

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of issue: 06/11/2018

Revision date: 01/01/2020

Version: 3.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)
Other means of identification : Voltage : 1.5 V
Battery Weight: 0.6 g

1.2. Recommended use and restrictions on use

Main use category : Toy battery
Restrictions on use : No information available.

1.3. Supplier

Supplier : Dongguan Guante Electronic Technology Co., Ltd
Address : Hengtai Industry Buliding, Middle East City Road, Guancheng District, Dongguan City.
Phone : 0086-0769-23102849
E-mail : guantecell@163.com

1.4. Emergency telephone number

+86-13912779466

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) : None
Signal word (GHS-US) : None
Hazard statements (GHS-US) : Not applicable
Precautionary statements (GHS-US) : Not applicable

2.3. Other hazards which do not result in classification

Batteries contain manganese dioxide which may boost combustion of other substances that may vent, ignite and produce sparks when subjected to high temperature, when damaged or abused (e.g., mechanical damage); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

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| Name | Product identifier | % | GHS-US classification |
|---------------------------------------------------------|----------------------|----|-------------------------------------------|
| Manganese oxide (MnO ₂) | (CAS-No.) 1313-13-9 | 38 | Acute Tox. 4, H302 Acute Tox. 4, H332 |
| Iron | (CAS-No.) 7439-89-6 | 20 | Not classified |
| Zinc | (CAS-No.) 7440-66-6 | 15 | Not classified |
| Water | (CAS-No.) 7732-18-5 | 8 | Not classified |
| Graphite | (CAS-No.) 7782-42-5 | 7 | Not classified |
| Poly[imino(1,6-dioxo-1,6-hexanediy)imino-1,6-hexanediy] | (CAS-No.) 32131-17-2 | 6 | Not classified |
| Potassium hydroxide | (CAS-No.) 1310-58-3 | 6 | Acute Tox. 4, H302 Skin Corr. 1A, H314 |

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures general : No hazards which require special first aid measures.
If you feel unwell, seek medical advice (show directions for use or Material safety data sheet if possible).
- First-aid measures after inhalation : There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes.
Remove to fresh air immediately. Get medical treatment immediately
- First-aid measures after skin contact : There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
- First-aid measures after eye contact : There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes.
Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing.
Get immediate medical treatment.
If appropriate procedures are not taken, this may cause eye injury.
- First-aid measures after ingestion : Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage.
Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects : No information available.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Unsuitable extinguishing media : No information available.

5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Thermal shock may cause battery case to crack open.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

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Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.

Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.

Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.

Do not short-circuit, recharge, deform, throw into fire or disassemble.

Do not mix different type of batteries.

Do not solder directly onto batteries.

Insert the battery correctly in electrical equipment.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool and dry area, but prevent condensation on cell or battery terminals.
High temperature may damage the performance of the battery.
Protect from physical damage and short circuits.
To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery.
Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries.
Do not stack battery directly on another battery.
Do not store batteries on electrically conductive surfaces.
Keep containers tightly closed in a dry, cool and well-ventilated place
Keep locked up and out of reach of children
Keep away from food, drink and animal feeding stuffs
Store in accordance with local regulations

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Manganese oxide (MnO ₂) (1313-13-9) | | |
|------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------|
| Not applicable | | |
| Potassium hydroxide (1310-58-3) | | |
| ACGIH | ACGIH Ceiling (mg/m ³) | 2 mg/m ³ |
| NIOSH | NIOSH REL (ceiling) (mg/m ³) | 2 mg/m ³ |
| Iron (7439-89-6) | | |
| Not applicable | | |
| Zinc (7440-66-6) | | |
| Not applicable | | |
| Water (7732-18-5) | | |
| Not applicable | | |
| Graphite (7782-42-5) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 2 mg/m ³ (all forms except graphite fibers-respirable particulate matter) |
| OSHA | OSHA PEL (TWA) (mg/m ³) | 15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction) |
| IDLH | US IDLH (mg/m ³) | 1250 mg/m ³ |
| NIOSH | NIOSH REL (TWA) (mg/m ³) | 2.5 mg/m ³ (natural-respirable dust) |
| Poly[imino(1,6-dioxo-1,6-hexanediyl)imino-1,6-hexanediyl] (32131-17-2) | | |
| Not applicable | | |

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

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Material Safety Data Sheet

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Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---------------------------------------------|---------------------|
| Physical state | : Solid |
| Color | : Silvery shell |
| Odor | : Odourless. |
| Odor threshold | : No data available |
| pH | : No data available |
| Melting point | : No data available |
| Boiling point | : No data available |
| Flash point | : Not applicable |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Flammability (solid, gas) | : Not flammable |
| Vapor pressure | : Not applicable |
| Relative vapor density at 20 °C | : No data available |
| Relative density | : No data available |
| Solubility | : No data available |
| Log Pow | : No data available |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Viscosity, kinematic | : Not applicable |
| Viscosity, dynamic | : Not applicable |
| Explosion limits | : Not applicable |
| Explosive properties | : Not an explosive |
| Oxidizing properties | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base.

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

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| Manganese oxide (MnO₂) (1313-13-9) | |
|------------------------------------------------------|------------|
| LD50 oral rat | 9000 mg/kg |
| Potassium hydroxide (1310-58-3) | |
| LD50 oral rat | 284 mg/kg |
| Iron (7439-89-6) | |
| LD50 oral rat | 30 g/kg |
| Zinc (7440-66-6) | |
| LD50 oral rat | 630 mg/kg |
| Water (7732-18-5) | |
| LD50 oral rat | > 90 ml/kg |

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Symptoms/effects : No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

| Zinc (7440-66-6) | |
|----------------------------------------|------------|
| LC50 fish 96h | 0.168 mg/l |
| EC50 Crustaceans | 0.86 mg/l |
| Potassium hydroxide (1310-58-3) | |
| LC50 fish 96h | 80 mg/l |

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.
GWPmix comment : No known effects from this product.

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Material Safety Data Sheet

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SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

In accordance with UNTDG

Not applicable

Transport by sea

The substance is not subject to IMO IMDG code (39-18)

Air transport

In accordance with IATA (61th) & ICAO (8th)

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Potassium hydroxide (1310-58-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

| | |
|-----------|---------|
| CERCLA RQ | 1000 lb |
|-----------|---------|

Iron (7439-89-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Zinc (7440-66-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313

| | |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| CERCLA RQ | 454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|

Water (7732-18-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Poly[imino(1,6-dioxo-1,6-hexanediyl)imino-1,6-hexanediyl] (32131-17-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

| | |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPA TSCA Regulatory Flag | XU - XU - indicates a substance exempt from reporting under the Inventory Update Reporting Rule, i.e., Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(C)). |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

15.2. International regulations

CANADA

Manganese oxide (MnO₂) (1313-13-9)

Listed on the Canadian DSL (Domestic Substances List)

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Potassium hydroxide (1310-58-3)

Listed on the Canadian DSL (Domestic Substances List)

Iron (7439-89-6)

Listed on the Canadian DSL (Domestic Substances List)

Zinc (7440-66-6)

Listed on the Canadian DSL (Domestic Substances List)

Water (7732-18-5)

Listed on the Canadian DSL (Domestic Substances List)

Graphite (7782-42-5)

Listed on the Canadian DSL (Domestic Substances List)

Poly[imino(1,6-dioxo-1,6-hexanediyl)imino-1,6-hexanediyl] (32131-17-2)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Manganese oxide (MnO₂) (1313-13-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Potassium hydroxide (1310-58-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Iron (7439-89-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Zinc (7440-66-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Water (7732-18-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Graphite (7782-42-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Manganese oxide (MnO₂) (1313-13-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Potassium hydroxide (1310-58-3)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Button type zinc-manganese dioxide alkaline batteries(1.5V LR41)

Material Safety Data Sheet

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Iron (7439-89-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Zinc (7440-66-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
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Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
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Listed on Turkish inventory of chemical
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Water (7732-18-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
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Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Graphite (7782-42-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
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Poly[imino(1,6-dioxo-1,6-hexanediyl)imino-1,6-hexanediyl] (32131-17-2)

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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
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Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Issue date : 06/11/2018

Revision date : 01/01/2020

Full text of H- and EUH-phrases:

| | |
|------|--------------------------------------------------------------------------------|
| H250 | Catches fire spontaneously if exposed to air |
| H260 | In contact with water releases flammable gases, which may ignite spontaneously |
| H302 | Harmful if swallowed |
| H314 | Causes severe skin burns and eye damage |
| H332 | Harmful if inhaled |
| H400 | Very toxic to aquatic life |

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Material Safety Data Sheet

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| | |
|------|------------------------------------------------------|
| H410 | Very toxic to aquatic life with long lasting effects |
|------|------------------------------------------------------|

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

| | |
|------|------------------------------------------------------------------------------------------------|
| ADR | European Agreement Concerning the International Carriage of Dangerous Goods by Road |
| IMDG | International Maritime Dangerous Goods |
| IATA | International Air Transport Association |
| ADN | European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway |
| RID | Regulations Concerning the International Carriage of Dangerous Goods by Rail |
| PBT | Persistent, Bioaccumulative and Toxic |
| vPvB | Very Persistent and Very Bioaccumulative |
| DNEL | Derived No Effect Level |
| PNEC | Predicted No Effect Concentration |
| LC50 | Lethal Concentration 50 |
| LD50 | Lethal Dose 50 |
| EC50 | Effective Concentration 50 |
| TWA | Time Weighted Average |
| STEL | Short Term Exposure Limit |

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHRIP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product