SAFETY DATA SHEET

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

Creation Date 10-Nov-2010 **Revision Date** 22-Sep-2023 **Revision Number** 11

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description:	**N,N-Dimethylformamide dimethyl acetal**
Cat No. :	**161250000; 161250250; 161251000; 161255000**
Synonyms	1,1-Dimethoxytrimethylamine; DMF-DMA
CAS No	4637-24-5
EC No	225-063-3
Molecular Formula	C5 H13 N O2
REACH registration number	01-2119900442-52

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Laboratory chemicals.
Sector of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company

UK entity/business name
Fisher Scientific UK
Bishop Meadow Road,
Loughborough, Leicestershire LE11 5RG, United Kingdom

EU entity/business name
Thermo Fisher Scientific
Janssen Pharmaceuticalaan 3a, 2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Physical hazards

Flammable liquids	Category 2 (H225)

Health hazards

Acute Inhalation Toxicity - Dusts and Mists	Category 4 (H332)
Serious Eye Damage/Eye Irritation	Category 1 (H318)
Skin Sensitization	Category 1 (H317)

Environmental hazards
Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

2.2. Label elements

Signal Word **Danger**

Hazard Statements
H225 - Highly flammable liquid and vapor
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H332 - Harmful if inhaled

Precautionary Statements
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308 + P313 - IF exposed or concerned: Get medical advice/attention

Additional EU labelling
Restricted to professional users

2.3. Other hazards

Water reactive

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS No	EC No	Weight %	CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and

				UK SI 2020/1567
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	EEC No. 225-063-3	>95	Flam. Liq. 2 (H225) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Acute Tox. 4 (H332)
Methyl orthoformate	149-73-5	EEC No. 205-745-7	0.1-2.5	Flam. Liq. 2 (H225) Eye Irrit. 2 (H319)
Dimethylformamide	68-12-2	200-679-5	0.3	Flam. Liq. 3 (H226) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Eye Irrit. 2 (H319) Repr. 1B (H360D)
Methyl alcohol	67-56-1	200-659-6	0.1-0.6	Flam. Liq. 2 (H225) Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT SE 1 (H370)
Methyl formate	107-31-3	EEC No. 203-481-7	0.1	Flam. Liq. 1 (H224) Acute Tox. 4 (H302) Acute Tox. 4 (H332) Eye Irrit. 2 (H319) STOT SE 3 (H335)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
Methyl alcohol	STOT Single Exp. 1 :: >= 10 STOT Single Exp. 2 :: 3 - < 10	-	-

REACH registration number	01-2119900442-52

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

Ingestion Do NOT induce vomiting. Get medical attention.

Inhalation Remove from exposure, lie down. Remove to fresh air. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention. If not breathing, give artificial respiration.

Self-Protection of the First Aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

4.2. Most important symptoms and effects, both acute and delayed

Difficulty in breathing. Causes eye burns. May cause allergic skin reaction. Causes severe eye damage. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Water spray. Carbon dioxide (CO_2). Dry chemical. Chemical foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons
No information available.

5.2. Special hazards arising from the substance or mixture

Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products
Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO_2).

5.3. Advice for firefighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Take precautionary measures against static discharges.

6.2. Environmental precautions

See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not let this chemical enter the environment.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Ensure adequate ventilation. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Handle product only in closed system or provide appropriate exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Keep away from open flames, hot surfaces and sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and flame. Flammables area. Keep container tightly closed in a dry and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany) Class 3

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE -** 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

Component	The United Kingdom	European Union	Ireland
Dimethylformamide	STEL: 10 ppm 15 min STEL: 30 mg/m³ 15 min TWA: 5 ppm 8 hr TWA: 15 mg/m³ 8 hr Skin	TWA: 15 mg/m³ (8h) TWA: 5 ppm (8h) Skin STEL: 10 ppm (15min) STEL: 30 mg/m³ (15min) STEL: 30 mg/m³ (8h) STEL: 10 ppm (8h)	TWA: 5 ppm 8 hr. TWA: 15 mg/m³ 8 hr. STEL: 10 ppm 15 min STEL: 30 mg/m³ 15 min Skin
Methyl alcohol	WEL - TWA: 200 ppm TWA; 266 mg/m³ TWA WEL - STEL: 250 ppm STEL; 333 mg/m³ STEL	TWA: 200 ppm 8 hr TWA: 260 mg/m³ 8 hr Skin	TWA: 200 ppm 8 hr. TWA: 260 mg/m³ 8 hr. STEL: 600 ppm 15 min STEL: 780 mg/m³ 15 min Skin
Methyl formate	STEL: 100 ppm 15 min STEL: 250 mg/m³ 15 min TWA: 50 ppm 8 hr TWA: 125 mg/m³ 8 hr Skin	TWA: 125 mg/m³ (15min) TWA: 50 ppm (15min) STEL: 250 mg/m³ (8h) STEL: 100 ppm (8h) Skin	TWA: 50 ppm 8 hr. TWA: 125 mg/m³ 8 hr. STEL: 250 mg/m³ 15 min STEL: 100 ppm 15 min Skin

Biological limit values
List source(s):

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)
See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Methyl orthoformate 149-73-5 (0.1-2.5)				DNEL = 3.46mg/kg bw/day

Dimethylformamide 68-12-2 (0.3)	DNEL = 5900µg/cm2	DNEL = 26.3mg/kg/day	DNEL = 446µg/cm2	DNEL = 1.1mg/kg/day
Methyl alcohol 67-56-1 (0.1-0.6)		DNEL = 20mg/kg bw/day		DNEL = 20mg/kg bw/day
Methyl formate 107-31-3 (0.1)				DNEL = 17.1mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Methyl orthoformate 149-73-5 (0.1-2.5)				DNEL = 3.05mg/m³
Dimethylformamide 68-12-2 (0.3)	DNEL = 30mg/m³	DNEL = 30mg/m³	DNEL = 15mg/m³	DNEL = 6mg/m³
Methyl alcohol 67-56-1 (0.1-0.6)	DNEL = 130mg/m³	DNEL = 130mg/m³	DNEL = 130mg/m³	DNEL = 130mg/m³
Methyl formate 107-31-3 (0.1)			DNEL = 120mg/m³	DNEL = 120mg/m³

Predicted No Effect Concentration (PNEC)
See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Methyl orthoformate 149-73-5 (0.1-2.5)	PNEC = 1.572mg/L	PNEC = 1.37mg/kg sediment dw	PNEC = 15.72mg/L	PNEC = 0.672g/L	PNEC = 2.99mg/kg soil dw
Dimethylformamide 68-12-2 (0.3)	PNEC = 30mg/L	PNEC = 115.18mg/kg sediment dw	PNEC = 30mg/L	PNEC = 123mg/L	PNEC = 56.97mg/kg soil dw
Methyl alcohol 67-56-1 (0.1-0.6)	PNEC = 20.8mg/L	PNEC = 77mg/kg sediment dw	PNEC = 1540mg/L	PNEC = 100mg/L	PNEC = 100mg/kg soil dw
Methyl formate 107-31-3 (0.1)	PNEC = 0.115mg/L	PNEC = 0.439mg/kg sediment dw	PNEC = 1.15mg/L	PNEC = 8117mg/L	PNEC = 0.0202mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Methyl orthoformate 149-73-5 (0.1-2.5)	PNEC = 0.1572mg/L	PNEC = 0.137mg/kg sediment dw			
Dimethylformamide 68-12-2 (0.3)	PNEC = 3mg/L	PNEC = 11.52mg/kg sediment dw			
Methyl alcohol 67-56-1 (0.1-0.6)	PNEC = 2.08mg/L	PNEC = 7.7mg/kg sediment dw			
Methyl formate 107-31-3 (0.1)	PNEC = 0.0115mg/L	PNEC = 0.0439mg/kg sediment dw			

8.2. Exposure controls

Engineering Measures
Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Nitrile rubber	< 30 minutes	0.4 mm	Level 2	As tested under EN374-3 Determination of
Butyl rubber	< 30 minutes	0.7 mm	EN 374	Resistance to Permeation by Chemicals

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to EN14387

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls No information available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Colorless	
Odor	Odorless	
Odor Threshold	No data available	
Melting Point/Range	No data available	
Softening Point	No data available	
Boiling Point/Range	102 - 104 °C / 215.6 - 219.2 °F	
Flammability (liquid)	Highly flammable	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	**Lower** 1.3 **Upper** 17.7	
Flash Point	7 °C / 44.6 °F	**Method -** No information available
Autoignition Temperature	155 °C / 311 °F	
Decomposition Temperature	> 100°C	
pH	7	
Viscosity	No data available	
Water Solubility	hydrolyses	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	**log Pow**	

Methyl orthoformate	0.09	
Dimethylformamide	-1.028	
Methyl alcohol	-0.74	
Methyl formate	-0.21	
Vapor Pressure	No information available	
Density / Specific Gravity	0.890	
Bulk Density	Not applicable	Liquid
Vapor Density	No information available	(Air = 1.0)
Particle characteristics	Not applicable (liquid)	

9.2. Other information

Molecular Formula	C5 H13 N O2
Molecular Weight	119.16
Explosive Properties	Vapors may form explosive mixtures with air

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Moisture sensitive.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	No information available.

10.4. Conditions to avoid

Extremes of temperature and direct sunlight. Keep away from open flames, hot surfaces and sources of ignition. Incompatible products. Exposure to moist air or water.

10.5. Incompatible materials

Acids. Strong oxidizing agents.

10.6. Hazardous decomposition products

Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO_2).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

(a) acute toxicity;

Oral	Based on available data, the classification criteria are not met
Dermal	Based on available data, the classification criteria are not met
Inhalation	Category 4

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	-	-	LC50 = 12.16 mg/L (Rat) 4 h
Methyl orthoformate	-	-	LC50 = 40 mg/L (Rat) 4 h
Dimethylformamide	3040 mg/kg (Rat)	1500 mg/kg (Rabbit) 3.2 g/kg (Rat)	>5.58 mg/L/4h (Rat)

Methyl alcohol	LD50 = 1187 – 2769 mg/kg (Rat)	LD50 = 17100 mg/kg (Rabbit)	LC50 = 128.2 mg/L (Rat) 4 h
Methyl formate	LD50 = 475 mg/kg (Rat)	LD50 > 5 g/kg (Rabbit)	LC50 > 21 mg/L (Rat) 4 h

(b) skin corrosion/irritation; Based on available data, the classification criteria are not met

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

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

Skin Category 1

Component	Test method	Test species	Study result
Dimethylformamide 68-12-2 (0.3)	Guinea Pig Maximisation Test (GPMT)	guinea pig	- non-sensitising
Methyl alcohol 67-56-1 (0.1-0.6)	OECD Test Guideline 406 Guinea Pig Maximisation Test (GPMT)	guinea pig	non-sensitising

May cause sensitization by skin contact

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

Did not show mutagenic effects in animal experiments

(f) carcinogenicity; Based on available data, the classification criteria are not met

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Dimethylformamide				Group 2A

(g) reproductive toxicity; No data available

Component	Test method	Test species / Duration	Study result
Methyl alcohol 67-56-1 (0.1-0.6)	OECD Test Guideline 416	Rat / Inhalation 2 Generation	NOAEC = 1.3 mg/l (air)

Reproductive Effects Product is or contains a chemical which is a known or suspected reproductive hazard.

(h) STOT-single exposure; Based on available data, the classification criteria are not met

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; Based on available data, the classification criteria are not met

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

11.2. Information on other hazards

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects Do not empty into drains. Reacts with water so no ecotoxicity data for the substance is available.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Methyl orthoformate	Leuciscus idus melanotus: LC50: 412 mg/L/48h	Daphnia: EC50: 690 mg/L/48h	
Dimethylformamide	Pimephales promelas: LC50 = 10.6 g/L/96h Onchorhynchus mykiss: LC50 = 9.8 g/L/96h Lepomis macrochirus: LC50 = 6.3 g/L/96h	EC50 = 7500 mg/L/48h	EC50 = 7500 mg/L/96h
Methyl alcohol	Pimephales promelas: LC50 > 10000 mg/L 96h	EC50 > 10000 mg/L 24h	
Methyl formate		EC50: > 500 mg/L, 48h (Daphnia magna)	EC50: = 240 mg/L, 72h (Desmodesmus subspicatus) EC50: = 190 mg/L, 96h (Desmodesmus subspicatus)

Component	Microtox	M-Factor
Dimethylformamide	EC50 = 2000 mg/L 5 min EC50 = 570 mg/L 240 h	
Methyl alcohol	EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	
Methyl formate	EC50 > 10000 mg/L 17 h	

12.2. Persistence and degradability

Persistence Persistence is unlikely, based on information available.

Degradability Decomposes in contact with water.

Component	Degradability
Dimethylformamide 68-12-2 (0.3)	100 % (OECD 301E (21d))
Methyl alcohol 67-56-1 (0.1-0.6)	DT50 ~ 17.2d >94% after 20d

Degradation in sewage treatment plant Decomposes in contact with water.

12.3. Bioaccumulative potential

Product does not bioaccumulate due to reaction with water

Component	log Pow	Bioconcentration factor (BCF)
Methanamine, 1,1-dimethoxy-N,N-dimethyl-		0.3 - 1.2 L/kg
Methyl orthoformate	0.09	No data available
Dimethylformamide	-1.028	0.3 - 1.2 L/kg
Methyl alcohol	-0.74	<10 dimensionless
Methyl formate	-0.21	No data available

12.4. Mobility in soil

Hydrolyses Is not likely mobile in the environment.

12.5. Results of PBT and vPvB assessment

Water reactive.

12.6. Endocrine disrupting properties

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances
Dimethylformamide	Group III Chemical	

12.7. Other adverse effects

Persistent Organic Pollutant This product does not contain any known or suspected substance
Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN1993
14.2. UN proper shipping name Flammable liquid, n.o.s.
Technical Shipping Name N,N-Dimethylformamide dimethyl acetal
14.3. Transport hazard class(es) 3
14.4. Packing group II

ADR

14.1. UN number UN1993
14.2. UN proper shipping name Flammable liquid, n.o.s.
Technical Shipping Name N,N-Dimethylformamide dimethyl acetal
14.3. Transport hazard class(es) 3
14.4. Packing group II

IATA

14.1. UN number UN1993
14.2. UN proper shipping name Flammable liquid, n.o.s.
Technical Shipping Name N,N-Dimethylformamide dimethyl acetal
14.3. Transport hazard class(es) 3
14.4. Packing group II

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required.

14.7. Maritime transport in bulk according to IMO instruments Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	225-063-3	-	-	X	X	KE-11054	X	X
Methyl orthoformate	149-73-5	205-745-7	-	-	X	X	KE-34363	X	X
Dimethylformamide	68-12-2	200-679-5	-	-	X	X	KE-11411	X	X
Methyl alcohol	67-56-1	200-659-6	-	-	X	X	KE-23193	X	X
Methyl formate	107-31-3	203-481-7	-	-	X	X	KE-17243	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	X	ACTIVE	X	-	X	X	X
Methyl orthoformate	149-73-5	X	ACTIVE	X	-	X	X	X
Dimethylformamide	68-12-2	X	ACTIVE	X	-	X	X	X
Methyl alcohol	67-56-1	X	ACTIVE	X	-	X	X	X
Methyl formate	107-31-3	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	-	-	-
Methyl orthoformate	149-73-5	-	-	-
Dimethylformamide	68-12-2	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details) Use restricted. See item 76. (see link for restriction details)	SVHC Candidate list - (Toxic to Reproduction, Article 57c)
Methyl alcohol	67-56-1	-	Use restricted. See item 69.	-

			(see link for restriction details) Use restricted. See item 75. (see link for restriction details)	
Methyl formate	107-31-3	-	Use restricted. See item 75. (see link for restriction details)	-

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links
https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	Not applicable	Not applicable
Methyl orthoformate	149-73-5	Not applicable	Not applicable
Dimethylformamide	68-12-2	Not applicable	Not applicable
Methyl alcohol	67-56-1	500 tonne	5000 tonne
Methyl formate	107-31-3	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals
Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .
Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

National Regulations

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification See table for values

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	WGK1	
Methyl orthoformate	WGK1	
Dimethylformamide	WGK 2	
Methyl alcohol	WGK 2	Class I : 20 mg/m³ (Massenkonzentration)
Methyl formate	WGK1 WGK2	Class II : 0.10 g/m³ (Massenkonzentration)

Component	France - INRS (Tables of occupational diseases)

Dimethylformamide	Tableaux des maladies professionnelles (TMP) - RG 84
Methyl alcohol	Tableaux des maladies professionnelles (TMP) - RG 84
Methyl formate	Tableaux des maladies professionnelles (TMP) - RG 84

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Methyl alcohol 67-56-1 (0.1-0.6)	Prohibited and Restricted Substances	Group I	
Methyl formate 107-31-3 (0.1)		Group I	

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H225 - Highly flammable liquid and vapor
H226 - Flammable liquid and vapor
H301 - Toxic if swallowed
H311 - Toxic in contact with skin
H312 - Harmful in contact with skin
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
H332 - Harmful if inhaled
H360D - May damage the unborn child
H370 - Causes damage to organs

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - (Volatile Organic Compound)

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Chemical incident response training.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Creation Date	10-Nov-2010
Revision Date	22-Sep-2023
Revision Summary	Not applicable.

This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.

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End of Safety Data Sheet