



Safety Data Sheet

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

Product identifier:

Product name: Perchloric acid 60%

SDS No. : 5999E-3

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

Research and Development

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Chemical Safety Management Department

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

Oxidizing liquids: Category 1

Corrosive to metals: Category 1

HEALTH HAZARDS

Acute toxicity (Oral): Category 4

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Carcinogenicity: Category 2

Reproductive toxicity: Category 2

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

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

Label elements



Signal word: Danger

HAZARD STATEMENT

May cause fire or explosion; strong oxidizer

May be corrosive to metals

Harmful if swallowed

Causes severe skin burns and eye damage

Suspected of causing cancer

Suspected of damaging fertility or the unborn child

May cause respiratory irritation

Causes damage to organs through prolonged or repeated exposure(thyroid gland)

PRECAUTIONARY STATEMENT

Prevention

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep away from clothing and other combustible materials.



Wear fire resistant or flame retardant clothing.
Keep only in original packaging.
Do not breathe dust/fume/gas/mist/vapors/spray.
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 to extinguish.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Absorb spillage to prevent material-damage.
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 (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Wash contaminated clothing before reuse.
IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

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

Disposal

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

Specific Physical and Chemical hazards

Oxidizing material. Organic or combustible material may catch fire in contact with it.

3. Composition/information on ingredients**Mixture/Substance selection:****Mixture**

Ingredient name:Perchloric acid
Content (%):60
Chemical formula:HClO4
Chemicals No, Japan:1-221
CAS No.:7601-90-3
MW:100.46
ECNO:231-512-4

Ingredient name:Water
Content (%):40
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. The content of products may exceed the figures shown above.



4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

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. Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water mist, foam, dry sand to extinguish.

Unsuitable extinguishing media

Inactive gas firefighting equipment

Halogenated firefighting system

Dry-powder firefighting equipment – hydrogen carbonate etc.

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

Carbon dioxide extinguisher

Halogenated extinguisher

Dry-powder extinguisher – hydrogen carbonate etc.

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

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.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame 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

Absorb spillage to prevent material-damage.

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, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep away from clothing and other combustible materials.

(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.

Wash contaminated clothing before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.

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

(Incompatible storage condition)

Store separately.

The product may corrode metal. Do not keep in a metal container.

Container and packaging materials for safe handling

Keep only in original packaging.

Store in a corrosion resistant/specified container with a resistant inner liner.

Glass

Polyethylene



8. Exposure controls/personal protection

Control parameters

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: Slightly pungent odor

Melting point/Freezing point data is not available.

Boiling point or initial boiling point data is not available.

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 data is not available.

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: 1.53

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

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

(Perchloric acid)

May explode on heating. Decomposes on heating. This produces toxic and corrosive fumes. The substance is a strong oxidant. It reacts violently with combustible and reducing materials, organic materials and strong bases. This generates fire and explosion hazard. Attacks many metals. This produces flammable/explosive gas (hydrogen). The acid is unstable if the concentration is over 72%; may explode by shock or concussion when dry or drying. Mixtures with combustible material (such as paper) may ignite spontaneously at room temperature.



(ICSC 1006)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Strong bases, Reducing agents, Combustible materials, Organic materials, Metals

Hazardous decomposition products

Hydrogen, Chlorine

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Perchloric acid)

rat LD50=1100mg/kg (MOE assessment vol.9, 2011)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Perchloric acid)

human corrosive (MOE risk assessment vol.9, 2011; NICNAS IMAP, Accessed Oct. 2018)

Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Perchloric acid)

skin corrosive/irritation class 1

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenicity

[GHS Cat. Japan, base data]

(Perchloric acid)

cat.2; (MOE risk assessment vol.9, 2011)

Reproductive toxicity

[GHS Cat. Japan, base data]

(Perchloric acid)

cat. 2; rat : MOE risk assessment vol.9, 2011

STOT

STOT-single exposure

[cat.3 (resp. irrit.)]

[GHS Cat. Japan, base data]

(Perchloric acid)

respiratory tract irritation (MOE risk assessment vol.9, 2011)

STOT-repeated exposure

[cat.1]

[GHS Cat. Japan, base data]

(Perchloric acid)

thyroid (MOE risk assessment vol.9, 2011)

Aspiration hazard data is not available.



12. Ecological Information

Ecotoxicity

Aquatic toxicity

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

(Perchloric acid)

Crustacea (Daphnia magna) LC50 = 495mg/L/48hr [490mg ClO₄⁻/L/48hr cal.] (MOE risk assessment vol.9, 2011)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]

(Perchloric acid)

Fish (Pimephales promelas) NOEC ≥ 495 mg/L/35days (≥ 490mg ClO₄⁻/L/35days cal.)(MOE risk assessment vol.9, 2011)

Water solubility

(Perchloric acid)

miscible (ICSC, 2000)

Persistence and degradability

Persistence and degradability data is not available.

Bioaccumulative potential

Bioaccumulative potential data is not available.

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.: 1873

UN Proper Shipping Name :

PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass

Class or division (Transport hazard class) : 5.1

Subsidiary hazard(s) : 8

Packing group : I

ERG GUIDE No.: 143

Special provisions No.: 60

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 1873

Proper Shipping Name :

PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass

Class or division : 5.1

Subsidiary hazard(s) : 8

Packing group : I

Special provisions No.: 900

IATA Dangerous Goods Regulations

UN No.: 1873

Proper Shipping Name :



PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass

Class or division : 5.1

Subsidiary hazard(s) : 8

Hazard labels : Oxidizer & Corrosive

Packing group : I

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

Specific target organ toxicity – repeated exposure: cat.1

Perchloric acid

Maritime transport in bulk according to IMO instruments

Non Noxious Liquid ; Cat. OS

Water

15. Regulatory Information

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

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

Perchloric 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

Ox. Liq. 1: H271 May cause fire or explosion; strong oxidizer

Corr. Met. 1: H290 May be corrosive to metals

Acute Tox. 4: H302 Harmful if swallowed

Skin Corr. 1: H314 Causes severe skin burns and eye damage

Eye Dam. 1: H318 Causes serious eye damage

Carc. 2: H351 Suspected of causing cancer

Repr. 2: H361 Suspected of damaging fertility or the unborn child

STOT SE 3: H335 May cause respiratory irritation

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

Reference Book

Globally Harmonized System of classification and labelling of chemicals, UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 21th edit., 2019 UN

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

IATA Dangerous Goods Regulations (62nd Edition) 2021

2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2022 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



KISHIDA

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