

**1. IDENTIFICATION OF SUBSTANCE AND COMPANY DETAILS**
**1.1 Product Identifier**

Product name:	Morpheus® Fusion / Morpheus® Fusion HT-96 / Morpheus® Fusion FX-96
Product number:	MD1-129 / MD1-130 / MD1-130-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
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**2. HAZARDS IDENTIFICATION**
**2.1 Classification of substance or mixture**
**Classification according to Regulation (EC) No. 1272/2008 [CLP]**

EUH032	Contact with acids liberates very toxic gas
H225	Highly flammable liquid & vapour
H226	Flammable liquid & vapour
H272	May intensify fire; oxidizer
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
H318	Causes serious eye damage
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
H336	May cause drowsiness or dizziness
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
H400	Very toxic to aquatic life
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
P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking
P220	Keep/Store away from clothing/combustible materials
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
P310	Immediately 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	2.5 %v/v	P261, P305+P351+P338	H315, H319, H335
1,1,1-Tris(hydroxymethyl)propane	-	-	77-99-6	2.5%w/v		
1,2,6-Hexanetriol	203-424-6	-	106-69-4	2.5%w/v		
1,2-Propanediol	200-338-0	-	57-55-6	0.12M		
1,3-Propanediol	207-997-3	-	504-63-2	0.12M		H315
1,4-Butanediol	203-786-5	-	110-63-4	0.12M	P261	H302, H336
1,4-Diaminobutane dihydrochloride	206-375-9	-	333-93-7	0.04-0.08M	P261, P305+P351+P338	H315, H319, H335
1,5-Pentanediol	-	-	111-29-5	2.5%v/v		
1,6-Hexanediol	211-074-0	-	629-11-8	0.12M		
1-Butanol	200-751-6	-	71-36-3	0.12M	P261, P280, P305+P351+P338	H226, H302, H315, H318, H335, H336
2-Propanol	200-661-7	-	67-63-0	0.12M	P210, P261, P305+P351+P338	H225, H319, H336
Ammonium acetate	211-162-9	-	631-61-8	0.1-0.2M		
Ammonium sulfate	231-984-1	-	7783-20-2	0.09-0.18M		
Barium acetate	208-849-0	-	543-80-6	0.004-0.008M		H302, H332
BICINE	-	-	150-25-4	0.1M		
Calcium chloride dihydrate	233-140-8	-	10035-04-8	0.06-0.12M	P305+P351+P338	H319
Cesium acetate	-	-	3396-11-0	0.004-0.008M		
CHAPS	-	-	75621-03-3	1.2-2.4%w/v	P280	H316
CHAPSO	-	-	82473-24-3	1.2-2.4%w/v		
Choline chloride	200-655-4	-	67-48-1	1.5-3%w/v	P261, P305+P351+P338	H315, H319, H335
Cobalt(II) chloride hexahydrate	231-589-4	-	7791-13-1	0.002-0.004M	P201, P261, P273, P280, P308+P313, P501	H302, H317, H334, H341, H350i, H360F, H410
D-(-)-Fructose	200-333-3	-	57-48-7	0.02M		
D-(+)-Galactose	-	-	59-23-4	0.12M		
D-(+)-Glucose	-	-	50-99-7	0.12M		
D-(+)-Mannose	-	-	3458-28-4	0.12M		
D-Panthenol	-	-	81-13-0	1.5-3%w/v		
D-Sorbitol	200-061-5	-	50-70-4	0.02M		
D-(+)-Xylose	200-400-7	-	58-86-6	0.12M		
Diethylene glycol	203-872-2	-	111-46-6	0.12-0.24M		H302
DL-Alanine	-	-	302-72-7	0.1-0.2M		
DL-Glutamic acid monohydrate	-	-	19285-83-7	0.1-0.2M		
DL-Lysine monohydrochloride	200-739-0	-	70-53-1	0.1-0.2M	P305+P351+P338	H319
DL-Ornithine monohydrochloride	213-956-0	-	1069-31-4	0.04-0.08M		
DL-Serine	-	-	302-84-1	0.1-0.2M		
Ethylene glycol	203-473-3	-	107-21-1	20%v/v		H302
Glycerol	200-289-5	-	56-81-5	20%v/v		
Glycine	200-272-2	-	56-40-6	0.1-0.2M		
HEPES sodium salt	-	-	75277-39-3	0.1M		
Hexylene glycol	203-489-0	-	107-41-5	12.5%v/v	P305+P351+P338	H315, H319
Imidazole	206-019-2	01-2119485825-24-XXXX	288-32-4	0.1M	P201, P280, P305+P351+P338, P310	H302, H314, H360D
L-(-)-Fucose	-	-	2438-80-4	0.12M		
L-Rhamnose monohydrate	-	-	10030-85-0	0.02M		
Lidocaine hydrochloride monohydrate	200-803-8	-	6108-05-0	0.8-1.6%w/v	P301+P310	H301
Lithium sulfate	233-820-4	-	10102-25-7	0.09-0.18M		H302
Magnesium chloride hexahydrate	-	-	7791-18-6	0.06-0.12M		
Manganese(II) chloride tetrahydrate	231-869-6	-	13446-34-9	0.002-0.004M		H302
MES monohydrate	224-632-3	-	145224-94-8	0.1M	P261, P305+P351+P338	H315, H319, H335
meso-Erythritol	-	-	149-32-6	2.5%w/v		
MOPS	214-478-5	-	1132-61-2	0.1M	P261, P305+P351+P338	H315, H319, H335
myo-Inositol	-	-	87-89-8	0.02M		
N-Acetyl-D-glucosamine	-	-	7512-17-6	0.12M		
NDSB 195	-	-	160255-06-1	1.5-3%w/v		
NDSB 201	-	-	15471-17-7	1.5-3%w/v		
NDSB 211	-	-	38880-58-9	1.5-3%w/v	P280, P305+P351+P338, P310	H314
NDSB 221	-	-	160788-56-7	1.5-3%w/v	P280, P305+P351+P338, P310	H314
NDSB 256	-	-	81239-45-4	1.5-3%w/v		
Nickel(II) chloride hexahydrate	-	-	7791-20-0	0.002-0.004M	P201, P261, P273, P280, P301+P310, P311	H301, H315, H317, H331, H334, H341, H350i, H360D, H372, H410
Penta(ethylene glycol)	225-341-4	-	4792-15-8	0.12-0.24M	P261, P305+P351+P338	H315, H319, H335
Poly(ethylene glycol) 1000	500-038-2	-	25322-68-3	12.5%w/v		
Poly(ethylene glycol) 20000	500-038-2	-	25322-68-3	10%w/v		
Poly(ethylene glycol) 3350	500-038-2	-	25322-68-3	12.5%w/v		
Poly(ethylene glycol) 4000	500-038-2	-	25322-68-3	10%w/v		
Poly(ethylene glycol) 8000	500-038-2	-	25322-68-3	10%w/v		
Poly(ethylene glycol) methyl ether 500	-	-	9004-74-4	20%v/v		
Potassium sodium tartrate tetrahydrate	-	-	6381-59-5	0.1-0.2M		
Potassium sulfate	231-915-5	-	7778-80-5	0.09-0.18M		
Procaine hydrochloride	200-077-2	-	51-05-8	0.8-1.6%w/v	P280, P301+P310	H301, H317
Proparacaine hydrochloride	227-541-7	-	5875-06-9	0.8-1.6%w/v	P280, P305+P351+P338	H302, H312, H317, H319, H332
Pyridoxine hydrochloride	200-386-2	-	58-56-0	1.5-3%w/v		
Rubidium chloride	-	-	7791-11-9	0.004-0.008M		
Spermidine trihydrochloride	206-379-0	-	334-50-9	0.04-0.08M	P261, P305+P351+P338	H315, H319, H335
Spermine tetrahydrochloride	206-189-8	-	306-67-2	0.04-0.08M		H315
Strontium acetate	-	-	543-94-2	0.004-0.008M		

Chemical	EC No.	REACH No.	CAS No.	Concentration	P-code(s)	H-code(s)
(+)-Sodium-L-ascorbate	205-126-1		134-03-2	1.5-3%w/v		
Sodium bromide	231-599-9	-	7647-15-6	0.09-0.18M		
Sodium chromate tetrahydrate	231-889-5	-	10034-82-9	0.002-0.004M	P201, P260, P273, P280, P284, P301+P310	H301, H312, H314, H317, H330, H334, H340, H350, H360FD, H372,
Sodium citrate tribasic dihydrate	-	-	6132-04-3	0.1-0.2M		
Sodium fluoride	231-667-8	-	7681-49-4	0.09-0.18M	P301+P310, P305+P351+P338	H301, H315, H319, EUH032
Sodium formate	205-488-0	-	141-53-7	0.1-0.2M		
Sodium glycocholate hydrate			338950-81-5	1.2-2.4%w/v		
Sodium iodide	231-679-3	-	7681-82-5	0.09-0.18M	P273, P305+P351+P338	H315, H319, H400
Sodium molybdate dihydrate	231-551-7	-	10102-40-6	0.002-0.004M		
Sodium nitrate	231-554-3	-	7631-99-4	0.09-0.18M	P220, P261, P305+P351+P338	H272, H302, H315, H319, H335
Sodium orthovanadate	237-287-9	-	13721-39-6	0.002-0.004M	P280	H302, H312, H332
Sodium oxamate	-	-	565-73-1	0.1-0.2M		
Sodium phosphate dibasic dihydrate	-	-	10028-24-7	0.09-0.18M		
Sodium sulfate	231-820-9	-	7757-82-6	0.09-0.18M		
Sodium tungstate dihydrate	236-743-4	-	10213-10-2	0.002-0.004M		H302
Taurocholic acid sodium salt hydrate			345909-26-4	1.2-2.4%w/v		
Tetracaine hydrochloride			136-47-0	0.8-1.6%w/v	P280, P301+P310, P305+P351+P338	H301, H317, H319
Tetraethylene glycol	203-989-9	-	112-60-7	0.12-0.24M		
Thiamine hydrochloride	200-641-8	-	67-03-8	1.5-3%w/v		
Triethylene glycol	203-953-2	-	112-27-6	0.12-0.24M	P261	H335
Trizma® base	201-064-4	-	77-86-1	0.1M	P261, P305+P351+P338	H315, H319, H335
Xylitol	201-788-0	-	87-99-0	0.02M		
Zinc acetate dihydrate	209-170-2	-	5970-45-6	0.002-0.004M	P273, P305+P351+P338	H302, H319, H400

#### 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. Use dry chemical powder.

##### 5.2 Special hazards arising from the substance or mixture

Carbon oxides. Nitrogen oxides. Sulfur oxides. Hydrogen chloride gas. Calcium oxides. Sodium oxides. Hydrogen cyanide gas. Magnesium oxides. Metal oxides. Potassium oxides. Hydrogen bromide gas. Hydrogen fluoride gas. Phosphorous oxides.

##### 5.3 Advice for firefighters

Wear breathing apparatus. Use water spray to cool unopened containers. Fight fire remotely due to risk of explosion.

#### 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. Remove all sources of ignition. Evacuate personnel to safe areas.

##### 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	
1,2-Propanediol	57-55-6	UK		150 ppm	EH40 WEL - Workplace Exposure Limit
2-Propanol	603-117-00-0	UK	500 ppm	400 ppm	EH40 WEL - Workplace Exposure Limit
Barium acetate	543-80-6	UK	0.5 mg/m <sup>3</sup>		EH40 WEL - Workplace Exposure Limit
Cobalt(II) chloride hexahydrate	7791-13-1	UK		0.1 mg/m <sup>3</sup>	EH40 WEL - Workplace Exposure Limit
Diethylene glycol	111-46-6	UK		23 mg/m <sup>3</sup>	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 <sup>3</sup>	EH40 WEL - Workplace Exposure Limit
Hexylene glycol	107-41-5	UK	25 mg/m <sup>3</sup>	25 mg/m <sup>3</sup>	EH40 WEL - Workplace Exposure Limit
Manganese(II) chloride tetrahydrate	13446-34-9	UK		0.5 mg/m <sup>3</sup>	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 fluoride	7681-49-4	UK		2.5 mg/m <sup>3</sup>	EH40 WEL - Workplace Exposure Limit
Sodium molybdate dihydrate	10102-40-6	UK	10 ppm	5 ppm	EH40 WEL - Workplace Exposure Limit
Sodium tungstate dihydrate	10213-10-2	UK	3 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	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

Gastrointestinal disturbance, nausea, headache, vomiting, central nervous system depression. Drying/cracking of skin, skin irritation. Central nervous system depression, nausea, headache, vomiting, drowsiness. Overexposure could cause mild, reversible liver effects. Confusion, dizziness, kidney injury, unconsciousness, convulsions, pulmonary edema, nausea, headaches, vomiting. Effects may be delayed. 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. Headache, nausea, vomiting. May cause kidney irregularities. Material is extremely destructive to mucous membranes & upper respiratory tract. Sedation. Damage to lungs. Prolonged exposure to iodides may produce iodism. Symptoms include: skin rash, running nose, headache, and irritation of mucous membrane. Sever 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. Absorption into body leads to formation of methemoglobin which causes cyanosis. Nausea, headache, vomiting. Material is extremely destructive to tissue of mucous membranes & upper respiratory tract. Gastrointestinal disturbance.

## 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
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### 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
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### 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
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### 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
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### 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

First issue

### 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.