SAFETY DATA SHEET

ADIPIC ACID

CAS No.: 124-04-9

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

ADIPIC ACID
Synonyms: Hexanedioic acid; 1,4-Butanedicarboxylic acid
CAS: 124-04-9

Other means of identification

Not relevant

Recommended use of the chemical and restrictions on use

Relevant uses: Nylon 6,6 and polyester resin manufacture, plasticizer intermediate, polyurethane raw material, food-grade acidulant precursor chemistry (this grade for industrial/technical use), flux formulation. For industrial user only.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

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2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Eye Irrit. 2	Eye irritation, Category 2, H319

GHS label elements, including precautionary statements

GHS: Warning

Hazard statements

Eye Irrit. 2: H319 – Causes serious eye irritation.

Precautionary statements

P264: Wash hands thoroughly after handling.
P280: Wear eye protection/face protection.
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.
P501: Dispose of the contents/containers in accordance with regulations on hazardous waste.

Other hazards which do not result in classification

Fine dust may form combustible dust/air mixtures under certain conditions (dust explosion hazard for finely divided material in confined equipment such as mills/dryers). Does not meet the PBT/vPvB criteria.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Adipic Acid (technical grade)

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 124-04-9	Adipic Acid — Eye Irrit. 2: H319 – Warning	≥ 99.5%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

Mixtures

Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

Request medical assistance immediately, showing the SDS of this product.

By inhalation

Remove the person affected from the area of exposure, provide fresh air and keep at rest. Dust may cause mild irritation. Seek medical attention if symptoms persist.

By skin contact

Remove contaminated clothing, wash skin thoroughly with water and soap. Seek medical attention if irritation persists.

By eye contact

Rinse eyes thoroughly with lukewarm water for at least 15 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists.

By ingestion/aspiration

Rinse out the mouth with water. Give water to drink if the person is conscious. Seek medical attention if a large amount has been swallowed or if symptoms occur.

Most important symptoms/effects, acute and delayed	Acute and delayed effects are indicated in sections 2 and 11.
Indication of immediate medical attention and special treatment needed, if necessary	Not relevant

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Suitable: Water spray/fog, foam, carbon dioxide, dry chemical powder
Unsuitable: None known

Specific hazards arising from the chemical

Combustible solid; finely divided dust dispersed in air may form an explosible dust cloud in confined spaces (e.g. mills, dryers, silos) if an ignition source is present.

Special protective actions for fire-fighters

Evacuate all non-essential personnel. Intervention only by capable personnel who are trained and aware of the hazards of the product. In all cases wear self-contained breathing apparatus. When intervention in close proximity, wear full protective chemical-resistant suit. After intervention, proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).

Additional provisions

Cool fire-exposed containers/packaging with water spray from a safe distance. Avoid generating dust clouds near ignition sources during fire-fighting.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Avoid generating dust. Sweep up spilled material into containers, provided there is no additional risk. Use appropriate PPE (see section 8).

For emergency responders

Wear protective equipment. Keep unprotected persons away. See section 8.

Environmental precautions

Avoid release to drains, watercourses or soil in large quantities (can lower pH locally). Notify the relevant authority in case of significant environmental release.

Methods and materials for containment and cleaning up

Sweep or vacuum up (avoid generating dust) and place in a labelled container for reuse (preferred) or disposal.

Reference to other sections

See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use

Avoid generating and inhaling dust; use local exhaust ventilation/dust extraction for milling, grinding or transfer operations. Avoid contact with eyes.

B. Technical recommendations for the prevention of fires and explosions

Control dust concentrations and eliminate ignition sources in areas where dust clouds may form (e.g. bulk handling, milling); use appropriately rated (dust-ignition-proof) electrical equipment where applicable.

C. Technical recommendations on general occupational hygiene

Do not eat or drink during the process; wash hands afterwards with suitable cleaning products.

D. Technical recommendations to prevent environmental risks

Provide tight electrical equipment well protected against corrosion. Avoid atmospheric emissions. Warn people about the dangers of the product. Follow the protective measures given in the exposure controls/personal protection section. In industrial installations, apply the rules for the prevention of major accidents (consult an expert).

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Minimum Temp.	Ambient
Maximum Temp.	35°C (store in a cool, dry place)
Maximum time	24 Months in original sealed packaging

B. General conditions for storage

Store in a dry, well-ventilated area in tightly closed containers, away from strong oxidizing agents and strong bases. For additional information see subsection 10.5.

Specific end use(s)

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Adipic Acid CAS: 124-04-9	Not specifically established (ACGIH/OSHA)	Treat as Particulate Not Otherwise Classified (PNOC): 10 mg/m³ (inhalable), 3 mg/m³ (respirable)

Appropriate engineering controls

It is recommended to use localized extraction in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

B. Respiratory protection

For dusty operations use a particulate filter (FFP2/P2) respirator.

C. Specific protection for the hands

Protective gloves against minor risks (e.g. nitrile).

D. Eye and face protection

Safety glasses with side shields; chemical goggles for dusty operations.

E. Bodily protection

Standard work clothing / coveralls.

F. Additional emergency measures

Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available.

Environmental exposure controls

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid (crystalline powder/granules)
Appearance	White crystalline solid
Color	White
Odor	Slight, faint acidic odor
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	337°C (decomposes)
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant *
Product Description	
Density / Relative density at 20°C	1.36 g/cm³
Bulk density	~700–750 kg/m³
Concentration	≥ 99.5%
pH (saturated aqueous solution, 20°C)	~2.7–3.2 (acidic)
Partition coefficient n-octanol/water (log Pow)	0.08
Solubility in water at 20°C	~20 g/L (moderate)
Decomposition temperature	~230°C onset (decarboxylation)
Melting point/freezing point	152°C
Flammability	
Flash Point	196°C (closed cup)
Flammability (solid, gas)	Combustible solid; dust cloud may be explosible
Autoignition temperature	~420°C
Lower / Upper flammability limit	Not relevant (dust explosion parameters available on request)
Particle Characteristics	
Median equivalent diameter	Available on request (grade-dependent)

** Not relevant due to the nature of the product, not providing information on the properties of its hazards.*

Other information

Explosive properties	Not explosive; fine dust dispersed in air may present a dust explosion hazard in confined equipment
Oxidising properties	Not an oxidizer
Corrosive to metals	Not classified
Heat of combustion	~24.6 kJ/g (approx.)
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

10. STABILITY AND REACTIVITY

Reactivity

No reactivity hazard under normal conditions of storage, handling and use. Reacts with strong bases (neutralisation, exothermic) and can react with strong oxidizing agents.

Chemical stability

Chemically stable under the indicated conditions of storage, handling and use.

Possibility of hazardous reactions

Decarboxylates on strong heating (above ~230°C) with release of carbon dioxide/monoxide. Under recommended storage conditions no hazardous reactions are expected.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid generating dust clouds near ignition sources	Not applicable	Avoid strong heating (decomposition >230°C)	Not applicable	Avoid prolonged moisture (caking)

Incompatible materials

Strong Bases	Strong Oxidizing Agents
Avoid contact – exothermic neutralisation	Avoid contact

Hazardous decomposition products

Carbon monoxide and carbon dioxide on strong heating/combustion.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect)

Low acute oral toxicity. Large doses may cause mild gastrointestinal irritation.

B. Inhalation (acute effect)

Dust may cause mild irritation of the respiratory tract. Not classified as an inhalation hazard under normal handling.

C. Contact with skin and eyes (acute effect)

Causes serious eye irritation. Not classified as a skin irritant; prolonged contact with dust or solution may cause mild irritation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not classified.

E. Sensitizing effects

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure

Classification criteria are not met based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure

Classification criteria are not met based on available data.

H. Aspiration hazard

Non-applicable (solid).

Product-specific toxicological information

Identification	Acute Toxicity	Genus
Adipic Acid (technical grade) CAS: 124-04-9	LD50 oral: >5000 mg/kg	Rat
	LD50 dermal: >7940 mg/kg	Rabbit
	LC50 inhalation: Not established (low volatility solid)	–

12. ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment under standard GHS criteria.

Toxicity

Identification	Acute Toxicity	Species	Genus
Adipic Acid CAS: 124-04-9	LC50: 145 mg/L (96h)	Pimephales promelas	Fish
	EC50: 199 mg/L (48h)	Daphnia magna	Crustacean

Persistence and degradability

Readily biodegradable under standard OECD test conditions.

Bioaccumulative potential

Low bioaccumulation potential (log Pow 0.08).

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Low	Negligible	No	Partially dissolves

Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of Annex XIII.

Other adverse effects

Not described

13. DISPOSAL CONSIDERATIONS

Disposal methods

Preferably recover/recycle where feasible. Otherwise incinerate in a licensed waste incinerator or dispose of via approved chemical/industrial waste disposal, in accordance with local regulations. For packaging: rinse residues with water before disposal or recycling.

Refer to national and local regulations on waste management, including the Hazardous and Other Wastes (Management and Transboundary Movement) Rules.

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	Not regulated
14.2 UN proper shipping name	Non-applicable (not classified as a dangerous good under ADR/IMDG/IATA)
14.3 Transport hazard class(es)	Non-hazardous for transport
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22)

14.1 UN number	Not regulated
14.2 UN proper shipping name	Non-applicable (not classified as a dangerous good under ADR/IMDG/IATA)
14.3 Transport hazard class(es)	Non-hazardous for transport
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	EmS Codes: Not applicable | Limited quantities: Not applicable | Segregation group: Not relevant
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024)

14.1 UN number	Not regulated
14.2 UN proper shipping name	Non-applicable (not classified as a dangerous good under ADR/IMDG/IATA)
14.3 Transport hazard class(es)	Non-hazardous for transport
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991

16. OTHER INFORMATION

Legislation related to safety data sheets

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3

H319: Causes serious eye irritation.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources

The United Nations Economic Commission for Europe (UNECE); European Chemicals Agency (ECHA) classification and labelling inventory; ACGIH Threshold Limit Values.

Abbreviations and acronyms

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

Disclaimer: The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

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