

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Identifier

Product Description: 2,4-Diaminophenol dihydrochloride
Cat No. : 212840000; 212840250; 212841000
CAS No 137-09-7
Molecular Formula C6 H8 N2 O . 2 H Cl

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

Recommended Use Laboratory chemicals.
Uses advised against No Information available

Details of the supplier of the safety data sheet

Importer

Fisher Scientific Korea
D5,D6, Incheon Airport Logistics Complex
150, Gonghangdong-Ro Mapo-Gu 296 Beon-Gil
Jung-Gu, Incheon 400-340
Tel: +82-2-6196-5500
Fax: +82-2-6196-5501

Supplier

Acros Organics BVBA
Janssen Pharmaceuticalaan 3a
2440 Geel, Belgium

E-mail address

Chem.KR@thermofisher.com

Emergency Telephone Number

Emergency telephone: Medical: +(82) 070-7686-0086 or + 1-703-741-5970
CHEMTREC: 1-800-424-9300 or + 1-703-527-3887
Korea: 00-308-13-2549 (24 hours a day, 7 days a week)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

Physical hazards

Based on available data, the classification criteria are not met

Health hazards

Acute Oral Toxicity	Category 3
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity - (single exposure)	Category 3

Environmental hazards

Based on available data, the classification criteria are not met

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Label Elements



Signal Word

Danger

Hazard Statements

H301 - Toxic if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary Statements

Prevention

P264 - Wash hands and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area

Response

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
P337 + P313 - If eye irritation persists: Get medical advice/attention
P312 - Call a POISON CENTER or doctor if you feel unwell
P330 - Rinse mouth
P321 - Specific treatment (see supplemental first aid instructions on this label)
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up

Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant

Other Hazards

Toxic to terrestrial vertebrates

NFPA

Health
3

Flammability
0

Instability
0

Physical hazards
N/A

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	Common Name	CAS No	Index No	Weight %
2,4-Diaminophenol dihydrochloride	No information available	137-09-7	Not listed	99 - 100

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SECTION 4: FIRST AID MEASURES

Description of first aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. 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. Immediate medical attention is required.
Self-Protection of the First Aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Most important symptoms and effects, both acute and delayed

. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Water spray. Carbon dioxide (CO₂). Dry chemical. Chemical foam.

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

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

Hazardous Combustion Products

Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂), Hydrogen chloride gas.

Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

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Personal Precautions, Protective Equipment and Emergency Procedures

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental precautions

Should not be released into the environment.

Methods and Material for Containment and Cleaning Up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.

Conditions for Safe Storage, Including any Incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.

Specific End Uses

Use in laboratories.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Component	CAS No	Korea	ACGIH TLV	OSHA PEL
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed	Not listed	Not listed

Component	CAS No	European Union	The United Kingdom	Germany
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed	Not listed	Not listed

Biological Exposure Indices

Component	CAS No	Biological Exposure Indices
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed

Exposure Controls

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection

Goggles

Hand Protection

Protective gloves

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure

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Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.
(Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Personal protective equipment Use only those certified by the Korea Occupational Safety and Health Administration.
Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators
Recommended Filter type: Particulates filter conforming to EN 143
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly
When RPE is used a face piece Fit Test should be conducted

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls No information available

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance (Physical State, Color, etc.) Beige Powder Solid

Odor Slight
Odor Threshold No data available
pH 1-2 (@ 20°C) 50 g/l aq.sol

Melting Point/Range 222 °C / 431.6 °F
Softening Point No data available
Boiling Point/Range No information available
Flash Point No information available **Method -** No information available

Evaporation Rate Not applicable Solid
Flammability (solid,gas) No information available
Explosion Limits No data available

Vapor Pressure No data available
Vapor Density Not applicable Solid
Specific Gravity / Density No data available
Bulk Density No data available
Water Solubility 275 g/L (15°C)
Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Component	CAS No	log Pow
2,4-Diaminophenol dihydrochloride	137-09-7	No data available

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Autoignition Temperature No data available
Decomposition Temperature 222 °C
Viscosity Not applicable Solid
Explosive Properties No information available
Oxidizing Properties No information available

Molecular Formula C6 H8 N2 O . 2 H Cl
Molecular Weight 197.07

SECTION 10: STABILITY AND REACTIVITY

Reactivity None known, based on information available

Chemical Stability Stable under normal conditions.

Possibility of Hazardous Reactions

Hazardous Polymerization Hazardous polymerization does not occur.
Hazardous Reactions None under normal processing.

Conditions to Avoid Incompatible products.

Incompatible Materials Acids. Strong oxidizing agents.

Hazardous Decomposition Products

Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO₂). Hydrogen chloride gas.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

Information on expected route of exposure

Inhalation Avoid breathing dust or spray mist. May be harmful if inhaled.
Ingestion May be harmful if swallowed.
Eyes Avoid contact with eyes. Irritating to eyes.
Skin Avoid contact with skin. May cause irritation.

Information on Health Hazards

(a) acute toxicity;

Oral Category 3
Dermal No data available
Inhalation No data available

Component	CAS No	LD50 Oral	LD50 Dermal	LC50 Inhalation
2,4-Diaminophenol dihydrochloride	137-09-7	LD50 = 240 mg/kg (Rat)	No data available	No data available

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(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

Respiratory

No data available

Skin

No data available

Component	CAS No	Test method	Test species	Study result
2,4-Diaminophenol dihydrochloride	137-09-7	No data available	No data available	No data available

No information available

(e) germ cell mutagenicity; No data available

Component	CAS No	Test method	Test species	Study result
2,4-Diaminophenol dihydrochloride	137-09-7	No data available	No data available	No data available

(f) carcinogenicity; No data available

Component	CAS No	Test method	Test species / Duration	Study result
2,4-Diaminophenol dihydrochloride	137-09-7	No data available	No data available	No data available

There are no known carcinogenic chemicals in this product

Component	CAS No	IARC	NTP	ACGIH	OSHA	UK
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed	Not listed	Not listed	Not listed	Not listed

(g) reproductive toxicity; No data available

Component	CAS No	Test method	Test species / Duration	Study result
2,4-Diaminophenol dihydrochloride	137-09-7	No data available	No data available	No data available

(h) STOT-single exposure; Category 3
Results / Target organs Respiratory system.

(i) STOT-repeated exposure; No data available

Target Organs

None known.

(j) aspiration hazard; Not applicable
Solid

Other Adverse Effects

Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Component	CAS No	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

SECTION 12: ECOLOGICAL INFORMATION

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Ecotoxicity effects Do not empty into drains.

Component	CAS No	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
2,4-Diaminophenol dihydrochloride	137-09-7	No data available	No data available	No data available	No data available

Persistence and degradability
Persistence Soluble in water, Persistence is unlikely, based on information available.

Bioaccumulative potential Bioaccumulation is unlikely

Mobility in soil The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

Ozone Depletion Potential

Component	CAS No	Ozone Depletion Potential
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed

Other adverse effects No information available

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose in accordance with the Wastes Control Act (폐기물관리법).

Contaminated Packaging Dispose of this container to hazardous or special waste collection point.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Large amounts will affect pH and harm aquatic organisms.

SECTION 14: TRANSPORT INFORMATION

Road and Rail Transport

UN-No UN2811
Proper Shipping Name Toxic solid, organic, n.o.s.
Technical Shipping Name 2,4-Diaminophenol dihydrochloride
Hazard Class 6.1
Packing Group III

IATA

UN-No UN2811
Proper Shipping Name Toxic solid, organic, n.o.s.
Technical Shipping Name 2,4-Diaminophenol dihydrochloride
Hazard Class 6.1
Packing Group III

IMDG/IMO

UN-No UN2811
Proper Shipping Name Toxic solid, organic, n.o.s.
Technical Shipping Name 2,4-Diaminophenol dihydrochloride
Hazard Class 6.1
Packing Group III
Marine Pollutant No hazards identified

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Special Precautions for User No special precautions required

SECTION 15: REGULATORY INFORMATION

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

Legend: X - Listed ' ' - Not Listed

International Inventories

Component	CAS No	KECL	TSCA	EINECS	IECSC	DSL	NDSL	PICCS	ENCS	ISHL	AICS
2,4-Diaminophenol dihydrochloride	137-09-7	-	X	205-279-4	X	X	-	X	-		X

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Korean National Regulations

Component	CAS No	Act on Registration and Evaluation of Chemical Substances (K-REACH)	Authorised Chemicals	Existing Substances Subject to Registration
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Component	CAS No	Chemical Control Act - Toxic Chemicals	Chemical Control Act - Prohibited Chemicals	Chemical Control Act - Use Restricted Chemicals
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Component	CAS No	Chemical Control Act - Accident Precaution Chemicals (% in mixtures)	Chemical Control Act - Accident Precaution Chemicals - Quantity limits Storage (% in mixtures)	Chemical Control Act - Accident Precaution Chemicals - Quantity limits Manufacture/Use (% in mixtures)
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Component	CAS No	Waste Control Law	Ministry of Environment - CMR risk	Ministry of Environment - Critically Controlled Substance
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Component	CAS No	ISHA - Harmful Agents Subject to Work Environment Monitoring	ISHA - Prohibited substances	ISHA - Substances requiring permission
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

Component	CAS No	ISHA - Substances subject to control	ISHA - Harmful Agents Requiring Health Examination	ISHA - Permissible Exposure Limits
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

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Component	CAS No	ISHA - Subject to Process Safety Reports (minimum quantity)	ISHA - Threshold Limit Values (TLVs) Chemicals	ISHA - Special management materials
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

National Fire Association - Dangerous Substances Minimum quantity requiring a permit

Component	CAS No	Class 1 - Oxidising solids	Class 2 - Flammable solid	Class 3 - Spontaneously Combustible Substances and Dangerous Substances When Wet	Class 4 - Flammable liquids	Class 5 - Self-reactive substances	Class 6 - Oxidising liquids
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Control Parameters

Component	CAS No	Korea	Biological Exposure Indices
2,4-Diaminophenol dihydrochloride	137-09-7	Not listed	Not listed

US Management Information

OSHA - Occupational Safety and Health Administration

Not applicable

Component	CAS No	Specifically Regulated Chemicals	Highly Hazardous Chemicals
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable

CERCLA Not applicable

Component	CAS No	CERCLA EHS RQs	Hazardous Substances RQs	SARA 313 - Threshold Values %
2,4-Diaminophenol dihydrochloride	137-09-7	Not applicable	Not applicable	Not applicable

CLP Classification - Regulation (EC) No 1272/2008

Danger.

H301 - Toxic if swallowed. H315 - Causes skin irritation. H319 - Causes serious eye irritation. H335 - May cause respiratory irritation.

P280 - Wear protective gloves/protective clothing/eye protection/face protection. P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P302 + P352 - IF ON SKIN: Wash with plenty of soap and water. P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 - Call a POISON CENTER or doctor if you feel unwell.

SECTION 16: OTHER INFORMATION

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

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WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
POW - Partition coefficient Octanol:Water

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC (volatile organic compound)

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Creation Date	16-Nov-2010
Revision Date	01-Apr-2022
Revision Number	5
Revision Summary	SDS sections updated, 2, 3.

MOEL's Public Notice No. 2020-130 (Standards for Classification and Labeling of Chemical Substances and Safety Data Sheets)

Disclaimer

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, use, processing, storage, transportation, disposal and release 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

End of Safety Data Sheet