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SAFETY DATA SHEET		Print Date: 02/25/2021
ZEREX™ G-48® Formula Antifreeze Coolant ™ Trademark, Valvoline or its subsidiaries, registered in various countries 861583		MSDS Number: R0296767 Version: 1.1

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ZEREX™ G-48® Formula Antifreeze Coolant
™ Trademark, Valvoline or its subsidiaries, registered in various countries

Product code : 861583

Company : Valvoline LLC
3499 Blazer Parkway
Lexington, KY 40509

United States of America

E-mail address : SDS@valvoline.com
Telephone : 1-800-TEAMVAL
Telefax :



Emergency telephone number : 1-800-VALVOLINE

2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 4
Reproductive toxicity : Category 1B
Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Kidney, Liver)

GHS-Labeling

Hazard pictograms :  

Signal word : Danger

Hazard statements : H302 Harmful if swallowed.
H360FD May damage fertility. May damage the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

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P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration
ETHYLENE GLYCOL	107-21-1	>=60 - <=100 %
DIETHYLENE GLYCOL	111-46-6	>=1 - <5 %
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	>=0.1 - <1 %

4. FIRST AID MEASURES

General advice : Consult a physician.
Show this safety data sheet to the doctor in attendance.

First aid measures for different exposure routes

In case of eye contact : Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
Remove contact lenses.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off immediately with plenty of water.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.
If symptoms persist, call a physician.
In case of shortness of breath, give oxygen.

If swallowed : Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.
Consult a physician if necessary.

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Most important symptoms and effects, both acute and delayed (new)

: 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 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. Ingestion or other significant exposure to this material (or a component) may cause 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
 central nervous system excitation (giddiness, liveliness, light-headed feeling) followed by central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects
 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)
 liver damage
 Convulsions
 coma

Notes to physician (new)

: 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

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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.
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, diethylene glycol and methanol poisoning.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : ABC powder
Carbon dioxide (CO₂)
Dry chemical
Water mist
- Unsuitable extinguishing media : Halons
- Hazardous combustion products : Alcohols
Aldehydes
carbon dioxide and carbon monoxide
ethers
Hydrocarbons
Sodium oxides
toxic fumes
various hydrocarbons
- Specific extinguishing methods : Keep containers and surroundings cool with water spray.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
- Environmental precautions : Prevent further leakage or spillage if safe to do so.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Large spills should be collected mechanically (remove by pumping) for disposal.
Keep in suitable, closed containers for disposal.
- Additional advice : Comply with all applicable federal, state, and local regulations.

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7. HANDLING AND STORAGE

Handling

- Technical measures : Normal measures for preventive fire protection.
- Advice on safe handling : Do not breathe vapours or spray mist.
For personal protection see section 8.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid exceeding of the given occupational exposure limits (see section 8).
Smoking, eating and drinking should be prohibited in the application area.
- Avoidance of contact : Acids
Aldehydes
Alkali metals
Alkaline earth metals
aluminum
Bases
strong alkalis
Strong oxidizing agents
Sulphur compounds

Storage

- Conditions for safe storage : Store in original container.
Keep containers tightly closed in a dry, cool and well-ventilated place.
- Materials to avoid : Acids, Aldehydes, Alkali metals, Alkaline earth metals, aluminum, Bases, strong alkalis, Strong oxidizing agents, Sulphur compounds
- Other data : Stable under recommended storage conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value (Form of exposure)	Control parameters / Permissible concentration	Basis
ETHYLENE GLYCOL	107-21-1	Ceiling (Aerosol.)	100 mg/m3	UY OEL
ETHYLENE GLYCOL	107-21-1	Ceiling (Aerosol.)	100 mg/m3	PY OEL
ETHYLENE GLYCOL	107-21-1	Ceiling (Aerosol.)	100 mg/m3	EC OEL

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ETHYLENE GLYCOL	107-21-1	Ceiling (Aerosol.)	100 mg/m3	CR OEL
ETHYLENE GLYCOL	107-21-1	(Aerosol.)		CR OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	TWA (Inhalable fraction.)	2 mg/m3	UY OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	STEL (Inhalable fraction.)	6 mg/m3	UY OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	TWA (Inhalable fraction.)	2 mg/m3	PY OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	STEL (Inhalable fraction.)	6 mg/m3	PY OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	TWA (Inhalable fraction.)	2 mg/m3	EC OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	STEL (Inhalable fraction.)	6 mg/m3	EC OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	TWA (Inhalable fraction.)	2 mg/m3	CR OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	STEL (Inhalable fraction.)	6 mg/m3	CR OEL
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	(Inhalable fraction.)		CR OEL

US. ACGIH Threshold Limit Values

Components	CAS-No.	Value (Form of exposure)	Control parameters / Permissible concentration	Basis
ETHYLENE GLYCOL	107-21-1	Ceiling (Aerosol.)	100 mg/m3	ACGIH
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	TWA (Inhalable fraction.)	2 mg/m3	ACGIH
DISODIUM TETRABORATE ANHYDROUS	1330-43-4	STEL (Inhalable fraction.)	6 mg/m3	ACGIH

Engineering measures

: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

Personal protective equipment

Respiratory protection

: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

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10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: No hazards to be specially mentioned. Hazardous polymerisation does not occur.
Conditions to avoid	: Heat, flames and sparks. Exposure to moisture.
Incompatible materials	: Acids Aldehydes Alkali metals Alkaline earth metals aluminum Bases strong alkalis Strong oxidizing agents Sulphur compounds
Hazardous decomposition products	: Alcohols Aldehydes carbon dioxide and carbon monoxide ethers Hydrocarbons Organic acids Sodium oxides ketones various hydrocarbons

11. TOXICOLOGICAL INFORMATION

Product

Acute oral toxicity	: No data available
Acute inhalation toxicity	: No data available
Acute dermal toxicity	: No data available
Skin corrosion/irritation	: No data available
Serious eye damage/eye irritation	: No data available

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Respiratory or skin sensitisation : No data available

Components:

ETHYLENE GLYCOL:

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

LD50 Human: Estimated 1.56 g/kg
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

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

STOT - repeated exposure : Exposure routes: Ingestion
Target Organs: Kidney, Liver
Assessment: May cause damage to organs through prolonged or repeated exposure.

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
No adverse effect has been observed in acute inhalation toxicity tests.

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

Respiratory or skin sensitisation : Test Method: Maximisation Test (GPMT)
Species: guinea pig
Result: Did not cause sensitisation on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Germ cell mutagenicity

Genotoxicity in vitro : Type: Ames test
with and without metabolic activation
Result: negative
Method: OECD Test Guideline 471
GLP: yes

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- : Test species: Chinese hamster ovary cells
 with and without metabolic activation
 Result: negative
 Method: OECD Test Guideline 479
 GLP: yes
- Genotoxicity in vivo : Type: In vivo micronucleus test
 Test species: mouse
 Method: OECD Test Guideline 474
 GLP: yes
 Result: negative
- STOT - repeated exposure : Exposure routes: Ingestion
 Target Organs: Kidney
 Assessment: May cause damage to organs through prolonged or repeated exposure.
- Experience with human exposure : Liver
- DISODIUM TETRABORATE ANHYDROUS:**
 Acute dermal toxicity : LD 50 Rabbit: > 1,055 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

No data available

Components:

ETHYLENE GLYCOL:

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

DIETHYLENE GLYCOL:

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

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

Persistence and degradability

Product:

No data available

Components:

DIETHYLENE GLYCOL:

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

Bioaccumulative potential

Product:

No data available

Components:

ETHYLENE GLYCOL:

Bioaccumulation : Species: Crayfish (Procambarus)
Exposure time: 61 d
Concentration: 1000 mg/l
Bioconcentration factor (BCF): 0.27
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

Product:

No data available

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Components:

ETHYLENE GLYCOL:

Surface tension : 48.4 mN/m

DIETHYLENE GLYCOL:

Surface tension : 48.5 mN/m

Other adverse effects

Product:

Ozone-Depletion Potential : No data available

Components:

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with the European Directives on waste and hazardous waste.

Do not contaminate ponds, waterways or ditches with chemical or used container.
Container hazardous when empty.
Dispose of in accordance with local 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.
Do not burn, or use a cutting torch on, the empty drum.

DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

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INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

UN_DG

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.

15. REGULATORY INFORMATION
Other international regulations
Notification status

US. Toxic Substances Control Act	: y (positive listing)
Australia. Industrial Chemical (Notification and Assessment) Act	: y (positive listing)
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	: y (positive listing)
Japan. Kashin-Hou Law List	: n (Negative listing)
Korea. Toxic Chemical Control Law (TCCL) List	: y (positive listing)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	: y (positive listing)
China. Inventory of Existing Chemical Substances	: y (positive listing)
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	: n (Negative listing)

16. OTHER INFORMATION
Further information

Other information : 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 MSDS has been prepared by Valvoline's Environmental Health and Safety Department.

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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