

SAFETY DATA SHEET

Preparation Date: 1/11/2018

Revision Date: 1/11/2018

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: B1087
Product Name: BENZONITRILE, REAGENT

Other means of identification

Synonyms: Benzoic acid nitrile
 Benzene, cyano-
 Cyanobenzene
 Phenyl cyanide

CAS #: 100-47-0
RTECS # DI2450000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Chemical intermediate. Solvent.
Uses advised against No information available

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300

Contact Person: Martin LaBenz (West Coast)

Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Flammable liquids	Category 4

Label elements

Warning

Hazard statements

Harmful if swallowed
Harmful in contact with skin
Harmful if inhaled
Causes skin irritation
Causes eye irritation
Combustible liquid



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves
Wear eye/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking

Precautionary Statements - Response

In case of fire: Use CO₂, dry chemical, or foam to extinguish.
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.
IF ON SKIN: Wash with plenty of water
Call a POISON CENTER or doctor/physician if you feel unwell
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage

Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Benzonitrile	100-47-0	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you

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have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

- Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.
- Eye Contact:** Flush eyes with water for 15 minutes. Get medical attention. If symptoms persist, call a physician.
- Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

- Symptoms**
- Causes skin irritation
 - Causes eye irritation
 - May cause pulmonary edema
 - Central nervous system effects
 - May cause digestive (gastrointestinal) tract irritation
 - Ingestion may cause nausea, vomiting, and diarrhea
 - May affect respiration
 - It may affect the kidneys
 - May affect the liver

Indication of any immediate medical attention and special treatment needed

- Notes to Physician:** Acute toxicity testing (in vivo and invitro) of Benzonitrile demonstrated that, unlike most nitriles, it does not liberate cyanide. However it is good practice to watch for signs of cyanide poisoning and to have a cyanide antidote kit available.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Dry chemical. Carbon dioxide (CO₂). Water spray mist or foam.

Unsuitable Extinguishing Media: High volume water jet. Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products: Nitrogen Oxides. cyanides. Hydrogen cyanide.

Specific hazards: Combustible material. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Most vapors are heavier than air. Vapors may spread along ground and collect in low or confined areas (sewers, basements, tanks).

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For

larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. Dike fire-control water for later disposal; do not scatter the material.

Special Protective Equipment for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions:

Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded. Remove all sources of ignition.

Environmental precautions

Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment

Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up

Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe vapors or spray mist. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Hygroscopic. Air sensitive. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials. Store under inert gas. Store under nitrogen.

Incompatible Materials:

Strong acids
Strong oxidizing agents
Strong bases
Strong reducing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Benzonitrile	100-47-0	None	None	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Benzonitrile	100-47-0	None	None	None	None

Australia and Mexico

Components	CAS-No.	Australia	Mexico
Benzonitrile	100-47-0	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Long sleeved clothing
Chemical resistant apron
Gloves

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Liquid

Appearance:

Oily.

Color:

Colorless.

Odor:

No information available.

Taste

Sharp.

Formula:

C6-H5-CN

Molecular/Formula weight:

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103.12

Flammability:
No information available

Flashpoint (°C/°F):
75°C/167°F
85°C/185°F

Flash Point Tested according to:
Closed cup
Open cup

Autoignition Temperature (°C/°F):
No information available

Lower Explosion Limit (%):
No information available

Upper Explosion Limit (%):
No information available

Melting point/range(°C/°F):
-13 °C/8.6 °F

Decomposition temperature(°C/°F):
No information available

Boiling point/range(°C/°F):
190.7 °C/375.26

Bulk density:
No information available

Density (g/cm3):
No information available

Specific gravity:
1.01

pH:
No information available

Vapor pressure @ 20°C (kPa):
0.1

Evaporation rate:
13 (butyl acetate = 100)

Vapor density:
3.6

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

**Partition coefficient
(n-octanol/water):**
log Kow = 1.56

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Solubility in Water: 2150 g/l at 20°C
Very soluble in Acetone
Very soluble in Benzene
Soluble in Carbon tetrachloride

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources.

Incompatible Materials:
Strong acids
Strong oxidizing agents
Strong bases
Strong reducing agents

Hazardous decomposition products: When heated to decomposition it emits toxic fumes. Nitrogen oxides (NOx). cyanide fumes.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product code: B1087

Product name: BENZONITRILE,
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Principal Routes of Exposure:

Ingestion. Inhalation. Skin.

Acute Toxicity**Component Information**

Benzonitrile	
CAS-No.	100-47-0

LD50/oral/rat = 700 mg/kg Oral LD50 Rat**LD50/oral/mouse** = 971-1400 mg/kg**LD50/dermal/rabbit** = 1250 mg/kg Dermal LD50Rabbit**LD50/dermal/rat** = 1200 mg/kg**LC50/inhalation/rat** = 3.79 mg/l 4 hours**LC50/inhalation/mouse** = 2.95 mg/l 4 hours**Other LD50 or LC50 information** = 720-1500 mg/kg LD50 Oral Rat (IUCLID dataset)**Product Information****LD50/oral/rat** =**VALUE- Acute Tox Oral** = 700 mg/kg**LD50/oral/mouse** =**Value - Acute Tox Oral** = 971 mg/kg**LD50/dermal/rabbit****VALUE-Acute Tox Dermal** = 1250 mg/kg**LD50/dermal/rat****VALUE -Acute Tox Dermal** = 1200 mg/kg**LC50/inhalation/rat****VALUE-Vapor** = No information available**VALUE-Gas** = No information available**VALUE-Dust/Mist** = 3.79 mg/l (4-hr.)**LC50/Inhalation/mouse****VALUE-Vapor** = No information available**VALUE - Gas** = No information available**VALUE - Dust/Mist** = 2.95 mg/ml 4 hr**Symptoms****Skin Contact:**

Harmful in contact with skin. Causes skin irritation. Mildly to moderately irritating to the skin. It can be absorbed through the skin.

Eye Contact:

Causes eye irritation. Mild eye irritation.

Inhalation

Harmful by inhalation. May cause irritation of respiratory tract. May cause central nervous system effects, central nervous system depression. Can cause dyspnea (shortness of breath and difficulty breathing). Toxic signs include labored breathing, hyperventilation, excessive sweating, thirst, headache, dizziness, sluggishness, fatigue, tremors, unsteady gait, confusion, weakness, a comatose state, convulsions, and death. It may cause pulmonary edema. May cause nausea, vomiting. May cause cardiovascular system effects. Note: When tested in vivo and in vitro, Benzonitrile did not liberate cyanide. Therefore cyanide poisoning is not likely.

Ingestion Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause excessive sweating. May cause thirst. May cause salivation. May affect respiration (dyspnea - difficulty breathing and shortness of breath; hyperventilation). May affect behavior/central nervous system (tremor, convulsions, anxiety, somnolence, fatigue and other symptoms similar to acute inhalation). May affect the cardiovascular system (tachycardia). May affect liver. May affect urinary system (kidneys). Note: When tested in vivo and in vitro, Benzonitrile did not liberate cyanide. Therefore cyanide poisoning is not likely.

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated inhalation and/or ingestion may cause central nervous system effects (affect behavior). Chronic exposure may affect the liver, kidneys, and blood. Prolonged or repeated inhalation may affect the blood (normocytic anemia). Prolonged or repeated inhalation may affect metabolism (weight loss).

Sensitization: No information available.

Mutagenic Effects: May affect genetic material

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Benzonitrile	100-47-0	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Target Organs: Kidneys. Liver. Central nervous system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Benzonitrile - 100-47-0

Freshwater Algae Data: 231 mg/L EC50 Chlorella vulgaris 6 h

Freshwater Fish Species Data: 78 mg/L LC50 Pimephales promelas 96 h static 1 78 mg/L LC50 Lepomis

Water Flea Data: macrochirus 96 h static 1 400 mg/L LC50 Poecilia reticulata 96 h static 1 64 mg/L
LC50 Pimephales promelas 96 h 1 130 mg/L LC50 Brachydanio rerio 96 h 1
122 mg/L EC50 Daphnia magna 24 h

Persistence and degradability: Biodegradable

Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is low.

Mobility: It is expected to have moderate mobility based upon estimated Koc.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Benzonitrile	100-47-0	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Class: No information available
Packing group: II
Emergency Response Guide Number: 152
Marine Pollutant: No data available
DOT RQ (lbs): No information available
Special Provisions: IB2, T7, TP2
Symbol(s): [DOT]: (R5) - Identifies a material that is a hazardous substance that has a reportable quantity (RQ) of 5000 pounds (2270 Kilograms).
Description: UN2224, Benzonitrile, 6.1, II

TDG (Canada)

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No Information available
Description: UN2224, Benzonitrile, 6.1, II

ADR

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Packing Group: II
Subsidiary Risk: No information available
Description: UN2224, Benzonitrile, 6.1, II

IMO / IMDG

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant No information available
EMS: F-A
Description UN2224, Benzonitrile, 6.1, II

RID

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Risk: 6.1
Packing Group: II
Description: UN2224, Benzonitrile, 6.1, II

ICAO

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Risk: No information available
Packing Group: II
Description: UN2224, Benzonitrile, 6.1, II

IATA

UN-No: UN2224
Proper Shipping Name: Benzonitrile
Hazard Class: 6.1
Subsidiary Risk: No information available
Packing Group: II
ERG Code: 6L
Special Provisions No information available
Description: UN2224, Benzonitrile, 6.1, II

15. REGULATORY INFORMATION**International Inventories**

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
<i>Benzonitrile</i>	100-47-0	PresentACTIV E	Present KE-02715	Present	Present (3)-1796	Present	Present	Present 202-855-7

U.S. Regulations*Benzonitrile*

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0211
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
New York Release Reporting - List of Hazardous Substances:
 5000 lb RQ
 1 lb RQ
Louisiana Reportable Quantity List for Pollutants: 5000lbfinal RQ
 2270kgfinal RQ
California Directors List of Hazardous Substances: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Benzonitrile	100-47-0	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Benzonitrile	100-47-0	5000 lb final RQ 2270 kg final RQ	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Benzonitrile	100-47-0	Not Applicable	Not Applicable

Canada**WHMIS 2015 - GHS Classifications**

WHMIS 2015 Hazard Classification Information:

The WHMIS 2015 classification of this product has not been validated or reviewed yet.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class

B3 Combustible liquid
D1A Very toxic materials

Components

Benzonitrile

WHMIS 1988

B3,D1A

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Benzonitrile	1 %

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Benzonitrile	100-47-0	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Benzonitrile	100-47-0	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject

Product code: B1087

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		to Mandatory Reporting
Benzonitrile	100-47-0	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Benzonitrile	100-47-0	Acute toxicity - Oral - Acute Tox. 4: H302 Harmful if swallowed. (Minimum classification); Acute toxicity - Dermal - Acute Tox. 4: H312 Harmful in contact with skin. (Minimum classification)608-012-00-3

EU - CLP (1272/2008)

R-phrases(s)

R21/22 - Harmful in contact with skin and if swallowed.

S -phrase(s)

S 2 - Keep out of the reach of children.

S23 - Do not breathe gas/fumes/vapor/spray.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Benzonitrile	100-47-0	Xn; R21/22	No information	S: 2 23

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Xn - Harmful.

Xn



16. OTHER INFORMATION

Preparation Date: 1/11/2018
Revision Date: 1/11/2018
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal

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End of Safety Data Sheet