SAFETY DATA SHEET

1. IDENTIFICATION OF SUBSTANCE AND COMPANY DETAILS

1.1 Product Identifier

Product name: 3M DL-Malic acid pH 7.0
Product number: MD2-100(250)-252
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 Data Sheet

Supplier: Molecular Dimensions Limited
Address: Unit 6 Goodwin Park, Willie Snaithe Road, Newmarket, Suffolk, CB8 7SQ, United Kingdom
Telephone: +44 (0)1638 561051
Fax: +44 (0)1638 660674
Email address: enquiries@moleculardimensions.com

1.4 Emergency telephone number

Emergency telephone 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 |
| H315 | Causes skin irritation |
| H318 | Causes serious eye damage |
| H335 | May cause respiratory irritation |

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):

P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P280 Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

2.3 Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

<table>
<thead>
<tr>
<th>Chemical</th>
<th>EC No.</th>
<th>REACH No.</th>
<th>CAS No.</th>
<th>Concentration</th>
<th>P-code(s)</th>
<th>H-code(s)</th>
</tr>
</thead>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures

General notes:

Consult a doctor. Show this safety data sheet 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.

Following eye contact:

Rinse thoroughly for at least 15 minutes. Consult a doctor.

Following ingestion:

Rinse mouth with water. Consult a doctor.

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.

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.

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.

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
None of the constituent chemicals have workplace exposure limits.

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

gh) 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, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting.
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. Not hazardous
- I.M.D.G. Not hazardous
- I.C.A.O.-T.I. Not hazardous
- A.D.N. Not hazardous

14.2 UN proper shipping name
- A.R.D./R.I.D. Not hazardous
- I.M.D.G. Not hazardous
- I.C.A.O.-T.I. Not hazardous
- A.D.N. Not hazardous

14.3 Transport hazard class(es)
- A.R.D./R.I.D. Not hazardous
- I.M.D.G. Not hazardous
- I.C.A.O.-T.I. Not hazardous
- A.D.N. Not hazardous

14.4 Packaging group
- A.R.D./R.I.D. Not hazardous
- I.M.D.G. Not hazardous
- I.C.A.O.-T.I. Not hazardous
- A.D.N. Not hazardous

14.5 Environmental hazards
- A.R.D./R.I.D. Not hazardous
- I.M.D.G. Not hazardous
- I.C.A.O.-T.I. Not hazardous
- A.D.N. Not hazardous

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

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
- I.M.D.G. International Maritime Dangerous Goods
- 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.