

1. Identification

Product identifier ADI-PURE® High Purity Adipic Acid
Other means of identification Not available.
Recommended use Chemical intermediate.
Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Information INVISTA S.à r.l.
 INVISTA Building
 4123 East 37th Street North
 Wichita, KS 67220
Emergency telephone: CHEMTREC: 855-224-6545
General Information Product Information: 1-877-446-8478
 Outside the U.S.: +1-770-792-4221
e-mail sds@invista.com

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Serious eye damage/eye irritation Category 2A
OSHA defined hazards Combustible dusts Classified

Label elements



Signal word Warning

Hazard statement Causes serious eye irritation. May form combustible dust concentrations in air.

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Wash thoroughly after handling. Wear eye/face protection. Prevent dust accumulation to minimize explosion hazard.

Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage Not assigned.

Disposal Not assigned.

Hazard(s) not otherwise classified (HNOC) Not classified.

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 3

Supplemental information

Hazard statement Harmful to aquatic life.

Prevention Avoid release to the environment.

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

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
ADIPIC ACID		124-04-9	> 99%

Composition comments Pure Substance.

4. First-aid measures

Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. If the affected person is not breathing, apply artificial respiration. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention, if needed.
Skin contact	Wash off immediately with plenty of water. For minor skin contact, avoid spreading material on unaffected skin. If skin irritation persists, call a physician.
Eye contact	Immediately flush eyes with plenty of water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Ingestion	If swallowed, do NOT induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth to a victim who is unconscious or is having convulsions. If the affected person is not breathing, apply artificial respiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	<p>Skin: May cause skin irritation in susceptible persons. Symptoms may include redness, drying of skin, itching and pain.</p> <p>Eyes: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.</p> <p>Inhalation: Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.</p> <p>Ingestion: May cause temporary irritation of the throat, stomach, and gastrointestinal tract. Ingestion of this product may cause nausea, vomiting and diarrhea.</p>
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Keep victim warm. In case of shortness of breath, give oxygen. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. Fire-fighting measures

Suitable extinguishing media	Dry chemical, CO ₂ , water spray or regular foam.
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	<p>Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.</p> <p>Irritating and toxic gases or fumes may be released during a fire.</p>
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire-fighting equipment/instructions	Cool containers / tanks with water spray. Move containers from fire area if you can do so without risk. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. In the event of fire, cool tanks with water spray.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Remove all sources of ignition. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	<p>Clean up in accordance with all applicable regulations. Cover powder spill with plastic sheet or tarp to minimize spreading. Use only non-sparking tools. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).</p> <p>Large Spills: Sweep up or gather material and place in appropriate container for disposal. Cover with plastic sheet to prevent spreading. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.</p> <p>Small Dry Spills: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p>

Environmental precautions Runoff from fire control or dilution water may cause pollution. Avoid release to the environment. Avoid discharge into drains, water courses or onto the ground. Dike the spilled material, where this is possible.

7. Handling and storage

Precautions for safe handling Wear appropriate personal protective equipment. Minimize dust generation and accumulation. Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin and eyes. Avoid prolonged exposure. Wash thoroughly after handling. Use care in handling/storage.

Conditions for safe storage, including any incompatibilities Keep away from heat, sparks, and flame. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value
ADI-PURE® High Purity Adipic Acid	TWA	5 mg/m3
Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.

Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Use only appropriately classified electrical equipment and powered industrial trucks.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear chemical goggles and face shield.

Hand protection Use impervious gloves.

Request information on glove permeation properties from the glove supplier.

Other Wear appropriate chemical resistant clothing.

Respiratory protection Respirator must be worn if exposed to dust. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Thermal hazards When material is heated, wear gloves to protect against thermal burns.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance Powder.

Physical state Solid.

Form Solid Powder.

Color Colorless.

Odor None.

Odor threshold Not available.

pH 2.7 at 25 °C (saturated aqueous solution); 3.2, conc: 0.1% (solution)

Melting point/freezing point 305.6 °F (152 °C)

Initial boiling point and boiling range 638.6 °F (337 °C) @ 760 mm Hg with decomposition

Flash point 384.8 °F (196 °C) Tag Closed Cup

Evaporation rate Not available.

Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0 kPa at 25 °C 0 kPa at 18.5 °C 0.097 hPa at 18.5°C
Vapor density	5.04 5.04 (air =1)
Relative density (liquid)	Not available.
Solubility(ies)	2.5 % w/w at 25°C
Partition coefficient (n-octanol/water)	0.081 at 25°C
Auto-ignition temperature	788 °F (420 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Chemical family	Dicarboxylic Acids
Density	1.36 g/cm3 estimated
Dust explosion properties	
Kst	184 bar.m/s
Minimum explosible concentration (MEC)	0.39 g/m ³
Minimum ignition energy (MIE) - dust cloud	5 mJ
Dynamic viscosity	2.64 mPa.s 4.54 mPa.s
Dynamic viscosity temperature	379.4 °F (193 °C) 320 °F (160 °C)
Molecular formula	C6-H10-O4
Molecular weight	146.14 g/mol
Percent volatile	0 %
Specific gravity	1.36
VOC (Weight %)	0 % 100 % EPA estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Not expected to occur.
Conditions to avoid	Do not expose to temperatures above 200 °C.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide.

11. Toxicological information

Information on likely routes of exposure

Ingestion	May cause temporary irritation of the throat, stomach, and gastrointestinal tract. Ingestion of this product may cause nausea, vomiting and diarrhea.
Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Skin contact	May cause skin irritation in susceptible persons. Symptoms may include redness, itching, drying of skin.
Eye contact	Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Symptoms related to the physical, chemical and toxicological characteristics See information on likely routes of exposure.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
ADIPIC ACID (CAS 124-04-9)		
Acute		
<i>Dermal</i>		
NOEL	Rabbit	> 7940 mg/kg, 24 Hours
<i>Inhalation</i>		
NOEC	Rat	7700 mg/m ³ , 4 Hours
<i>Oral</i>		
LD50	Rat	5560 mg/kg

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory sensitization Due to lack of data the classification is not possible.

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

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

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

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

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure Due to lack of data the classification is not possible.

Aspiration hazard Not likely, due to the form of the product.

Chronic effects None known.

Further information None known.

12. Ecological information

Ecotoxicity

Components	Species	Test Results	
ADIPIC ACID (CAS 124-04-9)			
Algae	EC10	Algae	41 mg/L, 72 Hours
	EC50	Algae	59 mg/l, 72 Hours
Crustacea	EC50	Daphnia	46 mg/L, 48 Hours
Fish	LC0	Danio rerio	> 1000 mg/l, 96 hours

Persistence and degradability Readily biodegradable.
Biodegradability = 100 % after 28 Days

Bioaccumulative potential Does not bioaccumulate.

Partition coefficient n-octanol / water (log Kow)

ADIPIC ACID 0.08

Bioconcentration factor (BCF)

ADI-PURE® High Purity Adipic Acid 3.162, (Currenta 2009) BCFWIN

Mobility in soil

Adsorption

Soil/sediment sorption - log Koc

ADI-PURE® High Purity Adipic Acid 2.4

Mobility in general

Volatility

Henry's law

ADI-PURE® High Purity Adipic Acid 0.0616, Pa m³/mole

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations. Do not dispose of waste into sewer.

Waste from residues / unused products Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport information

DOT

UN number UN3077
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (ADIPIC ACID RQ = 5000)
Transport hazard class(es) 9
Subsidiary class(es) Not applicable.
Packing group III
Marine pollutant No

IATA

Not regulated as a dangerous good.

IMDG

Not regulated as a dangerous good.

General information

U.S. Department of Transportation (DOT) Requirements: Environmentally hazardous substances, solid, n.o.s. (Adipic Acid)
Packages containing less than 5,000 lbs Adipic Acid are not regulated by United States DOT.

DOT



15. Regulatory information

US federal regulations

CERCLA Hazardous Substance List (40 CFR 302.4)

ADIPIC ACID (CAS 124-04-9) LISTED

US CERCLA Hazardous Substances: Reportable quantity

ADIPIC ACID (CAS 124-04-9) 5000 lbs

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical Yes

Other federal regulations

Clean Water Act (CWA) Hazardous substance
Section 112(r) (40 CFR
68.130)

US state regulations**US. Massachusetts RTK - Substance List**

ADIPIC ACID (CAS 124-04-9)

US. Pennsylvania RTK - Hazardous Substances

ADIPIC ACID (CAS 124-04-9)

US. Rhode Island RTK

ADIPIC ACID (CAS 124-04-9)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	October-23-2013
Revision date	09-Oct-2014
Version #	3.0
Further information	Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.
HMIS® ratings	Health: 2 Flammability: 1 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 1 Instability: 0
List of abbreviations	Defined as necessary above.
References	Thompson Micromedex, Database, 2006. Hazardous Substance Data Bank, Database, 2006. Internal assessments, testing and research. EPA: EPISuite Database CRC: Handbook of Chemistry and Physics

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