1. IDENTIFICATION OF SUBSTANCE AND COMPANY DETAILS

1.1 Product Identifier

Product name:	Morpheus® II / Morpheus® II HT-96 / Morpheus® II FX-96
Product number:	MD1-91/ MD1-92 / MD1-92-FX
EC No.	See section 3
REACH registration No.	See section 3
CAS No.:	See section 3

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

Identified uses	Research and development
Uses advised against	Not for drug, household or uses other than those identified

1.3 Details of the supplier of the Safety Datasheet

Supplier	Molecular Dimensions Limited
Address	The Innovation centre 217 Portobello Sheffield S1 4DP United Kingdom
Telephone:	+44 (0)11422 42257
Email address	enquiries@moleculardimensions.com

1.4 Emergency telephone number

Emergency phone number	999

2. HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

H301	Toxic if swallowed
H302	Harmful if swallowed
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H331	Toxic if inhaled
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H340	May cause genetic defects
H341	Suspected of causing genetic defects
H350	May cause cancer
H350i	May cause cancer by inhalation
H360D	May damage the unborn child
H360F	May damage fertility
H360FD	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H410	Very toxic to aquatic life with long-lasting effects

2.2 Label elements

Labelling according to Regulation (EC) No. 1277/2008 [CLP]

Pictogram(s):

Hazard statement(s):

See section 2.1.

Precautionary statement(s):

P201	Obtain special instructions before use
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P284	Wear respiratory protection
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
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
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)
(+/-)-1,2,4-Butanetriol	221-323-5	-	3068-00-6	50%v/v	P261, P305+P351+P338	H315, H319, H335
1,1,1-Tris(hydroxymethyl)propane	-	-	77-99-6	50%w/v		

Chemical	EC No.	REACH No.	CAS No.	Concentration	P-code(s)	H-code(s)
1,2,6-Hexanetriol	203-424-6	-	106-69-4	50%w/v		
1,4-Diaminobutane dihydrochloride	206-375-9	-	333-93-7	0.04M	P261, P305+P351+P338	H315, H319, H335
1,5-Pentanediol	-	-	111-29-5	50%v/v		
2-Amino-2-methyl-1,3-propanediol	204-100-7	-	115-69-5	0.1M	P261, P305+P351+P338	H315, H319, H335
3-(Benzyldimethylammonio)propanesulfonate	-	-	81239-45-4	50%w/v		
Barium acetate	208-849-0	-	543-80-6	0.004M		H302, H332
BES	233-465-5	-	10191-18-1	0.1M	P261, P305+P351+P338	H315, H319, H335
BIS-TRIS	230-237-7	-	6976-37-0	0.1M	P261, P305+P351+P338	H315, H319, H335
Cesium acetate	-	-	3396-11-0	0.004M		
Cobalt(II) chloride hexahydrate	231-589-4	-	7791-13-1	0.002M	P201, P261, P273, P280, P308+P313, P501	H302, H317, H334, H341, H350i, H360F, H410
D-(-)-Fructose	200-333-3	-	57-48-7	0.1M		
Dimethylethylammoniumpropane sulfonate	-	-	160255-06-1	50%w/v	P280, P305+P351+P338, P310	H314
DL-5-Hydroxylysine hydrochloride	-	-	13204-98-3	0.1M		
DL-Arginine hydrochloride	-	-	32042-43-6	0.1M		
DL-Histidine monohydrochloride monohydrate	229-266-8	-	123333-71-1	0.1M		
DL-Ornithine monohydrochloride	213-956-0	-	1069-31-4	0.04M		
DL-Threonine	-	-	80-68-2	0.1M		
D-Sorbitol	200-061-5	-	50-70-4	0.1M		
Erbium(III) chloride hexahydrate	233-385-0	-	10025-75-9	0.002M	P261, P305+P351+P338	H315, H319, H335
Gly-Gly	209-127-8	-	556-50-3	0.1M	P305+P351+P338	H319
Lithium sulfate	233-820-4	-	10102-25-7	0.09M		H302
L-Rhamnose monohydrate	-	-	10030-85-0	0.1M		
Manganese(II) chloride tetrahydrate	231-869-6	-	13446-34-9	0.002M		H302
MOPSO	269-989-6	-	68399-77-9	0.1M	P261, P305+P351+P338	H315, H319, H335
myo-Inositol	-	-	87-89-8	0.1M		
Nickel(II) chloride hexahydrate	-	-	7791-20-0	0.002M	P201, P261, P273, P280, P301+P310, P311	H301, H315, H317, H334, H341, H350i, H360D, H372, H410, H331,
Poly(ethylene glycol) 20000	500-038-2	-	25322-68-3	50%w/v		
Poly(ethylene glycol) 3000	500-038-2	-	25322-68-3	50%w/v		
Poly(ethylene glycol) 4000	500-038-2	-	25322-68-3	50%w/v		
Poly(ethylene glycol) 8000	500-038-2	-	25322-68-3	50%w/v		
Potassium sulfate	231-915-5	-	7778-80-5	0.09M		
Rubidium chloride	-	-	7791-11-9	0.004M		
Sodium chromate tetrahydrate	231-889-5	-	10034-82-9	0.002M	P201, P260, P273, P280, P284, P301+P310	H301, H312, H314, H317, H330, H334, H340, H350, H360FD, H372,
Sodium molybdate(VI) dihydrate	231-551-7	-	10102-40-6	0.002M		
Sodium orthovanadate	237-287-9	-	13721-39-6	0.002M	P280	H302, H312, H332
Sodium sulfate	231-820-9	-	7757-82-6	0.09M		
Sodium tungstate dihydrate	236-743-4	-	10213-10-2	0.002M		H302
Spermidine trihydrochloride	206-379-0	-	334-50-9	0.04M	P261, P305+P351+P338	H315, H319, H335
Spermine tetrahydrochloride	206-189-8	-	306-67-2	0.04M		H315
Strontium acetate	-	-	543-94-2	0.004M		
Terbium(III) chloride hexahydrate	233-132-4	-	13798-24-8	0.002M	P305+P351+P338	H315, H319
trans-4-Hydroxy-L-proline	200-091-9	-	51-35-4	0.1M		
Triethanolamine	203-049-8		102-71-6	0.1M		
Xylitol	201-788-0	-	87-99-0	0.1M		
Ytterbium(III) chloride hexahydrate	237-632-3	-	10035-01-5	0.002M	P261, P305+P351+P338	H315, H319
Yttrium(III) chloride hexahydrate	233-801-0	-	10025-94-2	0.002M	P261, P305+P351+P338	H315, H319, H335
Zinc chloride	231-592-0	-	7646-85-7	0.002M	P273, P280, P305+P351+P338, P310, P501	H302, H314, H410

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.

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

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

Following ingestion
Rinse mouth with water. Consult a doctor. Do NOT induce vomiting.

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.

5.2 Special hazards arising from the substance or mixture

Carbon oxides. Nitrogen oxides. Hydrogen chloride gas. Sulfur oxides. Lithium oxides. Nickel oxides. Rubidium oxides. Sodium oxides. Zinc oxides. Potassium oxides. Barium oxides. Cesium oxides. Strontium oxides. Chromium oxides. Molybdenum oxides. Vanadium oxides. Tungsten oxides. Erbium oxides. Yttrium oxides.

5.3 Advice for firefighters
Wear breathing apparatus. Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours. 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	
Barium acetate	543-80-6	UK	0.5 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
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
Sodium chromate tetrahydrate	10034-82-9	UK		0.05 ppm	EH40 WEL - Workplace Exposure Limit
Sodium molybdate(VI) dihydrate	10102-40-6	UK	10 ppm	5 ppm	EH40 WEL - Workplace Exposure Limit
Sodium tungstate dihydrate	10213-10-2	UK	3 mg/m^3	1 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

Material is extremely destructive to tissue of mucous membranes & upper respiratory tract. Dizziness, procrastination, can cause kidney damage if sodium intake is limited. Dehydration, weight loss, dermatological effects, thyroid disturbances. Central nervous system effects including: blurred vision, sensory loss, slurred speech, ataxia, convul. Diarrhoea, vomiting, neuromuscular effects such as tremors, clonus, hyperactive reflexes. Gastrointestinal disturbance. Spasm, inflammation & edema of larynx & bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting. Can cause delayed blood clotting leading to hemorrhages. Inhalation may cause sensitivity to heat, itching, increased awareness of odour or taste. Kidney irregularities.

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

Change of Triethylamine to Triethanolamine

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.