1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
- Product name: Dimethyl sulfoxide
- Product code (SDS NO): 2542E-2

Details of the supplier of the safety data sheet
- Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
- Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
- Division: Safety Management Dept. of Chemicals
- Telephone number: +81-6-6946-8061
- FAX: +81-6-6946-1607
- e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture
- PHYSICAL AND CHEMICAL HAZARDS
  - Flammable liquids: Category 4

Label elements
- Signal word: Warning

HAZARD STATEMENT
- Combustible liquid

PRECAUTIONARY STATEMENT
- Prevention
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Wear protective gloves and face protection.
- Response
  - In case of fire: Use appropriate media other than water for extinction.
- Storage
  - Store in a well-ventilated place. Keep cool.
- Disposal
  - Dispose of contents/container in accordance with local/national regulation.

Specific Physical and Chemical hazards
- Heating may cause fire.

3. Composition/information on ingredients

Mixture/Substance selection:

Substance
- Ingredient name: Dimethyl sulfoxide
- Content (%): 98 (min)
- Chemical formula: (CH₃)₂SO
- Chemicals No, Japan: 2-1553
- CAS No.: 67-68-5
- MW: 78.14
- ECNO: 200-664-3

Note: The figures shown above are not the specifications of the product.
4. First-aid measures
   Descriptions of first-aid measures
   IF INHALED
     Remove person to fresh air and keep comfortable for breathing.
     Call a POISON CENTER or doctor/physician if you feel unwell.
   IF ON SKIN (or hair)
     Take off immediately all contaminated clothing. Rinse skin with water/shower.
     If skin irritation or rash occurs: Get medical advice/attention.
   IF IN EYES
     Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy
     to do. Continue rinsing.
     If eye irritation persists: Get medical advice/attention.
   IF SWALLOWED
     Rinse mouth.
     Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire-fighting measures
   Extinguishing media
   Suitable extinguishing media
     In case of fire, use foam, dry powder, CO2 to extinguish.
   Specific hazards arising from the substance or mixture
     Containers may explode when heated.
     Fire may produce irritating, corrosive and/or toxic gases.
   Advice for firefighters
     Specific fire-fighting measures
     Evacuate non-essential personnel to safe area.
   Special protective equipment and precautions for fire-fighters
     Wear fire/flame resistant/retardant clothing.
     Wear protective gloves/protective clothing/eye protection/face protection.
     Firefighters should wear self-contained breathing apparatus with full face piece operated
     positive pressure mode.

6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
     Ventilate area until material pick up is complete.
     Wear proper protective equipment.
   Methods and materials for containment and cleaning up
     Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste
     container.
   Preventive measures for secondary accident
     Collect spillage.

7. Handling and storage
   Precautions for safe handling
     Preventive measures
       (Protective measures against fire and explosion)
       Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
       Exhaust/ventilator
       Exhaust/ventilator should be available.
     Safety treatments
Avoid contact with skin.
Avoid contact with eyes.

Safety Measures/Incompatibility
Wear protective gloves, protective clothing or face protection.
When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities
Recommendation for storage
Keep container tightly closed.
Store in a cool, dry place. Do not store in direct sunlight.

8. Exposure controls/personal protection
Exposure controls
Appropriate engineering controls
Do not use in areas without adequate ventilation.
Eye wash station should be available.
Washing facilities should be available.

Individual protection measures
Respiratory protection
Wear respiratory protection.

Hand protection
Wear protective gloves.

Eye protection
Wear eye/face protection.

9. Physical and Chemical Properties
Information on basic physical and chemical properties
Physical properties
Appearance: Liquid
Color: Colourless
Odor data N.A.
pH data N.A.

Phase change temperature
Initial Boiling Point/Boiling point: 189°C
Boiling range data N.A.
Melting point/Freezing point: 18.5°C
Decomposition temperature data N.A.
Flash point: (C.C.)(Dimethyl sulfoxide)87°C

Auto-ignition temperature: 215°C

Explosive properties: Flammability or explosive limit
Lower limit: 2.6 vol %
Upper limit: 42.0 vol %

Vapor pressure: 59.4 Pa (20 ℃)
Relative Vapor Density (Air=1): 2.7
Specific gravity/Density: 1.1 g/ml(20℃)

Solubility
Solubility in water: Easily soluble

n-Octanol/water partition coefficient: log Pow=1.35(calculated)
10. Stability and Reactivity

Reactivity
N.A.

Chemical stability
Stable under normal storage/handling conditions.

Possibility of hazardous reactions
Decomposes on heating and on burning. This produces toxic fumes including sulfur oxides.
Reacts violently with strong oxidants such as perchlorates. (ICSC 0459)

Conditions to avoid
Contact with incompatible materials.
Contact with fire source.

Incompatible materials
Strong oxidizing agents

Hazardous decomposition products
Sulfur oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)
[Company proprietary data]
(Dimethyl sulfoxide)
rat LD50 28,300 mg/kg

Acute toxicity (Dermal)
[Company proprietary data]
(Dimethyl sulfoxide)
rat LD50 about 40,000 mg/kg

No Irritant properties data available
No Allergenic and sensitizing effects data available
No Mutagenic effects data available
No Carcinogenic effects data available
No reproductive toxicity data available
No STOT—single/repeated exposure data available
No Aspiration hazard data available

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Aquatic acute toxicity component(s) data
[Company proprietary data]
(Dimethyl sulfoxide)
Fish(Phoxinus phoxinus) LC50 34,000 mg/L/96h
Crustacean(Artemia salina) LC50 6,630 mg/L/24hr

Water solubility
(Dimethyl sulfoxide)
miscible (ICSC, 2000)

No Persistence and degradability data available
Bioaccumulative potential
(Dimethyl sulfoxide)
log Pow=−1.35 (calculated) (ICSC, 2000)

No Mobility in soil data available
13. Disposal considerations
Waste treatment methods
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
Not applicable to UN No.
IMDG Code (International Maritime Dangerous Goods Regulations)
Not applicable to IMDG Code
IATA Dangerous Goods Regulations
Not applicable to IATA Dangerous Goods Regulations
Environmental hazards
  - MARPOL Annex III – Prevention of pollution by harmful substances
    - Marine pollutants (yes/no) : no

15. Regulatory Information
Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
  - TSCA
    - Dimethyl sulfoxide
Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information
GHS classification and labelling
  - Flam. Liq. 4: H227 Combustible liquid
Reference Book
  - Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
  - Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN
  - IMDG Code, 2018 Edition (Incorporating Amendment 39–18)
  - IATA Dangerous Goods Regulations (60th Edition) 2019
  - Classification, labelling and packaging of substances and mixtures (table3–1 ECNO6182012)
  - 2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
  - 2019 TLVs and BEIs. (ACGIH)
  - Supplier’s data/information
General Disclaimer
This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.
The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products’ properties.
The GHS classification data given here is based on current Japan official data (NITE published in 2017).