SHOWA DENKO K.K.

GPS/JIPS Safety Summary

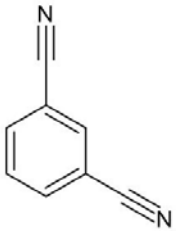
1. SUBSTANCE NAME

ISOPHTHALONITRILE (CAS No. 626-17-5)

2. GENERAL STATEMENT

Isophthalonitrile is a white gray powder. It is susceptible to airborne dispersion and may cause dust explosion. Thus, store this product in a low-humidity, well-ventilated place where no flame can be produced, and avoid sunlight and ignition sources.
When handling this product, take antistatic measures, remove ignition sources, and use explosion-proof equipment. If on skin, allergic dermatitis may occur. Therefore, it is necessary to wear gloves, etc., during use to prevent adhesion to the skin.

3. CHEMICAL IDENTITY

Item	Description
Chemical or generic name	Isophthalonitrile
Trade name	Isophthalonitrile(IPN)
Synonyms	Benzene-1,3-dicarbonitrile
CAS No.	626-17-5
Chemical Formula	$C_8H_4N_2$
Structual Formnula	
Source/References	Section 3 of the SDS issued by SHOWA DENKO K.K.

4. USES AND APPLICATIONS

Main uses	Isophthalonitrile manufactured by our company is used for raw materials of intermediates of pharmaceuticals and agricultural chemicals and raw materials of resins, etc.

5. PHYSICAL/CHEMICAL PROPERTIES

Because isophthalonitrile may cause dust explosion, it is necessary to perform antistatic measures (grounding, nitrogen substitution, humidification, ventilation, etc.), remove ignition sources (use of non-sparking tools, etc.), and avoid contact with strong acids, strong bases, oxidants, and reducing agents during use.

Appearance	Solid. Powder.
Colour	Grayish white.
Melting point/Boiling point	162 ° C (323.6 ° F) / 275 ° C (527 ° F) (101.3 kPa)
Vapour pressure	0.177 kPa (100 ° C (212 ° F))

Relative vapour density at 20 ℃	1.27 (20 ° C (68 ° F))
Solubility in water	0.08 % (20 ° C (68 ° F))
Other data	Dust explosion grade : St 3 – Especially intense explosion. Poisonous gas (hydrogen cyanide, nitrogen oxides) may be generated by heating or burning.
Sources/references	Section 9 and 10 of the SDS issued by SHOWA DENKO K.K.

6. HEALTH EFFECTS

Effect assessment	Results （GHS Hazard Classification）
Acute toxicity (oral)	Category 4　Harmful if swallowed.
Acute toxicity (dermal)	Not classified.
Acute toxicity (inhalation:gas)	Classification not possible.
Acute toxicity (inhalation:vapour)	Classification not possible.
Acute toxicity (inhalation:dust,mist)	Not classified.
Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation,	Not classified.
Respiratory sensitisation	Classification not possible.
Skin sensitisation	Category 1 May cause an allergic skin reaction
Germ cell mutagenicity	Not classified.
Carcinogenicity	Classification not possible.
Reproductive toxicity	Not classified.
Specific target organ toxicity – Single exposure,	Not classified.
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Classification not possible.
Referencese	Section 2 and 11 of SDS issued by SHOWA DENKO K.K.

・ GHS (Globally Harmonized System of Classification and Labelling of Chemicals): A system that classifies chemicals according to the type and degree of hazards, labels the information, and provides safety data sheets according to globally harmonized rules.
・ Not classified: Sufficient information has been obtained to implement the GHS classification, and as a result of the classification, it does not fall under any of the hazard categories specified in the GHS. It is considered to be a lower hazard; There is not enough information for GHS classification, and classification is not possible.
・ Classification not possible: Classification is not possible because there is no sufficiently reliable data to make judgment on GHS classification after examining various information sources and in-house data, etc; Since the priority of physical state, chemical structure, chemical property, and hazard items used in the GHS classification procedures does not fall under the category, it is not subject to the classification for the category.

7. ENVIRONMENTAL EFFECTS

Effect assessment	Results （GHS Hazard Classification）
Hazardous to the aquatic environment, short-term (acute)	Category 3　Harmful to aquatic life
Hazardous to the aquatic environment, long-term (chronic)	Category 3　Harmful to aquatic life with long lasting effects
Hazardous to the ozone layer	Classification not possible.
Sources/references	Sections 2 and 12 of the SDS issued by SHOWA DENKO K.K.

Environmental fate/dynamics	
Mobility in soil	Classification not possible.

Persistence/degradability	Biodegradation test (4 weeks): Not readily degradable.
Bioaccumulation potential	Bioconcentration test(carp, 6 weeks): Low bioconcentrative.
Conclusion about PBT/vPvB	The criteria for persistent bioaccumulative and toxic (PBT; remaining persistently in the environment and possessing high bioaccumulation potential and toxicity) and very persistent and very bioaccumulative (vPvB; remaining very persistently in the environment and possessing very high bioaccumulation potential) chemicals are believed to inapplicable.
Sources/references	Sections 12 of the SDS issued by SHOWA DENKO K.K.

8. EXPOSURE

Detals	Exposure potentials through main uses
Occupational exposures	Although our company products are manufactured in closed, well-controlled, continuous processes, there is a potential for dermal or inhalation exposure to operators during operation, in case of maintenance, sampling, or equipment failures (PROC 2). During batch and other process operations, there is a potential for dermal and inhalation exposure to operators during maintenance, sampling, filling, emptying, and equipment failure (PROC 4). There is a potential for dermal and inhalation exposure in operators during blending/mixing operation in batches in the formulation and manufacture of articles (PROC 5). There is a potential for dermal or inhalation exposure in operators during the transfer of substances or preparations from a ship or large-capacity container in the dedicated facility, in association with dust/vapour/aerosol generation, spillage, cleaning of the equipment, etc. (PROC 8b). There is a potential for dermal or inhalation exposure in operators due to dust generation, etc. in the manufacturing operation of formulation products or articles by tableting, compressing, squeezing, and pelletizing this product (PROC 14).
Consumer exposures	This product is not used directly by general consumers.
Environmental exposures	Although emission to the environment is limited because the product is typically manufactured and used in a closed process, the product can be released primarily into the atmospheric and water environment during the manufacturing process (ERC 1). The compounding process to raw materials and fixing process onto raw materials can lead to the release of the product primarily into the atmospheric environment (ERC 3). It is used as an intermediate in the synthesis of agricultural chemicals, pharmaceuticals, monomers, etc., and can be released mainly into the atmospheric and water environment (ERC 6a). It is used in indoor, closed containers, which can be released to a wider atmospheric environment (ERC 9a).
Precautions	If there is a possibility of exposure in other uses, take appropriate measures with reference to recommended risk management measures.

9. RISK MANAGEMENT RECOMMENDATIONS

Recommended risk management measures can minimize risks to workers, consumers, and the environment from Section 8 exposure scenarios.

Detals	Risk management recommendations
Worker	Technical measures Wear appropriate protective equipment and work from the windward side to avoid inhalation and contact with the eyes, skin, and clothing. Minimize dust generation and accumulation because dust may become electrostatically charged. Take action to prevent static discharges (ground and bond containers and receiving equipment; use explosion-proof electrical, ventilation, and lighting equipment; nitrogen substitution when loading equipment; and humidification around the work area), and use non-sparking tools. Install facilities for eye and body washing near the handling place.
	Local exhaust and general ventilation When handling this product, use local exhaust ventilation in a generally well-ventilated room.
	Permissible concentration For the product, the time weighted average (TLV-TWA) of 5 mg/m3 (IFV; inhalable parts and vapours) has been published by American Conference of Governmental Industrial Hygienists (ACGIH). Manage and control the concentration below these values.
	Protective equipment During operation, wear respiratory protection (mask with a collection rate of 95% or higher) and rubber gloves (APF20 [protection rate 95%]) to avoid contact with the skin, and wear eye protection (safety goggles) or face shield to avoid eye irritation. In addition, use protective clothing, boots, and apron that have undergone electrostatic removal or antistatic treatment according to the usage condition.
	Precautions The operation manager should educate operators about the selection of appropriate protective equipment, proper usage method, and control method of the work site.
Consumer	This product is not used directly by general consumers.
Environment	Install appropriate wastewater treatment facilities and exhaust gas treatment facilities. In addition, take measures to prevent leakage, and pay attention to periodic confirmation of discharge volume, daily control, and handling.
Special notes (emergency measures in case of leakage, etc.)	Precautions to human body, protective equipment, and emergency measures Since this product has skin sensitization, wear protective equipment during operation to prevent inhalation, eye or face contact, and skin adhesion. Since this product has a high dustability and may cause dust explosion, in case of leakage, immediately remove any ignition sources such as static electricity in the area surrounding the leakage site, immediately evacuate the surrounding personnel, and ventilate the area.

	Environmental precautions Take care not to discharge the leaked product into rivers, etc., and affect the environment.
Precautions	For normal handling, emergency response, disposal, and transportation control measures, refer to sections 4, 5, 6, 7, 8, 13, and 14 of the SDS issued by Showa Denko K.K.

10. STATE AGENCY REVIEW

Hazard assessment	Situations of review
International Chemical Safety Cards	ICSC: 1583 https://www.ilo.org/dyn/icsc/showcard.display?p_lang=en&p_card_id=1583&p_version=2
OECD HPV	https://hpvchemicals.oecd.org/UI/Search.aspx
REACH	https://echa.europa.eu/substance-information/-/substanceinfo/100.009.940

11. REGULATORY INFORMATION／GHS CLASSIFICATION AND LABELLING INFORMATION

When using the product outside Japan, it must be handled in accordance with applied laws and regulations in that country or territory.

Hazards	Classification results (hazard information)
Health hazards	Acute toxicity, oral, Category 4
	Skin sensitization, Category 1
Environmental hazards	Hazardous to the aquatic environment short-term aquatic hazard, Category 3
	Hazardous to the aquatic environment long-term aquatic hazard, Category 3

Labelling Information	
Hazard pictograms (GHS)	
Signal word (GHS)	Warning
Hazard statements (GHS)	Harmful if swallowed. (H302) May cause an allergic skin reaction. (H317) Harmful to aquatic life with long lasting effects. (H412)

12. CONTACT INFORMATION

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13. DATE OF ISSUE / REVISION, ADDITIONAL INFORMATION

Date of issue: Novenber 30, 2021

Revisions:

Date of revision	Revised section	Revised item	Version

Special instructions: none

14. DISCLAIMER

The safety summary is part of the effort for the voluntary management of chemical substance in the chemical industry (GPS/JIPS: Japan Initiative of Product Stewardship). The purpose of the safety summary is to provide information on the safe handling of the product as an overview and not to provide professional information, such as the risk evaluation process and its impact on human health and the environment. This document is not meant to serve as an alternative to risk evaluation, such as a Safety Data Sheet (SDS) or a Chemical Safety Report (CSR). This safety summary is being written as accurately as possible based on data such as laws, materials, and information available at the time of publication, but it does not include all data. It does not guarantee anything.