Date of issue for the 1st edition : 24/Mar/2014
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Safety Data Sheet

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

Product identifier:

Product name: Perchloric acid(60%)

Reference number(SDS):23025jis_E1-5

Product type:

Reagent

Recommended use of the chemical and restrictions on use

Recommended uses: Research and Development

Restrictions on uses: Do not use for other purposes.

Details of the supplier of the safety data sheet

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.
Address: 1-6, Ohmano-cho, Koshigaya-shi, Saitama 343-0844, Japan
Division: Quality Assurance Department
Telephone number: +81-48-986-6161
FAX: +81-48-989-2787
e-mail address: shiyaku-t@junsei.co.jp

Section 2. Hazards identification

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)

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

Label elements

Hazard pictograms:

Signal word: Danger

Hazard statements

H271-May cause fire or explosion; strong oxidizer

H290-May be corrosive to metals

H302-Harmful if swallowed

H314-Causes severe skin burns and eye damage

H318-Causes serious eye damage

H351-Suspected of causing cancer
H361-Suspected of damaging fertility or the unborn child
H335-May cause respiratory irritation
H372-Causes damage to organs through prolonged or repeated exposure

Precautionary statements

Prevention

Obtain, read and follow all safety instructions before use.
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 hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
Wash hands thoroughly after handling. Do not touch eyes.
Do not eat, drink or smoke when using this product.

Response

In case of fire: Use water mist, water in large amounts 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.
Specific treatment.
Get emergency medical help immediately.
Get medical help.
IF exposed or concerned, get medical advice.
Get medical help if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
Wash contaminated clothing before reuse.
IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Rinse mouth.
IF SWALLOWED: Get medical help.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

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

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Specific danger/hazard

Physical and Chemical hazards

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

Section 3. Composition/information on ingredients

Substance/mixture:

Mixture

Ingredient name:Perchloric acid

Content (%):60～62

Chemical formula:ClHO4

ENCS:1-221

CAS No.:7601-90-3

MW:100.46

EC No.:231-512-4

Ingredient name:Water

Content (%):Residual quantity of the ingredient mentioned above.

Chemical formula:H2O

CAS No.:7732-18-5

MW:18.02

EC No.:231-791-2

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

Section 4. First aid measures

Descriptions of first aid measures

General measures

Get emergency medical help immediately.

IF exposed or concerned, get medical advice.

Keep victim warm and quiet.

Call emergency medical service.

IF INHALED

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Give artificial respiration if victim is not breathing.

Administer oxygen if breathing is difficult.

IF INHALED: Get medical help.

IF ON SKIN

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

IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.

Get emergency medical help immediately.

Remove and isolate contaminated clothing and shoes.

IF IN EYES

IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical help.

IF SWALLOWED

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF SWALLOWED: Get medical help.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Sore throat. Burning sensation. Cough. Laboured breathing. Abdominal pain. Diarrhoea. Shock

or collapse. Vomiting.

※Inhalation of the vapor or mist may cause lung edema.

(Symptoms when skin and/or eye contact)

Redness. Pain. Serious burns. Loss of vision.

Indication of any immediate medical attention and special treatment needed

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water mist, water in large amounts to extinguish.

Not combustible but enhances combustion of other substances.

Unsuitable extinguishing media

Dry powder. Foam.

Specific hazards arising from the substance or mixture

Containers may explode when heated.

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

Advice for firefighters

Special extinguishing method

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.

Cool container with water spray.

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 a full facepiece operated in the positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

PUBLIC SAFETY: Ventilate closed spaces before entering.

EVACUATION : Spill: See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Environmental precautions

Avoid release to headsprings, rivers, lakes, ocean and groundwater.

Runoff may create fire or explosion hazard.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, etc.), then place in a chemical waste container.

Do NOT absorb in saw-dust or other combustible absorbents.

Preventive measures for secondary accident

Absorb spillage to prevent material-damage.

Collect spillage.

Prevent entry into waterways, sewers, basements or confined areas.

Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Use water spray to reduce vapors or divert vapor cloud drift.

Keep out of low areas.

Reference to other sections

Refer to section 8

Refer to section 13

Section 7. Handling and storage

Engineering measures

(Measures to prevent operator exposure)

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

(Measures to prevent 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.

(Local ventilation/general ventilation)

Exhaust/ventilator should be available.

(Precautions)

Avoid contact with skin.

Avoid contact with eyes.

Advice on safe handling

Obtain, read and follow all safety instructions before use.

Use only outdoors or in a well-ventilated area.

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

Use personal protective equipment as required.

When using do not eat, drink or smoke.

May ignite combustibles (wood, paper, oil, clothing, etc.).

Contaminated clothing may be a fire risk when dry.

Avoidance of contact

See Section 10: Stability and Reactivity.

Advice on general occupational hygiene

Do not get in eyes, on skin, or on clothing.

Wash hands thoroughly after handling. Do not touch eyes.

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

Wash contaminated clothing before reuse.

Conditions for safe storage

Keep container tightly closed. Keep cool.

Store in accordance with local/regional/national/international regulations regulation.

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

(Incompatible storage condition)

Store separately.

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

Incompatible substances

Refer to Section 10. Stability and reactivity.

Safe packaging material

Keep only in original packaging.

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

Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

Section 8. Exposure controls/personal protection

Permissible concentration

Occupational exposure limit values

JSOH

Not established

ACGIH

Not established

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, such as personal protective equipment

Respiratory protection

Select and wear respiratory protection in accordance with approved standards (e.g. JIS T8150).

Recommended respiratory protection : Self-Contained Breathing Apparatus (SCBA)

Hand protection

Wear protective gloves. Recommended material(s): neoprene, butyl rubber, viton, PVC

Inspect before use and replace worn or damaged gloves.

Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions.

Chemical-resistant, impervious gloves complying with an approved standard (e.g. JIS T8116) should be used.

Eye/face protection

Wear chemical safety goggle.

Wear eye/face protection in accordance with approved standards (e.g. JIS T8147).

Skin and body protection

Wear impervious clothing and boots in case of repeated or prolonged treatment.

Personal protective equipment for the body and skin should be selected based on the task being performed and the risks involved.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Liquid

Color: Colorless
Odor: Irritant odor
Odor threshold data is not available.
Melting point/Freezing point data is not available.
Boiling point, initial boiling point, or boiling range data is not available.
Flammability data is not available.
Lower and upper explosion limit data is not available.
Flash point data is not available.
Auto-ignition temperature data is not available.
Decomposition temperature data is not available.
Self-Accelerating Decomposition Temperature/SADT data is not available.
pH: Strong acidic.
Dynamic viscosity data is not available.
Kinematic viscosity data is not available.
Solubility:
Solubility in water: Miscible
Solubility in solvent data is not available.
Partition coefficient n-octanol/water data is not available.
Vapor pressure data is not available.
Vapor density data is not available.
Density and/or relative density: 1.5389(15℃) (60%)
Relative vapor density (Air=1) data is not available.
Relative density of the Vapor/air - mixture at 20℃ (Air = 1) data is not available.
Particle characteristics data is not available.

Other information
Critical temperature data is not available.
Evaporation rate data is not available.
VOC data is not available.

Section 10. Stability and Reactivity

Reactivity
Reactivity data is not available.

Chemical stability
Stable under normal storage/handling conditions.

Possibility of hazardous reactions
May explode on heating.
Decomposes on heating. This produces toxic and corrosive fumes.
The solution 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.
May explode by shock or concussion when dry or drying.
Mixtures with combustible material (such as paper) may ignite spontaneously at room temperature.

Conditions to avoid
Avoid direct sunlight, fire, flame, high temperature.
Contact with incompatible materials.
Shock. Concussion.

Incompatible materials
Strong bases. Reducing agents. Organic materials. Metals. Combustible substances.

Hazardous decomposition products
Hydrogen chloride. Chlorine. Hydrogen gas.

Section 11. Toxicological Information

The product has not been subjected to toxicological testing. Refer to the available data on the constituents.

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Category 4, Harmful if swallowed

[Data for components of the product]

[NITE-CHRIP]

(Perchloric acid)

rat LD50: 1100 mg/kg (source: NITE)

Acute toxicity (Dermal)

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Acute toxicity (Inhalation)

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Skin corrosion/irritation

[Product]

Category 1, Causes severe skin burns and eye damage

[Data for components of the product]

[NITE-CHRIP]

(Perchloric acid)

Category 1 (source: NITE)

Serious eye damage/irritation

[Product]

Category 1, Causes serious eye damage

[Data for components of the product]

[NITE-CHRIP]

(Perchloric acid)

Category 1 (source: NITE)

Respiratory or skin sensitization

Respiratory sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Skin sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]
No data available.

Germ cell mutagenicity

[Product]
Classification not possible (Insufficient data available or no data available).

[Data for components of the product]
No data available.

Carcinogenicity

[Product]
Category 2, Suspected of causing cancer

[Data for components of the product]
[NITE-CHRIP]
(Perchloric acid)
Category 2 (source: NITE)

Reproductive toxicity

[Product]
Category 2, Suspected of damaging fertility or the unborn child

[Data for components of the product]
[NITE-CHRIP]
(Perchloric acid)
Category 2 (source: NITE)

Specific target organ toxicity - single exposure

[Product]
Category 3, May cause respiratory irritation

[Data for components of the product]
[NITE-CHRIP]
(Perchloric acid)
Category 3 (Respiratory tract irritation) (source: NITE)

Specific target organ toxicity - repeated exposure

[Product]
Category 1, Causes damage to organs through prolonged or repeated exposure

[Data for components of the product]
[NITE-CHRIP]
(Perchloric acid)
Category 1 (thyroid) (source: NITE)

Aspiration hazard

[Product]
Classification not possible (Insufficient data available or no data available).

[Data for components of the product]
No data available.

Section 12. Ecological Information

The product has not been subjected to ecotoxicological testing. Refer to the available data on the constituents.

Ecotoxicity

Aquatic toxicity

[Product]
Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

[NITE-CHRIP]

(Perchloric acid)

Crustacea (Daphnia magna) 48-hour LC50: 495 mg/L (converted value 490 mg ClO4-/L) (source: NITE)

Fish (Danio rerio) 96-hour LC50: 1131 mg/L (converted value 1120 mg ClO4-/L) (source: NITE)

Hazardous to the aquatic environment, long-term (chronic)

[NITE-CHRIP]

(Perchloric acid)

Crustacea (Ceriodaphnia dubia) 7-day NOEC (reproduction inhibition): 10.1 mg/L (converted value 10 mg ClO4-/L) (source: NITE)

Fish (Pimephales promelas) 35-day NOEC (growth, survival): >= 495 mg/L (converted value >= 490 mg ClO4-/L) (source: NITE)

Water solubility

[Data for components of the product]

(Perchloric acid)

miscible (source: 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.

Section 13. Disposal considerations

Waste treatment methods

Waste from residues

Disposal should be in accordance with local, national, and international laws and regulations.

Comply with relevant laws and regulations as well as local municipal standards.

Do not dump into sewers, on the ground or into any body of water.

Contaminated packing

Disposal should be in accordance with local, national, and international laws and regulations.

Comply with relevant laws and regulations as well as local municipal standards.

Dispose of container after using the contents completely.

Section 14. Transport Information

UNRTDG

UN number : UN1873

UN Proper Shipping Name : PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass

Transport hazard class(es) : 5.1

Subsidiary hazard(s) : 8

Packing group : I

Special provisions No.: 60

IMDG Code (International Maritime Dangerous Goods Regulations)

UN number : UN1873

UN Proper Shipping Name : PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass
Transport hazard class(es) : 5.1
Subsidiary hazard(s) : 8
Packing group : I
Special provisions No.: 900

IATA (Dangerous Goods Regulations)

UN number : UN1873
UN Proper Shipping Name : PERCHLORIC ACID with more than 50% but not more than 72% acid, by mass
Transport hazard class(es) : 5.1
Subsidiary hazard(s) : 8
Hazard labels : Oxidizer & Corrosive
Packing group : I

Environmental hazards

Marine pollutants (yes/no) : no

Maritime transport in bulk according to IMO instruments

MARPOL Annex II - Noxious Liquid Substances

Non Noxious Liquid Substances ; Cat. OS
Water

MARPOL Annex V - HME (Harmful to the Marine Environment)

Specific target organ toxicity - repeated exposure: cat.1
Perchloric acid

ERG GUIDE No.: 143

Section 15. Regulatory Information

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

Chemicals listed in TSCA Inventory

7601-90-3; 7732-18-5

All components are listed or exempted.

Other regulatory information

We are not able to check up the regulatory information with regard to the substances in
your country or region, therefore, we request this matter would be filled by your responsibility.
Regulatory information with regard to this substance in your country or in your region
should be examined by your own responsibility.
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.
Regulatory information in this section are limited to intentional ingredient(s), but does
not contain information on non-intentional ingredients or impurities which are not informed by supplier(s).

Chemical safety assessment

Advice on safe handling for this product can be found in sections 7 and 8 of this SDS.

Section 16. Other information

GHS classification and labelling

H271-Oxidising Liquids, Category 1: H271 May cause fire or explosion; strong oxidizer
H290-Corrosive to metals, Category 1: H290 May be corrosive to metals
H302-Acute toxicity, Category 4: H302 Harmful if swallowed

H314-Skin corrosion/irritation, Category 1: H314 Causes severe skin burns and eye damage
H318-Serious eye damage/eye irritation, Category 1: H318 Causes serious eye damage
H351-Carcinogenicity, Category 2: H351 Suspected of causing cancer
H361-Reproductive toxicity, Category 2: H361 Suspected of damaging fertility or the unborn child
H335-Specific target organ toxicity - single exposure, Category 3, Respiratory tract irritation: H335 May cause respiratory irritation
H372-Specific target organ toxicity - Repeated exposure, Category 1: H372 Causes damage to organs through prolonged or repeated exposure

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 23rd edit., 2023 UN
IMDG Code, 2024 Edition (Incorporating Amendment 42-24)
IATA Dangerous Goods Regulations (67th Edition) 2026
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2026 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2025
JIS Z 7253 : 2025
Recommendation of occupational exposure limits (2024-2025) (JSOH)
Notification No. 0111-1 (January 11, 2022), Chemical Hazards Control Division, Industrial Safety and Health Department, Labour Standards Bureau, MHLW in Japan
Supplier's data/information
Chemicals safety data management system "GHS Assistant" Version 4.39 (https://www.asahi-ghs.com/)
NITE Chemical Risk Information Platform "NITE-CHRIP" (https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/systemTop)
GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.1) (May. 2024, METI)

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygienists;
anh - anhydride;
ATE - Acute Toxicity Estimate;
BCF - Bioconcentration Factor;
BOD - Biochemical Oxygen Demand;
Cat. - Category;
Ceiling-C - Ceiling value;
COD - Chemical Oxygen Demand;
CSCL - Chemical Substances Control Law in Japan;
DSEN - Dermal Sensitization;
EC No. - The European Community number;
EC50 - Effective Concentration 50;
ENCS - Existing and New Chemical Substances Inventory under CSCL
EPA - US Environmental Protection Agency;
EU - European Union;
GHS - Globally Harmonized System of Classification and Labelling of Chemicals;
IARC - International Agency for Research on Cancer;
IATA - International Air Transport Association;
IBC Code - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;
IMDG Code - International Maritime Dangerous Goods Code;

ISHA - Industrial Safety and Health Act in Japan;
JSOH - Japan Society for Occupational Health;
LC50 - Lethal Concentration 50;
LD50 - Lethal Dose 50;
logPow - n-Octanol/water Partition Coefficient;
MARPOL - International Convention for the Prevention of Pollution from Ships;
METI - Ministry of Economy, Trade and Industry in Japan;
MHLW - Ministry of Health, Labour and Welfare in Japan;
MOE - Ministry of the Environment in Japan
NOEC - No Observed Effect Concentration;
NTP - US National Toxicology Program;
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No.1907/2006;
RSEN - Respiratory Sensitization;
Skin - Danger of cutaneous absorption;
STEL - Short-term Exposure Limit;
STOT - Specific target organ toxicity;
SVHC - Substance of Very High Concern under REACH;
TWA - time-weighted average;
UN - United Nations;
UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods;

General Disclaimer

The information relates to this specific material. It may not be valid for this material, if used in combination with any other materials or in any process. It is the user's responsibility to satisfy him-selves as to the suitability and completeness of this information for his own particular use.
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 Data published in Japan (National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform (NITE-CHRIP), up to FY2024).