

SAFETY DATA SHEET

Creation Date 10-Nov-2010

Revision Date 28-Mar-2024

Revision Number 6

1. Identification

Product Name

N,N-Dimethylformamide dimethyl acetal

Cat No. : A15350

CAS No Synonyms

4637-24-5 1,1-Dimethoxytrimethylamine; DMF-DMA Laboratory chemicals.

Recommended Use Uses advised against

Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

<u>Company</u>

Thermo Fisher Scientific Chemicals, Inc. 30 Bond Street Ward Hill, MA 01835-8099 Tel: 800-343-0660 Fax: 800-322-4757

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

2. Hazard(s) identification

Classification

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

Flammable liquids Acute Inhalation Toxicity - Vapors Serious Eye Damage/Eye Irritation Skin Sensitization Reproductive Toxicity Category 2 Category 4 Category 1 Category 1 Category 1B

Label Elements

Signal Word Danger

Hazard Statements Highly flammable liquid and vapor Harmful if inhaled Causes serious eye damage May cause an allergic skin reaction Suspected of damaging fertility or the unborn child



Use only outdoors or in a well-ventilated area

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

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

Response

IF exposed or concerned: Get medical attention/advice

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Call a POISON CENTER or doctor/physician if you feel unwell

Skin

Wash contaminated clothing before reuse

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

If skin irritation or rash occurs: Get medical advice/attention

Eves

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Immediately call a POISON CENTER or doctor/physician

Fire

Explosion risk in case of fire

Fight fire with normal precautions from a reasonable distance

Evacuate area

In case of fire: Use CO2, dry chemical, or foam for extinction

Storage

Store locked up

Store in a well-ventilated place. Keep cool

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

WARNING. Cancer and Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	>95
Methyl orthoformate	149-73-5	0.1-2.5
Methyl alcohol	67-56-1	0.1-0.6

Dimethylformamide 68-12-2 0.3			0.3	
Methyl formate 107-31-3 0.1			0.1	
	4.	First-aid measures		
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Ge medical attention.			
Skin Contact	Wash off imr	mediately with plenty of water for at le	east 15 minutes. 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.			
Ingestion	Do NOT induce vomiting. Get medical attention.			
Most important symptoms and effects	Difficulty in b eye damage dizziness, tir itching, swel lightheadedr	ficulty in breathing. Causes eye burns. May cause allergic skin reaction. Causes severe damage. Inhalation of high vapor concentrations may cause symptoms like headache, ziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, ning, swelling, trouble breathing, tingling of the hands and feet, dizziness, atheadedness, chest pain, muscle pain or flushing.		
Notes to Physician	Treat symptomatically			
	5. Fi	re-fighting measures		
Suitable Extinguishing Media	Water spray to cool close	. Carbon dioxide (CO 2). Dry chemical d containers.	I. Chemical foam. Water mist may be used	

Flash Point	7 °C / 44.6 °F
Method -	No information available
Autoignition Temperature	155 °C / 311 °F
Explosion Limits	No data available
Upper	No data avallable
Lower	No data available
Sensitivity to Mechanical Impact	No information available

Specific Hazards Arising from the Chemical

Sensitivity to Static Discharge

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

No information available

No information available

Hazardous Combustion Products

Unsuitable Extinguishing Media

Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO₂).

Protective Equipment and Precautions for Firefighters

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

<u>NFPA</u>

Health	Flammability	Instability	Physical hazards
3	3	1	N/A
	6. Accidental re	lease measures	

ersonal PrecautionsRemove all sources of ignition. Take precautionary measures against static dischnvironmental PrecautionsSee Section 12 for additional Ecological Information.			
Methods for Containment and Clean 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.		
	7. Handling and storage		
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.		

Storage.

Keep away from heat, sparks and flame. Flammables area. Keep container tightly closed in a dry and well-ventilated place. Incompatible Materials. Acids. Strong oxidizing agents.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Methyl alcohol	TWA: 200 ppm	(Vacated) TWA: 200 ppm	IDLH: 6000 ppm	TWA: 200 ppm
-	STEL: 250 ppm	(Vacated) TWA: 260 mg/m ³	TWA: 200 ppm	STEL: 250 ppm
	Skin	(Vacated) STEL: 250 ppm	TWA: 260 mg/m ³	
		(Vacated) STEL: 325 mg/m ³	STEL: 250 ppm	
		Skin	STEL: 325 mg/m ³	
		TWA: 200 ppm	_	
		TWA: 260 mg/m ³		
Dimethylformamide	TWA: 5 ppm	(Vacated) TWA: 10 ppm	IDLH: 500 ppm	TWA: 10 ppm
-	Skin	(Vacated) TWA: 30 mg/m ³	TWA: 10 ppm	
		Skin	TWA: 30 mg/m ³	
		TWA: 10 ppm		
		TWA: 30 mg/m ³		
Methyl formate	TWA: 50 ppm	(Vacated) TWA: 100 ppm	IDLH: 4500 ppm	TWA: 100 ppm
	STEL: 100 ppm	(Vacated) TWA: 250 mg/m ³	TWA: 100 ppm	STEL: 150 ppm
	Skin	(Vacated) STEL: 150 ppm	TWA: 250 mg/m ³	
		(Vacated) STEL: 375 mg/m ³	STEL: 150 ppm	
		TWA: 100 ppm	STEL: 375 mg/m ³	
		TWA: 250 mg/m ³		

<u>Legend</u>

ACGIH - American Conference of Governmental Industrial Hygienists OSHA - Occupational Safety and Health Administration NIOSH: NIOSH - National Institute for Occupational Safety and Health

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.
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 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.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State Appearance Odor **Odor Threshold** pН . Melting Point/Range Boiling Point/Range Flash Point **Evaporation Rate** Flammability (solid,gas) Flammability or explosive limits Upper Lower Vapor Pressure Vapor Density **Specific Gravity** Solubility Partition coefficient; n-octanol/water **Autoignition Temperature Decomposition Temperature** Viscosity **Molecular Formula Molecular Weight**

Liquid Colorless Odorless No information available 7 No data available 102 - 104 °C / 215.6 - 219.2 °F 7 °C / 44.6 °F No information available Not applicable

No data available No data available No information available No information available 0.890 Hydrolyses No data available 155 °C / 311 °F > 100°C No information available C5 H13 N O2 119.16

10. Stability and reactivity

Reactive Hazard	None known, based on information available		
Stability	Moisture sensitive.		
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.		
Incompatible Materials	Acids, Strong oxidizing agents		
Hazardous Decomposition Products Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2)			
Hazardous Polymerization	Hazardous polymerization does not occur.		
Hazardous Reactions	None under normal processing.		

11. Toxicological information

Acute Toxicity

Product Information

Component Information LD50 Oral LD50 Dermal LC50 Inhalation Methanamine, Not listed Not listed LC50 = 12.16 mg/L (Rat) 4 h 1,1-dimethoxy-N,N-dimethyl Not listed Not listed LC50 = 12.16 mg/L (Rat) 4 h

Methyl orthoform	nate	Not listed		Not listed			LC50 = 40 mg/L (Rat)4 h	
Methyl alcoho		50 = 1187 – 2769 ma/k	g (Rat)	LD50 = 1	7100 mg/kg (Rabbi	it)	LC50 = 128.	2 mg/L (Rat) 4 h
Dimethylformam	Dimethylformamide			1500 mg/kg (Rabbit) 3.2 g/kg (Rat)		,	>5.58 n	ng/L/4h (Rat)
Methyl format	e	LD50 = 475 mg/kg (R	lat)	LD50	> 5 g/kg (Rabbit)		LC50 > 21	mg/L(Rat)4 h
Toxicologically Synergistic No information available Products Palaved and immediate effects as well as chronic effects from short and long-term exposure								
Irritation	No information available							
Sensitization		May cause sensitiz	zation by	skin cont	act			
Carcinogenicity		The table below in	dicates w	hether ea	ach agency has lis	sted any	ingredient	as a carcinogen.
Component	CAS No	IARC	N	TP	ACGIH		OSHA	Mexico
Methanamine, 1,1-dimethoxy-N,N-di methyl-	», 4637-24-5 Not listed ,N-di		Not I	isted	Not listed	No	ot listed	Not listed
Methyl orthoformate	149-73-5	Not listed	Not I	isted	Not listed	No	ot listed	Not listed
Methyl alcohol	67-56-1	Not listed	Not I	isted	Not listed	No	ot listed	Not listed
Dimethylformamide	68-12-2	Group 2A	Not I	isted	A3		Х	Not listed
Methyl formate	107-31-3	Not listed	Not I	isted	Not listed	No	ot listed	Not listed
Mutagenic Effects		Did not show muta	agenic eff	ects in an	imal experiments			
Reproductive Effects	5	Product is or conta	ains a che	emical wh	ich is a known or	suspect	ed reprodu	ctive hazard.
Developmental Effec	ts	No information ava	ailable.					
Teratogenicity		No information ava	ailable.					
STOT - single exposition STOT - repeated exp	ure osure	None known None known						
Aspiration hazard		No information available						
Symptoms / effects,both acute and Inhalation of high vapor concentrations may cause symptoms like headache, dia delayed Inhalation of high vapor concentrations may cause symptoms like headache, dia tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheaded pain, muscle pain or flushing				che, dizziness, de rash, itching, neadedness, ches				

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information	
Dimethylformamide	Group III Chemical	Not applicable	Not applicable	
Other Adverse Effects	The toxicological properties have not been fully investigated.			

12. Ecological information

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

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Methyl orthoformate	Not listed	Leuciscus idus melanotus: LC50: 412 mg/L/48h	Not listed	Daphnia: EC50: 690 mg/L/48h
Methyl alcohol	Not listed	Pimephales promelas: LC50 > 10000 mg/L 96h	EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	EC50 > 10000 mg/L 24h
Dimethylformamide	EC50 = 7500 mg/L/96h	Pimephales promelas: LC50 = 10.6 g/L/96h	EC50 = 2000 mg/L 5 min EC50 = 570 mg/L 240 h	EC50 = 7500 mg/L/48h

		Onchorhynchus mykiss: LC50 = 9.8 g/L/96h Lepomis macrochirus: LC50 = 6.3 g/L/96h		
Methyl formate	EC50: = 240 mg/L, 72h (Desmodesmus subspicatus) EC50: = 190 mg/L, 96h (Desmodesmus subspicatus)	Not listed	EC50 > 10000 mg/L 17 h	EC50: > 500 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/Accumulation

No information available.

Mobility

Is not likely mobile in the environment.

Component	log Pow
Methyl orthoformate	0.09
Methyl alcohol	-0.74
Dimethylformamide	-1.028
Methyl formate	-0.21

Waste Disposal Methods

13. Disposal considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Methyl alcohol - 67-56-1	U154	-

14. Transport information

DOT	
UN-No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Technical Name	(N,N-DIMETHYLFORMAMIDE DIMETHYL ACETAL)
Hazard Class	3
Packing Group	II
TDG	
UN-No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Hazard Class	3
Packing Group	II
IATA	
UN-No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Hazard Class	3
Packing Group	II
IMDG/IMO	
UN-No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Hazard Class	3
Packing Group	ll
	15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Methanamine,	4637-24-5	Х	ACTIVE	-

1,1-dimethoxy-N,N-dimethyl-				
Methyl orthoformate	149-73-5	Х	ACTIVE	-
Methyl alcohol	67-56-1	Х	ACTIVE	-
Dimethylformamide	68-12-2	Х	ACTIVE	-
Methyl formate	107-31-3	Х	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed '-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

TSCA 12(b) - Notices of Export

Not applicable

Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

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

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Methyl alcohol	67-56-1	0.1-0.6	1.0 %	-
Dimethylformamide	68-12-2	0.3	0.1 %	-

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

Not applicable

CWA (Clean Water Act) Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Methyl alcohol	X		-
Dimethylformamide	Х		-

OSHA - Occupational Safety and Not applicable Health Administration

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Methyl alcohol	5000 lb	-	5000 lb 2270 kg
Dimethylformamide	100 lb	-	100 lb 45 4 kg

California Proposition 65

This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Methyl alcohol	67-56-1	Developmental	-	Developmental
Dimethylformamide	68-12-2	Carcinogen	-	Carcinogen
U.S. State Right-to-Know	Not applicable	е		

Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Methyl alcohol	Х	Х	Х	Х	Х
Dimethylformamide	Х	Х	Х	Х	Х
Methyl formate	Х	Х	Х	-	Х

U.S. Department of Transportation

Reportable Quantity (RQ):	Υ
DOT Marine Pollutant	Ν
DOT Severe Marine Pollutant	Ν

U.S. Department of Homeland Security

This product contains the following DHS chemicals: **Legend** - STQs = Screening Threshold Quantities, APA = A placarded amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Methyl formate	Release STQs - 10000lb

Other International Regulations

Mexico - Grade

No information available

Authorisation/Restrictions according to EU REACH

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

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Methanamine, 1,1-dimethoxy-N,N-dimethyl-	4637-24-5	Not applicable	Not applicable	Not applicable	Not applicable
Methyl orthoformate	149-73-5	Listed	Not applicable	Not applicable	Not applicable
Methyl alcohol	67-56-1	Listed	Not applicable	Not applicable	Not applicable
Dimethylformamide	68-12-2	Listed	Not applicable	Not applicable	Not applicable
Methyl formate	107-31-3	Listed	Not applicable	Not applicable	Not applicable

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

Other International Regulations

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	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Methanamine,	4637-24-5	Not applicable	Not applicable	Not applicable	Not applicable
1,1-dimethoxy-N,N-dimethyl-					
Methyl orthoformate	149-73-5	Not applicable	Not applicable	Not applicable	Not applicable
Methyl alcohol	67-56-1	500 tonne	5000 tonne	Not applicable	Not applicable
Dimethylformamide	68-12-2	Not applicable	Not applicable	Not applicable	Annex I - Y42
Methyl formate	107-31-3	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information				
Prepared By	Health, Safety and Environmental Department Email: chem.techinfo@thermofisher.com www.thermofisher.com			
Creation Date	10-Nov-2010			
Revision Date	28-Mar-2024			
Print Date	28-Mar-2024			

Revision Summary

New emergency telephone response service provider.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS