

SAFETY DATA SHEET

According to JIS Z 7253:2019
Issue Date 25-Aug-2025
 Revision Number 3.05

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	o-Phenylenediamine-3,4,5,6-d4
Product Code	164-23931

Supplier FUJIFILM Wako Pure Chemical Corporation
 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan
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Recommended uses For research use only

Restrictions on use Seek expert judgment when using for purposes other than those recommended.

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

Acute toxicity - Oral

Category 4

Serious eye damage/eye irritation

Category 2A

Skin sensitization

Category 1

Germ cell mutagenicity

Category 2

Carcinogenicity

Category 1B

Specific target organ toxicity (single exposure)

Category 1, Category 2, Category 3

Category 1 blood system

Category 2 central nervous system

Category 3 Respiratory irritation

Specific target organ toxicity (repeated exposure)

Category 2

Category 2 nasal cavity, kidneys, bladder, blood system

Acute aquatic toxicity

Category 1

Chronic aquatic toxicity

Category 1

Pictograms



Signal word

Danger

Hazard statements

H319 - Causes serious eye irritation

H302 - Harmful if swallowed

H341 - Suspected of causing genetic defects

H350 - May cause cancer

H335 - May cause respiratory irritation

H317 - May cause an allergic skin reaction

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

H370 - Causes damage to the following organs: blood system

H371 - May cause damage to the following organs: central nervous system

H373 - May cause damage to the following organs through prolonged or repeated exposure: nasal cavity, kidneys, bladder, blood system

Precautionary statements-(Prevention)

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Contaminated work clothing should not be allowed out of the workplace
- Wear protective gloves
- Do not breathe dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Avoid release to the environment

Precautionary statements-(Response)

- IF exposed: Call a POISON CENTER or doctor/physician
- 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 ON SKIN: Wash with plenty of soap and water
- If skin irritation or rash occurs: Get medical advice/attention
- Wash contaminated clothing before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- Call a POISON CENTER or doctor/physician if you feel unwell
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth
- Collect spillage

Precautionary statements-(Storage)

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

Precautionary statements-(Disposal)

- Dispose of contents/container to an approved waste disposal plant

Others

Other hazards Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Substance

Formula C₆H₄D₄N₂

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
1,2-Benzene-3,4,5,6-d ₄ -diamine (9CI, ACI)	90.0	112.17	(3)-185	*	291765-93-0

Note on ISHL No.: * in the table means announced chemical substances.

Section 4: FIRST AID MEASURES

Inhalation

Remove to fresh air. If symptoms persist, call a physician.

Skin contact

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

Ingestion

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center

immediately. Do not induce vomiting without medical advice.

Protection of first-aiders

Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES**Suitable extinguishing media**

Water spray (fog), Carbon dioxide (CO₂), Foam, Extinguishing powder, Sand

Unsuitable extinguishing media

No information available

Specific hazards arising from the chemical product

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Special extinguishing method

No information available

Special protective actions for fire-fighters

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

Environmental precautions

To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for contaminant and methods and materials for cleaning up

Sweep up and gather scattered particles, and collect it in an empty airtight container.

Recovery, neutralization

No information available

Secondary disaster prevention measures

Clean contaminated objects and areas thoroughly observing environmental regulations.

Section 7: HANDLING AND STORAGE**Handling****Technical measures**

Avoid contact with strong oxidizing agents. Use with local exhaust ventilation.

Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

Safety handling precautions

Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Storage**Safe storage conditions****Storage conditions**

Keep container protect from light tightly closed. Store in a cool (2-10 °C) place. Packed with an inert gas. Store locked up.

Safe packaging material

Glass

Incompatible substances

Strong oxidizing agents

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

Exposure limits

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI) 291765-93-0	0.1mg/m ³	N/A	TWA 0.1mg/m ³ (皮膚)

Chemical Name	Concentration standard value set by the Minister of Health, Labor and Welfare (8hr)	Concentration standard value set by the Minister of Health, Labor and Welfare (Short-Term)
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI) 291765-93-0	Applicable (No standard value set)	Applicable (No standard value set)

Personal protective equipment

Respiratory protection Dust mask (JIS T 8151)
Hand protection chemical protective gloves (JIS T 8116)
Eye protection protective eyeglasses or chemical safety goggles (JIS T 8147)
Skin and body protection Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
 If this product is classified as "Chemical Substances Hazardous to Skin, etc.", use appropriate protective equipment to them.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Data except for the appearance is described as the unlabeled form (CAS No.95-54-5).

Form

Color White - dark brown
Appearance crystals - crystalline powder or flakes

Odor

no data available

Melting point/freezing point

100 - 104 °C

Boiling point, initial boiling point and boiling range

252 °C

Flammability

no data available

Evaporation rate:

no data available

Flammability (solid, gas):

no data available

Upper/lower flammability or explosive limits

Upper:

no data available

Lower:

1.5 vol%

Flash point

155 °C

Auto-ignition temperature:

no data available

Decomposition temperature:

no data available

pH

no data available

Viscosity (coefficient of viscosity)

no data available

Dynamic viscosity

no data available

Solubilities

Ethanol : soluble, .

n-Octanol/water partition coefficient:(log Pow)

no data available

Vapour pressure

no data available

Specific Gravity / Relative density

no data available

Vapour density

3.9 (air =1)

Particle characteristics

no data available

Section 10: STABILITY AND REACTIVITY

Stability

Reactivity no data available
Chemical stability May be altered by light.

Hazardous reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NO_x)

Section 11: TOXICOLOGICAL INFORMATION

*NITE: National Institute of Technology and Evaluation (JAPAN)

https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput

Data as deuterium compound has not been obtained. The data of non-labeled compound is described.

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	510 mg/kg(Rat)	N/A	0.15 mg/L/4H(Rat)

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas- source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity -inhalation vapor- source information	Acute toxicity -inhalation dust- source information	Acute toxicity -inhalation mist- source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Skin irritation/corrosion

Chemical Name	Skin corrosion/irritation source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagenicity source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

*NITE: National Institute of Technology and Evaluation (JAPAN)

https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput

Data as deuterium compound has not been obtained. The data of non-labeled compound is described.

Ecotoxicity no data available

Other data

Chemical Name	Short-term (acute) hazardous to the aquatic environment source information	Long-term (chronic) hazardous to the aquatic environment source information
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI)	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Persistence and degradability No information available

Bioaccumulative potential No information available

Mobility in soil No information available

Hazard to the ozone layer No information available

Section 13: DISPOSAL CONSIDERATIONS

Waste from residues

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

Contaminated container and contaminated packaging

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

Section 14: TRANSPORT INFORMATION

ADR/RID

UN number UN1673
 Proper shipping name: Phenylenediamines
 UN classification 6.1
 Subsidiary hazard class
 Packing group III
 Marine pollutant Yes

IMDG

UN number UN1673
 Proper shipping name: Phenylenediamines
 UN classification 6.1
 Subsidiary hazard class
 Packing group III
 Marine pollutant (Sea) Yes
 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

IATA

UN number UN1673
 Proper shipping name: Phenylenediamines
 UN classification 6.1
 Subsidiary hazard class
 Packing group III
 Environmentally Hazardous Substance Yes

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Firefighting Inhibitor
Poisonous and Deleterious Substances Control Law	Deleterious Substances 3rd. Grade
Industrial Safety and Health Act	Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57) Notifiable Substances (Law Art.57-2) Mutagens - Existing Chemicals Substances with Health Hazards Prevention Guideline(Carcinogenicity Substance) Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1) 【2027.4.1~】Substances designated by the Minister of Health, Labor and Welfare as carcinogenic(Ordinance on Industrial Safety and Health Art.577, Para.2)
Industrial Safety and Health Act (2027~)	
Regulations for the carriage and storage of dangerous goods in ship	Toxic Substances - Poison (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)
Civil Aeronautics Law	Toxic and Infectious Substances (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)
Pollutant Release and Transfer Register Law (2023.4.1-)	Class 1
Class 1 - No.	348
Air Pollution Control Law	Hazardous Air Pollutants

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law (2023.4.1-)
1,2-Benzene-3,4,5,6-d4-diamine (9CI, ACI) 291765-93-0 (90.0)	Applicable	Applicable	Applicable

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.

NITE: National Institute of Technology and Evaluation (JAPAN)
https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput
 IATA dangerous Goods Regulations
 RTECS:Registry of Toxic Effects of Chemical Substances
 Japan Industrial Safety and Health Association GHS Model SDS
 Dictionary of Synthetic Organic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.
 Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
 etc

Record of SDS revisions

The following contents were revised. Hazards identification. Physical and chemical properties. Regulatory information.

Disclaimer

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z 7252:2019. *JIS: Japanese Industrial Standards

End of Safety Data Sheet