

Safety Data Sheet

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

Product identifier:

Product name: Phthalic anhydride

Reference number(SDS): 72140jis_E2-3

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.

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Division: Quality Assurance Department

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e-mail address: shiyaku-t@junsei.co.jp

Section 2. Hazards identification

Classification of the substance or mixture

HEALTH HAZARDS

Acute toxicity (Oral): Category 4

Serious eye damage/eye irritation: Category 2A

Respiratory sensitization: Category 1A

Skin sensitization: Category 1

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

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

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

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

Label elements

Hazard pictograms:



Signal word: Danger

Hazard statements

H302–Harmful if swallowed

H319–Causes serious eye irritation

H334–May cause allergy or asthma symptoms or breathing difficulties if inhaled

H317–May cause an allergic skin reaction

H335–May cause respiratory irritation

H336–May cause drowsiness or dizziness

H372–Causes damage to organs through prolonged or repeated exposure

Precautionary statements

Prevention

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

In case of inadequate ventilation wear respiratory protection.

Use only outdoors or in a well-ventilated area.

Wash hands thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/eye protection/face protection.
Wash hands thoroughly after handling. Do not touch eyes.
Do not eat, drink or smoke when using this product.

Response

Get medical help if you feel unwell.
If experiencing respiratory symptoms: Get emergency medical help immediately.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical help.
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.
If eye irritation persists: Get medical help.
IF SWALLOWED: Rinse mouth. Get medical help.

Storage

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

Disposal

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

Section 3. Composition/information on ingredients**Substance/mixture:****Substance**

Ingredient name: Phthalic anhydride

Content (%):(GR) 99.5~100.3

(EP) 99.0<

Chemical formula: C₈H₄O₃

ENCS: 3-1344

CAS No.: 85-44-9

MW: 148.12

EC No.: 201-607-5

Note: "GR" and "EP" refer to the reagent grades "Guaranteed Reagent" and "Extra Pure", respectively.

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

Section 4. First aid measures**Descriptions of first aid measures****General measures**

Get medical help if you feel unwell.
Keep victim warm and quiet.
Call emergency medical service.
Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

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 experiencing respiratory symptoms: Get emergency medical help immediately.
IF INHALED: Get medical help.

IF ON SKIN

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

IF ON SKIN: Wash with plenty of water.

If skin irritation or rash occurs: Get medical help.

Remove and isolate contaminated clothing and shoes.

For minor skin contact, avoid spreading material on unaffected skin.

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 victim is conscious, give 1 – 2 glasses of water.

IF SWALLOWED: Get medical help.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Cough. Sore throat. Wheezing. Shortness of breath. Burning sensation. Abdominal pain.

(Symptoms when skin and/or eye contact)

Conjunctival redness of the eyes. Redness of the skin. Pain. Corneal damage.

Indication of any immediate medical attention and special treatment needed

The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort.

Specific treatment.

Section 5. Fire-fighting measures**Extinguishing media****Suitable extinguishing media**

In case of fire, use water mist, foam, dry powder, CO2 to extinguish.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

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.

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.

Methods and materials for containment and cleaning up

Use clean non-sparking tools to collect absorbed material.

All equipment used when handling the product must be grounded.

Cover with DRY earth, DRY sand, or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

Preventive measures for secondary accident

Collect spillage.

Stop leak if you can do it without risk.

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

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

DO NOT GET WATER on spilled substance or inside containers.

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.

(Local ventilation/general ventilation)

Exhaust/ventilator should be available.

(Precautions)

Avoid contact with skin.

Avoid contact with eyes.

Advice on safe handling

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.

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.

Contaminated work clothing should not be allowed out of the workplace.

Take off contaminated clothing and wash it 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 substances

Refer to Section 10. Stability and reactivity.

Safe packaging material

Keep only in original packaging.

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

Control value and Concentration standard value under ISHA

Not established

Occupational exposure limit values

JSOH

(Ceiling) 0.33ppm; 2mg/m³

ACGIH

TWA: 0.002mg/m³(IFV); STEL: 0.005mg/m³(IFV); SL: 0.05mg/100 cm² (Resp and dermal sens; asthma)

Notation

Skin; DSEN; RSEN

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.

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: Crystals

Color: Colorless~White

Odor: Characteristic odor

Odor threshold: 0.32~0.72 mg/m³

Melting point/Freezing point: 131°C

Boiling point or initial boiling point and boiling range: 284°C(sublimes)

Flammability: Ignitable

Lower and upper explosion limit:

Lower explosion limit: 1.7 vol %

Upper explosion limit: 10.4 vol %

Flash point: 152°C (Closed cup)

Auto-ignition temperature: 570°C

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: 6 g/L (20°C) (reaction)

Solubility in solvent: Soluble in ethanol, acetone, benzene.

Partition coefficient n-octanol/water (log value): 1.6

Vapor pressure: < 0.3 Pa (20°C)

Density and/or relative density: 1.53 g/cm³

Relative vapor density (Air=1): 5.1

Particle characteristics 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

Dust explosion possible if in powder or granular form, mixed with air.

Decomposes on contact with hot water. This produces phthalic acid.

Reacts with strong oxidants, strong acids, strong bases and reducing agents.

Reacts violently with copper oxide and sodium nitrite on heating. This generates explosion hazard.

Attacks many metals in the presence of water.

Conditions to avoid

Avoid direct sunlight, fire, flame, high temperature.

Contact with incompatible materials.

Moisture.

Incompatible materials

Strong acids, Strong bases, Strong oxidizing agents, Reducing agents, Hot water.

Hazardous decomposition products

Carbon oxides

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Category 4, Harmful if swallowed

[Data for components of the product]

[NITE-CHRIP]

rat LD50: 800 – 1600 mg/kg (source: NITE)

Acute toxicity (Dermal)

[Product]

Based on available data, the classification criteria are not met.

[Data for components of the product]

[NITE-CHRIP]

rabbit LD50: > 10000 mg/kg (source: NITE)

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]

Based on available data, the classification criteria are not met.

[Data for components of the product]

[NITE-CHRIP]

Not classified (source: NITE)

Serious eye damage/irritation

[Product]

Category 2A, Causes serious eye irritation

[Data for components of the product]

[NITE-CHRIP]

Category 2A (source: NITE)

Respiratory or skin sensitization

Respiratory sensitization

[Product]

Category 1A, May cause allergy or asthma symptoms or breathing difficulties if inhaled

[Data for components of the product]

[NITE-CHRIP]

Category 1A (source: NITE)

Skin sensitization

[Product]

Category 1, May cause an allergic skin reaction

[Data for components of the product]

[NITE-CHRIP]

Category 1 (source: NITE)

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]

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

[Data for components of the product]

[ACGIH]

A4: Not Classifiable as a Human Carcinogen

Reproductive toxicity

[Product]

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

[Data for components of the product]

No data available.

Specific target organ toxicity – single exposure

[Product]

Category 3, May cause respiratory irritation

Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[NITE-CHRIP]

Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (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]

Category 1 (respiratory system) (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

Ecotoxicity

Aquatic toxicity

[Product]

Based on available data, the classification criteria are not met.

[Data for components of the product]

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

[NITE-CHRIP]

Fish (*Oryzias latipes*) 96-hour LC50: > 99 mg/L (source: NITE)

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

[NITE-CHRIP]

Algae (*Pseudokirchneriella subcapitata*) 72-hour NOEC: 32 mg/L (source: NITE)Fish (*Oncorhynchus mykiss*) 60-day NOEC: 10 mg/L (source: NITE)Crustacea (*Daphnia magna*) 21-day NOEC: 16 mg/L (source: NITE)

Water solubility

[Data for components of the product]

6 g/L(20°C) (reaction) (source: ICSC, 2024)

Persistence and degradability

[Data for components of the product]

Rapidly degradable (Degradation rate: 85.2% (by BOD)) (source: NITE)

Bioaccumulative potential

[Data for components of the product]

log Pow: 1.6 (source: NITE)

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 : Not regulated
UN Proper Shipping Name : Not regulated
Transport hazard class(es) : Not regulated
Packing group : Not regulated

IMDG Code (International Maritime Dangerous Goods Regulations)

UN number : Not regulated
UN Proper Shipping Name : Not regulated
Transport hazard class(es) : Not regulated
Packing group : Not regulated

IATA (Dangerous Goods Regulations)

UN number : Not regulated
UN Proper Shipping Name : Not regulated
Transport hazard class(es) : Not regulated
Packing group : Not regulated

Marine pollutants (yes/no) : no

Special precautions for user

No information available.

Maritime transport in bulk according to IMO instruments**MARPOL Annex II – Noxious Liquid Substances**

Noxious Liquid Substances ; Cat. Y
Phthalic anhydride

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

Specific target organ toxicity – repeated exposure: cat.1
Phthalic anhydride

Section 15. Regulatory Information**Labor Standards Act, Japan**

Chemical substances or compounds (including alloys) causing disease (item (iv)-1 of Appended Table 1-2 of Regulation)

Phthalic anhydride

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

Chemicals listed in TSCA Inventory
85-44-9

All components are listed or exempted.

Superfund Amendments and Reauthorizations Act (SARA), Title III**SARA 313 (TRI)**

Phthalic anhydride

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**

H302–Acute toxicity, Category 4: H302 Harmful if swallowed
H319–Serious eye damage/eye irritation, Category 2A: H319 Causes serious eye irritation
H334–Respiratory sensitization, Category 1A: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317–Skin sensitization, Category 1: H317 May cause an allergic skin reaction
H335–Specific target organ toxicity – single exposure, Category 3, Respiratory tract irritation: H335 May cause respiratory irritation
H336–Specific target organ toxicity – single exposure, Category 3, Narcotic effects: H336 May cause drowsiness or dizziness
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-CHRIIP"
(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).