

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

Creation Date 04-Feb-2010

Revision Date 19-Oct-2023

Revision Number 17

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

1.1. Product identifier

Product Description:	Diethanolamine
Cat No. :	D/2050/08, D/2050/17
Synonyms	2,2`-Iminodiethanol
Index No	603-071-00-1
CAS No	111-42-2
EC No	203-868-0
Molecular Formula	C4 H11 N O2
REACH registration number	01-2119488930-28

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

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

Tel: 01509 231166 Chemtrec US: (800) 424-9300 Chemtrec EU: 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

Diethanolamine

Physical hazards

Based on available data, the classification criteria are not met

Health hazards

Acute oral toxicity Skin Corrosion/Irritation Serious Eye Damage/Eye Irritation Reproductive Toxicity Specific target organ toxicity - (repeated exposure)

Environmental hazards Based on available data, the classification criteria are not met Category 4 (H302) Category 2 (H315) Category 1 (H318) Category 2 (H361fd) Category 2 (H373)

Full text of Hazard Statements: see section 16



Signal Word

Danger

Hazard Statements

H302 - Harmful if swallowed
H315 - Causes skin irritation
H318 - Causes serious eye damage
H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
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
P310 - Immediately call a POISON CENTER or doctor/physician
P280 - Wear protective gloves/protective clothing/eye protection/face protection

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

FSUD2050

Diethanolamine

Component	CAS No	EC No	Weight %	CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567
Diethanolamine	111-42-2	EEC No. 203-868-0	<=100	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Repr. 2 (H361fd) STOT RE 2 (H373)

REACH registration number	01-2119488930-28

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice	If symptoms persist, call a physician.			
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. If skin irritation persists, call a physician.			
Ingestion	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.			
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.			
Self-Protection of the First Aider	Use personal protective equipment as required.			
4.2. Most important symptoms and effects, both acute and delayed				
	None reasonably foreseeable. Causes severe eye damage.			

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

Notes to Physician

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

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

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors.

Diethanolamine

Hazardous Combustion Products

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

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

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

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

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510 Class 11 Storage Class (LGK) (Germany)

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

List source(s): **IRE -** 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

Diethanolamine

Component	The United Kingdom	European Union	Ireland
Diethanolamine			TWA: 0.2 ppm 8 hr.
			TWA: 1 mg/m ³ 8 hr.
			inhalable fraction and vapour
			STEL: 0.6 ppm 15 min
			STEL: 3 mg/m ³ 15 min
			Skin

Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local	Acute effects	Chronic effects local	Chronic effects
	(Dermal)	systemic (Dermal)	(Dermal)	systemic (Dermal)
Diethanolamine 111-42-2(<=100)				DNEL = 0.13mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Diethanolamine 111-42-2(<=100)			DNEL = 0.5mg/m ³	DNEL = 0.75mg/m ³

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water	Water Intermittent	Microorganisms in	Soil (Agriculture)
		sediment		sewage treatment	
Diethanolamine	PNEC = 0.021 mg/L	PNEC =	PNEC = 0.095mg/L	PNEC = 100mg/L	PNEC = 1.63mg/kg
111-42-2(<=100)	-	0.092mg/kg	-	-	soil dw
		sediment dw			

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Diethanolamine	PNEC = 0.002mg/L	PNEC =		PNEC = 1.04mg/kg	
111-42-2(<=100)	-	0.0092mg/kg		food	
		sediment dw			

8.2. Exposure controls

Engineering Measures

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	
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Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments	
Nitrile rubber	See manufacturers	-		(minimum requirement)	

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Neoprene	recommendations	EN 374	
Natural rubber			
PVC			
Skin and body protect	Long sleeved clothing.		

Inspect gloves before use.

Diethanolamine

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: Particulates filter conforming to EN 143
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:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted
Environmental exposure controls	Prevent product from entering drains. Do not allow material to contaminate ground water system.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Solid	
Appearance	Colorless	
Odor	Ammonia-like	
Odor Threshold	No data available	
Melting Point/Range	27 - 30 °C / 80.6 - 86 °F	
Softening Point	No data available	
Boiling Point/Range	269.9 °C / 517.8 °F	
Flammability (liquid)	Not applicable	Solid
Flammability (solid,gas)	No information available	
Explosion Limits	Lower 2.1 Vol%	
	Upper 10.6 Vol%	
Flash Point	176 °C / 348.8 °F	Method - CC (closed cup)
Autoignition Temperature	370 - °C / 698 - °F	
Decomposition Temperature	259 °C	
рН	11	53 g/L (20°C)
Viscosity	Not applicable	Solid
Water Solubility	954 g/L (20°C)	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/wat	er)	
Component	log Pow	
Diethanolamine	-2.46	
Vapor Pressure	2 hPa @ 10 °C	
Density / Specific Gravity	1.096	
Bulk Density	No data available	

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Vapor Density Particle characteristics	Not applicable Solid No data available
9.2. Other information	
Molecular Formula Molecular Weight Evaporation Rate	C4 H11 N O2 105.14 Not applicable - Solid
	SECTION 10: STABILITY AND REACTIVITY
10.1. Reactivity	None known, based on information available
10.2. Chemical stability	Stable under normal conditions.
10.3. Possibility of hazardous re	pactions
Hazardous Polymerization Hazardous Reactions	Hazardous polymerization does not occur. None under normal processing.
10.4. Conditions to avoid	Incompatible products. Excess heat. Avoid dust formation.
10.5. Incompatible materials	Strong oxidizing agents. Acids. copper. Copper alloys. Aluminium.
10.6. Hazardous decomposition	products

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

SECTION 11: TOXICOLOGICAL INFORMATION

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

Product Information

(a) acute toxicity;

Diethanolamine

OralCategory 4DermalBased on available data, the classification criteria are not metInhalationBased on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Diethanolamine	LD50 = 780 mg/kg (Rat)	LD50 = 11.9 mL/kg (Rabbit)	-

(b) skin corrosion/irritation;	Category 2
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(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

RespiratoryBased on available data, the classification criteria are not metSkinBased on available data, the classification criteria are not met

(e) germ cell mutagenicity;	Based on available	data, the classificatio	n criteria are not met	
	Not mutagenic in AM	/IES Test		
(f) carcinogenicity;	Based on available	data, the classificatio	n criteria are not met	
	The table below indi	cates whether each	agency has listed any ingre	dient as a carcinoge
Component	EU	UK	Germany	IARC
Diethanolamine				Group 2B
(h) STOT-single exposure;	Based on available	data, the classificatio	n criteria are not met	
(i) STOT-repeated exposure;	Category 2			
Target Organs	Liver, Blood, Kidney	, Central nervous sys	stem (CNS).	
(j) aspiration hazard;	Not applicable Solid			

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

Diethanolamine

Contains a substance which is:. The product contains following substances which are hazardous for the environment. Toxic to aquatic organisms.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Diethanolamine	Pimephals prome: LC50: 140 mg/L/96h	EC50: = 55 mg/L, 48h (Daphnia magna)	EC50: 2.1 - 2.3 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 7.8 mg/L, 72h (Desmodesmus subspicatus)

Component	Microtox	M-Factor
Diethanolamine	EC50 = 73 mg/L 5 min	
	EC50 > 16 mg/L 16 h	

12.2. Persistence and degradability	Readily biodegradable
Persistence	Persistence is unlikely.
Degradation in sewage	Contains substances known to be hazardous to the environment or not degradable in waste
treatment plant	water treatment plants.
12.3. Bioaccumulative potential	Bioaccumulation is unlikely

Component log Pow Bioconcentration factor (BCF)

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Diethanolamine	-2.46	No data available	
<u>12.4. Mobility in soil</u>	The product is water soluble, and may spread environment due to its water solubility. Highly		
12.5. Results of PBT and vPvB assessment	Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).		
<u>12.6. Endocrine disrupting</u> properties Endocrine Disruptor Information	This product does not contain any known or su	uspected endocrine disruptors	
<u>12.7. Other adverse effects</u> Persistent Organic Pollutant Ozone Depletion Potential	This product does not contain any known or su This product does not contain any known or su		
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.
European Waste Catalogue (EWC)	According to the European Waste Catalog, Waste Codes are not product specific, but application specific.
Other Information	Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

Diethanolamine

Not regulated

14.1. UN number14.2. UN proper shipping name14.3. Transport hazard class(es)14.4. Packing group

ADR

Not regulated

14.1. UN number14.2. UN proper shipping name14.3. Transport hazard class(es)14.4. Packing group

<u>IATA</u>

Not regulated

14.1. UN number14.2. UN proper shipping name14.3. Transport hazard class(es)

Diethanolamine

14.4. Packing group

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
Diethanolamine	111-42-2	203-868-0	-	-	Х	Х	KE-20959	Х	Х

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Diethanolamine	111-42-2	Х	ACTIVE	Х	-	Х	Х	Х

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 Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Diethanolamine	111-42-2	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links

https://echa.europa.eu/substances-restricted-under-reach

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) -	Seveso III Directive (2012/18/EC) -
		Qualifying Quantities for Major Accident	Qualifying Quantities for Safety Report
		Notification	Requirements
Diethanolamine	111-42-2	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

Diethanolamine

work .

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
Diethanolamine	WGK2	

Component	France - INRS (Tables of occupational diseases)
Diethanolamine	Tableaux des maladies professionnelles (TMP) - RG 49, RG 49 bis

15.2. Chemical safety assessment

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

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

H302 - Harmful if swallowed

H315 - Causes skin irritation

H318 - Causes serious eye damage

H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child

H373 - May cause damage to organs through prolonged or repeated exposure

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 A Transport Association MARPOL - International Convention for the Prevention of Pollution fr Ships ATE - Acute Toxicity Estimate VOC - (Volatile Organic Compound)

Key literature references and sources for data https://echa.europa.eu/information-on-chemicals

Diethanolamine

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.

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Revision Summary	SDS sections updated.

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

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 Safety Data Sheet