Safety data sheet

Safety data sheet according to the United Nations' Globally Harmonized System (UN GHS)
Date / Revised: 21.05.2024 Version: 1.0
Product: **Adipic Acid - G**

(ID no. 30042497/SDS_GEN_ZA/EN)
Date of print 11.10.2025

1. Identification

Product identifier

Adipic Acid - G

Chemical name: Adipic acid
CAS Number: 124-04-9
Recommended use: for the production of homopolymerisates and copolymerisates, initial product for chemical syntheses
Not recommended use: food additive(s)

Details of the supplier of the safety data sheet

Company:

Emergency telephone number

National emergency number:
+27 11 203 2420
International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

Eye Dam./Irrit. 1
Aquatic Acute 3

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements

Globally Harmonized System (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H318	Causes serious eye damage.
H402	Harmful to aquatic life.

Precautionary Statements (Prevention):

P280	Wear eye and face protection.
P273	Avoid release to the environment.

Precautionary Statements (Response):

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or physician.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

According to UN GHS criteria

Hazard determining component(s) for labelling: Adipic acid

Other hazards

According to UN GHS criteria

No specific dangers known, if the regulations/notes for storage and handling are considered.

3. Composition/Information on Ingredients

Substances

Chemical nature

Adipic acid

CAS Number: 124-04-9
EC-Number: 204-673-3
INDEX-Number: 607-144-00-9

Hazardous ingredients (GHS)
According to UN GHS criteria

Adipic acid

Content (W/W): >= 75 % - <= 100 %	Eye Dam./Irrit. 1 Aquatic Acute 3
CAS Number: 124-04-9 EC-Number: 204-673-3 INDEX-Number: 607-144-00-9	H318, H402

For the classifications not written out in full in this section the full text can be found in section 16.

Mixtures

Not applicable

4. First-Aid Measures

Description of first aid measures

Remove contaminated clothing. Avoid contact with the skin, eyes and clothing.

If inhaled:
If difficulties occur after dust has been inhaled, remove to fresh air and seek medical attention.

On skin contact:
Wash thoroughly with soap and water

On contact with eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11., (Further) symptoms and / or effects are not known so far

Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, foam, carbon dioxide

Special hazards arising from the substance or mixture

No particular hazards known.

Advice for fire-fighters

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Sources of ignition should be kept well clear. Use breathing apparatus if exposed to vapours/dust/aerosol. Information regarding personal protective measures, see section 8.

Environmental precautions

Discharge into the environment must be avoided. Do not empty into drains. Retain and dispose of contaminated wash water.

Methods and material for containment and cleaning up

For large amounts: Sweep/shovel up. Dispose of contaminated material as prescribed.
For residues: Rinse away with water.

7. Handling and Storage

Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Avoid contact with skin and eyes. Wear suitable protective clothing and eye/face protection. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:
Avoid dust formation. The product is capable of dust explosion. Sources of ignition should be kept well clear. Take precautionary measures against static discharges.

Dust explosion class: Dust explosion class 2 (Kst-value 200 up to 300 bar m s-1).

Conditions for safe storage, including any incompatibilities

Segregate from alkalies and alkalizing substances.

Suitable materials for containers: Stainless steel 1.4401, Stainless steel 1.4301 (V2), Aluminium, Polyester resin, glass reinforced (Palatal A410), Paper/Fibreboard, High density polyethylene (HDPE), glass, Low density polyethylene (LDPE)
Further information on storage conditions: Containers should be stored tightly sealed in a dry place.

Storage stability:
Tends to cake.

Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

No occupational exposure limits known.

Exposure controls

Personal protective equipment

Respiratory protection:
Breathing protection if breathable aerosols/dust are formed. Particle filter with low efficiency for solid particles (e.g. EN 143 or 149, Type P1or FFP1)

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
butyl rubber (butyl) - 0.7 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Take off immediately all contaminated clothing. At the end of the shift the skin should be cleaned and skin-care agents applied.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

State of matter:	solid	
Form:	crystalline	
Colour:	white	
Odour:	odourless	
Odour threshold:	No data available.	
Melting point:	150.85 °C	(Directive 92/69/EEC, A.1)
Boiling point:	337.5 °C (1,013 hPa) Literature data.	
Sublimation point:	No applicable information available.	
Flammability:	not highly flammable	(Directive 92/69/EEC, A.10)
Lower explosion limit:	No data available.	
Upper explosion limit:	No data available.	
Flash point:	196 °C Literature data.	(closed cup)
Auto-ignition temperature:	405 °C	(DIN 51794)
Self-ignition temperature:	Temperature: > 400 °C	Test type: Self-ignition at high temperatures. (Method: Directive 92/69/EEC, A.16)
Thermal decomposition:	No data available.	
pH value:	2.7 (23 g/l, 25 °C) 3.2 (10 g/l)	(pH Meter)
Viscosity, kinematic:	No data available.	
Viscosity, dynamic:	No data available.	
Solubility in water:	Literature data. 23 g/l (25 °C)	
Solubility (qualitative) solvent(s):	organic solvents soluble	
Partitioning coefficient n-octanol/water (log Kow):	0.093 (25 °C; pH value: 3.3)	(measured)
Vapour pressure:	0.097 hPa (18.5 °C) Literature data.	
Relative density:	1.36 (25 °C) Literature data.	
Density:	1.36 g/cm3 (25 °C) Literature data.	
Relative vapour density (air):	No data available.	

Particle characteristics

Particle size distribution:	approx. 60 µm	(D50, Volumetric Distribution, measured)
	particles <= 4.19 µm	2.76 %
	particles <= 10.48 µm	8.79 %
	particles <= 103.58 µm	78.08 %

9.2. Other information

Information with regard to physical hazard classes

Explosives

Explosion hazard:	Product is not explosive, however a dust explosion could result from an air / dust mixture.	(Directive 92/69/EEC, A.14)
Impact sensitivity:	not shock-sensitive	(Directive 92/69/EEC, A.14)

Oxidizing properties

Fire promoting properties: Based on its structural properties the product is not classified as oxidizing.

Pyrophoric properties

Self-ignition temperature: Test type: Spontaneous self-ignition at room-temperature.

not self-igniting

Self-heating substances and mixtures

Self heating ability: It is not a substance capable of spontaneous heating.

Substances and mixtures, which emit flammable gases in contact with water

Formation of flammable gases:

Forms no flammable gases in the presence of water.

Corrosion to metals

No corrosive effect on metal.

Other safety characteristics

Minimum ignition energy:	10 - 30 mJ	(DIN EN 13821)
Bulk density:	approx. 700 kg/m3	(other)
pKA:	4.43 (20 °C)	
Adsorption/water - soil:	KOC: 1.61; log KOC: 0.21	(calculated)
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Molar mass:	146.14 g/mol	
Evaporation rate:	The product is a non-volatile solid.	

10. Stability and Reactivity

Reactivity

Corrosion to metals:	No corrosive effect on metal.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability

The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions

Reacts with basic components to generate heat. Dust explosion hazard.

Conditions to avoid

Avoid dust formation. Avoid deposition of dust. See SDS section 7 - Handling and storage.

Incompatible materials

Substances to avoid:
alkaline reactive substances

Hazardous decomposition products

Thermal decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated., Incomplete combustion results in formation of toxic gases, containing mainly carbon monoxide and carbon dioxide.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact.

Experimental/calculated data:
LD50 rat (oral): approx. 5,560 mg/kg (BASF-Test)

LC50 rat (by inhalation): > 7.7 mg/l 4 h (BASF-Test)
An aerosol was tested.

LD50 rabbit (dermal): > 7,940 mg/kg (other)

Irritation

Assessment of irritating effects:
Not irritating to the skin. May cause severe damage to the eyes.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant non-irritant (BASF-Test)

Serious eye damage/irritation rabbit: irreversible damage (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies. A sensitizing effect on particularly sensitive individuals cannot be excluded.

Experimental/calculated data:
guinea pig: Non-sensitizing. (other)

Germ cell mutagenicity

Assessment of mutagenicity:
The substance was not mutagenic in mammalian cell culture. No mutagenic effect was found in various tests with microorganisms and mammals.

Carcinogenicity

Assessment of carcinogenicity:
In long-term animal studies in which the substance was given in high concentrations by feed, a carcinogenic effect was not observed.

Reproductive toxicity

Assessment of reproduction toxicity:
No effects have been reported in reproductive organs in long term animal studies.

Developmental toxicity

Assessment of teratogenicity:
No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on available data, the classification criteria are not met.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Repeated oral uptake of the substance did not cause substance-related effects.

Aspiration hazard

No aspiration hazard expected.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:
LC0 (96 h) >= 1,000 mg/l, Brachydanio rerio (other, static)
Nominal values (confirmed by concentration control analytics)

Aquatic invertebrates:
LC50 (48 h) 46 mg/l, Daphnia magna (OECD Guideline 202, part 1)
Nominal concentration.

Aquatic plants:
EC50 (72 h) 64.5 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
Nominal concentration.

No observed effect concentration (72 h) 40.6 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
Nominal concentration.

Microorganisms/Effect on activated sludge:
EC50 (3 h) > 100 mg/l, activated sludge (OECD Guideline 209, aerobic)

Chronic toxicity to fish:
Study scientifically not justified.

Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) 6.3 mg/l, Daphnia magna (OECD Guideline 211)
Nominal concentration.

Assessment of terrestrial toxicity:
No data available.
Study scientifically not justified.

Persistence and degradability

Assessment biodegradation and elimination (H2O):
Readily biodegradable (according to OECD criteria).

Elimination information:
83 % BOD of the ThOD (30 d) (OECD 301D; 92/69/EWG, C.4-E) (aerobic, domestic sewage)
Literature data.

Assessment of stability in water:
According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Assessment bioaccumulation potential:
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Bioaccumulation potential:
Bioconcentration factor: 3.16 (calculated)
Accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is not expected.

Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Other ecotoxicological advice:
Do not release untreated into natural waters.

13. Disposal Considerations

Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.

Contaminated packaging:
Uncleaned empties should be disposed of in the same manner as the contents.

14. Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable

Special precautions for user	None known

RID

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Inland waterway transport

ADN

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Air transport

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number or ID number	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable

Environmental hazards:	Not applicable
Special precautions for user	None known

Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

15. Regulatory Information

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

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Eye Dam./Irrit.	Serious eye damage/eye irritation
Aquatic Acute	Hazardous to the aquatic environment - acute
H318	Causes serious eye damage.
H402	Harmful to aquatic life.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.