



IKE

Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product Identifier

Isomerized Kettle Extract

1.2 Synonyms

IKE
Pre-isomerized CO₂ Extract
Isomerized Resin Extract (IRE)

1.3 Relevant Uses

Food processing aid

1.4 Supplier

BarthHaas / BarthHaas UK Ltd.

1.5 Emergency Contact Details

BarthHaas / John I. Haas, Inc.
1600 River Rd., Yakima, WA 98902, USA.
Emergency phone: +1 509 469 4000 (office hours)
Email: info@johnihaas.com

Hopfenveredlung St. Johann GmbH
Address: Mainburger Str. 15, 93358 Train
Emergency phone: +49 9444 878 -0 (office hours)
Email: contact@nateco2.de



2. HAZARD IDENTIFICATION

2.1 Classification

Classification according to Regulation (EC) No 1272/2008 [CLP]:

- Skin Irritation Category 2
- Eye Irritation Category 2
- Skin Sensitisation Category 1

2.2 Label Elements

According to Regulation (EC) 1272/2008 [CLP]:

- Hazard Pictogram



- Signal Word:

- Warning

- Hazard Statement

- H315: Causes skin irritation
- H317: May cause an allergic skin reaction
- H319: Causes serious eye irritation

- Precautionary Statement

- P280: Wear protective gloves and eye protection
- P302+P352: IF ON SKIN: Wash with plenty of soap and water
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

2.3 Other Hazards

None

3. COMPONENTS/INFORMATION ON INGREDIENTS

The product is a mixture of isomerized hop (*Humulus lupulus* L.) bitter acids (viz. iso-alpha acids or isohumulones), hop resins and essential oils. The isomerized bitter acid content varies according to the original hop variety extracted, but typically the range will be 40-60% iso-alpha acids. The CAS no. for iso-alpha-acid/isohumulone is 25522-96-7 and the EINECS no. is 247-072-1).



4. FIRST AID MEASURES

4.1 Description of First

Aid Methods:

- **Inhalation**
 - **Skin Contact**
 - **Eye Contact**
 - **Oral Ingestion**
- Move to fresh air
 - Wash skin thoroughly with soap and water
 - Flood the eye with plenty of water. If any symptoms persist obtain medical attention.
 - Rinse mouth out with water and drink a portion of water (ca. 200ml). Vomiting may occur but should not be induced. Obtain medical attention if symptoms persist.

4.2 Most important symptoms and Effects

Skin and eye irritation

4.3 Indications of Immediate Medical

Action as indicated in Section 4.1 above

5 FIRE AID MEASURES

5.1 Extinguishing Media

Carbon dioxide, dry powder, foam.

5.2 Special Hazards Arising from Substance

Contains small amounts of hop oil. Hop oil is combustible and may give rise to hazardous fumes in a fire.

5.3 Advice for Firefighters

Fire fighters should wear self-contained positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Protection

Wear appropriate protective clothing – see Section 8.

6.2 Environmental Precautions

Avoid sub-soil penetration. Prevent entry to sewers and public waters. Do not discharge onto the ground or into watercourses.

6.3 Methods for Cleaning Up

Contain spillage using earth, sand or other inert material.
Transfer to suitable sealed container prior to disposal. Flush area with hot soapy water to remove final traces. Use adequate ventilation or a respirator if in a confined area.



7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Avoid excessive contact with product. Use appropriate protective clothing as indicated in Section 8. Wash hands after use.

7.2 Conditions for Safe Storage

Store at 10 °C (50° Fahrenheit). Keep container closed when not in use.
Use opened containers as soon as possible. Suitable storage is in glass, high density polyethylene, and high phenolic lacquered mild steel.

7.3 Specific End Uses

The substance is manufactured for use as a food ingredient and for such uses is not subject to registration via REACH (Regulation (EC) No.1907/2006). It should be used in accordance with applicable food legislation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Not applicable.

8.2 Exposure Controls:

- | | |
|---------------------------------|---|
| - Engineering Controls | - Provide adequate ventilation |
| - Eye/Face Protection | - Chemical goggles must be worn during handling |
| - Hand Protection | - PVC, rubber, latex or nitrile gloves |
| - Skin Protection | - If danger of splashing wear PVC or rubber apron |
| - Respiratory Protection | - Not normally required |



9. PHYSICAL AND CHEMICAL PROPERTIES

a) Physical state	Viscous liquid
b) Color	Yellow/orange to brown/green
c) Odor	Characteristic, resinous aroma
d) Melting point/Freezing point	Not practical to measure
e) Boiling point	> 100 °C
f) Flammability	Not practical to measure
g) Lower and upper explosion limit	Not practical to measure
h) Flash point	> 60 °C
i) Auto-ignition temperature	Not practical to measure
j) Decomposition temperature	Not practical to measure
k) pH	Not practical to measure
l) Kinematic viscosity	Not practical to measure
m) Solubility	Insoluble, Forms an emulsion
n) Partition coefficient n-octanol/water (log value)	Not practical to measure
o) Vapor pressure	Not practical to measure



p) Density [kg/m³]	850 – 1000
q) Relative vapor density	Not practical to measure
r) Particle characteristics	Not practical to measure

10. STABILITY AND REACTIVITY

10.1 Reactivity	No reactivity hazards known.
10.2 Chemical Stability	Stable if stored according to Section 7.2 and 10.5
10.3 Possibility of Hazardous Reaction	None known
10.4 Conditions to Avoid	Keep container closed when not in use
10.5 Incompatible Materials	Unlined steel – Aluminum
10.6 Hazardous Decomposition Products	None known



11. TOXICOLOGICAL INFORMATION

No data available. Read-across from the starting material Hop extract (CAS 8060-28-4 EINECS No. 232-504-3) is appropriate since IKE is Hop extract with α -acids isomerised to iso- α -acids. Toxicological assessment of Hop extract indicates that the toxicity of α acids and iso- α -acids are similar. The data below is for Hop extract: Long history of safe use as a beer ingredient.

11.1 Acute Toxicity	Typical hop extracts are not classified as hazardous. Estimated ATE values (oral, dermal) are >2000 mg/kg bw. Beta-acid enriched hop extracts containing 30 – 70% β -acids could potentially have an ATE value of 1,000 – 2,300 mg per kg bw. This would place certain extracts (>35% β -acids) under Category 4 for Acute Toxicity according to Regulation (EC) 1272/2008
11.2 Skin Corrosion/Irritation	Skin Irritation Category 2.
11.3 Serious Eye Damage/Irritation	Eye Irritation Category 2.
11.4 Respiratory or Skin Sensitization	Skin Irritation Category 1.
11.5 Germ Cell Mutagenicity	OECD Guideline 471 (Bacterial Reverse Mutation Assay) not mutagenic. Bacterial reverse Mutations Assay on 40% beta-acids: not mutagenic
11.6 Carcinogenicity	Long history of safe use as a component of beer. Bacterial reverse mutation assay: not Mutagenic
11.7 Reproductive Toxicity	Weight of evidence indicates lack of reproductive toxicity. Long history of safe use as a component of beer. Hop extracts are generally recognised as safe (GRAS) in accordance with US FDA regulation 21 CFR 182.20.
11.8 STOT- Single Exposure	Weight of evidence indicates safety when used for its intended use. See (11.7) above.
11.9 STOT-Repeated Exposure	Weight of evidence indicates safety when used for its intended use. See (11.7) above.
11.10 Aspiration Hazard	Not an aspiration hazard.



12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity

No data available. Read-across from the starting material Hop extract (CAS 8060-284 EINECS No. 232-504-3) is appropriate since IKE is Hop extract with α -acids isomerised to iso α -acids.

Ecotoxicological assessment of Hop extract and of the potassium salts of iso- α -acids did not conclude that either of these substances should be classified as hazardous to the environment.

The data below is for Hop extract: Toxicity to fish: *Carassius auratus* (goldfish) - Etude pharmacologique de l'action du lupulin et de la fleur d'organer sur le poisson. *Pharmaceutica acta Helvetiae* (1953) **28**(7-8), pp.183-206: lowest dose causing adverse effects estimated by calculation as ca. 80 mg/l.

Toxicity to Daphnia and other aquatic invertebrates:

EC50 - *Daphnia magna* (Water flea) - >5.8 mg/l - 48 h.

NOEC - *Daphnia magna* - ca. 2.2 mg/l - 48 h.

Toxicity to freshwater algae:

EC50 - 42.7 mg/l - 48 h.

NOEC - 12.5 mg/l - 72 h.

12.2 Persistence and Degradability

Ultimate biodegradation (natural product).

12.3 Bioaccumulative Potential

Natural product, not expected to bioaccumulate.

12.4 Mobility in Soil

Log K_{oc} 1.7 - <4.5 (modelling by EPISuite™)

Other information: low hazardous to water

Water contaminant class 1 (self assessment) according to VwVwS from May 17th 1999 appendix 3. Do not discharge onto the ground or into watercourses.

12.5 Results of PBT Exposure:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other Adverse Effects Exposure

No data available



13. DISPOSAL CONSIDERATIONS

- 13.1 Product Disposal** Dispose in accordance with all applicable local and national regulations.
- 13.2 Container Disposal** Labels should not be removed from containers until they have been cleaned. Contaminated containers should not be treated as household waste. Containers should be cleaned using appropriate methods and then re-used or disposed of by landfill or incineration as appropriate.

14. TRANSPORT INFORMATION

- 14.1 UN-Number** Non-hazardous for transport
- 14.2 Shipping Name** N/A
- 14.3 Transport Hazard Class** Non-hazardous for transport
- 14.4 Packing Group** Non-hazardous for transport
- 14.5 Marine Pollutant** No data available

15. REGULATORY INFORMATION

- 15.1 Safety, Health, and Environmental Regulations** For food use
Germany: Water contaminant class 1 (self assessment) according to VwVwS from May 17th 1999 appendix 3. Do not discharge onto the ground or into watercourses.
- 15.2 Chemical Safety Assessments** N/A – for food use.



16. OTHER INFORMATION

The information in this safety data sheet is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on our present knowledge and should be used only as a supplement to information already in your possession concerning this product. It does not represent any guarantee of the properties of the product. The determination of whether and under what condition the product should be used is yours to make. We do not accept any liability for loss, injury or damage that may result from its use.

(a) Key literature references and sources for data:

- REACH registration dossier for EC 232-504-3 and for EC 305-203-0