# SAFETY DATA SHEET
## L-Arginine
According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### *1.1. Product identifier*

**Product name** L-Arginine

**Product number** 28411569

**CAS number** 74-79-3

**EC number** 200-811-1

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

**Identified uses** For research purposes only.

**Uses advised against** Not suitable for human consumption or veterinary purposes.

### *1.3. Details of the supplier of the safety data sheet*

**Supplier**

Molekula Ltd.
Lingfield Way,
Darlington,
DL1 4XX,
United Kingdom
+44 (0) 3302000333
info@molekula.com

### *1.4. Emergency telephone number*

**+44 (0) 7769276927**

## SECTION 2: Hazards identification

### *2.1. Classification of the substance or mixture*

**Classification (SI 2019 No. 720)**

**Physical hazards** Not Classified

**Health hazards** Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335

**Environmental hazards** Not Classified

### *2.2. Label elements*

**EC number** 200-811-1

**Hazard pictograms**



**Signal word** Warning

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|---|---|
| **Hazard statements** | H315 Causes skin irritation.<br>H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation. |
| **Precautionary statements** | P261 Avoid breathing dust.<br>P264 Wash contaminated skin thoroughly after handling.<br>P271 Use only outdoors or in a well-ventilated area.<br>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.<br>P302+P352 IF ON SKIN: Wash with plenty of water.<br>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.<br>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P312 Call a POISON CENTRE/doctor if you feel unwell.<br>P332+P313 If skin irritation occurs: Get medical advice/ attention.<br>P337+P313 If eye irritation persists: Get medical advice/ attention.<br>P362+P364 Take off contaminated clothing and wash it before reuse.<br>P403+P233 Store in a well-ventilated place. Keep container tightly closed.<br>P405 Store locked up.<br>P501 Dispose of contents/ container in accordance with national regulations. |

### *2.3. Other hazards*

This substance is not classified as PBT or vPvB according to current UK criteria.

## SECTION 3: Composition/information on ingredients

### *3.1. Substances*

| | |
|---|---|
| **Product name** | L-Arginine |
| **CAS number** | 74-79-3 |
| **EC number** | 200-811-1 |
| **Chemical formula** | C6H14N4O2 |

## SECTION 4: First aid measures

### *4.1. Description of first aid measures*

| | |
|---|---|
| **General information** | Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel. |
| **Inhalation** | Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place. |
| **Ingestion** | Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation. Get medical attention if symptoms are severe or persist. |
| **Skin contact** | Rinse with water. |
| **Eye contact** | Rinse with water. Do not rub eye. Remove any contact lenses and open eyelids wide apart. Get medical attention if any discomfort continues. |
| **Protection of first aiders** | First aid personnel should wear appropriate protective equipment during any rescue. |

### *4.2. Most important symptoms and effects, both acute and delayed*

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|---|---|
| **General information** | The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| **Inhalation** | A single exposure may cause the following adverse effects: Irritation of nose, throat and airway. Difficulty in breathing. Coughing. |
| **Ingestion** | May cause irritation. |
| **Skin contact** | Redness. Irritating to skin. |
| **Eye contact** | Irritating to eyes. |

### *4.3. Indication of any immediate medical attention and special treatment needed*

| | |
|---|---|
| **Notes for the doctor** | Treat symptomatically. |

## SECTION 5: Firefighting measures

### *5.1. Extinguishing media*

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|---|---|
| **Suitable extinguishing media** | Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire. |
| **Unsuitable extinguishing media** | Do not use water jet as an extinguisher, as this will spread the fire. |

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

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|---|---|
| **Specific hazards** | None known. |
| **Hazardous combustion products** | Thermal decomposition or combustion products may include the following substances:<br>Harmful gases or vapours.<br>Carbon dioxide (CO2).<br>Carbon monoxide (CO).<br>Oxides of nitrogen. |

### *5.3. Advice for firefighters*

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|---|---|
| **Protective actions during firefighting** | Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Ventilate closed spaces before entering them. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities. |
| **Special protective equipment for firefighters** | Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing will provide a basic level of protection for chemical incidents. |

## SECTION 6: Accidental release measures

### *6.1. Personal precautions, protective equipment and emergency procedures*

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|---|---|
| **Personal precautions** | Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of dust. Use suitable respiratory protection if ventilation is inadequate. |

### *6.2. Environmental precautions*

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|---|---|
| **Environmental precautions** | Avoid discharge into drains or watercourses or onto the ground. |

### *6.3. Methods and material for containment and cleaning up*

**Methods for cleaning up** Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

### *6.4. Reference to other sections*

**Reference to other sections** For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

## SECTION 7: Handling and storage

### *7.1. Precautions for safe handling*

**Usage precautions** Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use.

**Advice on general occupational hygiene** Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse.

### *7.2. Conditions for safe storage, including any incompatibilities*

**Storage precautions** Store away from incompatible materials (see Section 10). Store locked up. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.

Moisture sensitive. Store under inert gas.

**Storage class** Chemical storage.

### *7.3. Specific end use(s)*

**Specific end use(s)** The identified uses for this product are detailed in Section 1.2.

## SECTION 8: Exposure controls/Personal protection

### *8.1. Control parameters*

### *8.2. Exposure controls*

**Protective equipment**



**Appropriate engineering controls** Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.

**Eye/face protection** Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

**Hand protection** Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, wear gloves that are proven to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

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|---|---|
| **Other skin and body protection** | Wear appropriate clothing to prevent repeated or prolonged skin contact. |
| **Hygiene measures** | Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product. |
| **Respiratory protection** | Ensure all respiratory protective equipment is suitable for its intended use and is 'UKCA'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges suitable for intended use should be used. Full face mask respirators with replaceable filter cartridges suitable for intended use should be used. Half mask and quarter mask respirators with replaceable filter cartridges suitable for intended use should be used. |
| **Environmental exposure controls** | Keep container tightly sealed when not in use. |

## SECTION 9: Physical and chemical properties

### *9.1. Information on basic physical and chemical properties*

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|---|---|
| **Appearance** | Crystals. Crystalline powder. |
| **Colour** | White. |
| **Odour** | Not known. |
| **Odour threshold** | No information available. |
| **pH** | pH (diluted solution): 11.4 100 g/l (20°C/68°F) |
| **Melting point** | 222°C/431.6°F |
| **Initial boiling point and range** | No information available. |
| **Flash point** | No information available. |
| **Evaporation rate** | No information available. |
| **Flammability (solid, gas)** | No information available. |
| **Upper/lower flammability or explosive limits** | No information available. |
| **Vapour pressure** | <0.1 hPa @ 25°C/77°F |
| **Vapour density** | No information available. |
| **Relative density** | 1.46 g/cm3 |
| **Solubility(ies)** | Soluble in water. |
| **Partition coefficient** | log Pow: -4.20 (20°C/68°F) |
| **Auto-ignition temperature** | No information available. |
| **Decomposition Temperature** | No information available. |

### *9.2. Other information*

| | |
|---|---|
| **Molecular weight** | 174.20 |

## SECTION 10: Stability and reactivity

### *10.1. Reactivity*

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|---|---|
| **Reactivity** | See the other subsections of this section for further details. |

### *10.2. Chemical stability*

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|---|---|
| **Stability** | Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions. |

### *10.3. Possibility of hazardous reactions*

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|---|---|
| **Possibility of hazardous reactions** | Violent reactions possible with:<br>Strong oxidising agents. |

### *10.4. Conditions to avoid*

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|---|---|
| **Conditions to avoid** | There are no known conditions that are likely to result in a hazardous situation. |

### *10.5. Incompatible materials*

| | |
|---|---|
| **Materials to avoid** | Oxidising agents. |

### *10.6. Hazardous decomposition products*

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|---|---|
| **Hazardous decomposition products** | Does not decompose when used and stored as recommended.<br>Thermal decomposition or combustion products may include the following substances:<br>Harmful gases or vapours.<br>Carbon dioxide (CO2).<br>Carbon monoxide (CO).<br>Oxides of nitrogen. |

## SECTION 11: Toxicological information

### *11.1. Information on toxicological effects*

**Acute toxicity - oral**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Acute toxicity - dermal**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Acute toxicity - inhalation**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Skin corrosion/irritation**

| | |
|---|---|
| **Summary** | Causes skin irritation. |

**Serious eye damage/irritation**

| | |
|---|---|
| **Summary** | Causes serious eye irritation. |

**Respiratory sensitisation**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Skin sensitisation**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Germ cell mutagenicity**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Carcinogenicity**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |
| **IARC carcinogenicity** | None of the ingredients are listed or exempt. |

**Reproductive toxicity**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Specific target organ toxicity - single exposure**

| | |
|---|---|
| **Summary** | May cause respiratory irritation. |

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|---|---|
| **Target organs** | Respiratory system, lungs |

**Specific target organ toxicity - repeated exposure**

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|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Aspiration hazard**

| | |
|---|---|
| **Summary** | Not relevant. Solid. |

| | |
|---|---|
| **General information** | The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| **Inhalation** | A single exposure may cause the following adverse effects: Irritation of nose, throat and airway. Difficulty in breathing. Coughing. |
| **Ingestion** | May cause irritation. |
| **Skin contact** | Redness. Irritating to skin. |
| **Eye contact** | Irritating to eyes. |
| **Route of exposure** | Ingestion Inhalation Skin and/or eye contact |
| **Target organs** | Respiratory system, lungs |

## SECTION 12: Ecological information

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|---|---|
| **Ecotoxicity** | Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment. |

***12.1. Toxicity***

**Acute aquatic toxicity**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

**Chronic aquatic toxicity**

| | |
|---|---|
| **Summary** | Based on available data the classification criteria are not met. |

***12.2. Persistence and degradability***

| | |
|---|---|
| **Persistence and degradability** | The degradability of the product is not known. |

***12.3. Bioaccumulative potential***

| | |
|---|---|
| **Bioaccumulative potential** | No data available on bioaccumulation. |
| **Partition coefficient** | log Pow: -4.20 (20°C/68°F) |

***12.4. Mobility in soil***

| | |
|---|---|
| **Mobility** | No data available. |

***12.5. Results of PBT and vPvB assessment***

***12.6. Other adverse effects***

| | |
|---|---|
| **Other adverse effects** | None known. |

## SECTION 13: Disposal considerations

***13.1. Waste treatment methods***

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**General information** The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

**Disposal methods** Do not empty into drains.

## SECTION 14: Transport information

**General** The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

### *14.1. UN number*

Not applicable.

### *14.2. UN proper shipping name*

Not applicable.

### *14.3. Transport hazard class(es)*

No transport warning sign required.

### *14.4. Packing group*

Not applicable.

### *14.5. Environmental hazards*

**Environmentally hazardous substance/marine pollutant**
No.

### *14.6. Special precautions for user*

Not applicable.

### *14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code*

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

## SECTION 15: Regulatory information

### *15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture*

**National regulations** Health and Safety at Work etc. Act 1974 (as amended).
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
EH40/2005 Workplace exposure limits.

### *15.2. Chemical safety assessment*

No chemical safety assessment has been carried out.

### Inventories

**EU - EINECS/ELINCS**
None of the ingredients are listed or exempt.

## SECTION 16: Other information

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|---|---|
| **Abbreviations and acronyms used in the safety data sheet** | ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.<br>ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.<br>RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.<br>IATA: International Air Transport Association.<br>ICAO: Technical Instructions for the Safe Transport of Dangerous Goods by Air.<br>IMDG: International Maritime Dangerous Goods.<br>CAS: Chemical Abstracts Service.<br>ATE: Acute Toxicity Estimate.<br>LC50: Lethal Concentration to 50 % of a test population.<br>LD50: Lethal Dose to 50% of a test population (Median Lethal Dose).<br>$EC_{50}$: 50% of maximal Effective Concentration.<br>PBT: Persistent, Bioaccumulative and Toxic substance.<br>vPvB: Very Persistent and Very Bioaccumulative. |
| **Classification abbreviations and acronyms** | Eye Irrit. = Eye irritation<br>Skin Irrit. = Skin irritation<br>STOT SE = Specific target organ toxicity-single exposure |
| **Classification procedures according to SI 2019 No. 720** | STOT SE 3 - H335: Skin Irrit. 2 - H315: Eye Irrit. 2 - H319: : Expert judgement. |
| **Training advice** | Only trained personnel should use this material. |
| **Revision date** | 17/10/2022 |
| **Revision** | 1 |
| **SDS number** | 1661 |
| **Hazard statements in full** | H315 Causes skin irritation.<br>H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation. |

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.