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SAFETY DATA SHEET		Revision Date: 05/22/2015
		Print Date: 7/24/2015
		SDS Number: R0368894
Zerex™ HD EXTENDED LIFE ANTIFREEZE COOLANT		Version: 1.0
ZXED2		

29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Zerex™ HD EXTENDED LIFE ANTIFREEZE COOLANT

Recommended use of the chemical and restrictions on use



Details of the supplier of the safety data sheet Ashland P.O. Box 2219 Columbus, OH 43216 United States of America EHS Customer Requests@ashland.com	Emergency telephone number 1-800-ASHLAND (1-800-274-5263) Regulatory Information Number 1-800-325-3751 Product Information 614-790-3333
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SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 4
 Skin irritation : Category 2
 Eye irritation : Category 2A
 Specific target organ systemic toxicity - repeated exposure (Oral) : Category 2 (Kidney, Liver)

GHS Label element

Hazard pictograms :  

Signal Word : Warning

Hazard Statements : Harmful if swallowed.
 Causes skin irritation.
 Causes serious eye irritation.
 May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.

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Precautionary Statements

: **Prevention:**

Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection/ face protection.
Wear protective gloves.

Response:

IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

IF ON SKIN: Wash with plenty of soap and water.

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

Get medical advice/ attention if you feel unwell.

If skin irritation occurs: Get medical advice/ attention.

If eye irritation persists: Get medical advice/ attention.

Take off contaminated clothing and wash before reuse.

Disposal:

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

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

: Mixture

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
ETHYLENE GLYCOL	107-21-1	Acute Tox. 4; H302 STOT RE 2; H373	92.26
DIETHYLENE GLYCOL	111-46-6	Acute Tox. 4; H302 STOT RE 2; H373	4.61
POTASSIUM HYDROXIDE	1310-58-3	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1; H314	2.70

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		Eye Dam. 1; H318	
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SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Call a POISON CENTRE or doctor/physician if exposed or you feel unwell.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : If breathed in, move person into fresh air.
If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.
If on skin, rinse well with water.
Wash contaminated clothing before re-use.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
- If swallowed : Obtain medical attention.
Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
May cause damage to organs through prolonged or repeated exposure if swallowed.
Effects of acute ethylene glycol poisoning appear in three fairly distinct stages. The initial stage occurs shortly after exposure, lasts 6-12 hours, and is characterized by central nervous system effects (transient exhilaration, nausea, vomiting, and in severe cases, coma, convulsions, and possible death). The second stage lasts from 12-36 hours after exposure and is initiated by the onset of coma. This phase is characterized by tachypnea, tachycardia, mild hypotension, cyanosis, and in severe cases, pulmonary edema, bronchopneumonia, cardiac enlargement, and congestive failure. The final stage occurs 24-72 post-exposure and is characterized by renal failure, ranging from a

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mild increase in blood urea nitrogen and creatinine followed by recovery, to complete anuria with acute tubular necrosis that can lead to death. Oxaluria is found in most cases. The most significant laboratory finding in ethylene glycol intoxication is severe metabolic acidosis.

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:

stomach or intestinal upset (nausea, vomiting, diarrhea)
irritation (nose, throat, airways)

Cough

pain in the abdomen and lower back

cyanosis (causes blue coloring of the skin and nails from lack of oxygen)

lung edema (fluid buildup in the lung tissue)

acute kidney failure (sudden slowing or stopping of urine production)

Convulsions

Notes to physician

: This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, give the patient three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol poisoning. Hemodialysis effectively removes ethylene glycol and its metabolites from the body.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Water spray

Foam

Carbon dioxide (CO₂)

Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Alcohols
Aldehydes

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carbon dioxide and carbon monoxide
ethers
toxic fumes
Hydrocarbons
potassium oxide

Specific extinguishing methods :

Product is compatible with standard fire-fighting agents.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

Other information : Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours/dust.
Do not smoke.
Container hazardous when empty.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and

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kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ETHYLENE GLYCOL	107-21-1	Ceiling	100 mg/m3 Aerosol.	ACGIH
		TWA	10 mg/m3 Inhalable fraction and vapor	ACGIHLIS_P
DIETHYLENE GLYCOL	111-46-6	TWA	10 mg/m3	WEEL
POTASSIUM HYDROXIDE	1310-58-3	Ceiling	2 mg/m3	ACGIH
		REL	2 mg/m3	NIOSH/GUID E

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Hand protection

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

: Safety glasses

Skin and body protection

: Wear as appropriate:
impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures

: Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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Physical state : liquid

Colour : red

Odour : No data available

Odour Threshold : No data available

pH : Average 9.2

Melting point/freezing point : No data available

Boiling point/boiling range : 330 °F / 166 °C
(1013 hPa)

Flash point : > 250 °F / > 121 °C

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : No data available

Density : 1.126 g/cm³ (15.6 °C)

Solubility(ies)

 Water solubility : No data available

 Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Thermal decomposition : No data available

Viscosity

 Viscosity, dynamic : No data available

 Viscosity, kinematic : No data available

Oxidizing properties : No data available

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SECTION 10. STABILITY AND REACTIVITY

- Reactivity : No decomposition if stored and applied as directed.
- Chemical stability : Stable under recommended storage conditions.
- Possibility of hazardous reactions : Product will not undergo hazardous polymerization.
- Conditions to avoid : excessive heat
- Incompatible materials : Acids
Alcohols
Aldehydes
Alkali metals
Alkaline earth metals
aluminum
Amines
Bases
chlorinated solvents
halogenated hydrocarbons
Metals
strong alkalis
Strong oxidizing agents
Sulphur compounds
water
Zinc
- Hazardous decomposition products : Alcohols
Aldehydes
carbon dioxide and carbon monoxide
ethers
Hydrocarbons
Organic acids
potassium oxide
ketones

SECTION 11. TOXICOLOGICAL INFORMATION

- Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity
Harmful if swallowed.

Product:

- Acute oral toxicity : Remarks: Ingestion of medications contaminated with

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diethylene glycol has caused kidney failure and death in humans. Products containing diethylene glycol should be considered toxic by ingestion.

Acute dermal toxicity : Remarks: Skin absorption of this material (or a component) may be increased through injured skin.

Components:

ETHYLENE GLYCOL:

Acute oral toxicity : LD 50 (Rat): 6,140 mg/kg

LD50 (Human): Estimated 1.56 g/kg
Assessment: The component/mixture is classified as acute oral toxicity, category 4.

Acute inhalation toxicity : LC 50 (Rat): 10.9 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Assessment: No adverse effect has been observed in acute inhalation toxicity tests.

Acute dermal toxicity : LD 50 (Rabbit): 9,530 mg/kg

DIETHYLENE GLYCOL:

Acute oral toxicity : LD50 (Human): Expected 1,120 mg/kg
Target Organs: Kidney

Acute inhalation toxicity : LC50 (Rat): > 4.6 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: No adverse effect has been observed in acute inhalation toxicity tests.

Acute dermal toxicity : LD 50 (Rabbit): 13,300 mg/kg

POTASSIUM HYDROXIDE:

Acute oral toxicity : LD 50 (Rat): 333 mg/kg

Acute dermal toxicity : LD 50 (Rabbit): 1,260 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks: May cause skin irritation and/or dermatitis.

Components:

ETHYLENE GLYCOL:

Result: Mildly irritating to skin

DIETHYLENE GLYCOL:

Species: Human

Result: Slightly irritating to skin

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POTASSIUM HYDROXIDE:

Result: Corrosive to skin

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Components:

ETHYLENE GLYCOL:

Result: Possibly irritating to eyes

DIETHYLENE GLYCOL:

Species: Rabbit

Result: Slightly irritating to eyes

POTASSIUM HYDROXIDE:

Result: Corrosive to eyes

Respiratory or skin sensitisation

Skin sensitisation: Not classified based on available information.

Respiratory sensitisation: Not classified based on available information.

Components:

DIETHYLENE GLYCOL:

Test Type: Maximisation Test (GPMT)

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Not classified based on available information.

Components:

DIETHYLENE GLYCOL:

Genotoxicity in vitro

: Test Type: Ames test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: yes

: Test species: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 479

Result: negative

GLP: yes

Genotoxicity in vivo

: Test Type: In vivo micronucleus test

Test species: Mouse

Method: OECD Test Guideline 474

Result: negative

GLP: yes

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Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.

Components:

ETHYLENE GLYCOL:

Exposure routes: Ingestion

Target Organs: Kidney, Liver

Assessment: May cause damage to organs through prolonged or repeated exposure.

DIETHYLENE GLYCOL:

Exposure routes: Ingestion

Target Organs: Kidney

Assessment: May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity

Not classified based on available information.

Product:

No aspiration toxicity classification

Experience with human exposure

Components:

DIETHYLENE GLYCOL:

Liver

Further information

Product:

Remarks: No data available

Carcinogenicity:

IARC

No component 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 identified as a carcinogen or potential carcinogen by OSHA.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****ETHYLENE GLYCOL:**

Toxicity to fish : LC 50 (Bluegill (*Lepomis macrochirus*)): 27,540 mg/l
Exposure time: 96 h
Method: Static
Remarks: Mortality

LC 50 (Fathead minnow (*Pimephales promelas*)): 8,050 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC 50 (Water flea (*Daphnia magna*)): > 10,000 mg/l
Exposure time: 48 h
Test Type: static test

DIETHYLENE GLYCOL:

Toxicity to fish : LC 50 (Fathead minnow (*Pimephales promelas*)): 75,210 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : LC 50 (Water flea (*Daphnia magna*)): > 10,000 mg/l
Exposure time: 24 h
Test Type: static test
Method: DIN 38412

POTASSIUM HYDROXIDE:

Toxicity to fish : LC 50 (Western mosquitofish (*Gambusia affinis*)): 80 mg/l
Exposure time: 96 h
Method: Static
Remarks: Mortality

Persistence and degradability**Components:****DIETHYLENE GLYCOL:**

Biodegradability : Result: Readily biodegradable
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential**Components:****ETHYLENE GLYCOL:**

Bioaccumulation : Species: Crayfish (*Procambarus*)
Bioconcentration factor (BCF): 0.27
Exposure time: 61 d

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Concentration: 1000 mg/l
Method: Flow through

Partition coefficient: n-octanol/water : log Pow: -1.36

DIETHYLENE GLYCOL:
Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 100

Partition coefficient: n-octanol/water : log Pow: -1.47

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life.

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

**International transport regulations
REGULATION**

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ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
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U.S. DOT - ROAD

Not dangerous goods

U.S. DOT - RAIL

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TRANSPORT CANADA - ROAD

Not dangerous goods

TRANSPORT CANADA - RAIL

Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant

no

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Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
ETHYLENE GLYCOL	107-21-1	5000	5419.337497

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 Component(s)

ETHYLENE GLYCOL	107-21-1	92.26 %
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Pennsylvania Right To Know

ETHYLENE GLYCOL	107-21-1	90.00 - 100.00 %
DIETHYLENE GLYCOL	111-46-6	1.00 - 5.00 %
POTASSIUM HYDROXIDE	1310-58-3	1.00 - 5.00 %

New Jersey Right To Know

ETHYLENE GLYCOL	107-21-1	90.00 - 100.00 %
DIETHYLENE GLYCOL	111-46-6	1.00 - 5.00 %
POTASSIUM HYDROXIDE	1310-58-3	1.00 - 5.00 %
SEBACIC ACID	111-20-6	1.00 - 5.00 %

California Prop 65 Proposition 65 warnings are not required for this product based on the results of a risk assessment.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AUSTR : On the inventory, or in compliance with the inventory

ENCS : Not in compliance with the inventory

KECL : On the inventory, or in compliance with the inventory

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PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information

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NFPA:	HMIS III:						
<p>Flammability</p> <p>Health</p> <p>Instability</p> <p>Special hazard.</p>	<table border="1"> <tr> <td>HEALTH</td> <td>2*</td> </tr> <tr> <td>FLAMMABILITY</td> <td>1</td> </tr> <tr> <td>PHYSICAL HAZARD</td> <td>0</td> </tr> </table> <p>0 = not significant, 1 =Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic</p>	HEALTH	2*	FLAMMABILITY	1	PHYSICAL HAZARD	0
HEALTH	2*						
FLAMMABILITY	1						
PHYSICAL HAZARD	0						

NFPA Flammable and Combustible Liquids Classification

Combustible Liquid Class IIIB

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

- H302 Harmful if swallowed.
- H312 Harmful in contact with skin.
- H314 Causes severe skin burns and eye damage.
- H318 Causes serious eye damage.
- H373 May cause damage to organs through prolonged or repeated exposure if swallowed.

Sources of key data used to compile the Safety Data Sheet

Ashland internal data including own and sponsored test reports

The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

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The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :

ACGIH : American Conference of Industrial Hygienists
 BEI : Biological Exposure Index
 CAS : Chemical Abstracts Service (Division of the American Chemical Society).
 CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
 FG : Food grade
 GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
 H-statement : Hazard Statement
 IATA : International Air Transport Association.
 IATA-DGR : Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO : International Civil Aviation Organization
 ICAO-TI (ICAO) : Technical Instructions by the "International Civil Aviation Organization"
 IMDG : International Maritime Code for Dangerous Goods
 ISO : International Organization for Standardization
 logPow : octanol-water partition coefficient
 LCxx : Lethal Concentration, for xx percent of test population
 LDxx : Lethal Dose, for xx percent of test population.
 ICxx : Inhibitory Concentration for xx of a substance
 Ecxx : Effective Concentration of xx
 N.O.S.: Not Otherwise Specified
 OECD : Organization for Economic Co-operation and Development
 OEL : Occupational Exposure Limit
 P-Statement : Precautionary Statement
 PBT : Persistent , Bioaccumulative and Toxic
 PPE : Personal Protective Equipment
 STEL : Short-term exposure limit
 STOT : Specific Target Organ Toxicity
 TLV : Threshold Limit Value
 TWA : Time-weighted average
 vPvB : Very Persistent and Very Bioaccumulative
 WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
 DOT : Department of Transportation
 FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
 HMIRC : Hazardous Materials Information Review Commission
 HMIS : Hazardous Materials Identification System
 NFPA : National Fire Protection Association
 NIOSH : National Institute for Occupational Safety and Health
 OSHA : Occupational Safety and Health Administration
 PMRA : Health Canada Pest Management Regulatory Agency
 RTK : Right to Know
 WHMIS : Workplace Hazardous Materials Information System