

## Tributyl Phosphate (TBP)

Version number: 1.0

### SECTION 1: Identification

#### 1.1 Product identifier

Identification of the substance	tributyl phosphate
Trade name	<b><u>Tributyl Phosphate (TBP)</u></b>
CAS number	126-73-8

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

Relevant identified uses	Laboratory chemical Manufacture of substances
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#### 1.3 Details of the supplier of the safety data sheet

Valudor Products, LLC 179 Calle Magdalena Suite 100 Encinitas, California CA 92024 United States	Telephone: +1 (760) 635 8500 e-mail: info@valudor.com Website: www.valudor.com
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#### 1.4 Emergency telephone number

Emergency information	800-535-5053 (Infotrac)
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As above or nearest toxicological information centre.

### SECTION 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
A.10	acute toxicity (oral)	4	Acute Tox. 4	H302
A.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
A.6	carcinogenicity	2	Carc. 2	H351

For full text of abbreviations: see SECTION 16

#### 2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Signal word	warning
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## Pictograms

GHS07, GHS08



## Hazard statements

- H302** Harmful if swallowed.  
**H315** Causes skin irritation.  
**H351** Suspected of causing cancer.

## Precautionary statements

- P201** Obtain special instructions before use.  
**P202** Do not handle until all safety precautions have been read and understood.  
**P264** Wash thoroughly after handling.  
**P270** Do not eat, drink or smoke when using this product.  
**P280** Wear protective gloves/protective clothing/eye protection/face protection.  
**P302+P352** IF ON SKIN: Wash with plenty of soap and water.  
**P308+P313** If exposed or concerned: Get medical advice/attention.  
**P330** Rinse mouth.  
**P362** Take off contaminated clothing and wash before reuse.  
**P405** Store locked up.  
**P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

## 2.3 Other hazards

Special danger of slipping by leaking/spilling product.

### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

<b>Name of substance</b>	tributyl phosphate
<b>Identifiers</b>	
CAS No	126-73-8
<b>Molecular formula</b>	C <sub>12</sub> H <sub>27</sub> O <sub>4</sub> P
<b>Molar mass</b>	266.3 g/mol

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## SECTION 4: First-aid measures

### 4.1 Description of first-aid measures

#### General notes

Self-protection of the first aider.

Remove affected person from the danger area and lay down.

Do not leave affected person unattended.

Take off immediately all contaminated clothing.

IF exposed or concerned: Get medical advice/attention.

#### Following inhalation

Provide fresh air.

Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

In case of unconsciousness place person in the recovery position. Never give anything by mouth.

#### Following skin contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap.

Get medical advice/attention.

Wash contaminated clothing before reuse.

#### Following eye contact

Rinse cautiously with water for several minutes.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Remove contact lenses, if present and easy to do. Continue rinsing.

#### Following ingestion

Rinse mouth immediately and drink plenty of water.

Do NOT induce vomiting.

Call a physician in any case.

#### Notes for the doctor

None.

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

This information is not available.

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

Symptoms may develop several hours following exposure; medical observation therefore necessary for at least 48 hours.

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## SECTION 5: Fire-fighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

water spray, alcohol resistant foam, fire extinguishing powder, carbon dioxide (CO<sub>2</sub>)

#### Unsuitable extinguishing media

water jet

### 5.2 Special hazards arising from the substance or mixture

Combustible.

Hazardous decomposition products: Section 10.

#### Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), phosphorus oxides (P<sub>x</sub>O<sub>y</sub>)

### 5.3 Advice for firefighters

Keep containers cool with water spray.

In case of fire and/or explosion do not breathe fumes.

Coordinate firefighting measures to the fire surroundings.

Do not allow firefighting water to enter drains or water courses.

Collect contaminated firefighting water separately.

Fight fire with normal precautions from a reasonable distance.

#### Special protective equipment for firefighters

chemical protection suit, Self-contained breathing apparatus (SCBA)

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

Remove persons to safety.

Ventilate affected area.

Special danger of slipping by leaking/spilling product.

Do not breathe vapor/spray.

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

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

#### For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water.

Retain contaminated washing water and dispose of it.

If substance has entered a water course or sewer, inform the responsible authority.

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## 6.3 Methods and material for containment and cleaning up

### Advice on how to clean up a spill

Collect spillage.

Absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.).

### Appropriate containment techniques

Use of adsorbent materials.

### Other information relating to spills and releases

Place in appropriate containers for disposal.

Ventilate affected area.

## 6.4 Reference to other sections

Hazardous combustion products: see section 5.

Personal protective equipment: see section 8.

Incompatible materials: see section 10.

Disposal considerations: see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.

Keep away from sources of ignition - No smoking.

#### Specific notes/details

None.

#### Measures to protect the environment

Avoid release to the environment.

#### Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.

Remove contaminated clothing and protective equipment before entering eating areas.

Do not breathe mist/vapors/spray.

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

Wash thoroughly after handling.

Preventive skin protection (barrier creams/ointments) is recommended.

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

#### Flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

#### Incompatible substances or mixtures

Incompatible materials: see section 10.

#### Protect against external exposure, such as

heat, humidity, direct light irradiation, sunlight

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## Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

## Ventilation requirements

Provision of sufficient ventilation.

## Specific designs for storage rooms or vessels

Store in a dry place.

## Storage temperature

maximum storage temperature: 50 °C

## Packaging compatibilities

Keep only in original container.

## 7.3 Specific end use(s)

Laboratory chemical.

Manufacture of substances.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

The following constituents are the only constituents of the product which have a PEL, a TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Occupational exposure limit values (Workplace Exposure Limits)									
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m <sup>3</sup> ]	STEL [ppm]	STEL [mg/m <sup>3</sup> ]	Notation	Source
US	tributyl phosphate	126-73-8	PEL (CA)	0.2	2.5	-	-	-	Cal/OSHA PEL
US	tributyl phosphate	126-73-8	REL	0.2 (10 h)	2.5 (10 h)	-	-	-	NIOSH REL
US	tributyl phosphate	126-73-8	PEL	-	5	-	-	-	29 CFR 1910.1000
US	tributyl phosphate	126-73-8	TLV®	-	5	-	-	iv	ACGIH® 2023

#### Notation

iv inhalable fraction and vapor

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

### 8.2 Exposure controls

#### Appropriate engineering controls

Use local and general ventilation.

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## Individual protection measures (personal protective equipment)

### Eye/face protection

Wear eye/face protection.

### Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
IIR: isobutene-isoprene (butyl) rubber	-	>60 minutes (permeation: level 3)
FKM: fluoro-elastomer	-	>60 minutes (permeation: level 3)
PVC: polyvinyl chloride	-	>60 minutes (permeation: level 3)

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

### Body protection

Protective clothing against liquid chemicals.

### Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Type: A-P2 (combined filters against particles and organic gases and vapors, color code: Brown/White).

### Environmental exposure controls

Use appropriate container to avoid environmental contamination.

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical state	liquid
Color	colorless
Odor	odorless
Odor threshold	not determined
<b>Other safety parameters</b>	
pH (value)	not determined
Melting point/freezing point	-80 °C

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<b>Boiling point or initial boiling point and boiling range</b>	289 °C
<b>Flash point</b>	146 °C
<b>Evaporation rate</b>	not determined
<b>Flammability (solid, gas)</b>	not relevant (fluid)
<b>Explosive limits</b>	not determined
<b>Vapor pressure</b>	0.000346 mPa at 25 °C
Density	0.972 g/cm <sup>3</sup> at 25 °C
Relative vapour density	this information is not available
<b>Solubility(ies)</b>	
Water solubility	280 ppmV
<b>Partition coefficient</b>	
n-octanol/water (log KOW)	5.004
<b>Soil organic carbon/water (log KOC)</b>	4 (US EPA Guideline 796.1550)
Auto-ignition temperature	>482 °C
<b>Decomposition temperature</b>	not relevant
<b>Viscosity</b>	
<b>Kinematic viscosity</b>	39.6 cSt at 34 °C
<b>Dynamic viscosity</b>	not determined
<b>Explosive properties</b>	none
<b>Oxidizing properties</b>	none
<b>Information for relevant hazard classes according to GHS</b>	hazard classes acc. to GHS (physical hazards): not relevant
<b>9.2 Other information</b>	
Temperature class (USA, acc. to NEC 500)	T1 (maximum permissible surface temperature on the equipment: 450°C)



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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is not reactive under normal ambient conditions.

### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

See below "Conditions to avoid".

### 10.3 Possibility of hazardous reactions

No known hazardous reactions.

### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Protect from moisture.

High temperatures (>140°C)

### 10.5 Incompatible materials

acids, bases, oxidizers, plastic

### 10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known.

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

If not otherwise specified the classification is based on:

Animal studies; Evidence from any other toxicity tests; Expert judgment (weight of evidence determination).

#### Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

##### Acute toxicity

Shall not be classified as acutely toxic (dermal).

Harmful if swallowed.

##### Inhalation.

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Exposure route	Endpoint	Value	Species	Method
oral	LD50	1,552 mg/kg	rat	-
dermal	LD50	>3,100 mg/kg	rabbit	-

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## **Skin corrosion/irritation**

Causes skin irritation.  
(OECD Guideline 404)

## **Serious eye damage/eye irritation**

Shall not be classified as seriously damaging to the eye or eye irritant.  
(OECD Guideline 405)

## **Respiratory or skin sensitization**

### **Skin sensitization**

Shall not be classified as a skin sensitizer.  
(EPA OTS 798.4100)

### **Respiratory sensitization**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

### **Germ cell mutagenicity**

Shall not be classified as germ cell mutagenic.  
(OECD Guideline 473)

### **Carcinogenicity**

Suspected of causing cancer.  
(EPA OTS 798.3300)

### **IARC Monographs**

not listed

### **National Toxicology Program (United States)**

not listed

### **OSHA Carcinogens**

Not listed.

### **Reproductive toxicity**

Shall not be classified as a reproductive toxicant.  
(EPA OTS 798.4700, EPA OTS 798.4900)

### **Specific target organ toxicity - single exposure**

Shall not be classified as a specific target organ toxicant (single exposure).

### **Specific target organ toxicity - repeated exposure**

Shall not be classified as a specific target organ toxicant (repeated exposure).

### **Aspiration hazard**

Shall not be classified as presenting an aspiration hazard.

## **11.2 Other information**

There is no additional information.

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## SECTION 12: Ecological information

### 12.1 Toxicity

#### Aquatic toxicity (acute)

Based on available data, the classification criteria are not met.

Endpoint	Exposure time	Value	Species	Method
LC50	24 h	35 mg/l	daphnia magna	-
LC50	96 h	4.2 mg/l	steelhead trout ( <i>Salmo gairdneri</i> )	-
LC50	48 h	-	(top) predators	-
EC50	48 h	1.8 mg/l	daphnia magna	-
EbC50	96 h	1.1 mg/l	algae ( <i>Scenedesmus subspicatus</i> )	-

#### Aquatic toxicity (chronic)

Endpoint	Exposure time	Value	Species	Method
NOEC	21 d	1.3 mg/l	daphnia magna	-
NOEC	95 d	0.82 mg/l	rainbow trout ( <i>Oncorhynchus mykiss</i> )	-

### 12.2 Persistence and degradability

#### Biodegradation

The substance is readily biodegradable.

#### Persistence

No data available.

### 12.3 Bioaccumulative potential

n-octanol/water (log KOW) 5.004

### 12.4 Mobility in soil

The Organic Carbon normalised adsorption coefficient 4  
(US EPA Guideline 796.1550)

### 12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

### 12.6 Other adverse effects

Data are not available.

#### Remarks

Keep away from drains, surface and ground water.

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Sewage disposal-relevant information

Do not empty into drains.

#### Waste treatment of containers/packages

Completely emptied packages can be recycled.  
Handle contaminated packages in the same way as the substance itself.

#### Remarks

Please consider the relevant national or regional provisions.

## SECTION 14: Transport information

14.1	UN number	not assigned
14.2	UN proper shipping name	-
14.3	Transport hazard class(es)	-
14.4	Packing group	-
14.5	Environmental hazards	-
14.6	Special precautions for user	-
14.7	Transport in bulk according to IMO instruments	-

### 14.8 Information for each of the UN Model Regulations

#### Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information

Not subject to transport regulations.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

#### National regulations (United States)

**Toxic Substance Control Act (TSCA)**                      Substance is listed (ACTIVE)

#### Superfund Amendment and Reauthorization Act (SARA TITLE III )

**The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)**

Not listed

#### Specific Toxic Chemical Listings (EPCRA Section 313)

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Not listed

## Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

### List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Not listed

## Clean Air Act

Not listed

## Right to Know Hazardous Substance List

### Cleaning Product Right to Know Act Substance List (CA-RTK)

Name of substance	CAS No	Functionality	Authoritative Lists
tributyl phosphate	126-73-8	-	ATSDR Neurotoxicants

## Toxic or Hazardous Substance List (MA-TURA)

Not listed

## Hazardous Substances List (MN-ERTK)

Name of substance	CAS No	References	Remarks
tributyl phosphate	126-73-8	A, O	-

### Legend

- A American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992-93", available from ACGIH
- O Occupational Safety and Health Administration (OSHA), Safety and Health Standards, Code of Federal Regulations, title 29, part 1910, subpart Z, "Toxic and Hazardous Substances, 1990." General information: Minnesota Department of Labor and Industry, Occupational Safety and Health Division

## Hazardous Substance List (NJ-RTK)

Name of substance	Name acc. to inventory	CAS No	Remarks	Classifications	Listed in	Substance number	DOT number
tributyl phosphate	tributyl phosphate (phosphoric acid tributyl ester)	126-73-8	-		1 2 4 15	1880	-

### Legend

- 1 Occupational Safety and Health Administration, 29 CFR 1910-Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, July 1, 2008.
- 15 "Fire Protection Guide to Hazardous Materials," NFPA 49 (Hazardous Chemicals Data), NFPA 325 (Guide to Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids), and NFPA 704 (Standard System for the Identification of the Hazards of Materials for Emergency Response), National Fire Protection Association (NFPA), 2001.

# Tributyl Phosphate (TBP)

## Legend

- 2 "2009 TLVs® and BEIs®, Threshold Limit Values and Biological Exposure Indices," American Conference of Governmental Industrial Hygienists (ACGIH), 2009.
- 4 "NIOSH Pocket Guide to Chemical Hazards," National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, No. 2005-149, September 2005.

## Hazardous Substance List (Chapter 323) (PA-RTK)

Name acc. to inventory	CAS No	Classification
PHOSPHORIC ACID TRIBUTYL ESTER	126-73-8	-

## Hazardous Substance List (RI-RTK)

Name of substance	CAS No	References
tributyl phosphate	126-73-8	T

## Legend

- T Toxicity (ACGIH®)

## California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

Not listed

## Drug precursors, Chemicals designated within the Controlled Substances Act, 21 U.S.C. § 802, paragraphs 34 (list I) and 35 (list II)

Not listed

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance by the supplier.

## SECTION 16: Other information, including date of preparation or last revision

Date of preparation: 2023-06-13

## Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
ACGIH®	American Conference of Governmental Industrial Hygienists
ACGIH® 2023	From ACGIH®, 2023 TLVs® and BEIs® Book. Copyright 2023. Reprinted with permission. Information on the proper use of the TLVs® and BEIs®: <a href="http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement">http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement</a>
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)

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Abbr.	Descriptions of used abbreviations
DGR	Dangerous Goods Regulations (see IATA/DGR)
EbC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IARC	International Agency for Research on Cancer
IARC Monographs	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
IMDG	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)
NOEC	No Observed Effect Concentration
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
ppm	Parts per million
STEL	Short-term exposure limit
TLV®	Threshold Limit Values
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative

### Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT).

International Maritime Dangerous Goods Code (IMDG).

Dangerous Goods Regulations (DGR) for the air transport (IATA).

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## List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H302	Harmful if swallowed.
H315	Causes skin irritation.
H351	Suspected of causing cancer.

## Responsible for the safety data sheet

Chemical Regulatory Compliance Com- Telephone: +1 (630) 410-1660  
pany e-Mail: GHS@crc-us.com  
Jasper, GA Website: www.crc-us.com  
USA

## Disclaimer

This information is based upon the present state of our knowledge.  
This SDS has been compiled and is solely intended for this product.