To Our Customers:

The attached Safety Data Sheet (SDS) was prepared by the vendor of the product you purchased through one of our divisions. We used the manufacturer's electronic document directly or scanned a paper copy and generated a file for our automated SDS delivery system.

All statements, technical information, and recommendations contained therein are solely that of the manufacturer of the product. We at Zep Inc. did not verify the accuracy and completeness of the statements and do not warrantee or guarantee the information. We provide vendor SDSs to assist our customers in their compliance efforts. The attached document is in compliance with one of the respective country regulatory requirements noted below:

The OSHA Hazard Communication Standard (in the United States)
The Hazardous Products Regulations (in Canada)

We made every effort to deliver all of the information prepared by the manufacturer. We cannot anticipate all conditions under which this information will be used. If you have any questions about the statements on the SDS, please contact the company shown on the document.

Zep Inc. assumes no liability or responsibility for loss or damage resulting from the improper use or handling of this product, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the manufacturer's product label and Safety Data Sheet.

Sincerely,

Product Stewardship Team
Zep Inc.

SAFETY DATA SHEET

Valvoline™ VALVOLINE HEAT TRANSFER FLUID LOW SOLIDS DILUTED HEAT TRANSFER FLUID

Version: 1.6 | Revision Date: 02/01/2022 | Print Date: 11/29/2022

29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Valvoline™ VALVOLINE HEAT TRANSFER FLUID LOW SOLIDS DILUTED HEAT TRANSFER FLUID

Product code : 899844

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

Recommended use : Coolant and antifreeze.

Details of the supplier of the safety data sheet Valvoline LLC 100 Valvoline Way Lexington, KY 40509 United States of America (USA) 1-800-TEAMVAL (1-800-832-6825) SDS@valvoline.com	**Emergency telephone number** 1-800-VALVOLINE (1-800-825-8654) **Regulatory Information Number** 1-800-TEAMVAL (1-800-832-6825) **Product Information** 1-800-TEAMVAL (1-800-832-6825)

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 4

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Kidney, Liver)

GHS label elements

Hazard pictograms :

Signal Word : Warning

Hazard Statements : Harmful if swallowed.

Suspected of damaging the unborn child.
May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.

Precautionary Statements : If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist or vapors.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
IF exposed or concerned: Get medical advice/ attention.
Storage:
Store locked up.
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	>=40.00 - < 50.00
POTASSIUM 2-ETHYLHEXANOATE	3164-85-0	Skin Irrit. 2; H315 Repr. 2; H361d	>=1.50 - < 5.00

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
If inhaled	:	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
In case of eye contact	:	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Induce vomiting immediately and call a physician. Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	:	Harmful if swallowed. Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure if swallowed. No symptoms known or expected.
Notes to physician	:	No hazards which require special first aid measures. Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Unsuitable extinguishing media	:	High volume water jet
Hazardous combustion products	:	No hazardous combustion products are known
Specific extinguishing	:	

methods

Further information	:	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment.
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	:	Neutralise with acid. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not breathe vapours/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. 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. Observe label precautions. 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	Control	Basis

		(Form of exposure)	parameters / Permissible concentration	
ETHYLENE GLYCOL	107-21-1	TWA	25 ppm Vapour	ACGIH
		STEL	50 ppm Vapour	ACGIH
		STEL	10 mg/m3 Inhalable fraction, Aerosol only	ACGIH
		C	50 ppm 125 mg/m3	OSHA P0
		C	40 ppm 100 mg/m3 Vapour	CAL PEL

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

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

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : orange

Odour : No data available

Odour Threshold : No data available

pH : ca. 10.5

Melting point/freezing point	:	-34 °F / -37 °C
Boiling point/boiling range	:	226 °F / 108 °C (1013.33 hPa)
Flash point	:	> 250.00 °F / > 121.11 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	ca. 1.07 g/cm3 (60.00 °F / 15.56 °C)
Solubility(ies)		
Water solubility	:	completely miscible
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.

Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	excessive heat Exposure to moisture Exposure to sunlight.
Incompatible materials	:	Aldehydes Alkali metals Alkaline earth metals isocyanates Strong acids strong alkalis Strong bases Strong oxidizing agents Sulphur compounds UV light.
Hazardous decomposition products		No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Harmful if swallowed.
Product:

Acute oral toxicity	:	Acute toxicity estimate: 1,042 mg/kg Method: Calculation method

Components:
ETHYLENE GLYCOL:

Acute oral toxicity	:	LD0 (Human): estimated 1.56 g/kg Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	:	LC50 (Rat): 10.9 mg/l Exposure time: 1 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50 (Rabbit): 9,530 mg/kg
Acute toxicity (other routes of administration)	:	LD50 (Rat): 5,010 mg/kg Application Route: Intraperitoneal

LD50 (Rat): 3,260 mg/kg
Application Route: Intravenous

POTASSIUM 2-ETHYLHEXANOATE:

Acute oral toxicity	:	LD50 (Rat): 3,640 mg/kg Remarks: The toxicological data has been taken from products of similar composition.
Acute inhalation toxicity	:	LC50 (Rat): > 0.11 mg/l Exposure time: 8 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity Remarks: No mortality observed at this dose. The toxicological data has been taken from products of similar composition.
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity Remarks: The toxicological data has been taken from products of similar composition.

Skin corrosion/irritation
Not classified based on available information.
Product:
Remarks : May cause skin irritation and/or dermatitis.

Components:
ETHYLENE GLYCOL:
Species : Rabbit
Result : No skin irritation

POTASSIUM 2-ETHYLHEXANOATE:
Species : Rabbit
Method : OECD Test Guideline 404
Result : Irritating to skin.
GLP : yes

Serious eye damage/eye irritation
Not classified based on available information.
Product:
Remarks : Vapours may cause irritation to the eyes, respiratory system and the skin.

Components:
ETHYLENE GLYCOL:
Result : Slight, transient irritation

POTASSIUM 2-ETHYLHEXANOATE:
Result : Slight, transient irritation

Respiratory or skin sensitisation
Skin sensitisation
Not classified based on available information.
Respiratory sensitisation
Not classified based on available information.
Components:
ETHYLENE GLYCOL:
Test Type : Maximisation Test
Species : Guinea pig
Assessment : Does not cause skin sensitisation.

Germ cell mutagenicity
Not classified based on available information.
Components:
ETHYLENE GLYCOL:
Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Result: negative

Carcinogenicity
Not classified based on available information.
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 on OSHA's list of regulated carcinogens.

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.

Reproductive toxicity
Suspected of damaging the unborn child.
Components:
POTASSIUM 2-ETHYLHEXANOATE:
Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

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.

Aspiration toxicity
Not classified based on available information.

Product:
No aspiration toxicity classification

Experience with human exposure
Components:
ETHYLENE GLYCOL:

Ingestion	:	Target Organs: Kidney

Further information
Product:

Remarks	:	No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Product:
Ecotoxicology Assessment

Short-term (acute) aquatic hazard	:	Not classified based on available information.
Long-term (chronic) aquatic hazard	:	Not classified based on available information.

Components:
ETHYLENE GLYCOL**:**

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 27,540 mg/l Exposure time: 96 h Test Type: static test LC50 (Pimephales promelas (fathead minnow)): 8,050 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 6,500 - 13,000 mg/l End point: Growth inhibition Exposure time: 7 Days
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 32,000 mg/l Exposure time: 7 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 24,000 mg/l Exposure time: 7 d
Ecotoxicology Assessment Short-term (acute) aquatic hazard	:	Not classified based on available information.
Long-term (chronic) aquatic hazard	:	Not classified based on available information.

POTASSIUM 2-ETHYLHEXANOATE**:**

Toxicity to fish	:	LC50 (Fish): > 100 mg/l Exposure time: 96 h Remarks: The toxicological data has been taken from products of similar composition.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 106 mg/l Exposure time: 48 h Test Type: static test Remarks: The toxicological data has been taken from products of similar composition.
Toxicity to algae	:	EC50 (Desmodesmus subspicatus (green algae)): 49.3 mg/l End point: Growth inhibition Exposure time: 72 h Test Type: static test Remarks: The toxicological data has been taken from products of similar composition.
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 25 mg/l Exposure time: 21 d Test Type: static test Remarks: The toxicological data has been taken from products of similar composition.

Persistence and degradability

Components:

ETHYLENE GLYCOL**:**

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 90 - 100 % Exposure time: 10 d Method: OECD Test Guideline 301

POTASSIUM 2-ETHYLHEXANOATE**:**

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 99 % Exposure time: 28 d Remarks: The toxicological data has been taken from

products of similar composition.

No data available

Bioaccumulative potential

Components:

ETHYLENE GLYCOL**:**

Bioaccumulation	:	Species: Crayfish (Procambarus) Bioconcentration factor (BCF): 0.27 Exposure time: 61 d Concentration: 1000 mg/l Method: Flow through
Partition coefficient: n-octanol/water	:	log Pow: -1.36

No data available

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Regulation	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

CFR_ROAD
Not regulated as a dangerous good

CFR_ROAD
Not regulated as a dangerous good

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)
TOLUENE	108-88-3	100	100 (F005)

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

ETHYLENE GLYCOL	107-21-1	>= 30 - < 50 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

ETHYLENE GLYCOL	107-21-1	>= 30 - < 50 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

ETHYLENE GLYCOL	107-21-1	>= 30 - < 50 %

Clean Water Act

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307
This product does not contain any priority pollutants related to the U.S. Clean Water Act
The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

TOLUENE	108-88-3	>= 0 - < 0.1 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

TOLUENE	108-88-3	>= 0 - < 0.1 %

California Prop. 65

⚠ **WARNING**: Reproductive Harm - www.P65Warnings.ca.gov.

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

TCSI	:	Not in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL.
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
TECI	:	Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

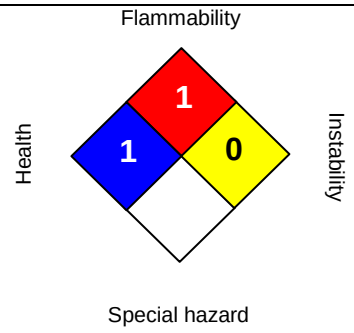
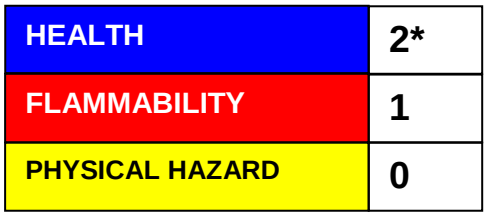
Inventories

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information

Internal information : R0382102

NFPA:	HMIS III:
	

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification

Combustible Liquid Class IIIB

Full text of H-Statements

H302	Harmful if swallowed.
H315	Causes skin irritation.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure if swallowed.

Sources of key data used to compile the Safety Data Sheet
Valvoline internal data including own and sponsored test reports

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

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 Valvoline's Environmental Health and Safety Department (1-800-VALVOLINE).

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