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Version	:	8.0

SAFETY DATA SHEET

PG-mix 12-14-24+2

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

1.1 Product identifier

Product name	:	PG-mix 12-14-24+2
Product code	:	PF712K
Product type	:	Solid

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

Identified uses
Industrial distribution. Industrial USE to formulate fertilisers product mixtures. Professional formulation of fertiliser products.

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

Yara UK Limited

Address

Street	:	Pocklington Industrial Estate Pocklington
Postal code	:	YO42 1DN
City	:	York
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 UK CLP/GHS

Classification : Aquatic Chronic 3, H412

The product is classified as hazardous according to UK CLP Regulation SI 2019/720 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

Signal word : No signal word.

Hazard statements : H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : P273 Avoid release to the environment.

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 65.

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.

Additional information : Product forms slippery surface when combined with water.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Classification	Type
potassium nitrate	REACH #: 01-2119488224-35 EC : 231-818-8 CAS : 7757-79-1	>= 50 - <= 65	Ox. Sol. 3, H272	[1]
copper sulphate pentahydrate	REACH #: 01-2119520566-40 EC : 231-847-6 CAS : 7758-99-8 Index : 029-004-00-0	>= 0.3 - < 1	Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=1)	[1]
boric acid	REACH #: 01-2119486683-25 EC : 233-139-2 CAS : 10043-35-3 Index : 005-007-00-2	>= 0.1 - <= 0.2	Repr. 1B, H360FD	[1]
zinc sulphate (monohydrate)	REACH #: 01-2119474684-27 EC : 231-793-3 CAS : 7446-19-7 Index : 030-006-00-9	>= 0.1 - <= 0.2	Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)	[1]

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.

Type

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

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

Remarks : This product contains Boron (see section 7 and 11).
The content is below the level required for classification of the product as toxic to reproduction.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Rinse with plenty of running water. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : If inhaled, remove to fresh air. In case of inhalation of decomposition products in a fire, symptoms may be delayed. Get medical attention if you feel unwell. The exposed person may need to be kept under medical surveillance for 48 hours.

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. Do not induce vomiting unless directed to do so by

medical personnel. Get medical attention if you feel unwell.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

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 flooding quantities of water for extinction.

Unsuitable extinguishing media : Do NOT use chemical extinguisher or foam or attempt to smother the fire with steam or sand.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : This material is harmful 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: nitrogen oxides, sulfur oxides, phosphorus oxides, metal oxide/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 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.

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. 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.

6.3 Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

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). As a precaution, keep exposure as low as possible for pregnant women, children and workers in reproductive age. Avoid dust generation. Do not breathe dust. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid

release to the environment. 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.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. Keep away from: organic materials, oil and grease.

7.3 Specific end use(s)

Recommendations : Do not generate and inhale liquid fertilizer aerosols.

In addition to overalls, gloves and eye protection, use of efficient respiratory protection (P2/P3 respirators with a tight face seal) during discharge of fertilizer bags and maintenance of equipment is recommended to minimize inhalation exposure and to ensure safe-use during this activity (see section 8).

Risk assessments show safe use during normal spreading of fertilizers containing below 5% of boron by tractor (liquid or granular) and backpack (liquid).

SECTION 8: Exposure controls/personal protection

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).

8.1 Control parameters

Occupational exposure limits

Remark : No exposure limit value known.

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 appropriate monitoring standards. 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
copper sulphate pentahydrate	DNEL	Long term Dermal	137 mg/kg bw/day	Workers	Local
	DNEL	Long term Oral	0.041 mg/kg bw/day	General population [Consumers]	Systemic
	DNEL	Long term Inhalation	1 mg/m³	Workers	Local
boric acid	DNEL	Long term Inhalation	8.3 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	392 mg/kg bw/day	Workers	Systemic
zinc sulphate (monohydrate)	DNEL	Long term Inhalation	1 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	8.3 mg/kg bw/day	Workers	Systemic

PNECs

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
potassium nitrate	PNEC	Sewage Treatment Plant	18 mg/l	Assessment Factors
copper sulphate pentahydrate	PNEC	Fresh water	7.8 µg/l	Not applicable.
	PNEC	Marine water	5.2 µg/l	Not applicable.
	PNEC	Sewage Treatment Plant	230 µg/l	Not applicable.
	PNEC	Fresh water sediment	87 mg/kg	Not applicable.
	PNEC	Marine water sediment	676 mg/kg	Not applicable.
	PNEC	Soil	65 mg/kg	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.

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, Europe:, 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 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 : Use respiratory protection with more than 94% efficiency (P2, P3 or N95) and a tight face seal, when risk of exposure to dust.

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

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance
Physical state : Solid (Crystalline)
Color : White.,
Odor : Odorless.

Melting point/freezing point	:	Not determined
Initial boiling point and boiling range	:	Not applicable.
Flammability	:	Non-flammable.
Upper/lower flammability or explosive limits	:	**Lower:** Not applicable. **Upper:** Not applicable.
Flash point	:	Not applicable.
Auto-ignition temperature	:	Not applicable.
Decomposition temperature	:	Not applicable.
pH	:	4 - 5 [Conc. (% w/w): 10 g/l]
Viscosity	:	**Kinematic:** Not applicable.
Solubility(ies)	:	soluble in water
Partition coefficient: n-octanol/water	:	Not applicable.
Vapor pressure	:	Not applicable.
Relative vapour density	:	Not applicable.
Bulk density	:	890 kg/m3
Explosive properties	:	Non-explosive.
Oxidizing properties	:	Non-oxidizer. On basis of test data Bridging principle "Substantially similar mixtures"

Particle characteristics

Median particle size	:	0.3 - 0.8 mm

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	:	alkalis combustible materials, reducing materials, organic materials, Acids

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	Method	Species	Result	Exposure
potassium nitrate				
	LD50 Oral	Rat	2,000 mg/kg	Not applicable.
	LD50 Dermal	Rat	> 5,000 mg/kg	Not applicable.
copper sulphate pentahydrate				
	OECD 401 LD50 Oral	Rat	481 mg/kg	Not applicable.
	OECD 402 LD50 Dermal	Rat	> 5,000 mg/kg	Not applicable.
boric acid				
	LD50 Oral	Rat	3,450 mg/kg	Not applicable.
	LD50 Dermal	Rabbit	> 5,000 mg/kg	Not applicable.
zinc sulphate (monohydrate)				
	OECD 401 LD50 Oral	Rat	926 mg/kg	Not applicable.

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)
copper sulphate pentahydrate	481 mg/kg	N/A	N/A	N/A	N/A
boric acid	3,450 mg/kg	N/A	N/A	N/A	N/A
zinc sulphate (monohydrate)	926 mg/kg	N/A	N/A	N/A	N/A

Irritation/Corrosion

Product/ingredient name	Method	Species	Result	Exposure
potassium nitrate				
	OECD 404 Skin	Rabbit	Non-irritating.	
copper sulphate pentahydrate				
	OECD 405 Eyes	Rabbit	Severe irritant	
zinc sulphate (monohydrate)				
	Eyes	Rabbit	Severe irritant	

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

Product/ingredient name	Method	Species	Result	Exposure
boric acid				
	Oral	Rat	Fertility effects-Positive NOEL	3 weeks Repeated dose;

Conclusion/Summary : Contains boron which may harm fertility or the unborn child, based on animal data.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : No specific data.
Ingestion : No specific data.
Skin contact : No specific data.
Eye contact : No specific data.

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.

Reproductive toxicity : Contains boron which may harm fertility or the unborn child, based on animal data.

Other effects : No known significant effects or critical hazards.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Method	Species	Result	Exposure
potassium nitrate				
	OECD 203 Acute LC50 Fresh water	Fish	> 100 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	490 mg/l	48 h
	Acute EC50 Marine water	Algae	> 1,700 mg/l	240 h
copper sulphate pentahydrate				
	Acute LC50 Fresh water	Fish	0.032 mg/l	96 h
	Acute NOEC Fresh water	Daphnia	0.029 mg/l	Not applicable.
boric acid				
	Acute LC50 Fresh water	Fish	> 100 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	> 100 mg/l	48 h
zinc sulphate (monohydrate)				
	Acute LC50 Fresh water	Fish	0.1 - 1 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	0.1 - 1 mg/l	48 h

Conclusion/Summary : Harmful 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
boric acid	0.175-1.09	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 : The classification of the product may meet the criteria for a hazardous waste.

Waste catalogue

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. Empty the bag by shaking to remove as much as possible of its contents. Empty bags may be disposed of as non-hazardous material or returned for recycling.

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

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	Not applicable.	Not applicable.	Not applicable.	Not applicable.
14.3 Transport hazard class(es)	Not applicable.	Not applicable.	Not applicable.	Not applicable.
14.4 Packing group	Not applicable.	Not applicable.	Not applicable.	Not applicable.
14.5. Environmental hazards	No.	No.	No.	No.

ADN : **Danger code** N2

Remark : A NPK fertilizer not liable to self-sustaining exothermic decomposition according to the S.1 trough test as defined in the recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, part III, section 38.

Remarks re ADN:

The product is only regulated as an environmentally hazardous substance when transported in tank vessels.

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

Proper shipping name : AMMONIUM NITRATE BASED FERTILIZER

Remarks : **Solid bulk cargoes**
Harmful to the marine environment with regard to MARPOL Annex V: No
Material is hazardous only in bulk according to the IMSBC: No
IMSBC shipping group: C

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

UK (GB) /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.

Ozone depleting substances
None of the components are listed.

Prior Informed Consent (PIC)
None of the components are listed.

Persistent Organic Pollutants
None of the components are listed.

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 65.

Seveso Directive
This product is not controlled under the Seveso Directive.

Other regulations : A substance (or substances) contained in this product is listed in The Poison Act 1972, as amended by The Control of Explosive Precursors and Poisons Regulations 2015 No.966, 2018 No.451 and 2023 No.63. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point.

National regulations

Biocidal products regulation : Not applicable.

EU regulations

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
GB CLP = UK CLP (EC No 1272/2008) on the Classification, Labelling and Packaging of Substances and Mixtures as amended by (EU Exit) Regulations 2019 No. 720 and amendments
DNEL = Derived No Effect Level
DMEL = Derived Minimal Effect Level
EUH statement = GB 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.

Procedure used to derive the classification

Classification	Justification
Aquatic Chronic 3, H412	Calculation method

Full text of abbreviated H statements

H272	May intensify fire; oxidizer.
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H360FD	May damage fertility. May damage the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications

Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Acute 1	AQUATIC HAZARD (ACUTE) - Category 1
Aquatic Chronic 1	AQUATIC HAZARD (LONG-TERM) - Category 1
Aquatic Chronic 3	AQUATIC HAZARD (LONG-TERM) - Category 3
Eye Dam. 1	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Ox. Sol. 3	OXIDIZING SOLIDS - Category 3
Repr. 1B	TOXIC TO REPRODUCTION - Category 1B

Revision comments : The safety data sheet has been revised according to UK REACH Regulation SI 2019/758.
The following sections contain new and updated information: 1, 16.

Date of printing : 06.11.2023
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Date of previous issue : 22.01.2021
Version : 8.0
Prepared by : Product Stewardship and Compliance (PSC).

|| 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 : PG-mix 12-14-24+2

Exposure Scenario/Safe Use Information : For each 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 - copper sulphate pentahydrate - 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, PROC08a, PROC08b, PROC09, PROC15
Environmental Release Category	:	ERC02
Sector of end use	:	SU03
Subsequent service life relevant for that use	:	No.

Number of the ES	:	06370-1/2017-05-03

Section 2 — Exposure controls

Contributing scenario controlling environmental exposure for:

Product characteristics	:	Solid In aqueous preparations

Amounts used	:	Annual site tonnage < 17
Frequency and duration of use	:	Continuous release
Environment factors not influenced by risk management	:	Flow rate of receiving surface water (m^3/d): 18,000 Local freshwater dilution factor10 Local marine water dilution factor 100
Other conditions affecting environmental exposure	:	Indoor use Residues which cannot be recycled are disposed off as chemical waste.
Emission days		220
Release fraction to air from process (initial release prior to RMM)		**ERC02:** 0.4 %
Release fraction to wastewater from process (initial release prior to RMM)		**ERC02:** 2 %
Release fraction to soil from process (initial release prior to RMM)		**ERC02:** 0 %
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

Contributing scenario controlling worker exposure for:

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100 %.
Physical state	:	Solid Powder. Aqueous solution
Dust	:	Solid, medium dustiness
Frequency and duration of use	:	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure	:	Assumes a good basic standard of occupational hygiene is implemented
Area of use:	:	Indoor
Ventilation control measures	:	Provide a good standard of general ventilation.
Organizational measures to prevent/limit releases, dispersion and exposure	:	Ensure operatives are trained to minimise exposures.

Conditions and measures related to personal protection and hygiene

Personal protection	:	Wear protective gloves/clothing and eye/face protection. See Section 8 of the safety data sheet (personal protective equipment).

Section 3 — Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment:

Exposure assessment (environment):	:	EUSES
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	10		Freshwater	5.4 µg/l	0.69	
ERC02	17		Freshwater	3.3 µg/l	0.43	[1]
ERC02	17		Marine water	1.5 µg/l	0.27	
ERC02	10		Freshwater sediment	74,77 mg/kg dwt	0.86	
ERC02	17		Freshwater sediment	12,71 mg/kg dwt	0.15	[1]
ERC02	17		Marine sediment	28,81 mg/kg dwt	0.04	
ERC02	17		Soil	57,85 mg/kg dwt	0.68	[1]
ERC02	10		Soil	44,07 mg/kg dwt	0.90	

[1] Dilution factor 100

Exposure estimation and reference to its source - Workers:

Exposure assessment (human): : MEASE

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.

Contributing scenario	General	Conc.	Duration	Protection efficiency (%)			RCR inhal.	RCR Dermal	Remark
				LEV	Respiratory	Dermal			
PROC02	Solids	> 25 %	> 4 h	0	0		0.5		
PROC02	aqueous solution	> 25 %	> 4 h	0	0		0.001		
PROC03	Solids	> 25 %	> 4 h	90	0		0.1		
PROC03	aqueous solution	> 25 %	> 4 h	0	0		0.01		
PROC04	Solids	> 25 %	> 4 h	90	0		0.5		
PROC04	aqueous	> 25 %	> 4 h	0	0		0.05		

	solution								
PROC05	Solids	> 25 %	> 4 h	90	0		0.5		
PROC05	aqueous solution	> 25 %	> 4 h	0	0		0.05		
PROC08a	Solids	> 25 %	> 4 h	90	0		0.5		
PROC08a	aqueous solution	> 25 %	> 4 h	0	0		0.05		
PROC08b	Solids	> 25 %	> 4 h	90	0		0.25		
PROC08b	aqueous solution	> 25 %	> 4 h	0	0		0.01		
PROC09	Solids	> 25 %	> 4 h	90	0		0.5		
PROC09	aqueous solution	> 25 %	> 4 h	0	0		0.01		
PROC15	Solids	> 25 %	> 4 h	0	0		0.5		
PROC15	aqueous solution	> 25 %	> 4 h	0	0		0.01		

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.For scaling, see, http://www.arche-consulting.be/metal-CSA-toolbox/du-scaling-tool
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.Scaling tool, scalable parameters and RCR is given in section 3.Scalable parameters:Duration, protection efficiency, Conc.RCR should not be exceeded.

Abbreviations and acronyms

Process Category	:	PROC02 - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC03 - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

		PROC04 - Chemical production where opportunity for exposure arises PROC05 - Mixing or blending in batch processes PROC08a - Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC08b - Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC09 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Environmental Release Category	:	ERC02 - Formulation into mixture
Sector of end use	:	SU03 - Industrial uses

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	:	PC12

chemical product		
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 (m^3/d): 18,000 Local freshwater dilution factor10 Local marine water dilution factor 100
Other conditions affecting environmental exposure	:	Indoor use Residues which cannot be recycled are disposed off as chemical 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.

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

Process Category	:	PROC02 - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC03 - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC04 - Chemical production where opportunity for exposure arises PROC05 - Mixing or blending in batch processes PROC08b - Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC09 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Environmental Release Category	:	ERC02 - Formulation into mixture
Market sector by type of chemical product	:	PC12 - Fertilizers
Sector of end use	:	SU03 - Industrial uses

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

Section 1 — Title

Short title of the exposure scenario : Yara - copper sulphate pentahydrate - Professional, Fertilizer.

Identified use name : 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.

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

List of use descriptors

Environmental Release Category : ERC08b, ERC08e

Market sector by type of chemical product : PC12

Subsequent service life relevant for that use : No.

Number of the ES : 06408-1/2017-05-08

Section 2 — Exposure controls

Contributing scenario controlling environmental exposure for:

Product characteristics : Liquid.
Solid

Concentration of substance in mixture or article	:	< 1 %
Frequency and duration of use	:	Continuous release
Environment factors not influenced by risk management	:	Flow rate of receiving surface water (m^3/d): 18.000 Local freshwater dilution factor10 Local marine water dilution factor 10
Technical conditions and measures at process level (source) to prevent release	:	Observe use instructions.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Professional and consumer product use with limited or no technical control of emission
Organizational measures to prevent/limit release from site	:	Activities should only be executed by trained/authorized personnel., Procedures for process control should be implemented to minimise release/exposure.

Section 3 — Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment:

Exposure assessment (environment):	:	EUSES

Contributing scenario	Annual site tonnage	Release rate	Protection target	Exposure estimate (PEC)	RCR	Remark
ERC08b, ERC08e			Freshwater	0,0029 mg/l		[1], [2]
ERC08b, ERC08e			Freshwater	0,0078 mg/l	1	[1], [3]
ERC08b, ERC08e			Freshwater sediment	0 mg/kg dry weight		[1], [2]
ERC08b, ERC08e			Freshwater sediment	87 mg/kg dry weight	1	[1], [3]

ERC08b, ERC08e			Marine water	0,0011 mg/l		[1], [2]
ERC08b, ERC08e			Marine water	0,0056 mg/l	1	[1], [3]
ERC08b, ERC08e			Marine sediment	16,1 mg/kg dry weight		[1], [2]
ERC08b, ERC08e			Marine sediment	676 mg/kg dry weight	1	[1], [3]
ERC08b, ERC08e			Soil	24,4 mg/kg dry weight		[1], [2]
ERC08b, ERC08e			Soil	64,6 mg/kg dry weight	1	[1], [3]

[1] Cu

[2] Background

[3] Maximum allowable concentrations

Exposure estimation and reference to its source - Workers:

Exposure estimation and reference to its source	:	As no toxicological hazard was identified, no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Section 4 — Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	:	The product is not expected to harm the environment when used properly according to directions., No additional risk management measures required.
Health	:	Refer to special instructions/safety data sheet., No additional risk management measures required.

Abbreviations and acronyms

Environmental Release Category	:	ERC08b - Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC08e - Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)

Market sector by type of chemical product	:	PC12 - Fertilizers

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

Section 1 — Title

Short title of the exposure scenario	:	Yara - Zinc sulphate - Professional, Fertilizer.
Identified use name	:	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.
Substance supplied to that use in form of	:	In a mixture

List of use descriptors

Environmental Release Category	:	ERC08b
Market sector by type of chemical product	:	PC12
Sector of end use	:	SU01, SU10, SU22
Subsequent service life relevant for that use	:	No.

Number of the ES	:	06453-2/2019-09-11

Section 2 — Exposure controls

Contributing scenario controlling environmental exposure for:

Product characteristics	:	Solid Liquid.
Concentration of substance in mixture or article	:	< 40 %
Amounts used	:	Annual site tonnage 100
Frequency and duration of use	:	Continuous release
Environment factors not influenced by risk management	:	Flow rate of receiving surface water (m^3/d): 18,000 Local freshwater dilution factor10 Local marine water dilution factor 100
Other conditions affecting environmental exposure	:	Indoor use Residues which cannot be recycled are disposed off as chemical waste.
Technical conditions and measures at process level (source) to prevent release	:	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. Use appropriate containment to avoid environmental contamination.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	> 100 tonnes/year: 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.

Contributing scenario controlling worker exposure for:

As no toxicological hazard was identified, no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Section 3 — Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment:

Exposure assessment (environment): : EUSES

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
ERC08b	100	0.02 %	Water	5,1 µg/l	0.25	[1], [2], [3]
ERC08b	100	0.02 %	Sediment	231 mg/kg dwt	0.98	[1], [2], [3]
ERC08b	100	0.02 %	Soil	41 mg/kg dwt	0.39	[1], [2], [3]
ERC08b	100	0.02 %	Sewage treatment plant	0,046 mg/l	0.435	[1], [2], [3]

[1] Calculated as Zn

[2] PECs include the regional PEC

[3] Release factor to water

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	:	Not applicable.

Abbreviations and acronyms

Environmental Release Category	:	ERC08b - Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
Market sector by type of chemical product	:	PC12 - Fertilizers
Sector of end use	:	SU01 - Agriculture, forestry, fishery SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU22 - Professional uses