

P308+P313	IF exposed or concerned: Get medical advice/attention
P310	Immediately call a POISON CENTER or doctor/physician
P311	Call a POISON CENTER or doctor/physician
P501	Dispose of contents/container according to instructions on SDS

2.3 Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Chemical	EC No.	REACH No.	CAS No.	Concentration	P-code(s)	H-code(s)
3-(1-Pyridino)-1-propanesulfonate	239-491-3	-	15471-17-7	0.00156M		
Adenosine 3',5'-cyclic monophosphate sodium salt monohydrate	-	-	37839-81-9	0.00156M		
Adenosine 5'-[γ-thio]triphosphate tetralithium salt	298-862-8	-	93839-89-5	0.00156M	P261, P305+P351+P338	H315, H319, H335
Adenosine 5'-triphosphate disodium salt hydrate	-	-	34369-07-8	0.00156M		H225, H301+H311+H331, H370, H319, H336, EUH066
Ammonium acetate	211-162-9	-	631-61-8	0.156 - 0.5 M		
Ammonium chloride	235-186-4	-	12125-02-9	0.156M	P305+P351+P338	H302, H319
Ammonium fluoride	235-185-9	-	12125-01-8	0.156M	P261, P280, P301+P310	H301, H311, H331
Ammonium sulfate	231-984-1	-	7783-20-2	0.156M		
Betaine hydrochloride	209-683-1	-	590-46-5	0.00781M	P305+P351+P338	H319
BICINE	-	-	150-25-4	0.5M		
Biotin	200-399-3	-	58-85-5	0.00781M		
BIS-TRIS	230-237-7	-	6976-37-0	0.5M	P261, P305+P351+P338	H315, H319, H335
Calcium acetate hydrate	200-580-7	-	114460-21-8	0.156M	P261, P305+P351+P338	H315, H319, H335
Calcium chloride dihydrate	233-140-8	-	10035-04-8	0.00156M	P305+P351+P338	H319
CHAPS	-	-	75621-03-3	0.00156M	P280	H316
CHAPSO	-	-	82473-24-3	0.00156M		
CHES	203-115-6	-	103-47-9	0.5M	P305+P351+P338	H319
Citric acid	201-069-1	-	77-92-9	0.5M	P305+P351+P338	H319
Cobalt(II) chloride hexahydrate	231-589-4	-	7791-13-1	0.00156M	P201, P261, P273, P280, P308+P313, P501	H302, H317, H334, H341, H350i, H360F, H410
Coenzyme A sodium salt hydrate	259-747-8	-	55672-92-9	0.00781M		
D-(+)-Galactose	-	-	59-23-4	0.039M		
D-(+)-Glucose	-	-	50-99-7	0.039M		
D-(+)-Maltose monohydrate	-	-	6363-53-7	0.039M		
D-(+)-Mannose	-	-	3458-28-4	0.039M		
D-(+)-Xylose	200-400-7	-	58-86-6	0.039M		
Deoxyribonucleic acid, from herring sperm	309-566-6	-	100403-24-5	31.8%w/v		
Dimethyl sulfoxide	200-664-3	-	67-58-5	7.81%v/v		
Dimethylethylammoniumpropane sulfonate	-	-	160255-06-1	0.00156M	P280, P305+P351+P338, P310	H314
DL-Dithiothreitol	222-468-7	-	3483-12-3	0.00781M	P261, P305+P351+P338	H302, H315, H319, H335
Ethylene glycol	203-473-3	-	107-21-1	7.81%v/v		H302
Ethylene glycol-bis(2-aminoethylether)-N,N,N',N'-tetraacetic acid	-	-	67-42-5	0.00781M		
Ethylenediaminetetraacetic acid	200-449-4	-	60-00-4	0.00781M	P305+P351+P338	H319
Fos-Choline-12	-	-	29557-51-5	0.00156M		
Glycerol	200-289-5	-	56-81-5	7.81 - 31.2 %v/v		
Glycine	200-272-2	-	56-40-6	0.0781M		
Gly-Gly-Gly	-	-	556-33-2	0.0781M		
Guanidine hydrochloride	200-002-3	-	50-01-1	0.234 - 0.781 M	P305+P351+P338	H302, H315, H319
Guanosine 3',5'-cyclic monophosphate sodium salt	-	-	40732-48-7	0.00156M		
Guanosine 5'-[γ-thio]triphosphate tetralithium salt	305-606-1	-	94825-44-2	0.00156M	P261, P305+P351+P338	H315, H319, H335
Guanosine 5'-triphosphate sodium salt hydrate	-	-	36051-31-7	0.00156M		
HEPES	-	-	7365-45-9	0.5M		
Imidazole	206-019-2	01-2119485825-24-XXXX	288-32-4	0.3125 - 0.625 M	P201, P280, P305+P351+P338, P310	H302, H314, H360D
Iron(III) chloride hexahydrate	231-729-4	-	10025-77-1	0.00156M	P280, P305+P351+P338	H290, H302, H315, H318
L-(-)-Fucose	-	-	2438-80-4	0.039M		
L-Arginine	200-811-1	-	74-79-3	0.0781 - 0.781 M		
L-Glutamic acid monosodium salt hydrate	-	-	142-47-2	0.0781 - 0.781 M		
Lithium chloride	231-212-3	-	7447-41-8	0.156M	P261, P305+P351+P338	H302, H315, H319, H335
L-Proline	205-702-2	-	147-85-3	0.0781M		
Magnesium chloride hexahydrate	-	-	7791-18-6	0.00156M		
Magnesium sulfate heptahydrate	-	-	10034-99-8	0.156M		
Manganese(II) chloride tetrahydrate	231-869-6	-	13446-34-9	0.00156M		H302
MES monohydrate	224-632-3	-	145224-94-8	0.5M	P261, P305+P351+P338	H315, H319, H335
MOPS	214-478-5	-	1132-61-2	0.5M	P261, P305+P351+P338	H315, H319, H335
N-Acetyl-D-glucosamine	-	-	7512-17-6	0.039M		
n-Decyl-β-D-maltopyranoside	-	-	82494-09-5	0.00156M		
n-Dodecyl-β-D-Maltopyranoside	-	-	69227-93-6	0.00156M	P261, P280, P302+P352	H303, H313, H333

Chemical	EC No.	REACH No.	CAS No.	Concentration	P-code(s)	H-code(s)
Nickel(II) chloride hexahydrate	-	-	7791-20-0	0.00156M	P201, P261, P273, P280, P301+P310, P311	H301, H315, H317, H334, H341, H350i, H360D, H372, H410, H331
Nicotinic acid	200-441-0	-	59-67-6	0.00781M	H305+H351+H338	H319
n-Octyl-β-D-Glycopyranoside	-	-	29836-26-8	0.00156M		
Oxaloacetic acid	206-329-8	-	328-42-7	0.00781M	P280, P305+P351+P338, P310	H314
Poly(ethylene glycol) 1000	500-038-2	-	25322-68-3	7.81%w/v		
Poly(ethylene glycol) 3350	500-038-2	-	25322-68-3	7.81%w/v		
Poly(ethylene glycol) 400	500-038-2	-	25322-68-3	7.81%v/v		
Polyethyleneimine 800	-	-	25987-06-8	0.00781M	P273, P280, P305+P351+P338	H302, H318, H317, H412
Potassium acetate	204-822-2	-	127-08-2	0.156M		
Potassium chloride	231-211-8	-	7447-40-7	0.156M		
Potassium fluoride	232-151-5	-	7789-23-3	0.156M	P261, P280, P301+P310, P311	H301, H311, H331
Potassium formate	209-677-9	-	590-29-4	0.156M		
Potassium iodide	231-659-4	-	7681-11-0	0.156M	P305+P351+P338	H302, H315, H319
Potassium phosphate dibasic	231-834-5	-	7758-11-4	0.156M		
Potassium phosphate monobasic	231-913-4	-	7778-77-0	0.156 - 0.5 M		
Potassium sodium tartrate tetrahydrate	-	-	6381-59-5	0.0781M		
Potassium sulfate	231-915-5	-	7778-80-5	0.156M		
Sarcosine	-	-	107-97-1	0.00156M		
Sodium acetate trihydrate	-	-	6131-90-4	0.156 - 0.5 M		
Sodium bromide	231-599-9	-	7647-15-6	0.156M		
Sodium chloride	231-598-3	-	7647-14-5	0.156M		
Sodium citrate tribasic dihydrate	-	-	6132-04-3	0.156M		
Sodium fluoride	231-667-8	-	7681-49-4	0.156M	P301+P310, P305+P351+P338	H301, H315, H319, EUH032
Sodium formate	205-488-0	-	141-53-7	0.156M		
Sodium iodide	231-679-3	-	7681-82-5	0.156M	P273, P305+P351+P338	H315, H319, H400
Sodium malonate dibasic monohydrate	-	-	26522-85-0	0.156M		
Sodium nitrate	231-554-3	-	7631-99-4	0.156M	P220, P261, P305+P351+P338	H272, H319
Sodium oxamate	-	-	565-73-1	0.0781M		
Sodium phosphate dibasic	231-448-7	-	7558-79-4	0.156M		
Sodium phosphate monobasic monohydrate	-	-	10049-21-5	0.156 - 0.5 M		
Sodium sulfate	231-820-9	-	7757-82-6	0.156M		
Sodium tartrate dibasic dihydrate	-	-	6106-24-7	0.156M		
Spermidine	204-689-0	-	124-20-9	0.00156M	P280, P305+P351+P338, P310	H314
Spermine tetrahydrochloride	206-189-8	-	306-67-2	0.00156M		H315
Sucrose	-	-	57-50-1	0.039M		
Tricine	-	-	5704-04-1	0.5M		
Tris(2-carboxyethyl)phosphine hydrochloride	-	-	51805-45-9	0.00781M	P280, P305+P351+P338, P310	H314
Trizma® hydrochloride	-	-	1185-53-1	0.5M		
Ultrapure water				100%v/v		
Urea	200-315-5	-	57-13-6	0.16 - 6.25 M		
Zinc chloride	231-592-0	-	7646-85-7	0.00156M	P273, P280, P305+P351+P338, P310, P501	H302, H314, H410
β-Nicotinamide adenine dinucleotide phosphate, reduced tetra(cyclohexylammonium) salt	-	-	100929-71-3	0.00156M		
β-Nicotinamide adenine dinucleotide, reduced dipotassium salt	-	-	104809-32-7	0.00156M	P261, P305+P351+P338	H315, H319, H335

4. FIRST AID MEASURES

4.1 Description of first aid measures

General notes

Consult a doctor. Show this safety datasheet to the doctor in attendance.

Following inhalation

Move to fresh air. If not breathing, give artificial respiration. Consult a doctor. Seek immediate medical attention.

Following skin contact

Wash off with soap & water. Consult a doctor. Take off contaminated clothing & shoes immediately.

Following eye contact

Flush eyes with water. Rinse thoroughly for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Consult a doctor. Do NOT induce vomiting. Seek immediate medical attention.

Self-protection for first aider

Always use recommended PPE when treating patient.

4.2 Most important symptoms and effects, both acute and delayed

The most important known effects are detailed in section 2.2 and section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIRE-FIGHTING METHODS

5.1 Extinguishing media

Use water spray, alcohol resistant foam, dry chemical or carbon dioxide. Use dry chemical powder.

5.2 Special hazards arising from the substance or mixture

Sulfur oxides. Carbon oxides. Nitrogen oxides. Hydrogen chloride gas. Calcium oxides. Hydrogen sulfide gas. Hydrogen cyanide gas. Iron oxides. Lithium oxides. Magnesium oxides. Nickel oxides. Potassium oxides. Hydrogen fluoride gas. Phosphorous oxides. Sodium oxides. Hydrogen bromide gas. Zinc oxides.

5.3 Advice for firefighters

Wear breathing apparatus. Use water spray to cool unopened containers. Emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours. Use personal protective equipment. Use personal protective equipment including respiratory protection.

6.2 Environmental precautions

Do not let product enter drains

6.3 Methods and materials for containment and clean up

Use spill kit to contain spillage & use wet brushing to place in a suitable container for disposal. Do not flush with water. Evacuate personnel to safe areas. Remove all sources of ignition.

6.4 Reference to any other sections

For disposal, see section 13

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

For precautions, see section 2.2

7.2 Conditions for safe storage, including any incompatibilities.

Store in cool place. Keep container tightly closed in well-ventilated place. Containers which are opened must be carefully resealed and stored upright to prevent leakage.

7.3 Specific end use

Apart from uses in Section 1.2, no other specific uses are stipulated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Chemical	CAS No.	Country	Limit value		Basis
			STEL	TWA	
Ammonium chloride	12125-02-9	UK		10 ppm	EH40 WEL - Workplace Exposure Limit
Ammonium fluoride	12125-01-8	UK		2.5 mg/m ³	EH40 WEL - Workplace Exposure Limit
Cobalt(II) chloride hexahydrate	7791-13-1	UK		0.1 mg/m ³	EH40 WEL - Workplace Exposure Limit
Ethylene glycol	107-21-1	UK	40 ppm	20 ppm	EH40 WEL - Workplace Exposure Limit
Glycerol	56-81-5	UK		10 mg/m ³	EH40 WEL - Workplace Exposure Limit
Iron(III) chloride hexahydrate	10025-77-1	UK	2 mg/m ³	1 mg/m ³	EH40 WEL - Workplace Exposure Limit
Manganese(II) chloride tetrahydrate	13446-34-9	UK		0.5 mg/m ³	EH40 WEL - Workplace Exposure Limit
Nickel(II) chloride hexahydrate	7791-20-0	UK		0.1 ppm	EH40 WEL - Workplace Exposure Limit
Potassium fluoride	7789-23-3	UK		2.5 ppm	EH40 WEL - Workplace Exposure Limit
Sodium fluoride	7681-49-4	UK		2.5 mg/m ³	EH40 WEL - Workplace Exposure Limit
Zinc chloride	7646-85-7	UK	2 mg/m ³	1 mg/m ³	EH40 WEL - Workplace Exposure Limit

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Wash hands before work break and at the end of the day

8.2.2 Personal protection

Eye/face protection

Face shield & safety specs.

Skin Protection

Nitrile gloves (splash protection only) and lab coat

Respiratory protection

Use respirators and components tested and approved under appropriate government standards such as CEN (EU) as back up to engineering control

Environmental exposure controls

Do not let product enter drains

9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance	Transparent liquid
b) Odour	No data available
c) Odour threshold	No data available
d) pH	No data available
e) Melting point / freezing point	No data available
f) Initial boiling point and boiling range	No data available
g) Flash point	No data available
h) Evaporation rate	No data available
i) Flammability	No data available
j) Upper / lower flammability or exposure limits	No data available
k) Vapour pressure	No data available
l) Vapour density	No data available
m) Relative density	No data available
n) Solubility(ies)	No data available
o) Partition coefficient: n-octanol / water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidising properties	No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity	No data available
10.2 Chemical stability	No data available
10.3 Possibility of hazardous reactions	No data available
10.4 Conditions to avoid	No data available
10.5 Incompatible materials	Strong oxidising agents, strong acids, strong bases
10.6 Hazardous decomposition materials	No data available. In case of fire see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a) Acute toxicity	No data available
b) Skin corrosion / irritation	No data available
c) Serious eye damage / irritation	No data available
d) Respiratory or skin sensitization	No data available
e) Germ cell mutagenicity	No data available
f) Carcinogenicity	No data available
g) Reproductive toxicity	No data available
h) STOT - single exposure	No data available
i) STOT - repeated exposure	No data available
j) Aspiration hazard	No data available

11.2 Delayed and immediate effects as well as chronic effects from short to long term exposure

Symptoms

Burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting. Vomiting, diarrhoea, damage to tooth enamel, dermatitis. Material is extremely destructive to tissue of mucous membranes & upper respiratory tract. Nausea, headache, fatigue. Nausea, headache, vomiting, central nervous system depression. Early symptoms of ingestion similar to drunkenness, leading to nausea, vomiting, abdominal pain, weakness, muscle tenderness, respiratory failure, convulsions, cardiovascular, collapse, pulmonary edema. Without treatment, death may occur in 2h to 24h. Long term affects include renal failure, brain and liver damage. Consumption of alcohol may increase toxic effects. Nausea, vomiting, urine discolouration, ataxia, peripheral sensory neuropathy. May cause allergic reaction & flushing in contact with skin. Headache, nausea, vomiting. May cause kidney irregularities. Material is extremely destructive to mucous membranes & upper respiratory tract. Overdose of iron compounds may have corrosive effect on gastrointestinal mucosa, followed by necrosis, perforation & stricture formation. Several hours later symptoms may occur: epigastric pain, diarrhoea, vomiting, nausea, and hematemesis. After apparent recovery, person may experience metabolic acidosis, convulsions, and coma. Other complications: acute liver necrosis, resulting in death. Gastrointestinal disturbance. Salivation, nausea, vomiting, abdominal pain, fever, irregular breathing. Fluoride can cause fatal hypocalcemia, perforation of nasal septum, calcium deposits in ligaments. Material is extremely destructive to mucous membranes & upper respiratory tract, e. Inhalation symptoms include spasm, inflammation & edema of bronchi & larynx. Prolonged exposure to iodides may produce iodism. Symptoms include: skin rash, running nose, headache, and irritation of mucous membrane. Severe cases: pimples, boils, hives, and blisters, black & blue spots. Iodides readily diffuse across the placenta & can cause neonatal death. Known to cause drug-induced fevers for short periods. Sedation. Vomiting, diarrhoea, dehydration, congestion in internal organs. Inflammatory reactions in gastrointestinal tract. Damage to lungs. Absorption into body leads to formation of methemoglobin which causes cyanosis. Material is extremely destructive to mucous membranes & upper respiratory tract, eyes & skin. Salivation, nausea, vomiting, fever. Material is extremely destructive to mucous membranes & upper respiratory tract. May cause liver irregularities. Spasm, inflammation & edema of larynx & bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting. Cough, shortness of breath, headache, nausea, vomiting. Reversible liver enzyme abnormalities. Kidney irregularities. Dermatitis. Central nervous system depression, nausea, headache, vomiting, narcosis. Damage to heart.

12. ECOLOGICAL INFORMATION

12.1 Toxicity	No data available
12.2 Persistence and degradability	No data available
12.3 Bioaccumulative potential	No data available
12.4 Mobility in soil	No data available
12.5 Results of PBT and vPvB assessment	No data available
12.6 Other adverse effects	No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product / packaging disposal

Dispose of packaging as unused product. Offer surplus and non-recyclable solutions to a licensed disposal company.
Observe all EU and local environmental regulations

14. TRANSPORT INFORMATION

14.1 UN number

A.R.D./R.I.D.	3082	I.M.D.G.	3082	I.C.A.O.-T.I.	3082	A.D.N.	3082
---------------	------	----------	------	---------------	------	--------	------

14.2 UN proper shipping name

A.R.D./R.I.D.	Environmentally hazardous substance, liquid, n.o.s.	I.M.D.G.	Environmentally hazardous substance, liquid, n.o.s.
I.C.A.O.-T.I.	Environmentally hazardous substance, liquid, n.o.s.	A.D.N.	Environmentally hazardous substance, liquid, n.o.s.

14.3 Transport hazard class(es)

A.R.D./R.I.D.	9	I.M.D.G.	9	I.C.A.O.-T.I.	9	A.D.N.	9
---------------	---	----------	---	---------------	---	--------	---

14.4 Packaging group

A.R.D./R.I.D.	II	I.M.D.G.	II	I.C.A.O.-T.I.	II	A.D.N.	II
---------------	----	----------	----	---------------	----	--------	----

14.5 Environmental hazards

A.R.D./R.I.D.	Yes	I.M.D.G.	Yes	I.C.A.O.-T.I.	Yes	A.D.N.	Yes
---------------	-----	----------	-----	---------------	-----	--------	-----

14.6 Special precautions for user

A.R.D./R.I.D.	No data available	I.M.D.G.	No data available
I.C.A.O.-T.I.	No data available	A.D.N.	No data available

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations

No data available.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

16. OTHER INFORMATION

a) Changes since last revision

Phosphate buffers changed from dibasic to monobasic

b) Key to any abbreviations used

PPE	Personal protective equipment
A.R.D./R.I.D.	International Carriage of Dangerous Goods by Road / Rail
I.M.D.G.	International Maritime Dangerous Goods
I.C.A.O.-T.I.	Technical Instructions for the Safe Transport of Dangerous Goods by Air
A.D.N.	International Carriage of Dangerous Goods by Inland Waterways
TWA	Time-weighted average
STEL	Short-term exposure limit

c) References and sources for data

sigma-aldrich.com

fishersci.co.uk

anatrace.com

d) Indication of methods used for classification (mixtures only)

No data available

e) List of Hazard and Precautionary phrase not listed in full in other sections

See Section 2.1.

f) Advice for training

Disclaimer:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Molecular Dimensions Ltd., shall not be held liable for any damage resulting from handling or from contact with the above product.