

Safety Data Sheet

SECTION 1: Identification of the substance and of the company

1.1 Product identifier

NAME:	Dimethyl fumarate
PRODUCT CODE:	AS-12684
CAS No:	624-49-7
Synonyms/Tradenames:	
IUPAC Name:	Dimethyl fumarate
MDL No:	MFCD00064438
EINECS No:	
REACH No:	A REACH registration number is not available for this substance as the substance or its uses are exempted from registration. The annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

Identified Use: Research and Development

1.3 Details of the supplier of the safety data sheet

Key Organics Limited
Highfield Road Industrial Estate
Camelford
Cornwall PL32 9RA UK
Tel: +44(0)1840 212171
Fax: +44(0)1840 213712
Email: enquiries@keyorganics.net

1.4 Emergency telephone number

+44(0)1840 212137 between the hours 9am to 5pm Monday to Friday.

SECTION 2: Hazard Identification

2.1 GHS Classification of the substance or mixture

(Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP])

Acute toxicity, inhalation (Category 4)
Acute toxicity, dermal (Category 4)
Acute toxicity, oral (Category 4)
Serious eye damage/eye irritation (Category 2A)
Specific target organ toxicity, single exposure; Respiratory tract irritation (Category 3)
Skin corrosion/irritation (Category 2)
Sensitisation, Skin (Category 1)
Hazardous to the aquatic environment, long-term hazard (Category 2)

2.2 Label elements

(Labelling according to Regulation (EC) No 1272/2008 [EU-GHS/CLP])

Signal Word: Warning



Hazard Statements:

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.

H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Phrases:

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P262	Do not get in eyes, on skin, or on clothing.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P402 + P404	Store in a dry place. Store in a closed container.
P422	Store contents under inert gas.

2.3 Other Hazards

No Information Available

SECTION 3: Composition/Information on ingredients**3.1 Substances**

AS-12684: 624-49-7 Dimethyl fumarate
MF: C₆H₈O₄ MW: 144.1260

3.2 Mixtures

Not relevant.

SECTION 4: First Aid Measures**4.1 Description of the first aid measures**

Skin Contact	Remove any contaminated clothing and shoes. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Eye Contact	Hold eyelids open and rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation or visual changes persists: Get medical advice/attention.
Ingestion	Do not induce vomiting. If victim is conscious and alert, give 1-2 glasses of water to wash out mouth thoroughly. Do not give anything by mouth to an unconscious person. Get medical advice/attention. Do not leave victim unattended.
Inhalation	If respiratory irritation or distress occurs, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if respiratory irritation or distress continues.

4.2 Most important symptoms and effect, both acute and delayed

To the best of our knowledge the acute and delayed symptoms and effects of this substance are not fully known.

4.3 Indication of any immediate medical attention and special treatment needed

Call a POISON CENTRE or doctor/physician if you feel unwell.
No additional measures required.

SECTION 5: Firefighting Measures**5.1 Extinguishing media**

Suitable:

Carbon Dioxide
Dry Chemical Powder
AFFF
Water

Unsuitable: Do not use water with a full water jet.

5.2 Special hazards arising from the substance or mixture

In combustion toxic fumes may form.

5.3 Advice for fire fighters

Wear protective clothing to prevent contact with skin and eyes.
Wear self-contained breathing apparatus.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures.

Refer to section 8 of SDS for personal protection details.

6.2 Environmental precautions.

Do not discharge into rivers and drains.

6.3 Methods and materials for containment and cleaning up

Mix with sand or vermiculite, transfer to suitable container and arrange disposal by approved disposal specialists.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Safe handling:	Do not store, use, and/or consume foods, beverages, tobacco products or cosmetics in areas where this material is stored. Wash hands and face carefully before eating, drinking, using tobacco or applying cosmetics in areas where this material is stored. Handle in BS approved adequately ventilated fume cupboard. Wash exposed skin promptly to remove accidental splashes of contact with this material. Remove and thoroughly wash any clothing if spillage occurs.
Protection against explosions and fires:	Undertake normal measures for fire protection. Minimal explosion risk.

7.2 Conditions for safe storage, including any incompatibilities

Managing storage risks:	Keep container tightly closed, store in cool, well ventilated area.
Storage controls:	Store under inert gas
Maintaining integrity:	Keep in tightly closed container in a cool area away from direct sunlight or heat sources.
Further information about storage conditions:	Store in well ventilated place. Keep container tightly closed.

7.3 Specific end use(s)

The end use(s) have not been fully determined. The substance is supplied for Research and Development purposes only and should be handled by appropriately trained professionals only.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

No data available.

8.2 Exposure controls

General protective & hygiene measures:	Wear protective gloves/protective clothing/eye protection/face protection. The standard precautionary measures should be adhered to when handling this material. Wash hands during breaks and at the end of handling the material. Remove immediately any contaminated clothing or footwear and either wash thoroughly or dispose of in hazardous waste.
Engineering measures:	Set up hand-wash station and eye station near work area. General area dilution/exhaust ventilation. Use only in a BS approved fume cupboard or in a well ventilated area.

Eye/face protection:	Safety glasses (NIOSH(US) or EN 166(EU)) and/or full face visor if handling large amounts.
Hand protection:	Suitable protective gloves or gauntlets satisfying EU Directive 89/686/EEC and the standard EN374 derived from it.
Respiratory protection:	Avoid breathing dust, fumes, gas, mist, vapours or sprays. For low level exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABE1P3D (EU EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Skin protection:	Protective clothing and gloves or gauntlets.
Other personal protection advice::	No data.

SECTION 9: Physical and Chemical Properties

9.1 Physical and chemical properties

Appearance/form:	White to Off-white Solid
Molecular formula:	C6H8O4
Molecular weight:	144.13
Odour:	No data available
Odour threshold:	No data available
pH:	4.0 - 6.0 at 10 g/l at 20 °C suspension
Melting/Boiling point (°C):	MP: 102 °C BP: 192 - 193 °C - lit.
Flash point:	58 °C (Closed cup)
Evaporation rate:	No data available
Flammability (solid,gas):	No data available
Upper/lower explosive limits:	No data available
Vapour pressure:	5 hPa at 25 °C
Vapour density:	No data available
Relative density:	1.0283 g/cm ³ at 20 °C
Solubility(ies):	Water: 1.6 g/l at 20 °C
Partition coefficient:	No data available
Auto ignition temperature:	833 °F
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidising properties:	No data available

9.2 Other information

No other information is available.

SECTION 10: Stability and Reactivity

10.1 Reactivity

No unusual reactivity.

10.2 Chemical stability

Stable under normal conditions as stated in section 7.

10.3 Possibility of hazardous reactions

No hazardous reactions known.

10.4 Conditions to avoid

No specific conditions to avoid.

10.5 Incompatible materials

Avoid contact with strong acids, bases, oxidising and reducing agents.

10.6 Hazardous decomposition products

In combustion emits toxic fumes.

SECTION 11: Toxicology Information

All the data contained in this section is derived from actual test data unless otherwise stated.

11.1 Information on toxicology effects

Acute toxicity:	Inhalation: Rapid absorption. LD50 Dermal - Rabbit - 1,250 mg/kg
Skin corrosion/irritation:	Causes skin irritation.
Serious eye damage/irritation:	Causes serious eye irritation.
Respiratory or skin sensitisation:	Sensitisation test: - Guinea pig Result: positive Remarks: (Lit.)
Germ cell mutagenicity:	Ames test Result: negative (Lit.) Aldrich- 242926 Page 7 of 9 The life science business of Merck operates as MilliporeSigma in the US and Canada Result: negative (Lit.)
Carcinogenicity:	No data available.
Reproductive toxicity:	Reproductive toxicity- Rat Animal testing did not show any effects on fertility. Developmental Toxicity- Rat No significant adverse effects were reported
STOT single exposure:	May cause respiratory irritation. Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
STOT repeated exposure:	No data available.
Aspiration hazard:	No data available.
Signs and Symptoms of Exposure:	No data available.

11.2 Additional Information

RTECS: EM6125000
Effects due to ingestion may include:, flushing, Nausea, Vomiting, Diarrhoea, Contact with skin can cause:, Dermatitis, Allergic reactions
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Systemic effects:
After absorption:
Nausea, Vomiting, flush of face, neck and arms
After long-term exposure to the chemical:
Changes in the blood count, weakening of the immune system
Damage to:
Kidney
Further data:
Other dangerous properties can not be excluded.
This substance should be handled with particular care.

SECTION 12: Ecological Information

All the data contained in this section is derived from actual test data unless otherwise stated.

12.1 Toxicity

Toxicity to fish NOEC - Pimephales promelas (fathead minnow) - 0.0457 mg/l
(OECD Test Guideline 210)
Toxicity to daphnia
and other aquatic
invertebrates
EC50 - Daphnia magna (Water flea) - 1.2 mg/l - 48 h
Remarks: (own results)
NOEC - Daphnia magna (Water flea) - 0.0559 mg/l
Aldrich- 242926 Page 8 of 9
The life science business of Merck operates as MilliporeSigma in the US and Canada
(OECD Test Guideline 211)
Toxicity to bacteria EC50 - activated sludge - 153.6

12.2 Persistence and degradability

Biodegradability Result: 76 % - Readily biodegradable.
(OECD Test Guideline 301D)

12.3 Bioaccumulative potential

No bioaccumulation is to be expected (log Pow <= 4).

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Other adverse effects

Toxic to aquatic life with long lasting effects.
Discharge into the environment must be avoided.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

Disposal considerations: Consult state, local or national regulations for proper disposal.
Disposal of packaging: Disposal must be made according to official regulations.

SECTION 14: Transport Information

14.1 UN number

3077

14.2 UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Dimethyl fumarate)

14.3 Transport class(es)

9

14.4 Packaging group

III

14.5 Environmental hazards

Air (ICAO/IATA): Yes
Road (ADR/RID): Yes
Sea (IMDG): Yes

14.6 Special precautions for user

Air (ICAO/IATA): No data available
Road (ADR/RID): No data available
Sea (IMDG): No data available

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations

Product is not subject to any additional regulations or provisions. This datasheet complies with the requirements of regulations (EC) No. 1907/2006.

15.2 Chemical safety assessment

No chemical safety assessment under Regulation (EC) 1907/2006 is required and has not been carried out.

SECTION 16: Other Information

Date of Previous SDS: 01 August 2023

Date of Revision: 10 September 2025

List of abbreviations used within SDS:

ADR: Accord European sur le transport des marchandises Dangereuses par Route (European Agreement concerning the international Carriage of Dangerous Goods by road).

RID: Reglement International concernant le transport des marchandises par chemin de fer (Regulations concerning the International transport of Dangerous Goods by Rail).

IMDG: International Maritime Code of Dangerous goods.

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulations by the International Air Transport Association.

ICAO: International Civil Aviation Organisation.

ICAO-IT: Technical Instructions by the ICAO.

GHS: Globally Harmonised System of Classification and Labelling of Chemicals.

CAS: Chemical Abstracts Service.

IUPAC: International Union for Pure and Applied Chemistry.

MDL: Molecular Design Ltd

EINECS: European Inventory of Existing Commercial Chemical Substances.

EPA: European Protection Agency.

IARC: International Agency on Research on Cancer.

NTP: National Toxicology Program.

OSHA: Occupational Safety and Health Administration.

ACGIH: American Conference of Industrial Hygienists.

Disclaimer

The information in this Safety Data Sheet is correct to the best of our knowledge at the date of publication. However, the information given should be considered only as a guide. The product listed is for research and development purposes only and not for human or animal use. As such the toxicological, ecological and physiochemical properties have not been fully investigated or determined and the product should be treated with respect and always handled under suitable conditions by suitably qualified personnel. The responsible party shall use this datasheet only in conjunction with other sources of information gathered by them, and should make an independent judgement of suitability, to ensure proper use and protect the health and safety of employees. This Safety Data Sheet is not intended to be a replacement of any statutory assessments required to be completed by the user. This information is furnished without warranty and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Key Organics Ltd. cannot accept liability for any loss, damage or injury which may result from the use of this product.

End of SDS