



Safety Data Sheet

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

Product identifier:

Product name: 3w/v%-Nitric acid ethanol solution

SDS No. : E0167E-3

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

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2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS

Flammable liquids: Category 2

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 2

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 1

Carcinogenicity: Category 1A

Reproductive toxicity: Category 1A

Specific target organ toxicity – single exposure: Category 2(respiratory apparatus/system)

Specific target organ toxicity – single exposure: Category 3 (Respiratory tract irritation)

Specific target organ toxicity – single exposure: Category 3(Narcosis)

Specific target organ toxicity – repeated exposure: Category 1(liver)

Specific target organ toxicity – repeated exposure: Category 2(respiratory apparatus/system; teeth; CNS)

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

HAZARD STATEMENT

Highly flammable liquid and vapor

Fatal if inhaled

Causes skin irritation

Causes serious eye damage

May cause cancer

May damage fertility or the unborn child

May cause damage to organs after single exposure(respiratory apparatus/system)

May cause respiratory irritation

May cause drowsiness or dizziness

Causes damage to organs through prolonged or repeated exposure(liver)

May cause damage to organs through prolonged or repeated exposure(respiratory



apparatus/system; teeth; CNS)

PRECAUTIONARY STATEMENT

Prevention

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapors/spray.
In case of inadequate ventilation wear respiratory protection. (as specified by the manufacturer/supplier or the competent authority.)
Use only outdoors or in a well-ventilated area.
Wash contaminated parts thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not eat, drink or smoke when using this product.

Response

In case of fire: Use appropriate media other than water for extinction.
Get medical advice/attention if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

Dispose of contents/container in accordance with local/national regulation.

Specific Physical and Chemical hazards

Highly flammable liquid. Vapor/air mixture may explode.

3. Composition/information on ingredients

Mixture/Substance selection:

Mixture

Ingredient name: Ethyl alcohol
Content (%): 94
Chemical formula: C_2H_5OH
Chemicals No, Japan: 2-202
CAS No.: 64-17-5
MW: 46.1
ECNO: 200-578-6

Ingredient name: Nitric acid
Content (%): 3.7
Chemical formula: HNO_3
Chemicals No, Japan: 1-394
CAS No.: 7697-37-2
MW: 63.01
ECNO: 231-714-2



Ingredient name:Water

Content (%):2.4

Chemical formula:H₂O

CAS No.:7732-18-5

MW:18.02

ECNO:231-791-2

Note : The figures shown above are not the specifications of the product.

4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical attention/advice if you feel unwell.

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.

Wash with plenty of soap and water.

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 alcohol-resistant foam, dry powder, CO₂ to extinguish.

Unsuitable extinguishing media

Indoor firefighting equipment or outdoor firefighting equipment

Sprinkler equipment

Dry-powder firefighting equipment – except for phosphate etc.,hydrogen carbonate etc.

Straight stream water extinguisher

Water mist extinguisher

Reinforcing liquid jet extinguisher

Dry-powder extinguisher – except for phosphate etc.,hydrogen carbonate etc.

Bucket of water or tank of water

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.

Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

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

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Use only outdoors or in a well-ventilated area.

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

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity"

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Take off contaminated clothing and wash it before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.

Store in a cool, dry place. Do not store in direct sunlight.

Container and packaging materials for safe handling

Glass



8. Exposure controls/personal protection

Control parameters

Adopted value

(Ethyl alcohol)

ACGIH(2008) STEL: 1000ppm (URT irr)

(Nitric acid)

ACGIH(1992) TWA: 2ppm;

STEL: 4ppm (URT & eye irr; dental erosion)

OSHA-PEL

(Ethyl alcohol)

TWA: 1000ppm, 1900mg/m³

(Nitric acid)

TWA: 2ppm, 5mg/m³

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 state: Liquid

Color: Colorless

Odor: Characteristic odor

Melting point/Freezing point data is not available.

Boiling point or initial boiling point: (Ethyl alcohol)78°C

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit data is not available.

Flash point: (Ethyl alcohol)13°C

Auto-ignition temperature data is not available.

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: Soluble

n-Octanol/water partition coefficient data is not available.

Vapor pressure data is not available.

Density and/or relative density: 0.81

Relative vapor density (Air=1) data is not available.

No Particle characteristics data is not available.

10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

(Ethyl alcohol)

The vapour mixes well with air, explosive mixtures are easily formed.

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard. (ICSC 0044)

(Nitric acid)

Decomposes on warming. This produces toxic and irritating fumes and gases including nitrogen oxides. The substance is a strong oxidant. It reacts violently with combustible and reducing materials, such as turpentine, charcoal and alcohol. The substance is a strong acid. It reacts violently with bases and is corrosive to metals. This produces flammable/explosive gas (hydrogen). Reacts violently with organic compounds. (ICSC 0183)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Bases, Strong oxidizing agents, Reducing agents, Calcium hypochlorite, Silver oxide, Ammonia, Combustible materials, Metals, Organic compounds

Hazardous decomposition products

Carbon oxides, Nitrogen oxides, Hydrogen

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]

(Nitric acid)

vapor: rat LC50=49ppm/4hr (JSOH, 1982)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Nitric acid)

human severe damage (ACGIH 7th, 2001)

Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Ethyl alcohol)

rabbit recover within 7 days (ECETOC TR No.48(2), 1998 et al)

(Nitric acid)

human non recoverable corneal opacity to blindness (ACGIH 7th, 2001)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenicity

[GHS Cat. Japan, base data]

(Ethyl alcohol)

cat.1A; (IARC, 2010)

(Ethyl alcohol)

IARC-Gr.1 : Carcinogenic to humans

(Ethyl alcohol)

ACGIH-A3(2008) : Confirmed Animal Carcinogen with Unknown Relevance to Humans

Reproductive toxicity

[GHS Cat. Japan, base data]

(Ethyl alcohol)

cat. 1A; human : PATTY 6th, 2012

STOT

STOT-single exposure

[cat.1]

[GHS Cat. Japan, base data]

(Nitric acid)

respiratory system (SIDS, 2010)

[cat.3 (resp. irrit.)]

[GHS Cat. Japan, base data]

(Ethyl alcohol)

respiratory tract irritation (PATTY 6th, 2012)

[cat.3 (drow./dizz.)]

[GHS Cat. Japan, base data]

(Ethyl alcohol)

narcotic effect (PATTY 6th, 2012; SIDS, 2005)

STOT-repeated exposure

[cat.1]

[GHS Cat. Japan, base data]

(Ethyl alcohol)

liver (DFGOT vol.12, 1999)

(Nitric acid)

respiratory system; teeth (SIDS, 2010)

[cat.2]

[GHS Cat. Japan, base data]

(Ethyl alcohol)

CNS (HSDB, Access on Jun. 2013)

Aspiration hazard data is not available.

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

(Ethyl alcohol)

Algae (*Chlorella*) EC50=1000mg/L/96hr (SIDS, 2005)

(Nitric acid)

Fish (*Gambusia affinis*) LC50=72mg/L/96hr (SIDS, 2010)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]

(Ethyl alcohol)

Crustacea (*Ceriodaphnia reticulata*) NOEC=9.6mg/L/10days (SIDS, 2005)

Water solubility

(Ethyl alcohol)

miscible (ICSC, 2000)

(Nitric acid)

miscible (ICSC, 2006)

Persistence and degradability



(Ethyl alcohol)
Degrade rapidly (BOD_Degradation : 89% (Registered chemicals data check & review, 1993))
Bioaccumulative potential
(Ethyl alcohol)
log Pow=-0.32 (ICSC, 2000)
(Nitric acid)
log Pow=-0.21 (ICSC, 2006)
Mobility in soil
Mobility in soil data is not available.
Other adverse effects
Ozone depleting chemical data is not available.

13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging
Waste treatment methods
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information

UN No. or ID No.: 1170
UN Proper Shipping Name :
ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class or division (Transport hazard class) : 3
Packing group : II
ERG GUIDE No.: 127
Special provisions No.: 144
IMDG Code (International Maritime Dangerous Goods Regulations)
UN No.: 1170
Proper Shipping Name :
ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class or division : 3
Packing group : II
Special provisions No.: 144
IATA Dangerous Goods Regulations
UN No.: 1170
Proper Shipping Name :
ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class or division : 3
Hazard labels : Flamm.liquid
Packing group : II
Special provisions No.: A3; A58; A180
Environmental hazards
MARPOL Annex III – Prevention of pollution by harmful substances
Marine pollutants (yes/no) : no
MARPOL Annex V – Prevention of pollution by garbage discharge
Carcinogenicity: cat.1, 1A, 1B
Ethyl alcohol
Reproductive toxicity: cat.1, 1A, 1B
Ethyl alcohol
Specific target organ toxicity – repeated exposure: cat.1
Ethyl alcohol
Maritime transport in bulk according to IMO instruments



Noxious Liquid ; Cat. Y
Nitric acid
Noxious Liquid ; Cat. Z
Ethyl alcohol
Non Noxious Liquid ; Cat. OS
Water

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemicals listed in TSCA Inventory

Ethyl alcohol; Nitric acid; Water

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. 2: H225 Highly flammable liquid and vapor

Acute Tox. 2: H330 Fatal if inhaled

Skin Irrit. 2: H315 Causes skin irritation

Eye Dam. 1: H318 Causes serious eye damage

Carc. 1A: H350 May cause cancer

Repr. 1A: H360 May damage fertility or the unborn child

STOT SE 2: H371 May cause damage to organs after single exposure

STOT SE 3: H335 May cause respiratory irritation

STOT SE 3: H336 May cause drowsiness or dizziness

STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure

Reference Book

Globally Harmonized System of classification and labelling of chemicals, (7th revised edition, 2017), UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN

IMDG Code, 2018 Edition (Incorporating Amendment 39-18)

IATA Dangerous Goods Regulations (61th Edition) 2020

Classification, labelling and packaging of substances and mixtures (Table 3 ECNO6182012)

2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2020 TLVs and BEIs. (ACGIH)

<http://monographs.iarc.fr/ENG/Classification/index.php>

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 2019).