1. IDENTIFICATION OF SUBSTANCE AND COMPANY DETAILS

1.1 Product Identifier

Product name:	The Ligand Friendly Screen (LFS)/ The Ligand Friendly Screen (LFS) HT-96/ The Ligand Friendly Screen (LFS) FX-96
Product number:	MD1-121/ MD1-122/ MD1-122-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]

H302	Harmful if swallowed
H319	Causes serious eye irritation
H315	Causes skin irritation
H335	May cause respiratory irritation
H312	Harmful in contact with skin
H332	Harmful if inhaled
H412	Harmful to aquatic life with long-lasting effects
EUH032	Contact with acids liberates very toxic gas
H301	Toxic if swallowed
H400	Very toxic to aquatic life
H272	May intensify fire; oxidizer
H314	Causes severe skin burns and eye damage
H410	Very toxic to aquatic life with long-lasting effects
H318	Causes serious eye damage
H360D	May damage the unborn child
H360	May damage fertility or the unborn child
H331	Toxic if inhaled
H373	May cause damage to organs through prolonged or repeated exposure

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):

P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P220	Keep/Store away from clothing/combustible materials
P310	Immediately call a POISON CENTER or doctor/physician
P201	Obtain special instructions before use
P308+P313	IF exposed or concerned: Get medical advice/attention
P337+P313	If eye irritation persists: Get medical advice/ attention.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P301+P330+P331+P310	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.
P284	Wear respiratory protection.
P302 + P352	IF ON SKIN: Wash with plenty of water.

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)
Ammonium chloride	235-186-4	01-2119489385-24-XXXX	12125-02-9	0.2M	P301+P312+P330 P305+P351+P338	H302, H319

Chemical	EC No.	REACH No.	CAS No.	Concentration	P-code(s)	H-code(s)
BIS-TRIS propane	264-899-3	-	64431-96-5	0.1M		
Boric acid	233-139-2	01-2119486683-25-XXXX	10043-35-3	0.1M	P201, P308+P313	H360
Calcium chloride dihydrate	233-140-8	-	10035-04-8	0.1M	P305+P351+P338	H319
DL-Malic acid	230-022-8	-	6915-15-7	0.1M	P280, P305+P351+P338, P337+P313	H319
Ethylene glycol	203-473-3	01-2119456816-28-XXXX	107-21-1	10%v/v	P280, P301+P310	H302, H373
Glycine	200-272-2	01-2119864796-18-XXXX	56-40-6	0.1M		
HEPES	230-907-9	-	7365-45-9	0.1M		
Hexylene glycol	203-489-0	01-2119539582-35-XXXX	107-41-5	55 - 60 %v/v	P280, P305+P351+P338, P337+P313	H315, H319
Imidazole	206-019-2	01-2119485825-24-XXXX	288-32-4	0.1M	P201, P260, P280, P303+P361+P353, P305+P351+P338, P308+P313	H302, H314, H360D
Lithium chloride	231-212-3	01-2119560574-XXXX	7447-41-8	0.2M	P301+P312+P330, P305+P351+P338	H302, H315, H319
Magnesium chloride hexahydrate	-	-	7791-18-6	0.1M		
MES monohydrate	224-632-3	-	145224-94-8	0.1M		
Poly(ethylene glycol) 1000	500-038-2	-	25322-68-3	30%w/v		
Poly(ethylene glycol) 3350	500-038-2	-	25322-68-3	20%w/v		
Poly(ethylene glycol) 6000	500-038-2	-	25322-68-3	20%w/v		
Potassium citrate tribasic monohydrate	-	-	6100-05-6	0.2M		
Potassium phosphate monobasic	231-913-4	01-2119490224-41-XXXX	7778-77-0	0.02 - 0.2 M		
Potassium sodium tartrate tetrahydrate	206-156-8	-	6381-59-5	0.2M		
Potassium thiocyanate	206-370-1	-	333-20-0	0.2M	P273, P280	H302, H312, H332, H412, EUH032
Sodium acetate trihydrate	204-823-8	01-2119485123-42-XXXX	6131-90-4	0.2M		
Sodium bromide	231-599-9	-	7647-15-6	0.2M		
Sodium cacodylate trihydrate	204-708-2	-	6131-99-3	0.1M	P273, P301+P310, P304+P340, P308+P313	H301, H410, H331
Sodium chloride	231-598-3	01-2119485491-33-XXXX	7647-14-5	0.2M		
Sodium fluoride	231-667-8	-	7681-49-4	0.2M	P301+P330+P331+P310, P305+P351+P338	H301, H315, H319, EUH032
Sodium formate	205-488-0	01-2119486468-21-XXXX	141-53-7	0.2M		
Sodium iodide	231-679-3	-	7681-82-5	0.2M	P273, P280, P305+P351+P338	H315, H319, H400
Sodium malonate dibasic monohydrate	-	-	26522-85-0	0.2M		
Sodium nitrate	231-554-3	01-2119488221-41-XXXX	7631-99-4	0.2M	P220, P305+P351+P338	H272, H319
Sodium phosphate dibasic dihydrate	231-448-7	-	10028-24-7	0.02 - 0.2 M		
Sodium phosphate monobasic monohydrate	231-449-2	-	10049-21-5	0.1M		
Sodium propionate	205-290-4	01-2120757184-52-XXXX	137-40-6	0.1M	P264, P280, P305+P351+P338, P37+P313	H319
Sodium sulfate	231-820-9	01-2119519226-43-XXXX	7757-82-6	0.2M		
Succinic acid	203-740-4	01-2119896114-34-XXXX	110-15-6	0.1M	P280, P305+P351+P338	H318
Trizma® base	201-064-4	01-2119957659-16-XXXX	77-86-1	0.1M		
Zinc chloride	231-592-0	01-2119472431-44-XXXX	7646-85-7	0.01M	P260, P280, P284, P301+P330+P331, P302+P352, P304+P340, P305+P351+P338, P308+P313	H302, H314, H335, 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. Use dry chemical powder.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas. Nitrogen oxides. Carbon oxides. Boron oxides. Calcium oxides. Sulfur oxides. Hydrogen cyanide gas. Lithium oxides. Magnesium oxides. Potassium oxides. Phosphorous oxides. Sodium oxides. Hydrogen bromide gas. Arsenic oxides. Hydrogen fluoride gas. Zinc 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

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

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	20mg/m^3	10 mg/m^3	EH40 WEL - Workplace Exposure Limit
Ethylene glycol	107-21-1	UK	40 ppm	20 ppm	EH40 WEL - Workplace Exposure Limit
Hexylene glycol	107-41-5	UK	25 ppm	25 ppm	EH40 WEL - Workplace Exposure Limit
Sodium cacodylate trihydrate	6131-99-3	UK	0.3 mg/m^3	0.1 mg/m^3	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

By ingestion/absorption: Nausea, vomiting, diarrhea, abdominal cramps, lesions on skin & mucous membranes. Circulatory collapse, tachycardia, delirium, convulsions, coma, death. Burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting. 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. Material is extremely destructive to mucous membranes & upper respiratory tract. Headache, nausea, vomiting. Sedation. Drowsiness, tremors, convulsions. Vomiting, diarrhoea, dehydration, congestion in internal organs. Inflammatory reactions in gastrointestinal tract. Damage to lungs. Prolonged exposure to iodides may produce iodism. Symptoms include: skin rash, running nose, headache, irritation of mucous membrane. Sever cases: pimples, boils, hives, 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.

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

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.