

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

Date of issue: 01/24/2025

Reviewed on 01/08/2025

**1 Identification**

- **Product identifier**
- **Trade name: Ethyl Formate natural**
- **CAS Number:**  
109-94-4
- **Other means of identification**
- **Product number:** 1203
- **EC number:**  
203-721-0
- **Index number:**  
607-015-00-7
- **Application of the substance / the mixture** Flavoring Ingredients
- **Details of the supplier of the safety data sheet**  
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- **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 2

H225 Highly flammable liquid and vapor.



GHS07

Acute toxicity - oral 4

H302 Harmful if swallowed.

Acute toxicity - inhalation 4

H332 Harmful if inhaled.

Eye irritation 2A

H319 Causes serious eye irritation.

Specific target organ toxicity (single exposure) 3 H335 May cause respiratory irritation.

- **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.

(Continued on page 2)

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

Date of issue: 01/24/2025

Reviewed on 01/08/2025

**Trade name: Ethyl Formate natural**

(Continuation of page 1)

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

· **Hazard pictograms**



GHS02 GHS07

· **Signal word** Danger

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

Ethyl formate

· **Hazard statements**

H225 Highly flammable liquid and vapor.

H302+H332 Harmful if swallowed or if inhaled.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

· **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 Use explosion-proof [electrical/ventilating/lighting] equipment.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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.

· **Information pertaining to particular dangers for man and environment:**

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 2

Fire = 3

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 2

Fire = 3

Reactivity = 0

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Classification according to (d)(1)(ii) of § 1910.1200**

The SDS issuer does not object to the classifications provided by importers or manufacturers of precursor products.

(Continued on page 3)

# Safety Data Sheet

acc. to OSHA HCS (29 CFR § 1910.1200)

Date of issue: 01/24/2025

Reviewed on 01/08/2025

**Trade name: Ethyl Formate natural**

(Continuation of page 2)

- **Hazards not otherwise classified**  
 There are no adverse physical or health effects known that are not covered by the hazard classes of the Hazard Communications Standard.

### 3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**  
 CAS: 109-94-4 Ethyl formate
- **Identification number(s)**
- **EC number: 203-721-0**
- **Index number: 607-015-00-7**

### 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.
- **After inhalation:**  
 Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
 In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately rinse with water.
- **After eye contact:**  
 Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** Immediately call a 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:**  
 CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or 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.

(Continued on page 4)

# Safety Data Sheet

acc. to OSHA HCS (29 CFR § 1910.1200)

Date of issue: 01/24/2025

Reviewed on 01/08/2025

**Trade name: Ethyl Formate natural**

(Continuation of page 3)

- **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).  
 Dispose contaminated material as waste according to section 13.  
 Ensure adequate ventilation.

· **Protective Action Criteria for Chemicals**

· <b>PAC-1:</b>	
	100 ppm
· <b>PAC-2:</b>	
	1,300 ppm
· <b>PAC-3:</b>	
	8000* ppm

· **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

- **Precautions for safe handling**  
 Ensure good ventilation/exhaustion at the workplace.  
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:**  
 Keep ignition sources away - Do not smoke.  
 Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
 Keep receptacle tightly sealed.  
 Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

· **Control parameters**

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

<b>CAS: 109-94-4 Ethyl formate</b>	
PEL	Long-term value: 300 mg/m <sup>3</sup> , 100 ppm
REL	Long-term value: 300 mg/m <sup>3</sup> , 100 ppm
TLV	Short-term value: 100 ppm
	A4

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

· **Exposure controls**

- **Appropriate engineering controls** No further data; see section 7.

(Continued on page 5)

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

Date of issue: 01/24/2025

Reviewed on 01/08/2025

**Trade name: Ethyl Formate natural**

(Continuation of page 4)

- **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.  
Avoid contact with the eyes.  
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

**9 Physical and chemical properties**

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

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| · <b>General Information</b>          | Molecular Weight: 74.08 g/mol      |
| · <b>Physical state</b>               | Liquid                             |
| · <b>Color:</b>                       | According to product specification |
| · <b>Odor:</b>                        | According to product specification |
| · <b>Odor threshold:</b>              | Not determined.                    |
| · <b>Melting point/Melting range:</b> | -80.5 °C (-112.9 °F)               |
| · <b>Boiling point/Boiling range:</b> | 54.05 °C (129.3 °F)                |
| · <b>Flammability:</b>                | Highly flammable.                  |
| · <b>Explosion limits:</b>            |                                    |
| · <b>Lower:</b>                       | 2.7 Vol %                          |
| · <b>Upper:</b>                       | 16.5 Vol %                         |
| · <b>Flash point:</b>                 | -20 °C (-4 °F)                     |
| · <b>Auto igniting:</b>               | 440 °C (824 °F)                    |
| · <b>Decomposition temperature:</b>   | Not determined.                    |
| · <b>pH-value:</b>                    | Not determined.                    |

(Continued on page 6)

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

Date of issue: 01/24/2025

Reviewed on 01/08/2025

Trade name: Ethyl Formate natural

(Continuation of page 5)

- **Viscosity:**
  - **Kinematic:** Not determined.
  - **Dynamic:** Not determined.
  - **Solubility in / Miscibility with**
  - **Water at 20 °C (68 °F):** 118 g/l
  - **Partition coefficient (n-octanol/water):** Not determined.
  - **Vapor pressure at 20 °C (68 °F):** 256 hPa (192 mm Hg)
  - **Vapor pressure at 50 °C (122 °F):** 875 hPa (656.3 mm Hg)
  - **Density at 20 °C (68 °F):** 0.925 g/cm<sup>3</sup> (7.71913 lbs/gal)
  - **Relative density** Not determined.
  - **Refractive Index**
  - **Vapor density** Not determined.
  - **Particle characteristics** Not applicable.
- 
- **Other information**
  - **Appearance:**
  - **Form:** Liquid
  - **Important information on protection of health and environment, and on safety.**
  - **Ignition temperature:** Not determined.
  - **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
  - **Organic solvents:** 100.0 %
  - **VOC content:** 100.00 %  
925.0 g/l / 7.72 lb/gal
  - **Change in condition**
  - **Evaporation rate** Not determined.

**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:**

**ATE (Acute Toxicity Estimate)**

Oral	LD50	1,850 mg/kg (ATE)
Inhalative	LC50/4 h	11 mg/l (ATE)

(Continued on page 7)

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

Date of issue: 01/24/2025

Reviewed on 01/08/2025

Trade name: Ethyl Formate natural

(Continuation of page 6)

**CAS: 109-94-4 Ethyl formate**

Oral	LD50	1,850 mg/kg (ATE) 1,850 mg/kg (rat)
Inhalative	LC50/4 h	11 mg/l (ATE)

- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
- **Interactive effects** No interactive effects between components are known.
- **Carcinogenic categories**

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

Substance is not listed.

· **NTP (National Toxicology Program)**

Substance is not listed.

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

Substance is not listed.

· **Alternative sources for toxicological information**

No non-standard sources for toxicological information where used.

**12 Ecological information**

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects**
- **Additional ecological information:**
- **General notes:**  
 Water hazard class 1 (Assessment by list): slightly hazardous for water  
 Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

**13 Disposal considerations**

- **Waste treatment methods**
- **Recommendation:**  
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

(Continued on page 8)

**Safety Data Sheet**  
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Date of issue: 01/24/2025



Reviewed on 01/08/2025

Trade name: Ethyl Formate natural

(Continuation of page 7)

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

**14 Transport information**

· UN-Number	UN1190
· DOT, IMDG, IATA	
· UN proper shipping name	Ethyl formate
· DOT	ETHYL FORMATE
· IMDG, IATA	
· Transport hazard class(es)	
· DOT	
	
· Class	3 Flammable liquids
· Label	3
· IMDG, IATA	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	II
· DOT, IMDG, IATA	
· Environmental hazards:	
· Marine pollutant:	No
· 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: 5 L On cargo aircraft only: 60 L
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· Special precautions for user	Warning: Flammable liquids
· Hazard identification number (Kemler code):	33
· EMS Number:	F-E,S-D

(Continued on page 9)



**Safety Data Sheet**  
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**Trade name: Ethyl Formate natural**

(Continuation of page 8)

· <b>Stowage Category</b>	E
· <b>UN "Model Regulation":</b>	UN 1190 ETHYL FORMATE, 3, II

**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.

· **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 GHS07

· **Signal word** Danger

(Continued on page 10)

# Safety Data Sheet

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Reviewed on 01/08/2025

**Trade name: Ethyl Formate natural**

(Continuation of page 9)

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

Ethyl formate

· **Hazard statements**

H225 Highly flammable liquid and vapor.

H302+H332 Harmful if swallowed or if inhaled.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

· **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 Use explosion-proof [electrical/ventilating/lighting] equipment.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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.

· **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 previous version** 01/16/2024

· **Date of preparation** 01/24/2025

· **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 2: Flammable liquids – Category 2

Acute toxicity - oral 4: Acute toxicity – Category 4

Eye irritation 2A: Serious eye damage/eye irritation – Category 2A

Specific target organ toxicity (single exposure) 3: Specific target organ toxicity (single exposure) – Category 3