

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

1 Identification

- **Product identifier**
- **Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic**
- **Product number:** 4083
- **CAS Number:**
57-06-7
- **EC number:**
200-309-2
- **Application of the substance / the mixture** Flavoring Ingredients

- **Details of the supplier of the safety data sheet**

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. Advanced Biotech makes NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the Advanced Biotech product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of an Advanced Biotech product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the Advanced Biotech product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

- **Manufacturer/Supplier:**

Advanced Biotech
10 Taft Road
Totowa, NJ 07512 USA

- **Information department:**

Product Safety Department
productsafety@adv-bio.com

- **Emergency telephone number:**

Infotrac: 1-800-535-5053 (Domestic) & 1-352-323-3500 (International)
Email: responders@infotrac.net & During normal business hours: 1-973-339-6242

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flammable Liquids 3 H226 Flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Toxicity - Dermal 3 H311 Toxic in contact with skin.
Acute Toxicity - Inhalation 2 H330 Fatal if inhaled.



GHS08 Health hazard

Sensitization - Respiratory 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

(Continued on page 2)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 1)



GHS05 Corrosion

Skin Corrosion 1C

H314 Causes severe skin burns and eye damage.

Eye Damage 1

H318 Causes serious eye damage.



GHS07

Acute Toxicity - Oral 4

H302 Harmful if swallowed.

Sensitization - Skin 1B

H317 May cause an allergic skin reaction.

GHS label elements

Pictograms on label shall be in the shape of a square set at a point and shall include a black hazard symbol on a white background with a red frame sufficiently wide to be clearly visible.

The substance is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms



GHS02



GHS05



GHS06



GHS08

Signal word Danger

Hazard-determining components of labeling:

Allyl isothiocyanate

Hazard statements

H226 Flammable liquid and vapor.

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P260 Do not breathe/dust/fume/gas/mist/vapors/spray.

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.

P310 Immediately call a poison center/doctor.

P320 Specific treatment is urgent (see on this label).

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Continued on page 3)

Safety Data Sheet

acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: **Allyl Isothiocyanate (Mustard Oil) synthetic**

(Continuation of page 2)

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 3
Fire = 2
Reactivity = 0

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



Health = *3
Fire = 2
Reactivity = 0

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

3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**
CAS: 57-06-7 Allyl isothiocyanate
- **Identification number(s)**
- **EC number:** 200-309-2

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Immediately call a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
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:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

(Continued on page 4)

Safety Data Sheet
 acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 3)

- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**
 During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.
- **Additional information**
 Cool endangered receptacles with water spray.
 Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
 Mount respiratory protective device.
 Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** 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).
 Use neutralizing agent.
 Dispose contaminated material as waste according to section 13.
 Ensure adequate ventilation.
- **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: | |
| 1 ppm | |
| · PAC-2: | |
| 2.8 ppm | |
| · PAC-3: | |
| 17 ppm | |

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
 Ensure good ventilation/exhaustion at the workplace.
 Open and handle receptacle with care.
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
 Keep ignition sources away - Do not smoke.
 Protect against electrostatic charges.
 Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
 No special requirements.
 Please refer to the product specification and/or Certificate of Analysis for product storage requirements.
- **Information about storage in one common storage facility:** Not required.

(Continued on page 5)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: **Allyl Isothiocyanate (Mustard Oil) synthetic**

(Continuation of page 4)

- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **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 section 7.
- **Control parameters**

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

CAS: 57-06-7 Allyl isothiocyanate

| | |
|------|---------------------------------------|
| WEEL | Short-term value: 1 ppm Skin; DSEN |
|------|---------------------------------------|

- **Additional information:** The lists that were valid during the creation were used as a basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the skin.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**



Protective gloves

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 should be based 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.

- **Penetration time of glove material**

The exact break through time has to be determined by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**



Tightly sealed goggles

US

(Continued on page 6)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: **Allyl Isothiocyanate (Mustard Oil) synthetic**

(Continuation of page 5)

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

| | |
|---|--|
| · General Information | Molecular Weight: 99.16 g/mol |
| · Appearance: | |
| · Form: | Liquid |
| · Color: | According to product specification |
| · Odor: | According to product specification |
| · Odor threshold: | Not determined. |
| · pH-value: | Not determined. |
| · Change in condition | |
| · Melting point/Melting range: | -100 °C (-148 °F) |
| · Boiling point/Boiling range: | 148-154 °C (298.4-309.2 °F) |
| · Flash point: | 45 °C (113 °F) |
| · Flammability (solid, gaseous): | Flammable. |
| · Decomposition temperature: | Not determined. |
| · Ignition temperature: | Not determined. |
| · Danger of explosion: | Product is not explosive. However, formation of explosive air/vapor mixtures are possible. |
| · Explosion limits: | |
| · Lower: | Not determined. |
| · Upper: | Not determined. |
| · Vapor pressure at 38 °C (100.4 °F): | 13 hPa (9.8 mm Hg) |
| · Density at 20 °C (68 °F): | 1.005-1.035 g/cm ³ (8.38673-8.63707 lbs/gal) |
| · Specific Gravity | 1.005-1.035 @ 20 °C (33.8-33.9 @ 68 °F) |
| · Relative density | Not determined. |
| · Vapor density | Not determined. |
| · Evaporation rate | Not determined. |
| · Solubility in / Miscibility with Water at 20 °C (68 °F): | 2 g/l |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity: | |
| · Dynamic: | Not determined. |
| · Kinematic: | Not determined. |
| · VOC content: | 0.00 % 0.0 g/l / 0.00 lb/gal |
| · 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.

(Continued on page 7)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 6)

- **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:**

ATE (Acute Toxicity Estimate)

| | | |
|------------|----------|-------------------|
| Oral | LD50 | 112 mg/kg (rat) |
| Dermal | LD50 | 88 mg/kg (rabbit) |
| Inhalative | LC50/4 h | 0.5 mg/l |

CAS: 57-06-7 Allyl isothiocyanate

| | | |
|------------|----------|--------------------------------------|
| Oral | LD50 | 425 mg/kg (ATE) 112 mg/kg (rat) |
| Dermal | LD50 | 300 mg/kg (ATE) 88 mg/kg (rabbit) |
| Inhalative | LC50/4 h | 0.5 mg/l (ATE) |

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** Sensitization possible through inhalation.
- **Additional toxicological information:**

· **Carcinogenic categories**

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

3

· **NTP (National Toxicology Program)**

Substance is not listed.

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

Substance is not 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 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.

(Continued on page 8)

Safety Data Sheet
 acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic




(Continuation of page 7)

- Danger to drinking water if even small quantities leak into the ground.
- **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:**
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

| | |
|-------------------------------------|---|
| · UN-Number | |
| · DOT, IMDG, IATA | UN1545 |
| · UN proper shipping name | |
| · DOT | Allyl isothiocyanate, stabilized |
| · IMDG, IATA | ALLYL ISOTHIOCYANATE, STABILIZED |
| · Transport hazard class(es) | |
| · DOT | |
| |  |
| · Class | 6.1 Toxic substances |
| · Label | 6.1, 3 |
| · IMDG | |
| |  |
| · Class | 6.1 Toxic substances |
| · Label | 6.1/3 |
| · IATA | |
| |  |
| · Class | 6.1 Toxic substances |
| · Label | 6.1 (3) |

(Continued on page 9)

Safety Data Sheet
 acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 8)

| | |
|---|--|
| <ul style="list-style-type: none"> · Packing group · DOT, IMDG, IATA | <p align="center">II</p> |
| <ul style="list-style-type: none"> · Environmental hazards: · Marine pollutant: · Special marking (ADR): | <p>No</p> <p>Symbol (fish and tree)</p> |
| <ul style="list-style-type: none"> · Special precautions for user · Hazard identification number (Kemler code): · EMS Number: · Stowage Category · Stowage Code | <p>Warning: Toxic substances</p> <p>639</p> <p>F-E,S-D</p> <p>D</p> <p>SW1 Protected from sources of heat. SW2 Clear of living quarters.</p> |
| <ul style="list-style-type: none"> · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | <p>Not applicable.</p> |
| <ul style="list-style-type: none"> · Transport/Additional information: · DOT · Quantity limitations | <p>On passenger aircraft/rail: Forbidden On cargo aircraft only: 60 L</p> |
| <ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) | <p>100 ml</p> <p>Code: E4</p> <p>Maximum net quantity per inner packaging: 1 ml Maximum net quantity per outer packaging: 500 ml</p> |
| <ul style="list-style-type: none"> · UN "Model Regulation": | <p>UN 1545 ALLYL ISOTHIOCYANATE, STABILIZED, 6.1 (3), II, ENVIRONMENTALLY HAZARDOUS</p> |

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

- **Section 355 (extremely hazardous substances):**

Substance is not listed.

- **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

- **TSCA (Toxic Substances Control Act):**

ACTIVE

- **Hazardous Air Pollutants**

Substance is not listed.

- **Proposition 65**

- **Chemicals known to cause cancer:**

Substance is not listed.

- **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

(Continued on page 10)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 9)

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

Substance is not listed.

· **TLV (Threshold Limit Value)**

Substance is not listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is not listed.

· **GHS label elements**

Pictograms on label shall be in the shape of a square set at a point and shall include a black hazard symbol on a white background with a red frame sufficiently wide to be clearly visible.

The substance is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS02 GHS05 GHS06 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**

Allyl isothiocyanate

· **Hazard statements**

H226 Flammable liquid and vapor.

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction.

· **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P260 Do not breathe/dust/fume/gas/mist/vapors/spray.

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.

P310 Immediately call a poison center/doctor.

P320 Specific treatment is urgent (see on this label).

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Continued on page 11)

Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Printing date 01/19/2024

Reviewed on 01/19/2024

Trade name: Allyl Isothiocyanate (Mustard Oil) synthetic

(Continuation of page 10)

· **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:** Product Safety Department

· **Contact:**

Product Safety Department
productsafety@adv-bio.com

· **Date of preparation / last revision** 01/19/2024

· **Abbreviations and acronyms:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial 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

Flammable Liquids 3: Flammable liquids – Category 3

Acute Toxicity - Oral 4: Acute toxicity – Category 4

Acute Toxicity - Dermal 3: Acute toxicity – Category 3

Acute Toxicity - Inhalation 2: Acute toxicity – Category 2

Skin Corrosion 1C: Skin corrosion/irritation – Category 1C

Eye Damage 1: Serious eye damage/eye irritation – Category 1

Sensitization - Respiratory 1: Respiratory sensitisation – Category 1

Sensitization - Skin 1B: Skin sensitisation – Category 1B