

1. Identification

Product identifier ADI-PURE® High Purity Adipic Acid

Other means of identification

SDS number 1855

Recommended use Chemical intermediate.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Information INV Nylon Chemicals Americas, LLC
4123 East 37th Street North
Wichita, KS 67220

Emergency telephone 1-855-224-6545

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

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

OSHA defined hazards Combustible dust

Label elements



Signal word Warning

Hazard statement Causes serious eye irritation. May form combustible dust concentrations in air. Harmful to aquatic life.

Precautionary statement

Prevention Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Avoid release to the environment.

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

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
ADIPIC ACID		124-04-9	≥99.8

Composition comments Pure Substance.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. If the affected person is not breathing, apply artificial respiration. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not use mouth-to-mouth method if victim inhaled the substance. Get medical attention, if needed.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse. Get medical attention if irritation develops or persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
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. Do not use mouth-to-mouth method if victim ingested the substance. Obtain medical attention, as needed.
Most important symptoms/effects, acute and delayed	Skin: May cause skin irritation in susceptible persons. Symptoms may include redness, drying of skin, itching and pain. Eyes: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Inhalation: Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Ingestion: May cause temporary irritation of the throat, stomach, and gastrointestinal tract. Ingestion of this product may cause nausea, vomiting and diarrhea.
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. Show this safety data sheet to the doctor in attendance.

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. Do not use water jet.
Specific hazards arising from the chemical	Irritating and toxic gases or fumes may be released during a fire. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons. 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.
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. Structural firefighters protective clothing will only provide limited protection.
Fire fighting equipment/instructions	Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. In the event of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
Specific methods	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. ALWAYS stay away from tanks engulfed in flame. Water runoff can cause environmental damage.
General fire hazards	Dust accumulation from this product may present an explosion hazard in the presence of an ignition source.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Immediately evacuate personnel to safe areas. Keep out of low areas. Remove all sources of ignition. For personal protection, see section 8 of the SDS. Do not touch or walk through spilled material.
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Methods and materials for containment and cleaning up

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. Use only non-sparking tools.

Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Clean contaminated surface thoroughly.

Large Spills: Sweep up and shovel into suitable containers for disposal. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.

Small Spills: Sweep up or gather material and place in appropriate container for disposal.

Never return spills in original containers for re-use. Eliminate all sources of ignition or flammables that may come into contact with a spill of this material.

Environmental precautions

Prevent further spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling

Do not get this material in contact with skin or eyes. Avoid dust formation. Ground and bond containers when transferring material. Avoid all personal contact. Do not breathe dust from this material. Do not get this material in your eyes, on your skin, or on your clothing. Do not taste or swallow. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Use care in handling/storage.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks, and flame. Eliminate sources of ignition. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Keep this material away from food, drink and animal feed. Keep tightly closed in a dry, cool and well-ventilated place. Store away from strong oxidizers. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Use care in handling/storage. Store in accordance with local/regional/national/international regulation. Store away from incompatible materials (see Section 10 of the SDS).

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

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.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Nitrile rubber.

Request information on glove permeation properties from the glove supplier.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

When workers are facing concentrations above the exposure limit, they must use appropriate certified respirators. Respirator must be worn if exposed to dust.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

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. Avoid contact with the skin and the eyes. Keep away from food and drink. When using, do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	White Crystalline Powder.
Physical state	Solid.
Form	Crystalline Powder.
Color	White.
Odor	None.
Odor threshold	Not available.
pH	2.7 (saturated aqueous solution at 25°C) 3.2 (0.1% aqueous solution at 25°C)
Melting point/freezing point	304.7 - 307.4 °F (151.5 - 153 °C) / 305.6 °F (152 °C)
Initial boiling point and boiling range	639.5 °F (337.5 °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	9.7 Pa at 18.5°C
Vapor density	5.04 (air =1)
Relative density (liquid)	Not available.
Solubility(ies)	
Solubility (water)	2.5 % w/w at 25°C
Partition coefficient (n-octanol/water)	0.081 at 25°C
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Chemical family	Dicarboxylic Acids
Density	1.09 g/cm3 -For Liquid at 163°C (325.4°F) 1.36 g/cm3 -For Solid at 25°C
Dust explosion properties	
Kst	184 bar.m/s
Minimum explosible concentration (MEC)	39 g/m³
Minimum ignition energy (MIE) - dust cloud	5 mJ
Dynamic viscosity	2.64 cP at 193°C (379.4°F) 4.54 cP at 160°C (320°F)
VOC (Weight %)	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 at normal conditions.
Possibility of hazardous reactions	Not expected to occur.
Conditions to avoid	High temperatures. Minimize dust generation and accumulation. Do not expose to temperatures above 200°C.
Incompatible materials	Strong oxidizing agents. Incompatible with strong acids and bases. Strong reducing agents.
Hazardous decomposition products	Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

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.
Ingestion	May cause temporary irritation of the throat, stomach, and gastrointestinal tract. Ingestion of this product may cause nausea, vomiting and diarrhea.

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		
Dermal		
NOEL	Rabbit	> 7940 mg/kg, 24 Hours
Inhalation		
NOEC	Rat	7700 mg/m ³ , 4 Hours
Oral		
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. Severely irritating; if not removed promptly, will injure eye tissue, which may result in permanent damage.

Respiratory or skin sensitization

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.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

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

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)			
Aquatic			
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
	LC50	Fathead minnow (Pimephales promelas)	97 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 Since emptied containers may retain product residue, follow label warnings even after container is emptied. Dispose of contents/container (in accordance with related regulations).

14. Transport information

DOT

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

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

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

**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.

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

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

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

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

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

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
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
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	October-05-2020
Version #	5.0
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: 2 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
Disclaimer	This Safety Data Sheet ("SDS") contains selected information about a specific INVISTA product or group of products. It relates only to the identified product and any identified uses and is based on information available as of the date hereof. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided herein with respect to any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. THIS SDS WAS PREPARED PURSUANT TO GOVERNMENT REGULATIONS THAT IDENTIFY SPECIFIC TYPES OF INFORMATION TO BE PROVIDED HEREIN. IT IS THEREFORE NOT INTENDED AS, AND DOES NOT CONTAIN, A COMPLETE STATEMENT OF, AND DOES NOT CONSTITUTE A REPRESENTATION, WARRANTY OR GUARANTY WITH REGARD TO, A PRODUCT'S CHARACTERISTICS, USES, QUALITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR THE SUITABILITY, SAFETY, EFFICACY, HAZARDS OR HEALTH EFFECTS OF THE PRODUCT, WHETHER USED SINGULARLY OR IN COMBINATION WITH ANY OTHER PRODUCT, EXCEPT TO THE EXTENT REQUIRED BY THE RELEVANT LAW AND REGULATIONS. Purchasers and users of the product are responsible for determining that the product is suitable for the intended use and that their workers and the general public are advised of any risks resulting from such use. Nothing contained in this SDS shall be construed to modify any of the commercial terms pursuant to which the product was sold by INVISTA including, but not limited to, terms and conditions addressing each party's respective rights and obligations with regard to warranties, remedies and indemnification. Purchasers and users of the product specifically should advise all of their employees, agents, contractors and customers who will use the product of the SDS, and any supplementary SDS or written warnings that they may receive from INVISTA from time-to-time. In addition, if purchasers and users believe or have reason to believe that the SDS or other information provided to them by INVISTA is inaccurate or in any way insufficient for any purpose, they should immediately notify INVISTA of the same, and of the basis for their belief (for example, studies, data, reports of incidents, etc.) so that INVISTA can determine whether modification or supplementation of the SDS, or other measures, are appropriate. Failure of purchasers and users to timely provide such notice shall be deemed a waiver by purchasers and users of any and all claims, demands or causes of action, including causes of action based on an alleged failure to warn, for personal injury or damage to the environment or property arising from or attributable to the use of product. This disclaimer shall be effective to the extent allowed by law. Should any provision be deemed to be ineffective or unenforceable, that provision shall be deemed severed from the disclaimer and the remaining provisions shall continue to have full force and effect.
Revision information	Product and Company Identification: Product and Company Identification