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SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Version 8.1 Revision Date 06.02.2025 Print Date 25.04.2025 GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1	Product identifiers Product name	:	Phthalic anhydride
	Product Number Brand Index-No. REACH No. CAS-No.	:	125733 Sigma-Aldrich 607-009-00-4 01-2119457017-41-xxxx 85-44-9

1.2 Relevant identified uses of the substance or mixture and uses advised against Identified uses : Laboratory chemicals, Manufacture of substances

- **1.3 Details of the supplier of the safety data sheet**Company :
- **1.4 Emergency telephone**

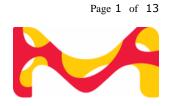
Emergency Phone #	: +(44)-870-8200418 (CHEMTREC (GB))
	+(353)-19014670 (CHEMTREC Ireland)
	001-803-017-9114 (CHEMTREC India)

SECTION 2: Hazards identification

2.1	Classification of the substance or mixtureAcute toxicity, (Category 4)H302: Harmful if swallowed.		
	Skin irritation, (Category 2)	H315: Causes skin irritation.	
	Serious eye damage, (Category 1)	H318: Causes serious eye damage.	
	Respiratory sensitization, (Category 1)	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
	Skin sensitization, (Sub-category 1A)	H317: May cause an allergic skin reaction.	
	Specific target organ toxicity - single exposure, (Category 3),	H335: May cause respiratory irritation.	

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2.2 Label elements

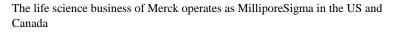
Labelling according Regulation (EC) No 1272/2008 Pictogram

Pictograffi				
Signal Word	Danger			
Hazard Statements H302 H315 H317 H318 H334	Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.			
Precautionary Statements P261 P264 P280 P301 + P312 P302 + P352 P305 + P351 + P338	Avoid breathing dust. Wash skin thoroughly after handling. Wear protective gloves/ eye protection/ face protection. IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.			
Supplemental Hazard Statements	none			
Reduced Labeling (<= 125 ml) Pictogram				
Signal Word	Danger			
Hazard Statements H334 H317	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.			
H318	Causes serious eye damage.			
Precautionary Statements P261 P280 P302 + P352 P305 + P351 + P338	Avoid breathing dust. Wear protective gloves/ eye protection/ face protection. IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.			

Supplemental Hazard Statements

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none



2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	$C_8H_4O_3$
Molecular weight	:	148.12 g/mol
CAS-No.	:	85-44-9
EC-No.	:	201-607-5
Index-No.	:	607-009-00-4

Component		Classification	Concentration
phthalic acid anhy	dride		
CAS-No. EC-No. Index-No.	85-44-9 201-607-5 607-009-00-4	Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; Resp. Sens. 1; Skin Sens. 1A; STOT SE 3; H302, H315, H318, H334, H317, H335	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

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4.2 Most important symptoms and effects, both acute and delayed The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media Foam Water

5.2 Special hazards arising from the substance or mixture

Carbon oxides Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating. Development of hazardous combustion gases or vapours possible in the event of fire.

Advice for firefighters 5.3

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 **Environmental precautions**

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

Reference to other sections 6.4 For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture.

Hygiene measures

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Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep locked up or in an area accessible only to qualified or authorized persons.

Moisture sensitive. Store under inert gas.

Storage class

Storage class (TRGS 510): 11: Combustible Solids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This

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recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

protective clothing

Respiratory protection

Recommended Filter type: Filter A-(P2)

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties 9.1 Information on basic physical and chemical properties

a)	Physical state	crystalline
b)	Color	colorless
c)	Odor	No data available
d)	Melting point/freezing point	Melting point/ range: 131 - 134 °C - lit.
e)	Initial boiling point and boiling range	284 °C - lit.
f)	Flammability (solid, gas)	No data available
g)	Upper/lower flammability or explosive limits	Upper explosion limit: 10.4 %(V) Lower explosion limit: 1.7 %(V)
h)	Flash point	152 °C - DIN 51758
i)	Autoignition temperature	580 °C
j)	Decomposition temperature	No data available
k)	рН	2 at 6 g/l at 20 °C
I)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 1.125 mPa.s at 155 °C
m)	Water solubility	16,400 g/l at 20 °C - soluble
n)	Partition coefficient: n-octanol/water	log Pow: 1.6 - Bioaccumulation is not expected.
o)	Vapor pressure	0.001 hPa at 26.6 °C
p)	Density	1.53 g/cm3 at 20 °C
	Relative density	No data available

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- q) Relative vapor No data available density
- r) Particle No data available characteristics
- s) Explosive properties Not classified as explosive.
- t) Oxidizing properties none

9.2 Other safety information

Surface tension 32.7 mN/m at 180 °C

Dissociation constant 2.97 at 35 °C

SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical. The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Violent reactions possible with: Strong acids Organic acids strong reducing agents alkali hydroxides Alcohols Air Exothermic reaction with: Water metals (in the presence of atmospheric oxygen and/or moisture) Risk of explosion with: metallic oxides Oxidizing agents Nitric acid glycerol

10.4 Conditions to avoid

Avoid moisture. Strong heating.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 1,530 mg/kg Remarks: (ECHA) Acute toxicity estimate Oral - 1,530 mg/kg (ATE value derived from LD50/LC50 value) Symptoms: mucosal irritations, Cough, Shortness of breath, After a latency period:, Lung edema, Possible damages:, damage of respiratory tract LD50 Dermal - Rabbit - > 3,160 mg/kg Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit Result: Irritating to skin. - 24 h Remarks: (ECHA)

Serious eye damage/eye irritation

Eyes - Rabbit Result: Causes serious eye damage. - 7 d Remarks: (ECHA)

Respiratory or skin sensitization

Maximization Test - Guinea pig Result: positive (OECD Test Guideline 406) in vivo assay - Guinea pig Result: positive Remarks: (ECHA)

Germ cell mutagenicity

Test Type: Ames test Test system: Escherichia coli/Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Test system: Chinese hamster lung cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Result: negative Remarks: (ECHA) Test Type: sister chromatid exchange assay Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Result: negative Remarks: (ECHA)

Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow

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Application Route: Intraperitoneal Method: OECD Test Guideline 474 Result: negative

Carcinogenicity

No data available

Reproductive toxicity No data available

Specific target organ toxicity - single exposure Inhalation - May cause respiratory irritation. - Respiratory Tract

Specific target organ toxicity - repeated exposure No data available

Aspiration hazard No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 105 Weeks - NOAEL (No observed adverse effect level) - 500 mg/kg Remarks: (ECHA)

RTECS: TI3150000

prolonged or repeated exposure can cause:, Liver injury may occur., Kidney injury may occur., Exposure to and/or consumption of alcohol may increase toxic effects., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Decomposition of the substance with tissue moisture.

Systemic effects:

gastric pain Nausea Vomiting Headache

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish

LC50 - Oryzias latipes - > 99 mg/l - 96 h (OECD Test Guideline 203)

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Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 71 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 68 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	EC50 - activated sludge - > 1,000 mg/l - 3 h (ISO 8192)
	EC50 - Pseudomonas putida - 213 mg/l - 16 h (ISO 10712)
Toxicity to fish(Chronic toxicity)	semi-static test NOEC - Oncorhynchus mykiss (rainbow trout) - 10 mg/l - 60 d (OECD Test Guideline 210)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	Reproduction Test EC50 - Daphnia magna (Water flea) - 42 mg/l - 21 d (OECD Test Guideline 211)
	Reproduction Test NOEC - Daphnia magna (Water flea) - 16 mg/l - 21 d (OECD Test Guideline 211)

12.2 Persistence and degradability

Biodegradability Biotic/Aerobic - Exposure time 14 d Result: 85 % - Readily biodegradable. (OECD Test Guideline 301)

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment

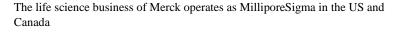
: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Discharge into the environment must be avoided. Harmful effect due to pH shift. Biological effects:

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SECTION 13: Disposal considerations

13.1 Waste treatment methods No data available

SECTION 14: Transport information		
14.1 UN number ADR/RID: -	IMDG: -	IATA: -
14.2 UN proper shipping nam ADR/RID: Not dangerous IMDG: Not dangerous IATA: Not dangerous	goods goods	
14.3 Transport hazard class(ADR/RID: -	es) IMDG: -	IATA: -
14.4 Packaging group ADR/RID: -	IMDG: -	IATA: -
14.5 Environmental hazards ADR/RID: no	IMDG Marine pollutant: no	IATA: no
14.6 Special precautions for	user	

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

14.7 Maritime transport in bulk according to IMO instruments Not applicable for product as supplied.

SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

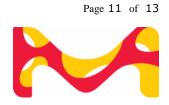
SECTION 16: Other information

Full text of H-Statements

H302	Harmful if swallowed.
H315	Causes skin irritation.

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- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM -American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. -Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIOC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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