

Safety Data Sheet

acc. to OSHA HCS

Printing date 01/21/2021

Revision date 01/21/2021

1 Identification

- **Product identifier**
- **Trade name: ARG1 (human, recombinant)**
- **Synonym** Arginase1; Liver-type Arginase; Type I Arginase
- **Article number:** 32558
- **Application of the substance / the mixture** For research use only, not for human or veterinary use.
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Cayman Chemical Co.
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
USA
- **Information department:** Product safety department
- **Emergency telephone number:**
During normal opening times: +1 (734) 971-3335
US/CANADA: 800-424-9300
Outside US/CANADA: 703-741-5970

2 Hazard(s) identification

- **Classification of the substance or mixture**
The product is not classified, according to the Globally Harmonized System (GHS).

-
- **Label elements**
 - **GHS label elements** None
 - **Hazard pictograms** None
 - **Signal word** None
 - **Hazard statements** None
 - **Classification system:**
 - **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

| | | |
|----------------------------------|----------|-------|
| CAS: 56-81-5 RTECS: MA8050000 | Glycerol | 20.0% |
|----------------------------------|----------|-------|

- **Other ingredients**

| | | |
|------------------------------------|--------------------------------|--------|
| CAS: 7732-18-5 RTECS: ZC0110000 | Water | 79.18% |
| CAS: 7647-14-5 RTECS: VZ4725000 | Sodium chloride | 0.64% |
| CAS: 7558-79-4 RTECS: WC4500000 | Sodium phosphate, Dibasic | 0.14% |
| CAS: 7447-40-7 RTECS: TS8050000 | Potassium chloride | 0.02% |
| CAS: 7778-77-0 RTECS: TC6615500 | Potassium phosphate, Monobasic | 0.02% |

4 First-aid measures

- **Description of first aid measures**
- **General information:** No special measures required.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
May cause anemia, cough, CNS depression, drowsiness, headache, heart damage, lassitude (weakness, exhaustion), liver damage, narcosis, reproductive effects, teratogenic effects.
No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Use fire fighting measures that suit the environment.
A solid water stream may be inefficient.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.

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- **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

| | | |
|-----------|--------------------------------|-----------------------|
| 56-81-5 | Glycerol | 45 mg/m ³ |
| 7778-77-0 | Potassium phosphate, Monobasic | 9.6 mg/m ³ |

· **PAC-2:**

| | | |
|-----------|--------------------------------|-----------------------|
| 56-81-5 | Glycerol | 180 mg/m ³ |
| 7778-77-0 | Potassium phosphate, Monobasic | 110 mg/m ³ |

· **PAC-3:**

| | | |
|-----------|--------------------------------|-------------------------|
| 56-81-5 | Glycerol | 1,100 mg/m ³ |
| 7778-77-0 | Potassium phosphate, Monobasic | 630 mg/m ³ |

7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special measures required.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
Keep container tightly closed.
Store in accordance with information listed on the product insert.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

| | |
|-------------------------|---------------------------------------------------------------------------------------|
| 56-81-5 Glycerol | |
| PEL | Long-term value: 15* 5** mg/m ³ mist; *total dust **respirable fraction |
| TLV | TLV withdrawn-insufficient data human occup. exp. |

- **Additional information:** The lists that were valid during the creation were used as basis.

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- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
- **Breathing equipment:** Not required.
- **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Goggles recommended during refilling.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

| | |
|---------------|------------------------------------|
| Form: | frozen liquid |
| Color: | According to product specification |
- **Odor:** Characteristic
- **Odor threshold:** Not determined.
- **Formulation** 8 mM Phosphate buffer, pH 7.4, with 110 mM NaCl, 2.2 mM KCl, and 20% glycerol
- **pH-value at 20 °C (68 °F):** 7.4
- **Change in condition**

| | |
|-------------------------------------|-----------------|
| Melting point/Melting range: | Undetermined. |
| Boiling point/Boiling range: | 100 °C (212 °F) |
- **Flash point:** 199 °C (390.2 °F)
- **Flammability (solid, gaseous):** Not applicable.
- **Ignition temperature:** 400 °C (752 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**

| | |
|---------------|-----------------|
| Lower: | Not determined. |
| Upper: | Not determined. |
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)

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|---------------------------|-----------------|
| · Density: | Not determined. |
| · Relative density | Not determined. |
| · Vapor density | Not determined. |
| · Evaporation rate | Not determined. |

- | | |
|--------------------------------------------------|-----------------|
| · Solubility in / Miscibility with Water: | Fully miscible. |
|--------------------------------------------------|-----------------|

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|---------------------------------------------------|-----------------|
| · Partition coefficient (n-octanol/water): | Not determined. |
|---------------------------------------------------|-----------------|

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|---------------------|-----------------|
| · Viscosity: | |
| Dynamic: | Not determined. |
| Kinematic: | Not determined. |

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|---------------------------|-----------------------|
| · Solvent content: | |
| Organic solvents: | 20.0 % |
| Water: | 79.2 % |
| VOC content: | 0.00 % |
| | 0.0 g/l / 0.00 lb/gal |

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|------------------------|-------|
| Solids content: | 0.8 % |
|------------------------|-------|

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|----------------------------|--------------------------------------------|
| · Other information | No further relevant information available. |
|----------------------------|--------------------------------------------|

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

56-81-5 Glycerol

| | | |
|--------------------|----------------------|---------------------|
| Oral | LD50 | 12,600 mg/kg (rat) |
| Irritation of skin | Irritation | 500 mg/24h (rabbit) |
| Irritation of eyes | Irritation | 500 mg/24h (rabbit) |
| | Intraperitoneal LD50 | 4,420 mg/kg (rat) |
| | Subcutaneous LD50 | 100 mg/kg (rat) |

- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.

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- **Additional toxicological information:**

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity:** No further relevant information available.

- **Persistence and degradability** No further relevant information available.

- **Behavior in environmental systems:**

- **Bioaccumulative potential** No further relevant information available.

- **Mobility in soil** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**

- **Recommendation:** Smaller quantities can be disposed of with household waste.

- **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.

- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **UN-Number**

- **DOT, IMDG, IATA** not regulated

- **UN proper shipping name**

- **DOT, IMDG, IATA** not regulated

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- | | |
|----------------------------------------------------------------------------------|-----------------|
| · Transport hazard class(es) | |
| · DOT, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · DOT, IMDG, IATA | not regulated |
| · Environmental hazards: | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation": | not regulated |

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.
- **Sara**

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| · Section 355 (extremely hazardous substances): |
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| None of the ingredients is listed. |
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| · Section 313 (Specific toxic chemical listings): |
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| None of the ingredients is listed. |
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| · TSCA (Toxic Substances Control Act): |
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| All components have the value ACTIVE. |
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|-----------------------------------|
| · Hazardous Air Pollutants |
|-----------------------------------|

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| None of the ingredients is listed. |
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|-------------------------|
| · Proposition 65 |
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| · Chemicals known to cause cancer: |
|-------------------------------------------|

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|------------------------------------|
| None of the ingredients is listed. |
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|----------------------------------------------------------------------|
| · Chemicals known to cause reproductive toxicity for females: |
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|------------------------------------|
| None of the ingredients is listed. |
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| · Chemicals known to cause reproductive toxicity for males: |
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| None of the ingredients is listed. |
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|-----------------------------------------------------------|
| · Chemicals known to cause developmental toxicity: |
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|------------------------------------|
| None of the ingredients is listed. |
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|----------------------------------|
| · Carcinogenic categories |
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| · EPA (Environmental Protection Agency) |
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|------------------------------------|
| None of the ingredients is listed. |
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|-----------------------------------------------------------|
| · TLV (Threshold Limit Value established by ACGIH) |
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| None of the ingredients is listed. |
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|---------------------------------------------------------------------------|
| · NIOSH-Ca (National Institute for Occupational Safety and Health) |
|---------------------------------------------------------------------------|

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|------------------------------------|
| None of the ingredients is listed. |
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· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** Environment protection department.

· **Contact:** -

· **Date of preparation / last revision** 01/21/2021 / -

· **Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

· *** Data compared to the previous version altered.**

US