

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product identifier:

Product name: ADIPIC ACID

Chemical name: 1,4-Butanedicarboxylic acid

REACH registration number: 01-2119457561-38-XXXX

REACH registration notes: REACH registration only covers products which OQEMA have imported into Europe or sourced within Europe. If the product is sold directly outside Europe this is not covered under the registration. It is the responsibility of the subsequent importer into Europe to ensure their volume of product is covered under the REACH regulations. This product is REACH compliant either through pre-registration or registration subject to volume threshold deadline. However please note we may have dual sources for some products. As a result, the product you have purchased may not be covered by the registration number listed above. Please contact the email address in section 1.3 for specific information on your purchase.

CAS number: 124-04-9

EC number: 204-673-3

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

Identified uses: Use in Dish Washing Machine Tablets Consumer. PC35 SU21 ERC8a
Production of Dish Washing Machine Tablets. PC35 SU3 SU10 ERC2 PROC2 PROC5
PROC8a PROC8b PROC13 PROC14
Preparations and formulas. PC20 PC23 SU3 SU22 SU5 SU10 ERC2 ERC6b PROC1 PROC2
PROC3 PROC4 PROC5 PROC7 PROC8a PROC8b PROC9 PROC10 PROC13
Laboratory Activities. PC21 SU22 ERC8a ERC8B PROC15
Intermediate Monomer. PC19 PC32 SU3 SU8 SU9 SU12 ERC6a ERC6c ERC6d PROC1
PROC2 PROC3 PROC4 PROC8a PROC8b PROC9
Flue gas. PC20 SU3 SU23 ERC8E PROC16

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SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 2

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

Classification (EC 1272/2008):

Physical hazards: Not Classified
Health hazards: Eye Dam. 1 - H318
Environmental hazards: Not Classified

Label elements:

EC number: 204-673-3

Hazard pictograms:



Signal word: Danger

Hazard statements: H318 Causes serious eye damage.

Precautionary statements: 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.

Contains: ADIPIC ACID

Supplementary precautionary statements:

P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Other hazards:

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances: ADIPIC ACID $\geq 99.0\% \text{ w/w} - \leq 100\% \text{ w/w}$

CAS number: 124-04-9

EC number: 204-673-3

Classification: Eye Irrit. 2 - H319

The full text for all hazard statements is displayed in Section 16.

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[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 3

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EC number: 204-673-3

4. FIRST AID MEASURES

Description of first aid measures:

Inhalation: Move affected person to fresh air at once. Get medical attention.
Ingestion: Do not induce vomiting. Rinse mouth thoroughly with water. Give plenty of water to drink.
Skin contact: Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.
Eye contact: Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Most important symptoms and effects, both acute and delayed:

General information: NO DATA AVAILABLE.

Indication of any immediate medical attention and special treatment needed:

Notes for the doctor: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: Foam. Powder. Water spray.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture:

Hazardous combustion products: Combustible.

Advice for firefighters:

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

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SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 4

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Personal precautions: Avoid inhalation of spray mist and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet. No smoking, sparks, flames or other sources of ignition near spillage.

Environmental precautions:

Environmental precautions: Do not discharge into drains or watercourses or onto the ground.

Methods and material for containment and cleaning up:

Methods for cleaning up: Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into suitable waste disposal containers and seal securely. Hold for waste disposal For waste disposal, see Section 13.

Reference to other sections:

Reference to other sections: Wear protective clothing as described in Section 8 of this safety data sheet. See Section 11 for additional information on health hazards. Collect and dispose of spillage as indicated in Section 13.

7. HANDLING AND STORAGE

Precautions for safe handling:

Usage precautions:

- Avoid contact with skin and eyes.
- Keep away from heat, sparks and open flame.
- Avoid inhalation of dust and contact with skin and eyes.
- Avoid inhalation of dust.
- Avoid generation and spreading of dust.
- Prevent formation of dust.
- Storage tanks and other containers must be earthed.

Advice on general occupational hygiene:

- Eye wash facilities and emergency shower must be available when handling this product.
- Do not eat, drink or smoke when using this product.
- Follow good hygiene practices.

Conditions for safe storage, including any incompatibilities:

Storage precautions: Keep away from heat, sparks and open flame. Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from moisture and wet air.

Specific end use(s):

Specific end use(s): The identified uses for this product are detailed in Section 1.2.

[cont...]

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Control parameters:****Ingredient comments:**

No exposure limits known for ingredient(s).

DNEL:

Workers - Inhalation; Long term systemic effects: 264 mg/m³

Workers - Inhalation; Short term systemic effects: 264 mg/m³

Workers - Inhalation; Long term local effects: 5 mg/m³

Workers - Inhalation; Short term local effects: 5 mg/m³

Workers - Dermal; Long term systemic effects: 38 mg/kg/day

Workers - Dermal; Short term systemic effects: 38 mg/kg/day

General population - Inhalation; Long term systemic effects: 65 mg/m³

General population - Inhalation; Short term systemic effects: 65 mg/m³

General population - Dermal; Long term systemic effects: 19 mg/kg/day

General population - Dermal; Short term systemic effects: 19 mg/kg/day

General population - Oral; Long term systemic effects: 19 mg/kg/day

General population - Oral; Long term systemic effects: 19 mg/kg/day

PNEC:

Fresh water; 0.126 mg/l

Marine water; 0.013 mg/l

STP; 59.1 mg/l

Sediment (Freshwater); 0.484 mg/kg

Sediment (Marine water); 0.048 mg/kg

Soil; 0.023 mg/kg

Exposure controls:**Protective equipment:**

Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Emergency shower and eye wash facilities should be readily available.

Eye/face protection:

The following protection should be worn: Chemical splash goggles. Safety glasses with side shields conforming to EN166.

Hand protection:

Use protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection:

Provide eyewash station and safety shower. Wear chemical protective suit. Chemical resistant boots should comply with European standard EN345. Body protection must be chosen depending on activity and possible exposure, e.g., apron, protecting boots, chemical-protection suit (according to DIN-EN 465).

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 6

Hygiene measures:	Wash promptly with soap and water if skin becomes contaminated. Eye wash facilities and emergency shower must be available when handling this product. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes and clothing Good personal hygiene procedures should be implemented. Wash skin thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Keep away from foodstuffs, beverages and feed.
Respiratory protection:	Where risk assessment shows air-purifying respirators are appropriate use: Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance:	Crystalline powder.
Colour:	White.
Odour:	Odourless.
Odour threshold:	No specific test data are available.
pH:	pH (concentrated solution): 2.7 pH (concentrated solution): 3.2
Melting point:	152.1°C klimisch 2
Initial boiling point and range:	265°C @ 133 hPa klimisch 2
Flash point:	196°C Closed cup. klimisch 4
Evaporation rate:	Not available.
Evaporation factor:	No specific test data are available.
Flammability (solid, gas):	Not flammable.
Upper/lower flammability or explosive limits:	Not available.
Other flammability:	No specific test data are available.
Vapour pressure:	0.097 hPa @ 18.5°C klimisch 4
Vapour density:	Not available.
Relative density:	1.36 @ 25°C klimisch 2
Bulk density:	630-650 kg/m ³
Solubility(ies):	23g/l @ 25°C @ °C Soluble in the following materials: Methanol. Insoluble in the following materials: Benzene. 15g/l at 20°C, 52g/l at 40°C, 1600g/l at 100°C
Partition coefficient:	log Pow: 0.093 klimisch rating 2
Auto-ignition temperature:	>400°C Relative self-ignition temperature for solids Method A16 klimisch rating: 1
Decomposition Temperature:	No specific test data are available.
Viscosity:	Not applicable.
Explosive properties:	Not explosive (A14 method)
Oxidising properties:	No oxidising properties
Comments:	Minimum ignition energy 5-10mJ Method sphere 20L
Other information:	
Molecular weight:	146.46 g/mol

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 7

10. STABILITY AND REACTIVITY

Reactivity: No information available.

Chemical stability:

Stability: Stable at normal ambient temperatures and when used as recommended.

Possibility of hazardous reactions: Not available.

Conditions to avoid: No information available.

Incompatible materials:

Materials to avoid: Strong oxidising agents. Strong acids. Strong bases.

Hazardous decomposition products: No data available.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Acute toxicity – oral:

Acute toxicity oral (LD₅₀ mg/kg): 5,560.0

Species: Rat

Notes (oral LD₅₀): LD₅₀ 5 560 mg/kg, Oral, Rat Klimisch rating 2 1978 OECD 401

Acute toxicity – dermal:

Acute toxicity dermal (LD₅₀ mg/kg): 7,940.0

Species: Rat

Notes (dermal LD₅₀): LD₀ 7 940 ml/kg, Dermal, Rabbit klimisch 2 1975

Acute toxicity – inhalation:

Acute toxicity inhalation (LC₅₀ dust/mist mg/l): 7.7

Species: Rat

Notes (inhalation LC₅₀): LC₀ >7.7 mg/l, Inhalation, Rat klimisch 2 1981 OECD 403

Skin corrosion/irritation:

Skin corrosion/irritation: Slightly irritating.

Animal data:

Dose: 0.5 g of a 50% aqueous solution, 24 hours, Rabbit Slightly irritating. Klimisch rating 2 1978

Serious eye damage/irritation:

Serious eye damage/irritation:

Dose: 100 mg, 24 hours, Rabbit Highly irritating. klimisch rating 1 2004 OECD405

Skin sensitisation:

Skin sensitisation: Guinea pig maximization test (GPMT) - Guinea pig: Not sensitising. Klimisch rating 2 1974

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SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 8

Germ cell mutagenicity:

Genotoxicity - in vitro:

Bacterial reverse mutation test: Negative. Klimisch rating 2 1982 1991 1978 OECD 471
Chromosome aberration: Negative. Klimisch rating 2 1974 Gene mutation: Negative.
Klimisch rating 1 2009 OECD476

Carcinogenicity:

Carcinogenicity:

NOAEL > 3 750 mg/kg/day, Oral, Rat NOAEL > 750 mg/kg/day, Oral, Rat Klimisch rating 2
1957

Reproductive toxicity:

Reproductive toxicity – development:

Maternal toxicity:

NOAEL: \geq 250 mg/kg/day, Oral, Rabbit

Developmental toxicity:

NOAEL: \geq 250 mg/kg/day, Oral, Rabbit Klimisch rating 2 1974

Maternal toxicity:

NOAEL: \geq 263 mg/kg/day, Oral, Mouse

Developmental toxicity:

NOAEL: \geq 263 mg/kg/day, Oral, Mouse Klimisch rating 2 1972

Maternal toxicity:

NOAEL: \geq 288 mg/kg/day, Oral, Rat

Developmental toxicity:

NOAEL: \geq 288 mg/kg/day, Oral, Rat Klimisch rating 2 1972

Specific target organ toxicity - repeated exposure:

STOT - repeated exposure:

NOAEL approx. 750 mg/kg/day, Oral, Rat Klimisch rating 2 1957

12. ECOLOGICAL INFORMATION

Toxicity:

Acute aquatic toxicity:

Acute toxicity – fish:

LC₀, 96 hours: \geq 1 000 mg/l, Brachydanio rerio (Zebra Fish)
klimisch rating 2
1991

Acute toxicity – aquatic invertebrates:

LC₅₀, 48 hours: 46 mg/l, Daphnia magna
klimisch rating 2
1997
OECD 202

Acute toxicity - aquatic plants:

NOEC, 72 hours: 41 mg/l, Pseudokirchneriella subcapitata
EC₅₀, 72 hours: 59 mg/l, Pseudokirchneriella subcapitata
klimisch rating 2
1997
OECD 201

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 9

Acute toxicity – microorganisms: EC₅₀, 3 hours: 4 747 mg/l, Activated sludge
EC₅₀, 3 hours: 7 910 mg/l, Activated sludge
klimisch rating 2
1988
OECD 209
IGC50, 40 hours: 591.02 mg/l, Tetrahymena Pyriformis
klimisch rating 2
1997

Acute toxicity - terrestrial Toxicity to terrestrial plants:

EC₈₀, 3 days: 170 mg/l, Triticum aestivum

Chronic aquatic toxicity:

Chronic toxicity – aquatic invertebrates:

NOEC, 21 days: 6.3 mg/l, Daphnia magna
EC₅₀, 21 days: 18 mg/l, Daphnia magna
klimisch rating 2
1997
OECD 211

Persistence and degradability: Readily biodegradable.

Photo transformation: Calculation method.
Air - Degradation 50: 2.9 days
klimisch rating 2
2009

Biodegradation: Water - Degradation 83: 30 days
The substance is readily biodegradable.
klimisch rating 2
1979
OECD 301D
Water - Degradation > 90: 5 days
Inherently biodegradable.
klimisch rating 2
1980
EU Method C.9
Water and sediment - Degradation 99: 1 day
klimisch rating 2
1979
Water and sediment - Degradation > 95: 8 days
klimisch rating 2
1980
Soil - Degradation 84: 1 day
The substance is readily biodegradable.
klimisch rating 2
1993

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 10

Bioaccumulative potential: Calculation method. BCF: 3.162, None, estimated by calculation. klimisch rating 2 2009

Partition coefficient: log Pow: 0.093 klimisch rating 2

Mobility in soil:

Mobility: Ultimate destination of the product: Water

Adsorption/desorption coefficient: Calculation method. Soil - Koc: 2.4 @ 25°C Soil - Koc: 5.3 @ 25°C Soil - Koc: 21.5 @ 25°C
klimisch rating 2 2009

Henry's law constant: Calculation method. 0.062 Pa m³/mol @ 25°C klimisch rating 2 2009

Results of PBT and vPvB assessment: This product does not contain any substances classified as PBT or vPvB.

Other adverse effects: Not available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods:

Disposal methods: Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

14. TRANSPORT INFORMATION

General: The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

UN number: Not applicable.

UN proper shipping name: Not applicable.

Transport hazard class(es): No transport warning sign required.

Packing group: Not applicable.

Environmental hazards:

Environmentally hazardous substance/marine pollutant: No.

Special precautions for user: Not applicable.

Transport in bulk according to Annex II of MARPOL and the IBC Code:

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 11

15. REGULATORY INFORMATION

Chemical safety assessment: A chemical safety assessment has been carried out.

Note: The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Abbreviations and acronyms used in the safety data sheet:

ECHA: European Chemicals Agency
ATE: Acute Toxicity Estimate
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
CAS# / CAS NO. CAS-numero (eräs kemikaalien tunnistenumero)
DNEL: Derived No Effect Level
C&L: Classification and Labelling
EC NO.: EINECS and ELINCS Number (see also EINECS and ELINCS)
EINECS: European Inventory of Existing Commercial Substances
IATA: International Air Transport Association
kow: octanol-water partition coefficient
LC50: Lethal Concentration to 50 % of a test population
LD50: Lethal Dose to 50% of a test population (Median Lethal Dose)
SDS: Safety Data Sheet
OECD: Organization for Economic Co-operation and Development
PBT: Persistent, Bioaccumulative and Toxic substance
PEC: Predicted Effect Concentration
PNEC: Predicted No Effect Concentration(s)
PPE: Personal Protection Equipment
QSAR: Qualitative Structure Activity Relationship
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
SIEF: Substance Information Exchange Forum
STOT: Specific Target Organ Toxicity
STOT (RE): Repeated Exposure
STOT (SE): Single Exposure
vPvB: Very Persistent and Very Bioaccumulative

Hazard statements in full: H318 Causes serious eye damage.
H319 Causes serious eye irritation.

[cont...]

SAFETY DATA SHEET

Adipic Acid

Issued: 12/06/2023

Page 12

Legal disclaimer:

The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.