

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



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

1.1. Product identifier

Trade name

p-Phenylenediamine

CAS number

106-50-3

EC number

203-404-7

Synonyms

1,4-Benzenediamine

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

Relevant identified uses

Research and development.

Not suitable for use in

Not suitable for human consumption or veterinary purposes.

1.3. Details of the supplier of the safety data sheet

Supplier

Molekula Group

Street address

Molekula Ltd, Lingfield Way, Darlington,

DL1 4XX Darlington

United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

Contact person

Kevin Banks

Email address

+44 (0) 7769276927

1.4. Emergency telephone number

Poison center/Additional emergency number

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classification

Hazardous to the aquatic environment — Acute hazard category 1
Hazardous to the aquatic environment — Chronic hazard category 1
Skin sensitisation, hazard category 1
Eye irritation, hazard category 2
Acute toxicity, oral, hazard category 3
Acute toxicity, dermal, hazard category 3
Acute toxicity, inhalation, hazard category 2

Hazard statements

H301, H311, H317, H319, H330, H400, H410

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Danger

Hazard statements

H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



Precautionary statements

P260 Do not breathe dust/fumes/gas/mist/vapours/spray.
P264 Wash Skin. thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 wear respiratory protection.
P310 Immediately call a POISON CENTER/doctor.
P312 Call a POISON CENTER/doctor if you feel unwell.
P320 Specific treatment is urgent (see on this label).
P321 Specific treatment (see on this label).
P330 Rinse mouth.
P391 Collect spillage.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P302 + P352 IF ON SKIN: Wash with plenty of 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.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P405 Store locked up.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container to .
P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P333 +P313 If skin irritation or rash occurs: Get medical advice/attention.

2.3. Other hazards

No data available

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-pharse M factor acute M factor chronic	Note
p-phenylenediamine	106-50-3 203-404-7 01-2119471483-36 612-028-00-6	100%	Acute Tox. 3 - oral, Acute Tox. 3 - dermal, Skin Sens. 1, Eye Irrit. 2, Acute Tox. 3 - inhalation, Aquatic Acute 1, Aquatic Chronic 1	H301, H311, H317, H319, H331, H400, H410 - -	-

Molecular weight

108.14

p-Phenylenediamine

Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

IF exposed or concerned: Get medical advice/attention. First aiders/ medical personnel need to protect themselves. Show this Safety Data Sheet (SDS) to medical personnel.

Inhalation

Toxic if inhaled. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. If breathing stops, provide artificial respiration. For breathing difficulties oxygen may be necessary.

Skin contact

In case of skin contact: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Immediately call a POISON CENTER/doctor.

Eye contact

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

Ingestion

IF SWALLOWED: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only if the persons are fully conscious and awake).

Information for doctors

No data available.

4.2. Most important symptoms and effects, both acute and delayed

The severity of the symptoms described will vary dependant of the concentration and the length of exposure. See section 11 for more detailed information on health effects and symptoms.

Inhalation

Single exposure may cause the following adverse effects: Difficulty in breathing. Unconsciousness, possibly death.

Skin contact

Single exposure may cause the following adverse effects: Unconsciousness, possibly death.

Eye contact

Single exposure may cause the following adverse effects: Severe irritation. Unconsciousness, possibly death.

Ingestion

Single exposure may cause the following adverse effects: Severe abdominal pain. May cause severe internal injury. Unconsciousness, possibly death.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. No special treatment requirement.

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

Unsuitable extinguishing media

No specific fire fighting procedure given.

5.2. Special hazards arising from the substance or mixture

Specific hazards: Toxic.

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

Hazardous combustion products:

Nitrous gases (NO_x). Carbon monoxide (CO). Carbon dioxide (CO₂).

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapours and spray mist and contact with skin and eyes. Provide adequate ventilation. Wear protective clothing, gloves, eye and face protection. Warn everybody of potential hazards and evacuate if necessary. For personal protection, see section 8.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Collect spillage with shovel, broom or the like and reuse, if possible. Dispose of large amounts of spillage/waste according to agreement with local authorities.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

Avoid contact with skin and eyes. Wear protective clothing, gloves, eye and face protection. Avoid dust formation. Work under hood Do not breathe dust/fume/gas/mist/vapours/spray. Avoid ingestion and inhalation. For precautions see section 2.2.

General hygiene

Observe good chemical hygiene practices. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using the product. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



7.2. Conditions for safe storage, including any incompatibilities

Store at room temperature. Store in a dry place. Store in a closed container. Store under nitrogen.

7.3. Specific end use(s)

No specific usage precautions noted.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

TWA: 0.1mg/m³ UK. EH40. WEL = Workplace Exposure Limit.

8.2. Exposure controls

Eye / face protection

Wear eye protection.

Hand protection

Wear protective gloves. Recommended gloves: Nitrile.

Glove Thickness: 0.11mm

Breakthrough time: 8 hours

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash contaminated skin thoroughly after handling.

Other skin protection

Wash skin thoroughly after handling.

Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

Environmental exposure controls

Avoid discharge into drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Solid

Colour

White to grey to pink to red to brown

Odour

Aromatic.

Melting point / freezing point

139 - 141 °C

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



Boiling point or initial boiling point and boiling range

No data available

Flammability

No data available

Lower and upper explosion limit

Lower: 1.5 Upper: 9.8

Flash point

156 °C

Auto-ignition temperature

No data available

Decomposition temperature

>500□

pH

8-9

Kinematic viscosity

No data available

Solubility

No data available

Partition coefficient n-octanol/water

No data available

Vapour pressure

0.01mbar @ 20□

Density and/or relative density

No data available

Relative vapour density

No data available

Particle characteristics

No data available

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Forms explosive mixtures with air on intense heating.

15 (approx) Kelvin below the flash point is to be rated as critical.

10.2. Chemical stability

Stable under normal temperature conditions. Stable under the prescribed storage conditions.

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



10.3. Possibility of hazardous reactions

Violent reactions possible with:
Strong oxidising agents.

10.4. Conditions to avoid

Air sensitive. Incompatible materials.

10.5. Incompatible materials

Acids. Strong oxidising agents. Acid anhydrides. Acid chlorides

10.6. Hazardous decomposition products

See section 5.

SECTION 11: Toxicological information

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

Acute toxicity

Product / Substance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Duration of exposure	Test animals
p-phenylenediamine 106-50-3 / 203-404-7	LD50	80 mg/kg	Oral	-	Rat
p-phenylenediamine 106-50-3 / 203-404-7	LC50	0.92 mg/l	Inhalation.	4 hours	Rat
p-phenylenediamine 106-50-3 / 203-404-7	LD50	300 mg/kg	Dermal	-	-
p-phenylenediamine 106-50-3 / 203-404-7	LD50	80 mg/kg	Oral	-	Rat
p-phenylenediamine 106-50-3 / 203-404-7	LC50	0.92 mg/l	Inhalation.	4 hours	Rat
p-phenylenediamine 106-50-3 / 203-404-7	LD50	300 mg/kg	Dermal	-	-

Skin corrosion/irritation

Product / Substance name CAS / EC no.	Result	Duration of exposure	Species
p-phenylenediamine 106-50-3 / 203-404-7	Causes mild skin irritation.	24 hours	Rabbit
p-phenylenediamine	Causes mild skin irritation.	24 hours	Rabbit

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



Product / Substance name CAS / EC no.	Result	Duration of exposure	Species
106-50-3 / 203-404-7			

Serious eye damage/irritation

Product / Substance name CAS / EC no.	Result	Species
p-phenylenediamine 106-50-3 / 203-404-7	Irritating.	Rabbit
p-phenylenediamine 106-50-3 / 203-404-7	Irritating.	Rabbit

Respiratory or skin sensitisation

Product / Substance name CAS / EC no.	Result	Species	Method / Guideline
p-phenylenediamine 106-50-3 / 203-404-7	May cause sensitisation.	Mouse	in vivo assay
p-phenylenediamine 106-50-3 / 203-404-7	May cause sensitisation.	Mouse	in vivo assay

Germ cell mutagenicity

Product / Substance name CAS / EC no.	Result	Exposure route	Species	Method / Guideline
p-phenylenediamine 106-50-3 / 203-404-7	Morphological transformation.	-	Rat	Embryo
p-phenylenediamine 106-50-3 / 203-404-7	Cytogenetic analysis	-	Hamster Ovary	-
p-phenylenediamine 106-50-3 / 203-404-7	Negative.	Oral	Rat	Micronucleus test
p-phenylenediamine 106-50-3 / 203-404-7	Morphological transformation.	-	Rat	Embryo
p-phenylenediamine 106-50-3 / 203-404-7	Cytogenetic analysis	-	Hamster Ovary	-
p-phenylenediamine 106-50-3 / 203-404-7	Negative.	Oral	Rat	Micronucleus test

Aspiration hazard

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

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



11.2. Information on other hazards

No data available

SECTION 12: Ecological information

12.1. Toxicity

Acute fish toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
p-phenylenediamine 106-50-3 / 203-404-7	LC50	3.9 mg/l	96 hours	Onchorhynchus mykiss (Rainbow trout)

Acute algae toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
p-phenylenediamine 106-50-3 / 203-404-7	EC50	0.27 mg/l	72 hours	Pseudokirchneriella subcapitata

Acute crustacean toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
p-phenylenediamine 106-50-3 / 203-404-7	EC50	0.33 mg/l	48 hours	Daphnia magna

Micro-/macro organism toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
p-phenylenediamine 106-50-3 / 203-404-7	EC50	13.4 mg/l	3 hours	Sludge Treatment

Chronical toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
p-phenylenediamine	NOEC	0.005 mg/l	21 days	Daphnia magna

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
106-50-3 / 203-404-7				

12.2. Persistence and degradability

Persistence and degradability

Product / Substance name CAS / EC no.	Type of test	Duration	Result	Degradation
p-phenylenediamine 106-50-3 / 203-404-7	aerobic	28 days	30%	The product is not readily biodegradable.

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

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

SECTION 14: Transport information

14.1. UN number

1673

14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

PHENYLENEDIAMINES (o-, m-, p-)

IMDG proper shipping name

PHENYLENEDIAMINES (o-, m-, p-)

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



IATA proper shipping name

Phenylenediamines (o-, m-, p-)

14.3. Transport hazard class(es)

Label

ADR/RID/ADN



6.1

IMDG



6.1

IATA



6.1

ADR / RID Class

6.1

ADR / RID Classification code

T2

ADR / RID hazard identification number

60

IMDG Class

6.1

IATA Class

6.1

ADN Class

6.1

ADN Class Code

T2

14.4. Packing group

ADR / RID / ADN: III

IMDG: III

IATA: III

According to Regulation (EC) No 1907/2006

p-Phenylenediamine



14.5. Environmental hazards

IMDG EmS

F-A, S-A

14.6. Special precautions for user

Tunnel restriction code: E

Transport category: 2

14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC08

SECTION 15: Regulatory information

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

EU regulations

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

National regulations

Directive: 2012/18/EU:

H2 ACUTE TOXIC

E1 ENVIRONMENTAL HAZARDS

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Phrase meaning

Aquatic Acute 1 - Hazardous to the aquatic environment — Acute hazard category 1

Aquatic Chronic 1 - Hazardous to the aquatic environment — Chronic hazard category 1

Skin Sens. 1 - Skin sensitisation, hazard category 1

Eye Irrit. 2 - Eye irritation, hazard category 2

Acute Tox. 3 - oral - Acute toxicity, oral, hazard category 3

Acute Tox. 3 - dermal - Acute toxicity, dermal, hazard category 3

Acute Tox. 2 - inhalation - Acute toxicity, inhalation, hazard category 2

Acute Tox. 3 - inhalation - Acute toxicity, inhalation, hazard category 3

H301 Toxic if swallowed.

H311 Toxic in contact with skin.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H330 Fatal if inhaled.

H331 Toxic if inhaled.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.