture classified

as type D.

Self-Accelerating decomposi-

tion temperature (SADT)

176 °F / 80 °C

Viscosity

Viscosity, kinematic : Not applicable

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Particle size : No data available

#### **SECTION 10. STABILITY AND REACTIVITY**

Reactivity : Heating may cause a fire.

Chemical stability : Follow precautionary advice and avoid incompatible materials

and conditions

Possibility of hazardous reac-

tions

May form explosive dust-air mixture.

Oxidizing material can cause a reaction.

Hazardous decomposition products will be formed at elevated

temperatures.

May explode under confinement.

Conditions to avoid : Heat, flames and sparks.

Protect from contamination. Avoid dust formation.

Temperatures greater than recommended storage temperatu-

re.

Contact with incompatible substances can cause decomposi-

tion at or below SADT.

Incompatible materials : Oxidizing agents

Avoid impurities (e.g. rust, dust, ash), risk of decomposition.

Flammable materials

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#### **Hazardous decomposition products**

Thermal decomposition : Hydrogen cyanide

Nitrogen

Carbon monoxide Carbon dioxide

### **SECTION 11. TOXICOLOGICAL INFORMATION**

### Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

### **Acute toxicity**

Not classified based on available information.

#### **Components:**

#### 1,1'-Azodicyclohexanecarbonitrile:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Method: Expert judgment

Acute inhalation toxicity : Approximate Lethal Concentration (Rat): > 8 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

#### Skin corrosion/irritation

Not classified based on available information.

### **Components:**

# 1,1'-Azodicyclohexanecarbonitrile:

Species : Tissue Culture

Method : OECD Test Guideline 439

Result : No skin irritation

### Serious eye damage/eye irritation

Not classified based on available information.

#### **Components:**

#### 1,1'-Azodicyclohexanecarbonitrile:

Species : Not tested on animals Result : No eye irritation

Method : OECD Test Guideline 492

### Respiratory or skin sensitization

#### Skin sensitization

Not classified based on available information.

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#### Respiratory sensitization

Not classified based on available information.

#### **Components:**

### 1,1'-Azodicyclohexanecarbonitrile:

Test Type : Direct Peptide Reactivity Assay (DPRA)

Routes of exposure : Skin contact

Species : Not tested on animals
Method : OECD Test Guideline 442C

Result : negative

Test Type : LuSens Assay Routes of exposure : Skin contact

Species : Not tested on animals
Method : OECD Test Guideline 442D

Result : negative

### Germ cell mutagenicity

Not classified based on available information.

#### Components:

### 1,1'-Azodicyclohexanecarbonitrile:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

### Carcinogenicity

Not classified based on available information.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is

identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA**No component of this product present at levels greater than or equal to 0.1% is

on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is

identified as a known or anticipated carcinogen by NTP.

# Reproductive toxicity

Not classified based on available information.

# STOT-single exposure

May cause respiratory irritation.

#### **Components:**

#### 1,1'-Azodicyclohexanecarbonitrile:

Assessment : May cause respiratory irritation.

# STOT-repeated exposure

Not classified based on available information.

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### **Aspiration toxicity**

Not classified based on available information.

#### **Components:**

# 1,1'-Azodicyclohexanecarbonitrile:

No aspiration toxicity classification

#### **SECTION 12. ECOLOGICAL INFORMATION**

#### **Ecotoxicity**

### **Components:**

### 1,1'-Azodicyclohexanecarbonitrile:

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 2.54 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic

plants

ErC50 (Desmodesmus subspicatus (green algae)): > 1.95

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 0.95 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

# Persistence and degradability

# **Components:**

# 1,1'-Azodicyclohexanecarbonitrile:

Biodegradability : Result: Not readily biodegradable.

Method: OECD Test Guideline 301B

### **Bioaccumulative potential**

# **Components:**

### 1,1'-Azodicyclohexanecarbonitrile:

Partition coefficient: n- : log Pow: 3.36 (68 °F / 20 °C)

octanol/water

# Mobility in soil

No data available

#### Other adverse effects

No data available

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#### **SECTION 13. DISPOSAL CONSIDERATIONS**

**Disposal methods** 

Waste from residues Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken to an approved waste

handling site for recycling or disposal.

If not otherwise specified: Dispose of as unused product.

#### **SECTION 14. TRANSPORT INFORMATION**

#### International Regulations

**UNRTDG** 

**UN** number UN 3226

SELF-REACTIVE SOLID TYPE D (1,1-Proper shipping name

AZODI(HEXAHYDROBENZONITRILE))

Class

Packing group Not assigned by regulation

Labels 4.1

**IATA-DGR** 

UN/ID No. UN 3226

Proper shipping name Self-reactive solid type D (1,1'-Azodi (Hexahydrobenzonitrile))

Class 4.1

Not assigned by regulation Packing group

Flammable Solid, Keep Away From Heat Labels

459

Packing instruction (cargo

aircraft)

Packing instruction (passen-

ger aircraft)

**IMDG-Code UN** number UN 3226

SELF-REACTIVE SOLID TYPE D (1,1-Proper shipping name

AZODI(HEXAHYDROBENZONITRILE))

(1,1-Azodi(hexahydrobenzonitrile))

Class 4.1

Packing group Not assigned by regulation

Labels 4.1 EmS Code F-J, S-G Marine pollutant yes

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

Not applicable for product as supplied.

#### **Domestic regulation**

**49 CFR** 

UN/ID/NA number UN 3226

Proper shipping name Self-reactive solid type D (1,1-Azodi(hexahydrobenzonitrile))

Class

Packing group Not assigned by regulation FLAMMABLE SOLID Labels





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ERG Code : 149

Marine pollutant : yes(1,1-Azodi(hexahydrobenzonitrile))

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

### **SECTION 15. REGULATORY INFORMATION**

# **CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

# SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Combustible dust

Self-reactive chemicals

Specific target organ toxicity (single or repeated exposure)

SARA 313 : This material does not contain any chemical components with

known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**US State Regulations** 

Pennsylvania Right To Know

1,1'-Azodicyclohexanecarbonitrile 2094-98-6

#### **SECTION 16. OTHER INFORMATION**

#### **Further information**

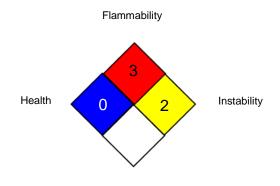
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#### NFPA 704:



Special hazard

#### HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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For further information contact the local Chemours office or nominated distributors.

### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Lim-

its for Air Contaminants

ACGIH / TWA : 8-hour, time-weighted average ACGIH / STEL : Short-term exposure limit

ACGIH / C : Ceiling limit

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded

at any time during a workday

NIOSH REL / C : Ceiling value not be exceeded at any time.

OSHA Z-1 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime

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Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory: TSCA - Toxic Substances Control Act (United States): UN - United Nations: UNRTDG -United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety

**Data Sheet** 

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen-

cy, http://echa.europa.eu/

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8