

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

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SAFETY DATA SHEET

BIONUE

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

1.1 Product identifier

Product name : BIONUE
Product code : PYPDJL
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. Professional formulation of fertiliser products. Professional USE as fertiliser at Farm - loading and spreading. Professional USE as fertiliser in Greenhouse. Professional USE as liquid fertiliser in open field. Professional USE as fertiliser - maintenance of equipment.	
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

Emergency telephone number (with hours of operation) : National Chemical Emergency Centre
+44 (0) 1865 407333 (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 : Skin Irrit. 2, H315
Eye Dam. 1, H318
Skin Sens. 1, H317
STOT SE 3, H335 (Respiratory tract irritation)
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 :

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention :

P280	Wear protective gloves and eye protection.
P261	Avoid breathing gas or vapour.

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.
P333 +	If skin irritation or rash occurs, seek medical

P313 advice/attention.

Hazardous ingredients : Leonardite (naturally-occurring mineral)
manganese sulphate
zinc sulphate (monohydrate)
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one
and 2-methyl-2H-isothiazol-3-one (3:1)

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

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
Leonardite (naturally-occurring mineral)	RRN: Exempted	>= 25 - <= 35	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 (Respiratory tract irritation)	[1]
manganese sulphate	RRN: 01-2119456624-35 EC: 232-089-9 CAS : 10034-96-5 Index: 025-003-00-4	>= 3 - <= 5	Eye Dam. 1, H318 STOT RE 2, H373 Aquatic Chronic 2, H411	[1] [2]
zinc sulphate (monohydrate)	RRN: 01-2119474684-27	>= 3 - <= 5	Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Acute 1, H400	[1]

	EC: 231-793-3 CAS : 7446-19-7 Index: 030-006-00-9		Aquatic Chronic 1, H410	
bronopol (INN)	RRN: Not available. EC: 200-143-0 CAS : 52-51-7 Index: 603-085-00-8	>= 0.01 - <= 0.025	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 (Respiratory tract irritation) Aquatic Acute 1, H400 Aquatic Chronic 2, H411 M-factor: 10 - AQUATIC HAZARD (ACUTE),	[1]
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)	RRN: Not available. CAS : 55965-84-9 Index: 613-167-00-5	>= 0.001 - <= 0.01	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 2, H330 Skin Corr. 1C, H314 Eye Dam. 1, H318 Skin Sens. 1A, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 EUH071 M-factor: 100 - AQUATIC HAZARD (ACUTE), 100 - AQUATIC HAZARD (LONG-TERM),	[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 running 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. If

breathing is difficult, give oxygen.

- Skin contact** : Wash with soap and water. Wash with plenty of soap and water. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure.
- 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

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following: pain, watering, redness
- Inhalation** : Adverse symptoms may include the following: respiratory tract irritation, coughing
- Skin contact** : Adverse symptoms may include the following: irritation, redness
- 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.
- 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 combustion products** : Decomposition products may include the following materials: metal oxide/oxides, 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 protective actions for fire-fighters** : 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.

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 sections** : See Section 1 for emergency contact information.
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

Not for human or animal consumption.

- Protective measures** :
- Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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

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	200 t	500 t

7.3 Specific end use(s)

Recommendations : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
manganese sulphate	EH40/2005 WELs (2018-08-21). TWA 0.2 mg/m ³ (as manganese) Form: Inhalable fraction TWA 0.05 mg/m ³ (as manganese) Form: Respirable fraction

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
manganese sulphate	DNEL	Long term Inhalation	0.2 mg/m ³	Workers	Systemic
	DNEL	Long term Dermal	4.14 mg/kg bw/day	Workers	Systemic
zinc sulphate (monohydrate)	DNEL	Long term Inhalation	1 mg/m ³	Workers	Systemic
	DNEL	Long term Dermal	8.3 mg/kg bw/day	Workers	Systemic
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)	DNEL	Long term Inhalation	0.02 mg/m ³	Workers	Local
	DNEL	Short term Inhalation	0.04 mg/m ³	Workers	Local

PNECs

Product/ingredient	Type	Compartment Detail	Value	Method Detail
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name				
manganese sulphate	PNEC	Fresh water	0.0128 mg/l	Not applicable.
	PNEC	Marine water	0.4 µg/l	Not applicable.
	PNEC	Sewage Treatment Plant	56 mg/l	Not applicable.
	PNEC	Soil	25.1 mg/kg wwt	Not applicable.
	PNEC	Fresh water sediment	11.4 µg/kg wwt	Not applicable.
	PNEC	Marine water sediment	1.4 µg/kg wwt	Not applicable.
zinc sulphate (monohydrate)	PNEC	Fresh water	20.6 µg/l	Not applicable.
	PNEC	Marine water	6.1 µg/l	Not applicable.
	PNEC	Fresh water sediment	235.6 mg/kg dwt	Not applicable.
	PNEC	Marine water sediment	113 mg/kg dwt	Not applicable.
	PNEC	Soil	106.8 mg/kg dwt	Not applicable.
	PNEC	Sewage Treatment Plant	52 µg/l	Not applicable.
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)	PNEC	Fresh water	3.39 µg/l	Assessment Factors
	PNEC	Marine water	3.39 µg/l	Assessment Factors
	PNEC	Sewage Treatment Plant	0.23 mg/l	Assessment Factors
	PNEC	Fresh water sediment	0.027 mg/kg dwt	Assessment Factors
	PNEC	Marine water sediment	0.027 mg/kg dwt	Assessment Factors
	PNEC	Soil	0.01 mg/kg dwt	Assessment Factors

8.2 Exposure controls


Appropriate engineering controls

- : Use only with adequate ventilation. 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. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. 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,
<u>Skin protection</u> 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 emphasized 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.
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.
Personal protective equipment (Pictograms)	: 

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: Liquid
Color	: Dark, Brown.,
Odor	: Not determined.
Odor threshold	: Not determined.
pH	: 3.5 - 4.0
Melting point/freezing point	: < -9 °C
Initial boiling point and boiling range	: 100 °C
Flash point	: Not determined
Evaporation rate	: Not determined
Flammability (solid, gas)	: Non-flammable.

Upper/lower flammability or explosive limits	:	Lower: Not determined
Vapor pressure	:	Upper: Not determined
	:	0.00001 hPa
Vapor density	:	Not determined
Relative density	:	1.15 - 1.25
Bulk density	:	Not determined
Partition coefficient: n-octanol/water	:	Not determined
Auto-ignition temperature	:	Not determined
Viscosity	:	Dynamic: 900 - 12,000 mPa.s
		Kinematic: Not determined.
Explosive properties	:	Non-explosive.
Oxidizing properties	:	None

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

<u>10.1 Reactivity</u>	:	No specific test data related to reactivity available for this product or its ingredients.
<u>10.2 Chemical stability</u>	:	The product is stable.
<u>10.3 Possibility of hazardous reactions</u>	:	Under normal conditions of storage and use, hazardous reactions will not occur.
<u>10.4 Conditions to avoid</u>	:	Avoid contamination by any source including metals, dust and organic materials.
<u>10.5 Incompatible materials</u>	:	No specific data.
<u>10.6 Hazardous decomposition products</u>	:	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	Method	Species	Result	Exposure	References
Leonardite (naturally-occurring mineral)					
	LD50 Oral	Rat	12,173 mg/kg	Not applicable.	
manganese sulphate					
	LD50 Oral	Rat	2,150 mg/kg	Not applicable.	IUCLID 5
	OECD 403 LC50 Inhalation	Rat	> 5 mg/l	4 h	ECHA

	Dusts and mists				
zinc sulphate (monohydrate)					
	OECD 401 LD50 Oral	Rat	926 mg/kg	Not applicable.	ECHA
bronopol (INN)					
	OECD 401 LD50 Oral	Rat	305 mg/kg	Not applicable.	ECHA
	LD50 Dermal	Rat	1,600 mg/kg	Not applicable.	ECHA
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)					
	OECD 423 LD50 Oral	Rat	64 mg/kg	Not applicable.	ECHA
	OECD 403 LC50 Inhalation Dusts and mists	Rat	0.171 mg/l	4 h	ECHA
	OECD 402 LD50 Dermal	Rat	87 mg/kg	Not applicable.	ECHA

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

Acute toxicity estimates

Product/ingredient name	Oral	Dermal	Inhalation (gases)	Inhalation (vapors)	Inhalation (dusts and mists)
No tradename available.	28,492.3 mg/kg	N/A	N/A	N/A	N/A
Leonardite (naturally-occurring mineral)	12,173 mg/kg	N/A	N/A	N/A	N/A
manganese sulphate	2,150 mg/kg	N/A	N/A	N/A	N/A
zinc sulphate (monohydrate)	926 mg/kg	N/A	N/A	N/A	N/A
bronopol (INN)	305 mg/kg	1,600 mg/kg	N/A	N/A	N/A
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)	64 mg/kg	87 mg/kg	N/A	N/A	0.171 mg/l

Irritation/Corrosion

Product/ingredient name	Method	Species	Result	Exposure	References
manganese sulphate					
	Eyes	Rabbit	Severe irritant		
zinc sulphate (monohydrate)					
	Eyes	Rabbit	Severe irritant		IUCLID 5
bronopol (INN)					
	OECD 404 Skin	Rabbit	Irritant		ECHA
	Eyes	Rabbit	Severe irritant		ECHA

reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)

	Eyes	Rabbit	Damage		ECHA
	OECD 404 Skin	Rabbit	Corrosive.		ECHA

Conclusion/Summary

Skin : Causes skin irritation.
Eyes : Causes serious eye damage.
Respiratory : May cause respiratory irritation.

Sensitization

Product/ingredient name	Method	Species	Result	References
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)				
	B.42 Skin sensitization: Local Lymph Node Assay Skin	Mouse	Sensitizing	ECHA

Conclusion/Summary

Skin : May cause an allergic skin reaction.
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.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Leonardite (naturally-occurring mineral)	Category 3	-	Respiratory tract irritation
bronopol (INN)	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
manganese sulphate	Category 2	-	-

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

Potential acute health effects

Inhalation : May cause respiratory irritation. Vapor may be irritating to eyes and respiratory system.

Ingestion : May cause burns to mouth, throat and stomach.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Eye contact : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Adverse symptoms may include the following: respiratory tract irritation, coughing

Ingestion : May cause burns to mouth, throat and stomach.

Skin contact : Adverse symptoms may include the following: irritation, redness

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 : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Method	Species	Result	Exposure	References
manganese sulphate					
	Fish, Acute Toxicity Test Acute LC50 Fresh water	Fish.	3.2 - 14 mg/l	96 h	IUCLID 5
	Chronic NOEC Fresh water	Fish	> 0.55 mg/l	65 d	IUCLID 5
zinc sulphate (monohydrate)					
	Acute LC50	Fish	0.1 - 1 mg/l	96 h	ECHA

	Fresh water				
	Acute EC50 Fresh water	Daphnia	0.1 - 1 mg/l	48 h	ECHA
bronopol (INN)					
	Acute LC50 Fresh water	Fish	35.7 mg/l	96 h	ECHA
	OECD 202 Acute EC50 Fresh water	Daphnia	1.4 mg/l	48 h	ECHA
	OECD 201 Acute EC50 Fresh water	Algae	0.16 mg/l	72 h	ECHA
	Chronic NOEC	Fish - Oncorhynchus mykiss	1.94 mg/l	49 d	Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.:
reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1)					
	Acute LC50 Fresh water	Fish	0.19 mg/l	96 h	ECHA
	Acute EC50 Fresh water	Daphnia	0.16 mg/l	48 h	ECHA
	OECD 201 Acute EC50 Marine water	Algae	0.0052 mg/l	96 h	ECHA
	Chronic NOEC Marine water	Algae	0.00049 mg/l	96 h	ECHA

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
bronopol (INN)	0.18	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

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

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 03 13*	solid salts and solutions containing heavy metals

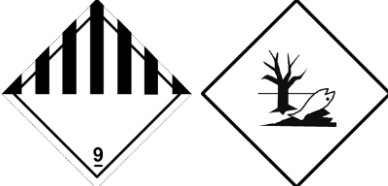
Packaging

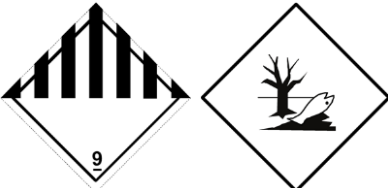
- Methods of disposal** : The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a 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.

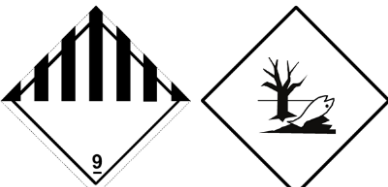
SECTION 14: Transport information

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	
<u>Danger code</u>	: Not applicable.

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	
<u>Marine pollutant</u>	: No.
<u>Emergency schedules (EmS)</u>	: 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 IMO instruments** : 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

Europe inventory : Not determined.

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

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 : This product contains substances for which Chemical Safety Assessments are still required.

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
 - N/A = Not available
 - PNEC = Predicted No Effect Concentration
 - RRN = REACH Registration Number
 - SGG = Segregation Group
 - PBT = Persistent, Bioaccumulative and Toxic
 - vPvB = Very Persistent and Very Bioaccumulative
 - bw = Body weight
- Key data sources** :
- EU REACH ECHA/IUCLID5 CSR.
 - National Institute for Occupational Safety and Health, U.S. Dept. of Health, Education, and Welfare, Reports and Memoranda Registry of Toxic Effects of Chemical Substances.
 - Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec HAR 2P9, Canada.
 - Regulation (EC) No 1272/2008 Annex VI.

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

Classification	Justification
Skin Irrit. 2, H315	Calculation method
Eye Dam. 1, H318	Calculation method
Skin Sens. 1, H317	Calculation method
STOT SE 3, H335 (Respiratory tract irritation)	Calculation method
Aquatic Chronic 2, H411	Calculation method

Full text of abbreviated H statements

EUH071	Corrosive to the respiratory tract.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
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. 3	ACUTE TOXICITY oral - Category 3
Acute Tox. 4	ACUTE TOXICITY oral - Category 4
Acute Tox. 2	ACUTE TOXICITY dermal - Category 2
Acute Tox. 4	ACUTE TOXICITY dermal - Category 4
Skin Corr. 1C	SKIN CORROSION/IRRITATION - Category 1C
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1	SKIN SENSITIZATION - Category 1
Skin Sens. 1A	SKIN SENSITIZATION - Category 1A
Eye Dam. 1	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Eye Irrit. 2	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Acute Tox. 2	ACUTE TOXICITY inhalation - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) Respiratory tract irritation - Category 3
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Aquatic Acute 1	AQUATIC HAZARD (ACUTE) - Category 1
Aquatic Chronic 1	AQUATIC HAZARD (LONG-TERM) - Category 1
Aquatic Chronic 2	AQUATIC HAZARD (LONG-TERM) - Category 2

Revision comments : The following sections contain new and updated information: 2, 3, 8, 11.

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Date of previous issue : 13.03.2020

Version : 1.1

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/Safe Use Information:**

Identification of the substance or mixture

Product definition : Mixture

Product name : BIONUE

