


SAFETY DATA SHEET

Revision Date : 31.03.2020

SECTION 1: Chemical Product and Company Identification

Product name: Acetonitrile
Identified uses: laboratory chemicals, organic synthesis, solvent, processing aid.
Details of The Supplier of The Safety Data Sheet: Company: Formosa Plastics Corporation Company Address : Room 635, 5f, 201, Tung Hwa N. Road, Taipei 105, Taiwan(R.O.C.) Company Address (Plant Site) : Formosa Industrial Complex, No.1, Mai Laio, Yunlin, Taiwan
Telephone :+ 886-2-27122211#7101 Telephone (Plant site) : +886-5-6811441 Fax : +886-5-6812090

SECTION 2: Hazards Identification

Classification of the substance or mixture 1. Flammable liquids (Category 2) 2. Acute toxicity, Dermal (Category 3) 3. Acute Toxicity Oral (Category 4) 4. Acute Toxicity Inhalation (Category 4) 5. Serious eye damage (Category 2)
Pictogram: 
Signal word: Danger!
Hazard statements: Highly flammable liquid and vapor Harmful if inhaled. Harmful in contact with skin. Harmful if swallowed. Causes serious eye irritation.
Precautionary statements Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

SAFETY DATA SHEET

Revision Date : 31.03.2020

<p>IF SWALLOWED: Rinse mouth</p> <p>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.</p> <p>IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.</p> <p>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>If eye irritation persists: Get medical advice/attention.</p> <p>Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>Specific measures (see first aid measures Section 4).</p> <p>If skin irritation or rash occurs: Get medical advice/attention.</p> <p>Wash contaminated clothing before reuse.</p> <p>In case of fire: Use water fog, foam, dry chemical or carbon dioxide for extinction.</p> <p>Store locked up.</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p> <p>Dispose of contents/container only to approved transporters, recyclers, treatment, storage or disposal facilities. Comply with all local, regional and national laws pertaining to waste management.</p> <p>Other hazards: None</p>
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SECTION 3: Composition/Information on Ingredients

Substance name: Acetonitrile
Synonyms: Cyanomethane, ethanenitrile, ethyl nitrile, methanecarbonitrile, methyl cyanide
Formula: CH ₃ CN
Concentration: 95~100%
Molecular weight :41.05 g/mol
CAS-No. : 75-05-8

SECTION 4: First Aid Measures

<p>Inhalation :</p> <p>remove exposed person to fresh air and keep warm and rested. If not breathing, ensure airway is clear and commence artificial respiration by mechanical means, not mouth to mouth. Use mouth to mask ventilation with one way valve to exhaust victim's exhaled air away from rescuer, or an Ambu bag or pressure demand valve with face mask. Commence administration of oxygen as soon as possible. Administration of oxygen should be maintained until transfer to the care of a paramedic or doctor.</p> <p>Ingestion :</p> <p>Seek immediate medical attention. If conscious rinse mouth with plenty of water without swallowing. Give activated charcoal slurry if conscious. Never give anything by mouth to an unconscious person. If breathing give oxygen, and if not breathing begin artificial respiration following steps as with Inhalation.</p> <p>Skin Contact :</p> <p>immediately flush the skin with copious amounts of water, whilst removing contaminated clothing and shoes. Treat any observed systemic toxicity as inhalation. Contaminated leather especially footwear should be discarded. Note: contaminated items could be a fire hazard so need to be placed in</p>
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SAFETY DATA SHEET

Revision Date : 31.03.2020

closed container and discarded. Provided prompt decontamination is carried out, small splashes on to skin should not give significant rise for concern.

Eye Contact :

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed: The earliest indicators of exposure to low concentrations of Acetonitrile vapor are a cooling sensation in the lungs and chest tightness. Commonly development of nausea and headaches can occur. At higher concentrations reddening of the eyes and skin is typical and after prolonged exposure or exposure to significant concentrations irritation of the throat/bronchioles, palpitations, salivation, breathing difficulties, numbness, weakness of arms and legs, giddiness, collapse and convulsions can occur. Effects will develop over many hours which can progress to significant cyanide poisoning effects where emergency medical response is required. The systemic effects appear to be largely attributable to the conversion of acetonitrile to cyanide.

First aiders must protect themselves against Acetonitrile. Mouth-to-mouth resuscitation should not be used.

Note to Physician: General supportive therapy in the event of life threatening complications may be more important than specific antidotes. Support respiratory and cardiovascular function. Administer 100% oxygen to accelerate cytochrome oxidase reactivation. Acetonitrile is slowly metabolised to CN, with peak blood CN levels occurring up to 12 hours after exposure. All available IV antidotes counter the effects of CN or enhance its excretion. Use of an IV antidote regime may be helpful to counter toxic effects along with measures to retard or prevent further adsorption.

Whenever a cyanide antidote is used, the patient should be admitted to an intensive care unit. Monitor arterial gases. Treat lactic acidosis and metabolic acidosis with sodium bicarbonate. Treat seizures with diazepam, phenytoin, or Phenobarbital. Hyperbaric oxygen and hemodialysis may be helpful in severe cases not responsive to supportive and antidotal therapy. Hypotension secondary to nitrites should be treated with intravenous fluids and the Trendelenburg position. If pulmonary edema develops, maintain ventilation and oxygenation with close arterial gas monitoring. PEEP or CPAP may be necessary if pO₂ remains below 50mm Hg. Avoid net positive fluid balance. Blood cyanide and serum thiosulphate levels will be helpful for documentation although they might not be available for several days.

MetHb inducing antidotes, sodium nitrite/4-DMAP, are not recommended where Cyanide toxicity may be due to fire, due to concomitant effects of Carbon Monoxide with haemoglobin. Do not induce emesis in cases of ingestion. Gastric lavage may be performed with a large bore tube after endotracheal intubation. Evacuate remaining stomach content under

SAFETY DATA SHEET

Revision Date : 31.03.2020

medical supervision with limiting risk of exposure to the lungs or to the medical personnel. Medical personnel should be in appropriate personal protective equipment when performing this procedure. Administer activated charcoal slurry to prevent absorption. Administer one dose of saline cathartic or sorbitol mixed with charcoal or given separately. Patients should be observed a minimum of 24-48 hours. Effects on Liver Function tests and Peripheral White Blood Cell Count can be detected for several days after exposure (4 to 5 days), especially where exposure was prolonged at low concentrations.

SECTION 5: Firefighting Measures

Extinguishing Media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: Highly flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. Container explosion may occur under fire conditions or when heated.

Combustion Products: Combustion products may include the following materials: carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂ etc.), Hydrogen cyanide (HCN).

Advice for firefighters

Firefighters should wear appropriate protective equipment which includes a self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode and full turnout gear. **DO NOT FIGHT FIRE WHEN IT REACHES MATERIAL.** Withdraw from fire and let it burn. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. First move people out of line-of-sight of the scene and away from windows. Cool containers with water jet in order to prevent pressure build-up, auto-ignition or explosion.

Flash Point: Flash Point 5.6°C tag. open cup

Lower Flammable Limit: 3.0%

Upper Flammable Limit: 16.0%

Autoignition: 524°C in air

SECTION 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. For personal protection see section 8.

SAFETY DATA SHEET

Revision Date : 31.03.2020

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Methods and materials for containment and cleaning up Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
Reference to other sections Refer to Section 8 for personal protective equipment, Section 13 for disposal information, and Section 15 for Release Reporting information, if applicable.

SECTION 7: Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Workers must carefully follow good hygienic practices, including no eating, drinking, or smoking in workplace. Proper use and maintenance of protective equipment is essential. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

SECTION 8: Exposure Controls/Personal Protection

Engineering Measures Provide local exhaust ventilation or other engineering controls to maintain any air contaminant below their occupational exposure limits.	
Control parameters	
OSHA TWA (skin)	PEL-Short Term Exposure Limit ; PEL-STEL15min(skin)
40 ppm	60ppm
Personal protective equipment RESPIRATOR: Use only with adequate ventilation. Do not breathe vapor or mist. Use appropriate respiratory protection if there is the potential to exceed the exposure limit(s). If the exposure limit is exceeded, use an approved supplied-air respirator. Ventilation and other forms of engineering controls are the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.	

SAFETY DATA SHEET

Revision Date : 31.03.2020

<p>Eye/face protection Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).</p> <p>Skin protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.</p> <p>Body Protection Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.</p> <p>Control of environmental exposure Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.</p>
<p>Occupational Exposure Controls Wash hands, forearms and face thoroughly after handling this material and before eating, smoking, using lavatory and at the end of the day. Appropriate techniques should be used to remove potential contaminated clothing. Wash contaminated clothing before reusing. Dispose of contaminated leather articles.</p>

SECTION 9: Physical and Chemical Properties

Appearance: clear, colorless liquid	Odor: ether like
Molecular Formula: CH ₃ CN	Molecular Weight: 41.05 g/mol
Odor Threshold:170 ppm	Melting Point -45.7°C
pH :Not Available	Boiling Point 81.6°C at 760 mm H g
Flammability limits in air: Lower/Upper 3.0~16.0 vol.%	Flash Point 12.8°C close cup Autoignition temperature 524°C in air
Vapor Density (Air=1) :1.42	Vapor Pressure (mmHg) : 98.64 hPA @ 20°C
Specific Gravity (water=1): 0.79	Solubility in water: Completely soluble
Octanol/Water Partition Coefficient: -0.54@25°C	Evaporation rate: No data is available

SECTION 10: Stability and Reactivity

<p>Chemical Stability: Stable under recommended storage conditions.</p>
<p>Reactivity: Not reactive under normal handling and storage.</p>
<p>Conditions to Avoid: Heat, flames and sparks. Extremes of temperature and direct sunlight.</p>
<p>Incompatibilities: Incompatible with acids, bases, nitrating agents, nitrogen-fluorine</p>

SAFETY DATA SHEET

Revision Date : 31.03.2020

compounds, oxidizers, perchlorates, sulphites.

Hazardous Decomposition:

Decomposition products may include the following materials: carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂ etc.), Hydrogen cyanide (HCN).

SECTION 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Effects of Exposure:

Skin Irritation/Corrosivity: Non-irritating in rabbits. Not corrosive.

Serious eye irritation/damage: Severely Irritating in rabbits.

Respiratory Sensitization : No information is available.

Skin Sensitization: Negative in guinea pigs (Buehler Test).

Germ Cell Mutagenicity: Acetonitrile does not induce gene mutations in bacteria, gave negative responses in all mammalian cell gene mutation assays and has produced only marginal effects in chromosome aberration assays in vitro – equivocal results in presence of metabolic activation but negative in absence of activation. Reliable in vivo micronucleus studies have shown marginal or negative results. The potential of acetonitrile to interfere with chromosome segregation in *D. melanogaster* has been demonstrated both in vitro and in vivo systems. Not classified as a germ cell mutagen.

Carcinogenicity: In a NTP inhalation study with rats and mice an increase in liver adenomas and carcinomas was observed at 400 ppm (the highest dose) in male rats but was not statistically significant compared to controls. No exposure related liver lesions were observed in female rats. There were no exposure related increases in the incidence of lung or liver neoplasms in mice. In summary, the results of the NTP bioassay on acetonitrile do not indicate that acetonitrile was carcinogenic in laboratory rats or mice.

Acetonitrile is not classified as carcinogenic by IARC, NTP or the EU CLP.

Reproductive Toxicity: No reproductive or developmental effects were seen below maternally lethal doses in the following reliable animal studies: reproductive/developmental toxicity screening (rat, inhalation); organ histopathology and sperm motility (chronic rat and mouse, inhalation); developmental (rat, inhalation and gavage; rabbit, gavage); 2 -generation reproduction (rat, inhalation) or structural analogue acrylonitrile was negative at doses where parent animals were unaffected. Not classified as toxic to reproduction.

STOT - single exposure: Animal studies do not demonstrate target organ effects. Not classified for specific target organ toxicity.

STOT - repeat exposure: NOAECs in reliable chronic rodent inhalation studies are based on mortality (NOAEC in 104 week inhalation study was

SAFETY DATA SHEET

Revision Date : 31.03.2020

400 ppm for rats and 200 ppm for mice). These studies did not demonstrate target organ effects, clinically or by histopathology, with the exception of forestomach lesions in the mice. Mice exhibited forestomach lesions at all exposure levels; however the role that inhalation exposure plays in the occurrence of these lesions is not known and may be minor compared to ingestion as a result of grooming of contaminated fur and/or mucociliary clearance. Not classified for specific target organ toxicity.	
Acute Toxicity	
Acute Oral Toxicity	LD50 rat 1.68 – 8.53 mL/kg LD50 mouse 617 mg/kg
Acute Dermal Toxicity	LD50 rabbit >2000 mg/kg
Acute Inhalation Toxicity	LC50 mouse 3587 ppm/4 hr (6.022 mg/L) LC50 rat 16,000 ppm/4 hr (26.8 mg/L)

SECTION 12: Ecological Information

Ecotoxicity	
Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 1.640,00 mg/l - 96 h NOEC - Oryzias latipes - 102 mg/l - 21 d
Toxicity to daphnia and other aquatic invertebrates	EC50-Daphnia magna (Water flea)-3.600 mg/l-48 h (OECD Test Guideline 202) NOEC-Daphnia magna (Water flea)-160 mg/l - 21 d
Persistence and Degradability: Readily biodegradable in water. Hydrolysis is unimportant to the aquatic fate. Aerobic biodegradation is expected to be the major loss process in soil and water; volatilization may become competitive in shallow water.	
Bioaccumulative Potential: No experimental data on bioaccumulation are available for acetonitrile.	
Mobility in Soil: Estimated Koc values for acetonitrile range from 0.3 - 16 and indicate a low potential for	
Results of PVT and vPvB assessment: The data show that the properties of acetonitrile do not meet the specific criteria detailed in REACH Annex XIII or do not allow a direct comparison with all the criteria in Annex XIII but nevertheless indicate that acetonitrile would not have these properties and the substance is not considered a PBT/vPvB.	
Other adverse effects: Avoid release to the environment. Stability in water Remarks: Hydrolyses slowly	

SECTION 13: Disposal Considerations

Dispose of contents/container in accordance with local/regional/national/international regulations. Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste . Use only approved transporters, recyclers, treatment, storage or disposal facilities. Comply with all local, regional and national laws pertaining to waste management.

SAFETY DATA SHEET

Revision Date : 31.03.2020

Section 14: Transport Information

UN number: UN1648		
UN proper shipping name: Acetonitrile		
Transport hazard class(es): ADR/RID: 3 IMDG: 3 IATA: 3		
Packaging group: ADR/RID: II IMDG: II IATA: II		
Environmental hazards		
ADR/RID:no IMDG Marine pollutant: no IATA: no		

SECTION 15: Regulatory Information

<p>United States Federal Regulations</p> <p>MSDS complies with OSHA's Hazard Communication Rule 29, CFR 1910.1200.</p> <p>SARA Extremely Hazardous Substance: No</p> <p>SARA Toxic Chemicals: Yes</p> <p>SARATitle III: CAS # 75-05-8: immediate, delayed, fire.</p> <p>RCRA:U003</p> <p>TSCA: Listed on the TSCA inventory.</p> <p>CERCLA: Yes. RQ = 5000 lbs (2270 Kg)</p> <p>State Regulations</p> <p>California Proposition 65: This material contains 5 ppm Acrylonitrile (107-13-1) which is known to the State of California to cause cancer.</p> <p>International Regulations</p> <p>Canada WHMIS: ND</p> <p>Europe EINECS Numbers: ND</p>
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SECTION 16: Other Information

References:	<ol style="list-style-type: none"> 1. CHEMINFO, CCINFO, 2. RTECS, TOMES PLUS 3. HSDB , TOMES PLUS , VOI . 63 , 2005 4. Chem Watch 5. Acetonitrile Safe Storage and Handling Guide(Ineos) 		
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Tabulator	Safety Engineer	Name	CHAO SHIH LUNG
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Notes	The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.		