



Carolina International Sales Co., Inc

## MATERIAL SAFETY DATA SHEET

2522 Plantation Center Drive  
Matthews, NC 28105  
(704) 845 9440

www.ciscochem.com

1. PRODUCT NAME: Adipic Acid

2. CHEMICAL NAME: Adipic Acid

3. SYNONYMS:

4. CAS NUMBER: 124-04-9

5. PROPERTIES: ODOUR & APPEARANCE: white crystalline  
odourless solid

ODOUR THRESHOLD: none-odourless

VAPOUR PRESSURE: 0.073mmHg/0.0097kPa (18 c)

EVAPORATION RATE (Butyl Acetate-1): nil- not available

VAPOUR DENSITY (air=1): 5

BOILING RANGE: 337.5 c (265 c/509 F @ 100mmHg) decomposes to vapour acid and other substances  
above 330 c

MELTING POINT: 152 c/306F

SPECIFIC GRAVITY: 1.36 (20/20 C)

WATER SOLUBILITY: 14 grams per litre (20 c); 1600 grams per litre (100 c)

IN OTHER SOLVENTS: highly soluble in methyl & ethyl alcohols; soluble in acetone & ethyl acetate  
slightly soluble in aromatic hydrocarbons

VISCOSITY (molten material): 4.54 centipoise (160 c)

PH: 2.7 (saturated solution); 3.2 (0.1% solution) – adipic acid is a weak acid

6. HAZARDS: Adipic Acid - 100%

7. FIRE FIGHTING FLASH POINT: 196 c/385 F (closed cup)- however, product dust is considered combustible

MEASURES: AUTOIGNITION TEMPERATURE: 420 c/788 F

FLAMMABLE LIMITS: 35g/m<sup>3</sup> or higher (dust) will ignite; upper limit not well defined

COMBUSTION PRODUCTS: carbon monoxide, nitrogen oxides, acrid smoke, part oxidised hydrocarbon  
fragments

FIRE FIGHTING PRECAUTIONS: foam, dry chemical, water fog, water spray only to cool & dilute,  
product that float on water- water jets spreads flames; firefighters must wear SCBA

STATIC DISCHARGE: dust can accumulate a static charge, which could cause an explosion

MECHANICAL IMPACT: not sensitive

CHEMICAL STABILITY: stable; will not polymerize

REACTIVE WITH: violent reaction with strong oxidizing agents; may react vigorously with strong alkalis  
and reducing agents; contact with alcohols, glycols, epoxides and some polymerisable compounds may  
cause violent polymerisation

DECOMPOSITION PRODUCTS: decomposes to valeric acid vapour (low hazard) above 330 c

8. PERSONAL HANDS: not required

PROTECTION EYES: safety glasses with side shields

MEASURES: VENTILATION: required to maintain airborne concentration below TWAEV

CLOTHING: not required

THRESHOLD LIMIT VALUES: 8 hr Time Weighted Avg (TWA): 5mg/cu m., Excursion limit recommended:  
Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a  
total of 30 min during a work day, and under no circumstances should they exceed 5 times the TLV-TWA,  
provided that the TLV-TWA is not exceeded.

ATMOSPHERIC STANDARDS: This action promulgates standards of performance for equipment leaks  
of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOC-

IN CASE OF  
TRANSPORT EMERGENCY  
CONTACT CHEMTREC  
USA: 1-800-424-9300  
INTERNATIONAL: 1-703-527-3887



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MI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCOMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC considering costs, non air quality health and environmental impact and energy requirements. Adipic acid is produced, as an intermediate or final product, by process units covered under this subpart. CLEAN WATER ACT REQUIREMENTS: Designated as a hazardous substance of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

CERCLA REPORTABLE QUANTITIES: Persons in charge of vessels of facilities are required to notify the National Response Center (NRC) immediately, when there is release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000 lb or 2270 kg. The toll free number of the NRC IS (800) 424-8802; In the Washington D.C metropolitan area (202) 426-2675. The rule for determining when notification is required is stated in 40 CFR 302.4

FDA REQUIREMENTS: Substance added to human food affirmed as generally recognized as safe (GRAS). This substance is generally recognized as safe when used as a buffer and !

neutralizing agent in accordance with good manufacturing or feeding practice. Adipic acid is an indirect food additive in polymer used as a basic component of single and repeated use food contact surfaces. Polyurethane resins are approved for use on dry solids with the surface containing no free fat or oil (no end test required). Adipic acid is an indirect food additive polymer for use as a basic component of single and repeated use food contact surfaces. Cross-linked polyester resins (produced by the condensation of one or more of the acids, shall meet the following extractives limitations: net chloroform-soluble extractives not to exceed 0.1 mg/sq in of food contact surface tested when the prescribed food-simulating solvent is water or 8 or 50% alcohol: total nonvolatile extractives not to exceed 0.1 mg/sq in of food contact surface when... solvent is heptane. In accordance with good manufacturing practice, finished articles containing the cross-linked polyester resins should be... cleansed prior to ... first use in contact with food.

9. FIRST AID PROCEDURES: SKIN: Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.  
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.  
INHALATION: Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.  
INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.  
NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

10. EXPOSURE LIMITS: TWAEV ppm: 5  
LD50 ORAL: 1900  
SKIN (mg/kg): not known  
LC50 ppm INHALATION: not known

11. TOXICOLOGICAL INFORMATION: EFFECT OF ACUTE EXPOSURE  
SKIN: CONTACT: dry product not irritating; solutions may irritate  
SKIN ABSORPTION: absorption unlikely  
EYE CONTACT: product dust is a mechanical irritant  
INHALATION: an unlikely route of exposure; mild irritation likely after dust inhalation – reports of injury on exposure of workers to 26 mg/m<sup>3</sup> of dust cannot be attributed to adipic acid likely due to the presence of other chemicals



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INGESTION: severely irritation possible; no other symptoms known; animal testing has shown little effect following oral doses of 1% - 5% of total food intake

### EFFECTS OF CHRONIC EXPOSURE

GENERAL: prolonged exposure to very high concentrations of dust may cause neurotoxicity; prolonged ingestion of 3% - 5% adipic acid reduced weight gain in rats (both probably not relevant to industrial exposure)

SENSITISING: not a sensitiser

CARCINOGENIC: not a tumorigen not a carcinogen in either animals or humans

REPRODUCTIVE EFFECT: no known effect in humans; not a mutagen, not a teratogen

SYNERGISTIC WITH: not known

ESTIMATED LD50: 11,000mg/kg (oral, rat & rabbit); 1900mg/kg (oral, mouse) (A rat LD50 (oral) of 940mg/kg could not be repeated – probably false.)

ESTIMATED LC50: not known

NOTE: LD50 varies widely among species. Human toxicity is probably impossible to gauge from these data.

12. ECOLOGICAL INFORMATION: This product cannot accumulate in living tissue, this product is readily and rapidly biodegradeable; 90% degradation over 7 days in a “river die-away test”; 84% converted to CO<sub>2</sub> within 30 days in a soil decomposition test.
13. DISPOSAL CONSIDERAIONS: DO NOT FLUSH IN SEWER; may be incinerated in approved facility.
14. CARCINOGENIC PROPERTIES & NOTIFICATIONS: Not a tumorigen not a carcinogen in either animals or humans.
15. TRANSPORT INFORMATION: USA 49 CFR  
Product identification number: UN- 3077  
Shipping name: ENVORINMENTAL HAZARDOUS SUBSTANCE, SOLID, (adipic acid)  
Classification: Class 9; Packing group III  
Label: Class 9  
WHMIS Class: D 2B  
Material use: Manufacture of nylon, polyurethane foam, resins, food additive, adhesives, mfg. Of esters (plasticizers)
16. HANDLING & STORAGE: Store and use in a cool dry environment, away from sources of ignition, heat, alkaines, reducing and oxidizing agents. Use with adequate ventilation. Ground the container before transferring or handling to prevent static discharge, which may cause ignition. Take care to aviod dust buildup on handling equipment. Do not cut, drill, weld or grind near this container. Avoid contact with skin and wash work clothes frequently. An eye bath safety shower must be available near the workplace. Consider purging storage containers with nitrogen.
17. ACCIDENTAL RELEASE MEASURES: LEAK PRECAUTION: contain product to prevent environmental contamination, FIRE POTENTIAL: dust is liable to ignite, and is potentially explosive; avoid creating dust and handle with spark-proof equipment, away from sources of ignition, heat, etc.  
HANDLING SPILL: ventilate area of spill; dampen spill with water before sweeping; pick using non-sparking plastic or aluminium shovels, OR pick up wit vacuum cleaner with a highly efficient filtration system; store in closed containers for disposal.