Safety Data Sheet

16 Mix aldehyde/ketone DNPHs in acetonitrile

Version：V2.0.0.1
Report No.：BWQ8733-2016-MSDS-US
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Revision Date：-
*Prepared according to American OSHA HCS-2024 (29 CFR 1910.1200)

1 Identification

Product identifier

Product Name	16 Mix aldehyde/ketone DNPHs in acetonitrile
Cat No.	BWQ8733-2016
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable

Recommended use of the product and restrictions on use

Relevant identified uses	Please consult manufacturer.
Uses advised against	Please consult manufacturer.

Details of the supplier of the Safety Data Sheet

Name of the company	Weiyel Inc
Address of the company	Hedian Light Industrial Park, Chengguan Town, Shangcheng County, Xinyang City, Henan Province, China
Post code	465350
Telephone number	010-58103678
Fax number	010-84840368
E-mail address	info@weiyel.com

Emergency phone number

Emergency phone number	010-58103678

2 Hazard(s) identification

Hazard classification according to 29 CFR 1910.1200

Flammable liquids	Category 2
Acute Toxicity - Oral	Category 4
Acute Toxicity - Dermal	Category 4
Serious eye damage/irritation	Category 2
Acute Toxicity - Inhalation	Category 3

Label elements

Hazard pictograms	
Signal word	**Danger**

Hazard statements

H225	Highly flammable liquid and vapour
H302	Harmful if swallowed
H312	Harmful in contact with skin
H319	Causes serious eye irritation
H331	Toxic if inhaled

Precautionary statements

Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing gas/mist/vapour/spray.
P264	Wash hands and other parts of the body (if related) thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or with adequate ventilation.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response

P321	Specific treatment (see related instructions on the label).
P330	Rinse mouth.
P302+P352	IF ON SKIN: Wash with plenty of water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	Small fire: dry chemical, CO_2 or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

P403+P235	Store in a well-ventilated place. Keep cool.

◆ Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards

	Not applicable.

Hazard description

◆ Physical and chemical hazards

	Highly flammable liquids, its vapor and air mixture can form explosive mixture.

◆ Health hazards

Inhaled	Sore throat. Weakness. Abdominal pain. Laboured breathing. Convulsions. Unconsciousness. Vomiting. Symptoms may be delayed.
Ingestion	(Further see Inhalation).
Skin Contact	Redness.
Eye	Redness. Pain.

◆ Environmental hazards

	Please refer to 12th chapter of SDS.

3 Composition/information on ingredients

Substance/mixture

	Mixture

Component	CAS No.	EC No.	Concentration (wt, %)
Acetonitrile	75-05-8	200-835-2	99.237
Formaldehyde	50-00-0	200-001-8	0.090
Acetaldehyde	75-07-0	200-836-8	0.065
Acrylaldehyde	107-02-8	203-453-4	0.054
Acetone	67-64-1	200-662-2	0.053
Propionaldehyde	123-38-6	204-623-0	0.053
(E)-crotonaldehyde	123-73-9	204-647-1	0.046
Butyraldehyde	123-72-8	204-646-6	0.046
Butanone	78-93-3	201-159-0	0.046
Benzaldehyde	100-52-7	202-860-4	0.035
Isovaleraldehyde	590-86-3	209-691-5	0.04
Valeraldehyde	110-62-3	203-784-4	0.041
2-tolualdehyde	529-20-4	208-452-2	0.032
m-tolualdehyde	620-23-5	210-632-0	0.032
p-tolualdehyde	104-87-0	203-246-9	0.032

Hexanal	66-25-1	200-624-5	0.036
2,5-dimethylbenzaldehyde	5779-94-2	227-303-2	0.03

4 First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Skin contact	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
Ingestion	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Give plenty of water to drink. Refer for medical attention.
Inhalation	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms/effects, acute and delayed

1	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Small fire: dry chemical, CO_2 or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the substance or mixture

1	Will form explosive mixtures with air.
2	Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration.
3	Vapours may travel to source of ignition and flash back.
4	Liquid and vapour are flammable.
5	Development of hazardous combustion gases or vapor possible in the event of fire.
6	May expansion or decompose explosively when heated or involved in fire.

Special protective equipment and precautions for fire-fighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
2	Fight fire from a safe distance, with adequate cover.
3	Prevent fire extinguishing water from contaminating surface water or the ground water system.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Avoid breathing vapours and contacting with skin and eye.
2	Beware of vapours accumulating to form explosive concentrations.
3	Vapours can accumulate in low areas.
4	Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves.
5	Use personal protective equipment,do not breathe gas/mist/vapour/spray.
6	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
7	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

1	It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus and wear anti-static clothing.
2	In case of small amount of spillage, use clean non sparking tools to collect absorption materials.
3	In case of large amount of spillage, construct cofferdam or dig a hole to collect the spillage. Use foam cover to reduce evaporation. Water spray mist can reduce evaporation, but can not reduce the flammability of the leakage in the restricted space.
4	Collect absorbent material using a clean, non-sparking tool.
5	Cover with anti-solvent foam to reduce evaporation.
6	Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
7	Water spray reduces evaporation but does not reduce the flammability of spills in confined spaces.
8	Cut off the source of the leak as much as possible.
9	Keep leaks in a ventilated place.
10	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
11	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.
12	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container.
13	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7 Handling and storage

Precautions for safe handling

1	Avoid inhalation of vapors.
2	Use only non-sparking tools.
3	To prevent fire caused by electrostatic discharge steam, equipment on all metal parts should be grounded.
4	Use explosion proof equipment.
5	Handling is performed in a well ventilated place.

6	Wear suitable protective equipment.
7	Avoid contact with skin and eyes.
8	Keep away from heat/sparks/open flames/ hot surfaces.

Conditions for safe storage, including any incompatibilities

1	Keep containers tightly closed.
2	Keep containers in a dry, cool and well-ventilated place.
3	Keep away from heat/sparks/open flames/hot surfaces.
4	Store away from incompatible materials and foodstuff containers.

8 Exposure controls/personal protection

Control parameters

◆Occupational exposure limit values

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m³	ppm	mg/m³
Acetonitrile	Australia	40	67	60	101
	Canada - Ontario	20	-	-	-
	European Union	40	70	-	-
	New Zealand	40	67	60	101
	USA - ACGIH	20	-	-	-
	USA - NIOSH	20	34	-	-
Formaldehyde	Australia	1	1.2	2	2.5
	Canada - Ontario	-	-	1	-
	European Union	0.3	0.37	0.6	0.74
	New Zealand	0.3	-	0.6	-
	USA - ACGIH	0.1	-	0.3	-
	USA - NIOSH	0.016	-	0.1	-
Acetaldehyde	Australia	20	36	50	91
	Canada - Ontario	-	-	25	-
	USA - OSHA	200	360	-	-
	Austria	50	90	50	90
	Belgium	25	46	-	-
	Canada - Québec	-	-	25	45
Acrylaldehyde	Australia	0.1	0.23	0.3	0.69
	Canada - Ontario	-	-	0.1	-
	European Union	0.02	0.05	0.05	0.12
	New Zealand	0.1	0.23	-	-
	USA - NIOSH	0.1	0.25	0.3	0.8

	USA - OSHA	0.1	0.25	-	-
Acetone	Australia	500	1185	1000	2375
	Canada - Ontario	250	-	500	-
	European Union	500	1210	-	-
	New Zealand	500	1185	1000	2375
	USA - ACGIH	250	-	500	-
	USA - NIOSH	250	590	-	-
Propionaldehyde	Canada - Ontario	20	-	-	-
	USA - ACGIH	20	-	-	-
	Belgium	20	48	-	-
	Canada - Québec	20	-	-	-
	Finland	20	48	-	-
	Ireland	20	-	-	-
(E)-crotonaldehyde	USA - NIOSH	2	6	-	-
	USA - OSHA	2	6	-	-
	Austria	0.34	1	1.36	4
	Denmark	2	6	4	12
	Finland	0.1	0.29	0.3	0.87
	France	2	6	-	-
Butyraldehyde	Austria	20	64	20	64
	Finland	25	74	-	-
	Germany (AGS)	20	64	20	64
	Latvia	-	5	-	-
	Romania	-	-	9	25
Butanone	Australia	150	445	300	890
	Canada - Ontario	200	-	300	-
	European Union	200	600	300	900
	New Zealand	150	445	300	890
	USA - ACGIH	75	-	150	-
	USA - NIOSH	200	590	300	885
Benzaldehyde	Canada - Ontario	-	-	4	17
	Finland	1	4.4	4	17.4
	Hungary	-	3.25	-	-
	Latvia	-	5	-	-
	Poland	-	10	-	40
Isovaleraldehyde	Austria	10	39	10	39
	Germany (AGS)	10	39	10	39

Valeraldehyde	Australia	50	176	-	-
	Canada - Ontario	50	-	-	-
	New Zealand	50	176	-	-
	USA - ACGIH	50	-	-	-
	USA - NIOSH	50	175	-	-
	Austria	50	175	100	350
Hexanal	Finland	-	-	10	42
	Poland	-	40	-	80

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Use explosion-proof electrical/ventilating/lighting/equipment.
4	Set up emergency exit and necessary risk-elimination area.

Personal protection equipment

General requirement	
Eye protection	Must wear appropriate safety goggles.
Hand protection	Must wear anti static chemical protective gloves.
Respiratory protection	Must wear appropriate personal dust proof gas mask.
Skin and body protection	Must wear anti static chemical protective clothing and anti static shoes.

9 Physical and chemical properties and safety characteristics

Physical and chemical properties

Appearance (physical state, color, etc.)	clear or yellow liquid
Odor	No information available
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	-46 (Acetonitrile)
Initial boiling point and boiling range(°C)	82 (Acetonitrile)
Flash point(Closed cup,°C)	2 (Acetonitrile)
Evaporation rate	No information available
Flammability	No information available
Upper/lower explosive limits[%(v/v)]	Upper limit：17 (Acetonitrile)；Lower limit：3 (Acetonitrile)
Vapor pressure	9.9kPa (25°C,Acetonitrile)
Vapor density(Air = 1)	1.4 (Acetonitrile)
Relative density(Water=1)	0.8 (Acetonitrile)

Solubility	1000000mg/L (25 °C,Acetonitrile)
n-octanol/water partition coefficient	-0.3 (Acetonitrile)
Auto-ignition temperature(°C)	524 (Acetonitrile)
Decomposition temperature(°C)	No information available
Kinematic viscosity	No information available

10 Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	In contact with N-halogen compounds may cause a potensive explosive hazardous. In contact with oxidants may cause a fire. In contact with oxidants may cause a fire or an explosion.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	N - halogenated compounds, sulfuric acid and strong oxidants. Oxidants, acids and alkalis. Oxidants, chloroform and bromoform
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
Acetonitrile	2460mg/kg(Rat)	> 2000mg/kg(Rabbit)	4.748mg/L(Rabbit)
Hexanal	4890mg/kg(Rat)	No information available	No information available
Benzaldehyde	1300mg/kg(Rat)	No information available	No information available
Formaldehyde	100mg/kg(Rat)	292mg/kg(Rabbit)	0.454mg/L(Mouse)
Acetone	5800mg/kg(Rat)	> 15800mg/kg(Rabbit)	76mg/L(Rat)
p-tolualdehyde	1600mg/kg(Rat)	2500mg/kg(Rat)	No information available
Acrylaldehyde	29mg/kg(Rat)	200mg/kg(Rabbit)	0.018mg/L(Rat)
Isovaleraldehyde	5600mg/kg(Rat)	2530mg/kg(Rabbit)	42.7mg/L(Rat)
Butanone	2737mg/kg(Rat)	6480mg/kg(Rabbit)	32mg/L(Mouse)
Butyraldehyde	2490mg/kg(Rat)	2910mg/kg(Rabbit)	No information available
Acetaldehyde	661mg/kg(Rat)	3540mg/kg(Rabbit)	23.962mg/L(Rat)
Propionaldehyde	1410mg/kg(Rat)	2460mg/kg(Rabbit)	> 4.6mg/L(Rat)
Valeraldehyde	4580mg/kg(Rat)	4050mg/kg(Rabbit)	No information available
(E)-crotonaldehyde	240mg/kg(Mouse)	380mg/kg(Rabbit)	No information available

Carcinogenicity

Component	List of carcinogens by	Report on Carcinogens	OSHA Carcinogen List

	the IARC Monographs	by NTP	
Acetonitrile	Not Listed	Not Listed	Not Listed
Formaldehyde	Category 1	Category K	Listed
Acetaldehyde	Category 2B; Category 1(Remark 1)	Category R	Not Listed
Acrylaldehyde	Category 2A	Not Listed	Not Listed
Acetone	Not Listed	Not Listed	Not Listed
Propionaldehyde	Not Listed	Not Listed	Not Listed
(E)-crotonaldehyde	Not Listed	Not Listed	Not Listed
Butyraldehyde	Not Listed	Not Listed	Not Listed
Butanone	Not Listed	Not Listed	Not Listed
Benzaldehyde	Not Listed	Not Listed	Not Listed
Isovaleraldehyde	Not Listed	Not Listed	Not Listed
Valeraldehyde	Not Listed	Not Listed	Not Listed
2-tolualdehyde	Not Listed	Not Listed	Not Listed
m-tolualdehyde	Not Listed	Not Listed	Not Listed
p-tolualdehyde	Not Listed	Not Listed	Not Listed
Hexanal	Not Listed	Not Listed	Not Listed
2,5-dimethylbenzaldehyde	Not Listed	Not Listed	Not Listed

Remark 1: associated with consumption of alcoholic beverages

Others

16 Mix aldehyde/ketone DNPHs in acetonitrile	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Causes serious eye irritation(Category 2)
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met

12 Ecological information

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Butanone	LC_{50}：3220mg/L (96h)(Fish)	EC_{50}：5090mg/L (48h)(Crustaceans)	ErC_{50}：>1200mg/L (72h)(Algae)
Isovaleraldehyde	LC_{50}：3.25mg/L (96h)(Fish)	No information available	No information available
Butyraldehyde	LC_{50}：16mg/L (96h)(Fish)	No information available	No information available

Acetaldehyde	LC_{50} : 30.8mg/L (96h)(Fish)	EC_{50} : 30mg/L (48h)(Crustaceans)	ErC_{50} : 26mg/L (72h)(Algae)
Acetonitrile	LC_{50} : > 100mg/L (96h)(Fish)	EC_{50} : > 1000mg/L (48h)(Crustaceans)	ErC_{50} : >700mg/L (72h)(Algae)
Hexanal	LC_{50} : 14mg/L (96h)(Fish)	EC_{50} : 7.16mg/L (48h)(Crustaceans)	ErC_{50} : 22.6mg/L (72h)(Algae)
Propionaldehyde	LC_{50} :115mg/L (96h)(Fish)	EC_{50} : 88.7mg/L (48h)(Crustaceans)	ErC_{50} : 260mg/L (72h)(Algae)
Valeraldehyde	LC_{50} : 12.9mg/L (96h)(Fish)	EC_{50} : 32mg/L (48h)(Crustaceans)	ErC_{50} : >9.3mg/L (72h)(Algae)
Formaldehyde	LC_{50} : 52.5mg/L (96h)(Fish)	EC_{50} : 14mg/L (48h)(Crustaceans)	No information available
Benzaldehyde	LC_{50} : 1.07mg/L (96h)(Fish)	No information available	ErC_{50} : 32mg/L (72h)(Algae)
Acetone	LC_{50} : 5540mg/L (96h)(Fish)	EC_{50} : 18500mg/L (48h)(Crustaceans)	ErC_{50} : 7200mg/L (96h)(Algae)
Acrylaldehyde	LC_{50} : 0.019mg/L (96h)(Fish)	EC_{50} : 0.09mg/L (48h)(Crustaceans)	No information available

| Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Butanone	No information available	NOEC : 100mg/L(Crustaceans)	NOEC : 93mg/L(Algae)
Acetaldehyde	No information available	No information available	NOEC : 1.9mg/L(Algae)
Acetonitrile	NOEC : 102mg/L(Fish)	NOEC : >960mg/L(Crustaceans)	NOEC : 700mg/L(Algae)
Valeraldehyde	No information available	NOEC : 2.5mg/L(Crustaceans)	NOEC : 4.1mg/L(Algae)
Benzaldehyde	NOEC : 0.12mg/L(Fish)	No information available	NOEC : 2mg/L(Algae)

| Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Formaldehyde	Low(Half-life = 14 days)	Low(Half-life = 2.97 days)
Butanone	Low(Half-life = 14 days)	Low(Half-life = 26.75 days)
Benzaldehyde	Low	Low
Isovaleraldehyde	Low	Low
2-tolualdehyde	Low	Low
m-tolualdehyde	Low	Low
p-tolualdehyde	Low	Low

| Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Formaldehyde	Low	Log Kow=0.35
Butanone	Low	Log Kow=0.29

Benzaldehyde	Low	Log Kow=1.48
Isovaleraldehyde	Low	Log Kow=1.31
2-tolualdehyde	Low	Log Kow=2.26
m-tolualdehyde	Low	Log Kow=2.2575
p-tolualdehyde	Low	Log Kow=2.2575

Mobility in soil

Component	log Koc	Remark
Acetonitrile	0.653	
Formaldehyde	1.202	
Propionaldehyde	-0.007	25 ℃, MCI method
Butyraldehyde	0.708	
Butanone	0.654	25 ℃
Benzaldehyde	1.05	25 ℃
Isovaleraldehyde	0.896	
2-tolualdehyde	1.733	
m-tolualdehyde	1.724	
p-tolualdehyde	1.724	
Hexanal	1.51	25 ℃, pH=5.5

13 Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label and Mark

Transporting Label	

IMDG-CODE

UN number	1648
UN proper shipping name	ACETONITRILE
Transport hazard class	3
Transport subsidiary hazard class	None

Packing group	Ⅱ
Marine pollutant (Yes or no)	No

IATA-DGR

UN number	1648
UN proper shipping name	ACETONITRILE
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	Ⅱ

UN-ADR

UN number	1648
UN proper shipping name	ACETONITRILE
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	Ⅱ

Transport in bulk according to IMO instruments

◆Transport in bulk according to Annex II of MARPOL and the IBC code

Not Available

◆Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Not Available

◆Transport in bulk in accordance with the IGC Code

Not Available

Others

Precautions for transport	Shipment of the goods vehicle exhaust pipe must be equipped with fire retardant devices, prohibit using mechanical equipment and tools of which easy to produce sparks. Transit should be anti-exposure, anti-rain, anti-high temperature. Transportation used tank (tank) cars should be grounded chain, tank can be installed to reduce the partition hole static electricity shocks. Strictly prohibited shipping or transportation with oxidants, acids, food and food additives etc. When bulk transport, Prohibit the use of cement or wooden boats. Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

15 Regulatory information

International chemical inventory

Component	A	B	C	D	E	F	G	H	I	J	K	L	M
Acetonitrile	√	√	√	√	√	√	√	√	√	√	√	√	√

Formaldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
Acetaldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
Acrylaldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
Acetone	√	√	√	√	√	√	√	√	√	√	√	√	√
Propionaldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
(E)-crotonaldehyde	√	√	√	√	√	√	√	√	√	×	√	√	√
Butyraldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
Butanone	√	√	√	√	√	√	√	√	√	√	√	√	√
Benzaldehyde	√	√	√	√	√	√	√	√	√	√	√	√	√
Isovaleraldehyde	√	√	√	√	√	√	√	√	√	×	√	√	√
Valeraldehyde	√	√	√	√	√	√	√	√	√	×	√	√	√
2-tolualdehyde	√	√	×	×	√	√	×	√	√	×	×	√	√
m-tolualdehyde	√	√	√	√	√	√	√	√	√	×	×	√	√
p-tolualdehyde	√	√	√	√	√	√	√	√	√	×	×	√	√
Hexanal	√	√	√	√	√	√	√	√	√	×	√	√	√
2,5-dimethylbenzaldehyde	×	√	×	×	×	×	×	√	×	×	×	×	×

【A】 China Inventory of Existing Chemical Substances(IECSC)
【B】 European Inventory of Existing Commercial Chemical Substances(EC inventory)
【C】 United States Toxic Substances Control Act Inventory(TSCA)
【D】 Canadian Domestic Substances List(DSL)
【E】 New Zealand Inventory of Chemicals(NZIoC)
【F】 Philippines Inventory of Chemicals and Chemical Substances(PICCS)
【G】 Korea Existing Chemicals Inventory(KECL)
【H】 Australian. Inventory of Industrial Chemical (AIICS)
【I】 Japan Inventory of Existing & New Chemical Substances(ENCS)
【J】 Thailand Existing Chemicals Inventory(TECI)
【K】 Mexico National Inventory of Chemical Substances (INSQ)
【L】 Russia Inventory of Existing Substances (DRAFT)
【M】 Inventory of Existing Chemical Substances in Taiwan, China (TCSI)

List of Chemical Substances under International Conventions

Component	A	B	C
Acetonitrile	×	×	×
Formaldehyde	×	×	×
Acetaldehyde	×	×	×
Acrylaldehyde	×	×	×
Acetone	×	×	×
Propionaldehyde	×	×	×
(E)-crotonaldehyde	×	×	×
Butyraldehyde	×	×	×
Butanone	×	×	×
Benzaldehyde	×	×	×

Isovaleraldehyde	×	×	×
Valeraldehyde	×	×	×
2-tolualdehyde	×	×	×
m-tolualdehyde	×	×	×
p-tolualdehyde	×	×	×
Hexanal	×	×	×
2,5-dimethylbenzaldehyde	×	×	×

【A】 The Montreal Protocol on Substances that Deplete the Ozone Layer
【B】 Stockholm Convention on Persistent Organic Pollutants (POPs)
【C】 Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

US chemical inventory

Component	A	B	C	D	E	F	G	H
Acetonitrile	√	×	√	√	√	√	√	×
Formaldehyde	√	√	√	√	√	√	√	√
Acetaldehyde	√	×	√	√	√	√	√	√
Acrylaldehyde	√	√	√	√	√	√	√	×
Acetone	×	×	√	√	√	√	√	×
Propionaldehyde	√	×	√	√	√	√	√	×
(E)-crotonaldehyde	×	√	√	√	√	√	√	×
Butyraldehyde	×	×	×	√	√	√	√	×
Butanone	×	×	√	√	√	√	√	×
Benzaldehyde	×	×	×	√	√	√	√	×
Isovaleraldehyde	×	×	×	√	√	√	×	×
Valeraldehyde	×	×	×	√	√	√	√	×
2-tolualdehyde	×	×	×	×	×	×	×	×
m-tolualdehyde	×	×	×	×	×	×	×	×
p-tolualdehyde	×	×	×	×	×	×	×	×
Hexanal	×	×	×	√	√	√	√	×
2,5-dimethylbenzaldehyde	×	×	×	×	×	×	×	×

[A] US Clean Air Act (CAA)- Section 112, Hazardous Air Pollutants
[B] US SARA 302- Extremely Hazardous Substance List
[C] US CERCLA- Hazardous Substances List
[D] US Massachusetts Right-to-Know Substance List
[E] US New Jersey Right to Know Hazardous Substance List
[F] US Pennsylvania Right to Know Hazardous Substance List
[G] US New York City Right-to-Know Hazardous Substance List
[H] US California Proposition 65 List

Note:
"√" Indicates that the substance included in the regulations.
"×" No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2025/09/30
Revision Date	-
Reason for revision	-

Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
[2] IARC, website: http://www.iarc.fr/.
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
[4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.
[5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
[6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
[7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
[8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organization for Economic Co-operation and Development
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC_{50}	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC_{50}	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P_{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor	HCS	Hazard Communication Standard

Disclaimer

This Safety Data Sheet (SDS) was prepared according to OSHA HCS-2024. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.