

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II / Regulation (EU) No. 2015/830.
- United Kingdom (UK)

Date of issue/ Date of revision : 15.03.2018
Date of previous issue : 01.06.2017
Version : 4.0



SAFETY DATA SHEET

BIOTRAC

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : BIOTRAC
Product code : PYP11M
Product type : liquid

1.2 Relevant identified uses of the substance or mixture and uses advised against

| Identified uses |
|--|
| Industrial distribution. Industrial USE to formulate chemical product mixtures. |

| | |
|-----------------------------|--|
| Uses advised against | : Other non-specified industry |
| Reason | : Due to lack of related experience or data, the supplier cannot approve this use. |

1.3 Details of the supplier of the safety data sheet

Address : Yara Pocklington
Street : Manor Place
Wellington Road
The Industrial Estate
Postal code : YO42 1DN
City : Pocklington
Country : United Kingdom
Telephone number : +44 1759 302545
Fax no. : +44 1759 303650
e-mail address of person responsible for this SDS : yarauk.hesq@yara.com

1.4 Emergency telephone number

National advisory body/Poison Center : Not available.

Supplier

Telephone number : National Chemical Emergency Centre
+44 (0) 1865 407333

Hours of operation : 24h

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture.

Product definition : Mixture

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

Classification : Eye Dam. 1, H318
Aquatic Chronic 2, H411

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : P280 Wear protective gloves and eye protection.
P273 Avoid release to the environment.

Response : P391 Collect spillage.
P305 IF IN EYES:
P351 Rinse cautiously with water for several minutes.
P338 Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.

Hazardous ingredients : zinc sulphate (anhydrous)

EU Regulation (EC) No. 1907/2006 (REACH) Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Applicable, Table 3.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.
Tactile warning of danger : Not applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : Not applicable.
Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : Not applicable.
Other hazards which do not result in classification : None.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

| Product/ingredient name | Identifiers | % | Classification | Type |
|---------------------------|--|-------------|--|------|
| | | | Regulation (EC) No. 1272/2008 [CLP] | |
| glycerol | RRN: 01-2119471987-18 EC: 200-289-5 CAS : 56-81-5 | >= 7 - < 10 | | [2] |
| zinc sulphate (anhydrous) | RRN: 01-2119474684-27 EC: 231-793-3 CAS : 7446-19-7 Index: 030-006-00-9 | >= 3 - < 5 | Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 | [1] |

Type

[1] Substance classified with a physical, health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

See Section 16 for the full text of the H statements declared above.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

- | | | |
|-----------------------------------|---|---|
| Eye contact | : | Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. Get medical attention immediately. |
| Inhalation | : | Avoid inhalation of vapor, spray or mist. If inhaled, remove to fresh air. Get medical attention immediately. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. |
| Skin contact | : | Wash with soap and water. Get medical attention if irritation develops. |
| Ingestion | : | Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. |
| Protection of first-aiders | : | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

- | | | |
|---------------------|---|--|
| Eye contact | : | Causes serious eye damage. |
| Inhalation | : | Vapor may be irritating to eyes and respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. |
| Skin contact | : | No known significant effects or critical hazards. |
| Ingestion | : | May cause burns to mouth, throat and stomach. |

Over-exposure signs/symptoms

- | | | |
|--------------------|---|---|
| Eye contact | : | Adverse symptoms may include the following: |
|--------------------|---|---|

pain
watering
redness

- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : May cause burns to mouth, throat and stomach.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None identified.

5.2 Special hazards arising from the substance or mixture

- Hazards from the substance or mixture** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
ammonia
Avoid breathing dusts, vapors or fumes from burning materials.
In case of inhalation of decomposition products in a fire, symptoms may be delayed.

5.3 Advice for firefighters

- Special precautions for firefighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
- Additional information** : Not available.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- 6.2 Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

- 6.4 Reference to other** : See Section 1 for emergency contact information.

sections

See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

- Recommendations** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Bund storage facilities to prevent soil and water pollution in the event of spillage.

Seveso Directive - Reporting thresholds

Danger criteria

| Category | Notification and MAPP threshold | Safety report threshold |
|--|---------------------------------|-------------------------|
| E2: Hazardous to the aquatic environment - Chronic 2 | 200 t | 500 t |

7.3 Specific end use(s)

- Recommendations** : Not available.

SECTION 8: Exposure controls/personal protection

The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

| Product/ingredient name | Exposure limit values |
|-------------------------|---|
| glycerol | <p>EH40/2005 WELs (1997-01-01) TWA 10 mg/m³ Form: Mist</p> <p>Notes: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used. For this substance the classification and labeling was introduced in the 29th Adaptation to Technical Progress of the European Community's Dangerous Substances Directive</p> |

Recommended monitoring procedures

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Reference should be made to monitoring standards, such as the following:
- European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy)
 - European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents)
 - European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents)
- Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

| Product/ingredient name | Type | Exposure | Value | Population | Effects |
|---------------------------|------|----------------------|---------------------|------------|----------|
| zinc sulphate (anhydrous) | DNEL | Long term Inhalation | 1 mg/m ³ | Workers | Systemic |
| zinc sulphate (anhydrous) | DNEL | Long term Dermal | 8.3 mg/kg bw/day | Workers | Systemic |

PNECs

| Product/ingredient name | Type | Compartment Detail | Value | Method Detail |
|-------------------------|------|--------------------|-------|---------------|
|-------------------------|------|--------------------|-------|---------------|

| | | | | |
|---------------------------|------|------------------------|-----------------|-----------------|
| zinc sulphate (anhydrous) | PNEC | Fresh water | 20.6 µg/l | Not applicable. |
| zinc sulphate (anhydrous) | PNEC | Marine water | 6.1 µg/l | Not applicable. |
| zinc sulphate (anhydrous) | PNEC | Fresh water sediment | 235.6 mg/kg dwt | Not applicable. |
| zinc sulphate (anhydrous) | PNEC | Marine water sediment | 113 mg/kg dwt | Not applicable. |
| zinc sulphate (anhydrous) | PNEC | Soil | 106.8 mg/kg dwt | Not applicable. |
| zinc sulphate (anhydrous) | PNEC | Sewage Treatment Plant | 52 µg/l | Not applicable. |

8.2 Exposure controls

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : A washing facility or water for eye and skin cleaning purposes should be present. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: Tightly-fitting goggles CEN: EN166

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. For general applications, we recommend gloves with a thickness typically greater than 0.35 mm. It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material.
> 8 hours (breakthrough time): Protective gloves should be worn under normal conditions of use.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Other skin protection : Appropriate footwear and any additional skin protection

measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Respiratory protection** : In case of inadequate ventilation wear respiratory protection. Recommended: Filter P2 (EN 143)
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : liquid
- Color** : Green.
- Odor** : Not determined.
- Odor threshold** : Not determined.
- pH** : 7

- Melting point/freezing point** : < 0 °C

- Initial boiling point and boiling range** : Not determined

- Flash point** : Not determined
- Fire point** : Not determined
- Evaporation rate** : Not determined
- Flammability (solid, gas)** : Non-flammable.

- Upper/lower flammability or explosive limits** : **Lower:** Not determined
Upper: Not determined

- Vapor pressure** : Not determined
- Vapor density** : Not determined
- Relative density** : 1.17

- Bulk density** : Not determined
- Partition coefficient: n-octanol/water** : Not determined
- Auto-ignition temperature** : Not determined
- Viscosity** : **Dynamic:** < 100 mPa.s

Kinematic: Not determined

- Explosive properties** : Non-explosive.
- Oxidizing properties** : None

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : The product is stable.
- 10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid** : Avoid contamination by any source including metals, dust and organic materials.
- 10.5 Incompatible materials** : Urea reacts with calcium hypochlorite or sodium hypochlorite to form the explosive nitrogen trichloride.
- 10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure | References |
|---------------------------|-----------|---------|--------------|-----------------|--------------------|
| glycerol | | | | | |
| | LD50 Oral | Rat | 12,600 mg/kg | Not applicable. | ENTOX* - ,449,2005 |
| zinc sulphate (anhydrous) | | | | | |
| | LD50 Oral | Rat | 1,710 mg/kg | Not applicable. | IUCLID 5 |

Conclusion/Summary : No known significant effects or critical hazards.

Acute toxicity estimates

| Route | ATE value |
|-------|----------------|
| Oral | 53,909.2 mg/kg |

Irritation/Corrosion

| Product/ingredient name | Result | Species | Score | Exposure | Observation | References |
|---------------------------|------------------------|---------|-----------------|----------|-----------------|------------|
| zinc sulphate (anhydrous) | Eyes - Severe irritant | Rabbit | Not applicable. | | Not applicable. | IUCLID 5 |

Conclusion/Summary
Skin : No known significant effects or critical hazards.

- Eyes** : Causes serious eye damage.
Respiratory : No known significant effects or critical hazards.

Sensitization

Conclusion/Summary

- Skin** : No known significant effects or critical hazards.
Respiratory : No known significant effects or critical hazards.

Mutagenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Carcinogenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Reproductive toxicity

- Conclusion/Summary** : No known significant effects or critical hazards.

- Information on the likely routes of exposure** : Not available.

Potential acute health effects

- Inhalation** : Vapor may be irritating to eyes and respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : May cause burns to mouth, throat and stomach.
- Skin contact** : No known significant effects or critical hazards.
- Eye contact** : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

- Inhalation** : No specific data.
- Ingestion** : May cause burns to mouth, throat and stomach.
- Skin contact** : No specific data.
- Eye contact** : Adverse symptoms may include the following: pain watering redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
- Potential delayed effects** : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Effects on or via lactation : No known significant effects or critical hazards.

Other effects : No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

| Product/ingredient name | Result | Species | Exposure | References |
|---------------------------|------------------------------------|-------------------------------|----------|---|
| glycerol | Acute LC50 54,000 mg/l Fresh water | Rainbow trout,donaldson trout | 4 d | Resour.Publ.No. 160, U.S.Dep.Interior , Fish Wildl.Serv., Washington, DC :505 p. (USGS Data File) |
| zinc sulphate (anhydrous) | Acute LC50 0.3 - 0.8 mg/l | Fish | 96 h | |
| | Acute LC50 > 0.3 mg/l | Daphnia | 48 h | |

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Conclusion/Summary : No known significant effects or critical hazards.

12.3 Bioaccumulative potential

| Product/ingredient name | LogPow | BCF | Potential |
|-------------------------|--------|-----------------|-----------|
| glycerol | -1.76 | Not applicable. | low |

Conclusion/Summary : No known significant effects or critical hazards.

12.4 Mobility in soil

Soil/water partition coefficient (KOC) : Not available.
Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.
vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

European waste catalogue (EWC)


| Waste code | Waste designation |
|------------|--|
| 06 10 02* | wastes containing hazardous substances |

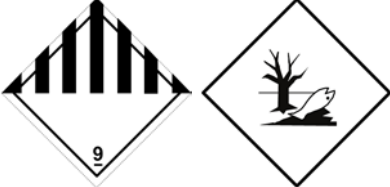
Packaging

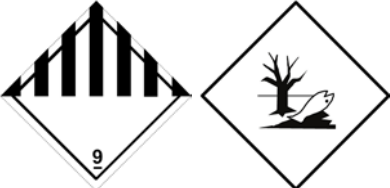
Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way.
 Care should be taken when handling emptied containers that have not been cleaned or rinsed out.
 Empty containers or liners may retain some product residues.
 Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

| Regulation: ADR/RID | |
|--|---|
| 14.1 UN number | 3082 |
| 14.2 UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulphate,) |
| 14.3 Transport hazard class(es) | 9  |
| 14.4 Packing group | III |
| 14.5 Environmental hazards | Yes. |
| Additional information | |
| Hazard identification number : 90 | |

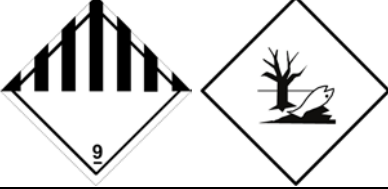
| Regulation: ADN | |
|---------------------------------|---|
| 14.1 UN number | 3082 |
| 14.2 UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulphate,) |
| 14.3 Transport hazard class(es) | 9  |
| 14.4 Packing group | III |
| 14.5 Environmental hazards | Yes. |
| Additional information | |
| Danger code : N2 | |

| Regulation: IMDG | |
|---------------------------------|---|
| 14.1 UN number | 3082 |
| 14.2 UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulphate,) |
| 14.3 Transport hazard class(es) | 9  |
| 14.4 Packing group | III |
| 14.5 Environmental hazards | Yes. |

Additional information

Marine pollutant : Yes.
Emergency schedules (EmS) : F-A, S-F

Regulation: IATA

| | |
|--|---|
| 14.1 UN number | 3082 |
| 14.2 UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulphate,) |
| 14.3 Transport hazard class(es) | 9  |
| 14.4 Packing group | III |
| 14.5 Environmental hazards | Yes. |
| Additional information | |
| <u>Marine pollutant</u> : Yes. | |

14.6 Special precautions for user : Transport within user's premises: Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

Not available.

14.8 IMSBC : Not applicable.

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorization**

Annex XIV: None of the components are listed.

Substances of very high concern: None of the components are listed.

EU Regulation (EC) No. 1907/2006 (REACH) Annex XVII : Applicable, Table 3.

- Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Other EU regulations

Ozone depleting substances (1005/2009/EU)

None of the components are listed.

Prior Informed Consent (PIC) (649/2012/EU)

None of the components are listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

| |
|--|
| Category |
| E2: Hazardous to the aquatic environment - Chronic 2 |

National regulations

Biocidal products regulation : Not applicable.

Notes : To our knowledge no other country or state specific regulations are applicable.

15.2 Chemical Safety Assessment : Complete.

SECTION 16: Other information

Abbreviations and acronyms :

- ATE = Acute Toxicity Estimate
- CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
- DNEL = Derived No Effect Level
- DMEL = Derived Minimal Effect Level
- EUH statement = CLP-specific Hazard statement
- PNEC = Predicted No Effect Concentration
- RRN = REACH Registration Number
- PBT = Persistent, Bioaccumulative and Toxic
- vPvB = Very Persistent and Very Bioaccumulative
- bw = Body weight

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

| Classification | Justification |
|-------------------------|--------------------|
| Eye Dam. 1, H318 | Calculation method |
| Aquatic Chronic 2, H411 | Calculation method |

Full text of abbreviated H statements

| | |
|-------------|---|
| H302 | Harmful if swallowed. |
| H318 | Causes serious eye damage. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |

Full text of classifications [CLP/GHS]

| | |
|--------------------------------|---|
| Acute Tox. 4, H302 | ACUTE TOXICITY (oral) - Category 4 |
| Eye Dam. 1, H318 | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 |
| Aquatic Acute 1, H400 | AQUATIC HAZARD (ACUTE) - Category 1 |
| Aquatic Chronic 1, H410 | AQUATIC HAZARD (LONG-TERM) - Category 1 |
| Aquatic Chronic 2, H411 | AQUATIC HAZARD (LONG-TERM) - Category 2 |

Revision comments : Information in the safety data sheet has been updated in the following Sections:
 Section 2. Classification
 Section 3. Composition and information of the ingredients of the hazardous chemical

Date of printing : 10.04.2018
Date of issue/ Date of revision : 15.03.2018
Date of previous issue : 01.06.2017
Version : 4.0
Prepared by : Yara Chemical Compliance (YCC).
 || Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information provided in this Safety Data Sheet is accurate as at the date of its issue. The information it contains is being given for safety guidance purposes and relates only to the specific material and uses described in it. This information does not necessarily apply to that material when combined with other material(s) or when used otherwise than as described herein, since all materials may represent unknown hazards and should be used with caution. Final determination of the suitability of any material is the sole responsibility of the user.



**Annex to the extended Safety Data Sheet (eSDS) -
Exposure Scenario:**

Identification of the substance or mixture

Product definition : Mixture

Product name : BIOTRAC

**Exposure Scenario
information**

: Exposure Scenarios are not attached for corrosive or irritant hazards, relevant information on safe use is included in section 8. For each additional hazard resulting in classification relevant Exposure Scenarios are attached.



Annex to the extended Safety Data Sheet (eSDS) - Exposure Scenario:

Section 1 – Title

Short title of the exposure scenario : Yara - zinc sulphate - Distribution, Formulation

Identified use name : Industrial distribution.
Industrial USE to formulate chemical product mixtures.
Industrial USE to formulate fertilisers product mixtures.

Substance supplied to that use in form of : In a mixture

List of use descriptors

Process Category : PROC02, PROC03, PROC04, PROC05, PROC08b, PROC09, PROC15
Environmental Release Category : ERC02
Market sector by type of chemical product : PC12
Sector of end use : SU03
Subsequent service life relevant for that use : No.

Number of the ES : 05645-2/2017-12-01

Section 2 – Exposure controls

Contributing scenario controlling environmental exposure for:

Product characteristics : Liquid.
Solid

Concentration of substance in mixture or article : < 100 %

Amounts used : Annual site tonnage < 5000
Frequency and duration of use : Continuous release

Environment factors not influenced by risk management : Flow rate of receiving surface water (m³/d): 18,000
Local freshwater dilution factor 10
Local marine water dilution factor 100

Other conditions affecting environmental exposure : Indoor use
Residues which cannot be recycled are disposed off as chemical

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| | waste. |
| Technical conditions and measures at process level (source) to prevent release | : Formulation activity is assumed to be a predominantly enclosed process. Provide adequate ventilation, especially in closed rooms. Local exhaust ventilation should be provided. Use appropriate containment to avoid environmental contamination. |
| Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil | : Specific measures are required. |
| Risk management measures - Air | : Treat air emission to provide a typical removal efficiency of, > 90%, Fabric filter, Wet scrubber - particle removal |
| Risk management measures - Water | : Typical on-site wastewater treatment technology provides removal efficiency of, > 90%, Chemical precipitation or sedimentation or filtration or electrolysis or reverse osmosis or ion exchange |
| Organizational measures to prevent/limit release from site | : Activities should only be executed by trained/authorized personnel., Regular inspection/maintenance to prevent fugitive releases/leakage., Regular cleaning of work areas, equipment and floors., Procedures for process control should be implemented to minimise release/exposure. |

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| Contributing scenario controlling worker exposure for: | |
| Concentration of substance in mixture or article | : < 100 % |
| Physical state | : Liquid. Solid. |
| Dust | : Solid, high dustiness, Solid, low dustiness |
| Frequency and duration of use | : Use duration (h/d): < 8 |
| Area of use: | : Indoor |
| Technical conditions and measures to control dispersion from source towards the worker | : Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits., Dust capturing and removal techniques are applied on work areas with potential dust generation., Workplace measurements |
| Ventilation control measures | : Provide extract ventilation to points where emissions occur. Treatment effectiveness > 90 % |
| Organizational measures to prevent/limit releases, dispersion and exposure | : Ensure operatives are trained to minimise exposures., Regular inspection/maintenance to prevent fugitive releases/leakage., Regular cleaning of work areas, equipment and floors., Procedures for process control should be implemented to |

minimise release/exposure.

Conditions and measures related to personal protection and hygiene

- Personal protection** : Causes serious eye damage., Wear protective gloves and eye protection., Do not eat, drink or smoke when using this product., Wash hands thoroughly after handling., See Section 8 of the safety data sheet (personal protective equipment).
- Respiratory protection** : In case of inadequate ventilation wear respiratory protection.

Section 3 – Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment:

- Exposure assessment (environment):** : measured data, -
- EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE** : See Section 8 in SDS, PNEC. Predicted exposures are not expected to exceed the PNEC when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

| Contributing scenario | Annual site tonnage | Release rate | Protection target | Exposure estimate (PEC) | RCR | Remark |
|-----------------------|---------------------|--------------|-------------------------|-------------------------|------|--------|
| ERC02 | 5000 | | Water | < 3,4 µg/l | 0.16 | [1] |
| ERC02 | 5000 | | Sediment | 45 mg/kg dwt | 0.19 | [1] |
| ERC02 | 5000 | | Soil | 41 mg/kg dwt | 0.39 | [1] |
| ERC02 | 5000 | | Sewage Treatment Plant. | 0 mg/l | 0 | [1] |

[1] Calculated as Zn

Exposure estimation and reference to its source - Workers:

- Exposure assessment (human):** : Workplace measurements
Worst case assumption
- EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE** : See Section 8 in SDS, DNEL. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Section 4 – GUIDANCE TO DU TO EVALUATE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

- Environment** : Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures., Measure or calculate local exposure to assess risk. See tools on www.reach-zinc.eu/
- Health** : Guidance is based on assumed operating conditions which may

not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures., Workplace monitoring data may also be used to judge the actual workplace exposure and subsequently can be used to reduce the requirements for respiratory protection provided the exposure levels do not exceed the DNELs.

Abbreviations and acronyms

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| Process Category | : | PROC02 - Use in closed, continuous process with occasional controlled exposure PROC03 - Use in closed batch process (synthesis or formulation) PROC04 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC05 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC08b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC09 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15 - Use a laboratory reagent |
| Environmental Release Category | : | ERC02 - Formulation of preparations |
| Market sector by type of chemical product | : | PC12 - Fertilizers |
| Sector of end use | : | SU03 - Industrial uses |