1 Identification

- Product identifier
  - Trade name: Allyl Isothiocyanate synthetic
- Product number: 4083
- CAS Number: 57-06-7
- EC number: 200-309-2
- Application of the substance / the mixture: Food flavorings

Details of the supplier of the safety data sheet

- Manufacturer/Supplier: Advanced Biotech
  10 Taft Road
  Totowa, NJ 07512 USA
- Information department: Product safety department
  sarfa@adv-bio.com
- Emergency telephone number:
  1(800)535-5053 (Info Trac)
  1(352)323-3500 (International)
  During normal business hours: 1(973)339-6242

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS02 Flame
    Flam. Liq. 3 H226 Flammable liquid and vapor.
  - GHS06 Skull and crossbones
    Acute Tox. 3 H301 Toxic if swallowed.
    Acute Tox. 2 H310 Fatal in contact with skin.
  - GHS08 Health hazard
    STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.
  - GHS07
    Skin Irrit. 2 H315 Causes skin irritation.
    Eye Irrit. 2A H319 Causes serious eye irritation.
    Skin Sens. 1 H317 May cause an allergic skin reaction.
    STOT SE 3 H335 May cause respiratory irritation.

- Label elements: Harmful in contact with skin or if inhaled.

(Continued on page 2)
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  GHS06  GHS07  GHS08

Signal word
Danger

Hazard-determining components of labeling:
allyl isothiocyanate

Hazard statements
H226 Flammable liquid and vapor.
H301 Toxic if swallowed.
H310 Fatal in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P301+P310 If swallowed: Immediately call a poison center/doctor.
P303+P361+P353 IF ON SKIN (or hair): Remove/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.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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.

(Continued on page 3)
Trade name: Allyl Isothiocyanate synthetic

3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
  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.
  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. If symptoms persist, consult a doctor.
- After swallowing:
  Do not induce vomiting; immediately call for medical help.
- 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 or extinguishing powder. Fight larger fires with alcohol resistant foam.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture
  No further relevant information available.
- 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
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
  Inform respective authorities in case of seepage into water course or sewage system.
  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).
Trade name: Allyl Isothiocyanate synthetic

Dispose contaminated material as waste according to item 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.

7 Handling and storage

Handling:

Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.

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.
Information about storage in one common storage facility: Not required.
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 item 7.

Control parameters

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-06-7 allyl isothiocyanate</td>
<td>Short-term value: 1 ppm</td>
</tr>
</tbody>
</table>

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

Exposure controls

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 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.
Trade name: Allyl Isothiocyanate synthetic

- 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

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Liquid
    - Color: Colorless to pale tan
    - Odor: Mustard
    - Odour threshold: Not determined.
  - pH-value: Not determined.

  - Change in condition
    - Melting point/Melting range: -100 °C (-148 °F)
    - Boiling point/Boiling range: 150 °C (302 °F)

  - Flash point: 46 °C (115 °F)

  - Flammability (solid, gaseous): Not applicable.

  - Ignition temperature:
    - Decomposition temperature: Not determined.
  - Auto igniting: 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.
Trade name: Allyl Isothiocyanate synthetic

(Continuation of page 5)

- Vapor pressure at 38 °C (100 °F): 13 hPa (10 mm Hg)
- Density at 20 °C (68 °F): 1.02 g/cm³ (8.512 lbs/gal)
- Relative density: Not determined.
- Vapour 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.
- Organic solvents: 0.0 %
- Other information: No further relevant information available.

10 Stability and reactivity
- Reactivity
- 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:
    - 57-06-7 allyl isothiocyanate
      - Oral LD50 112 mg/kg (rat)
      - Dermal LD50 88 mg/kg (rabbit)
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
    - Sensitization: Sensitization possible through skin contact.
  - Additional toxicological information:
  - Carcinogenic categories
    - IARC (International Agency for Research on Cancer)
      - 57-06-7 allyl isothiocyanate 3
    - NTP (National Toxicology Program)
      - 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.
- Ecotoxicological effects:
  - Remark: Very toxic for fish
- 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.
  - Danger to drinking water if even small quantities leak into the ground.
  - Also poisonous for fish and plankton in water bodies.
  - Very toxic for aquatic organisms
- 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
  - UN1545
- DOT, ADR, IMDG, IATA
  - DOT
  - ADR
  - IMDG, IATA
- UN proper shipping name
  - Allyl isothiocyanate, stabilized
  - 1545 Allyl isothiocyanate, stabilized
  - ALLYL ISOTHIOCYANATE, STABILIZED
### Transport hazard class(es)

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<th>DOT</th>
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<th>Label</th>
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<td>6.1, 3</td>
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<table>
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<th>Label</th>
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<td>6.1+3</td>
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<table>
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<tr>
<th>IMDG</th>
<th>Class</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.1</td>
<td>6.1/3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IATA</th>
<th>Class</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.1</td>
<td>6.1 (3)</td>
</tr>
</tbody>
</table>

### Packing group

**DOT, ADR, IMDG, IATA**: II

### Environmental hazards:

- Marine pollutant: No

### Special precautions for user

- Warning: Toxic substances
- Danger code (Kemler): 639
- EMS Number: F-E,S-D

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

- Not applicable.

### Transport/Additional information:

- **DOT**
  - Quantity limitations:
    - On passenger aircraft/rail: Forbidden
    - On cargo aircraft only: 60 L
### 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):**
      Substance is listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      Substance is not listed.
    - **Chemicals known to cause reproductive toxicity for females:**
      Substance is not listed.
    - **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 established by ACGIH)**
      Substance is not listed.
    - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
      Substance is not listed.
  - **GHS label elements**
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: Allyl Isothiocyanate synthetic

- Hazard pictograms
  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.

- Signal word Danger

- Hazard-determining components of labeling:
  allyl isothiocyanate

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  H226 Flammable liquid and vapor.
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  P405 Store locked up.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- 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: Sidney Arfa
- Date of preparation / last revision 06/25/2015 / -

- Abbreviations and acronyms:
  ADR: Accord européen sur le transport 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
  ACGIH: American Conference of Governmental Industrial Hygienists
  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)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  Flam. Liq. 3: Flammable liquids, Hazard Category 3
### Trade name: Allyl Isothiocyanate synthetic

<table>
<thead>
<tr>
<th>Hazard Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 3: Acute toxicity, Hazard Category 3</td>
</tr>
<tr>
<td>Acute Tox. 2: Acute toxicity, Hazard Category 2</td>
</tr>
<tr>
<td>Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2</td>
</tr>
<tr>
<td>Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A</td>
</tr>
<tr>
<td>Skin Sens. 1: Sensitisation - Skin, Hazard Category 1</td>
</tr>
<tr>
<td>STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3</td>
</tr>
<tr>
<td>STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2</td>
</tr>
</tbody>
</table>