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# SAFETY DATA SHEET

YaraVita MANIKIN DF

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

### 1.1 Product identifier

Product name : YaraVita MANIKIN DF  
Product code : PYP76W  
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. 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

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

**Name** : NPIC Poison centre, Dublin  
**Telephone number** : 01 809 2166

**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** : Eye Dam. 1, H318  
STOT RE 2, H373  
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.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H411 Toxic to aquatic life with long lasting effects.

#### **Precautionary statements**

**Prevention** : P280 Wear protective gloves and eye protection.  
P260 Do not breathe dust.  
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** : manganese sulphate, monohydrate

**EU Regulation (EC) No. 1907/2006 (REACH) Annex XVII** : Not applicable.

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

**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 : None.

## SECTION 3: Composition/information on ingredients

**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
manganese sulphate, monohydrate	REACH #: 01-2119456624-35 EC : 232-089-9 CAS : 10034-96-5 Index: 025-003-00-4	>= 90 - 100	Eye Dam. 1, H318 STOT RE 2, H373 (brain) (inhalation) Aquatic Chronic 2, H411	-	[1] [2]

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

[2] Substance with a workplace exposure limit

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. Immediately flush eyes with

plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention immediately.

- Inhalation** : Get medical attention immediately. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Get medical attention following exposure or if feeling unwell.
- 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 following exposure or if feeling unwell. Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- 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** : 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.
- 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** : 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 dust. 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** : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, 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. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.
- 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 breathe dust. Do not get in eyes or on skin or clothing. 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

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.

### 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, monohydrate	<b>EU OEL (2017-02-21).</b> TWA 0.05 mg/m <sup>3</sup> (as manganese) Form: Respirable fraction TWA 0.2 mg/m <sup>3</sup> (as manganese) Form: Inhalable fraction <b>NAOSH (2018-08-21).</b> TWA 0.2 mg/m <sup>3</sup> (as manganese) Form: Inhalable fraction TWA 0.05 mg/m <sup>3</sup> (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, monohydrate	DNEL	Long term Inhalation	0.2 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term Dermal	4.14 mg/kg bw/day	Workers	Systemic

#### PNECs

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
manganese sulphate, monohydrate	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.

## 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. 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. If operating conditions cause high dust concentrations to be produced, use dust goggles.  
**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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

**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 a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.  
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- 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 (Powder.)
- Color** : White.,
- Odor** : Odorless.
- Melting point/freezing point** : 134 °C
- Initial boiling point and boiling range** : Not applicable.
- Flammability** : Non-flammable.
- Lower and upper explosion limit** : **Lower:** Not applicable.  
**Upper:** Not applicable.
- Flash point** : Not applicable.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not applicable.
- pH** : 7 [Conc. (% w/w): 5 g/l ]
- Viscosity** : **Kinematic:** Not applicable.
- Solubility(ies)** : 50 g/l  
soluble in water
- Partition coefficient: n-octanol/water** : Not applicable.
- Vapor pressure** : Not applicable.
- Relative vapour density** : Not applicable.
- Bulk density** : 1,110 kg/m<sup>3</sup>
- Explosive properties** : Non-explosive.

**Oxidizing properties** : Non-oxidizer.  
No oxidizing ingredients present.

#### **Particle characteristics**

**Median particle size** : 0.1 - 0.4 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** : No specific data.

**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 hazard classes as defined in Regulation (EC) No 1272/2008**

#### **Acute toxicity**

Product/ingredient name	Method	Species	Result	Exposure
manganese sulphate, monohydrate				
	LD50 Oral	Rat	2,150 mg/kg	Not applicable.
	OECD 403 LC50 Inhalation Dusts and mists	Rat	> 5 mg/l	4 h

**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)
manganese sulphate, monohydrate	2,150 mg/kg	N/A	N/A	N/A	N/A

#### **Irritation/Corrosion**

Product/ingredient name	Method	Species	Result	Exposure
manganese sulphate, monohydrate				
	Eyes	Rabbit	Severe irritant	

**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.

**Specific target organ toxicity (repeated exposure)**

Product/ingredient name	Category	Route of exposure	Target organs
manganese sulphate, monohydrate	Category 2	inhalation	brain

- Information on the likely routes of exposure** : Inhalation

**Potential acute health effects**

- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- 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** : Adverse symptoms may include the following: respiratory tract irritation, coughing
- Ingestion** : No specific data.
- 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.

**Reproductive toxicity** : No known significant effects or critical hazards.

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

**Other effects** : May cause damage to organs through prolonged or repeated exposure.  
Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

**Toxicokinetics**

**Distribution** : Not available.

**11.2. Information on other hazards**

**11.2.1 Endocrine disrupting properties** : Not available.

**11.2.2 Other information** : Not available.

## SECTION 12: Ecological information

**12.1 Toxicity**

Product/ingredient name	Method	Species	Result	Exposure
manganese sulphate, monohydrate				
	Chronic NOEC Fresh water	Fish	> 0.55 mg/l	65 d

**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**

**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 Endocrine disrupting properties** : Not available.

**12.7 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)**

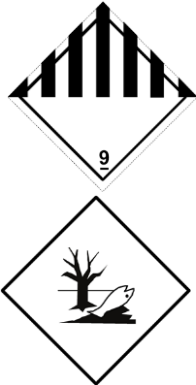
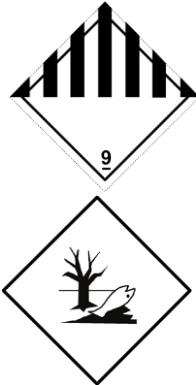
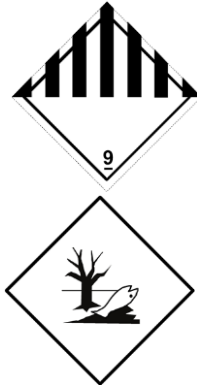
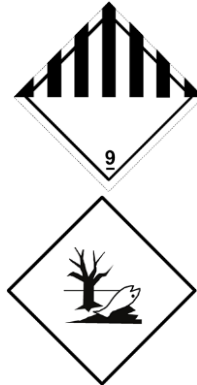
Waste code	Waste designation
06 03 13*	solid salts and solutions containing heavy metals

**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

	ADR/RID	ADN	IMDG	IATA
<b>14.1 UN number or ID number</b>	3077	3077	3077	3077
<b>14.2 UN proper shipping name</b>	ENVIRONMENTALY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (manganese sulphate, )	ENVIRONMENTALY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (manganese sulphate, )	ENVIRONMENTALY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (manganese sulphate, )	ENVIRONMENTALY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (manganese sulphate, )
<b>14.3 Transport hazard class(es)</b>	9 	9 	9 	9 
<b>14.4 Packing group</b>	III	III	III	III
<b>14.5. Environmental hazards</b>	Yes.	Yes.	Yes.	Yes.

**Additional information**

ADR/RID

: **Hazard identification number** 90  
**Tunnel code** (A) (-)

ADN

: **Danger code** N2

IMDG

: **Emergency schedules (EmS)** F-A, S-F

IATA

:

**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 Maritime transport in bulk according to IMO instruments****Proper shipping name** : FERTILIZERS WITHOUT NITRATES**Remarks** : **Solid bulk cargoes**  
Harmful to the marine environment with regard to MARPOL Annex V: Yes  
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

#### 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.** : Not applicable.

#### 1907/2006 (REACH) Annex XVII

##### - 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.

##### Persistent Organic Pollutants

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** : 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  
 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
Eye Dam. 1, H318	Calculation method
STOT RE 2, H373	Calculation method
Aquatic Chronic 2, H411	Calculation method

**Full text of abbreviated H statements**

H318	Causes serious eye damage.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

**Full text of classifications [CLP/GHS]**

Aquatic Chronic 2	AQUATIC HAZARD (LONG-TERM) - Category 2
Eye Dam. 1	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

**Revision comments** : The safety data sheet has been revised according to  
 Commission Regulation (EU) 2020/878.

Date of printing : 23.01.2023  
 Date of issue/ Date of revision : 10.01.2023  
 Date of previous issue : 22.06.2021  
 Version : 5.0  
 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** : YaraVita MANIKIN DF

**Exposure Scenario/Safe Use 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 - manganese 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, PROC08a, PROC08b, PROC09, PROC14, PROC15, PROC19, PROC28

**Environmental Release Category** : ERC02

**Market sector by type of chemical product** : PC12

**Subsequent service life relevant for that use** : No.

<b>Number of the ES</b> : 000000005093-1/2016-03-07
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### **Section 2 — Exposure controls**

#### **Contributing scenario controlling environmental exposure for:**

<b>Product characteristics</b> : Inorganic salt.
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**Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil** : No additional information.

**Contributing scenario controlling worker exposure for:**

**Product characteristics** : Inorganic salt.

**Concentration of substance in mixture or article** : Covers percentage substance in the product up to 100 %.  
aqueous preparations  
40 %

**Physical state** : Solid  
Granulate  
Powder.  
Aqueous solution

**Dust** : Solid, high dustiness

**Frequency and duration of use** : Contributing scenario : **PROC02, PROC03, PROC04, PROC05, PROC14, PROC19**  
200 - 300 days per year

Contributing scenario : **PROC08a, PROC08b, PROC09**  
360 days per year

**Conditions and measures related to personal protection and hygiene**

**Personal protection** : Use suitable eye protection and gloves.

**Section 3 — Exposure estimation and reference to its source**

**Exposure estimation and reference to its source - Environment:**

**Exposure assessment (environment):** : Qualitative approach used to conclude safe use.

**Exposure estimation and reference to its source - Workers:**

**Exposure assessment** : Used ECETOC TRA model (May 2010 release).

(human):

**Exposure estimation and reference to its source**

: See Section 8 in SDS, DNEL.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Contributing scenario	General	Conc.	Duration	Protection efficiency (%)			RCR inhal.	RCR Dermal	Remark
				LEV	Respiratory	Dermal			
PROC02	Solids, Indoor	<100%	> 4 h	90	0	80	0.18	0,19	[1]
PROC02	Solids, Outdoor	<100%	> 4 h		90	80	0.13	0,18	
PROC03	Solids, Indoor	<100%	> 4 h	90	0	80	0.18	0,05	[1]
PROC03	Solids, Outdoor	<100%	> 4 h		90	80	0.13	0,04	[1]
PROC04	Solids, Indoor	<100 %	> 4 h	90	95	90	0.23	0,47	[1]
PROC05	Solids, Indoor	<100 %	> 4 h	90	95	95	0.23	0,47	[1]
PROC08a	Solids, Indoor	<100%	> 4 h	90	95	95	0.45	0,47	[1], [2]
PROC08b	Solids, Indoor	<100%	> 4 h	95	90	90	0.23	0,47	[1]
PROC09	Solids, Indoor	<100%	> 4 h	90	95	90	0.18	0,47	[1]
PROC14	Solids, Indoor	<100%	> 4 h	90	90	80	0.18	0,47	[1]
PROC08a	Liquid, Indoor	< 40%	> 4 h			90	0.51	0,38	[1], [2]
PROC08a	Liquid, Outdoor	< 40%	> 4 h			90	0.36	0,38	[1], [2]
PROC08b	Liquid, Indoor	< 40%	> 4 h			80	0.51	0,38	[1]
PROC08b	Liquid, Outdoor	< 40%	> 4 h			80	0.36	0,38	[1]
PROC09	Liquid,	< 40%	> 4 h			80	0.036	0,38	[1]

	Outdoor								
PROC09	Liquid, Indoor	< 40%	> 4 h			80	0.05	0,38	[1]
PROC15	Liquid, Indoor	< 40%	> 4 h			90	0.51	0,38	[1], [3]
PROC28	Indoor, Outdoor , Liquid, Solids								[4]

[1] No LEV is taken into account for the dermal exposure estimate

[2] Includes cleaning

[3] Covered according to ECHA Hierarchy of exposure potentials

[4] PROC 28 is considered covered by PROC 8a

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

<b>Environment</b>	:	Refer to special instructions/safety data sheet.
<b>Health</b>	:	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., If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Abbreviations and acronyms

<b>Process Category</b>	:	<p>PROC02 - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</p> <p>PROC03 - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC04 - Chemical production where opportunity for exposure arises</p> <p>PROC05 - Mixing or blending in batch processes</p> <p>PROC08a - Transfer of substance or mixture (charging and discharging) at non-dedicated facilities</p> <p>PROC08b - Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> <p>PROC09 - Transfer of substance or mixture into small containers</p>
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(dedicated filling line, including weighing)  
 PROC14 - Tableting, compression, extrusion, pelletization, granulation  
 PROC15 - Use as laboratory reagent  
 PROC19 - Manual activities involving hand contact  
 PROC28 - Manual maintenance (cleaning and repair) of machinery

**Environmental Release Category** : ERC02 - Formulation into mixture

**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 - manganese sulphate - Fertilizer.

**Identified use name** : Professional formulation of fertiliser products.  
 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**

**Process Category** : PROC05, PROC08a, PROC08b, PROC09, PROC11, PROC15, PROC19

**Environmental Release Category** : ERC08b, ERC08d, ERC08e

**Market sector by type of chemical product** : PC12

**Sector of end use** : SU01, SU22

**Subsequent service life  
relevant for that use** : No.

**Number of the ES** : 000000005154-1/2016-03-21

## Section 2 — Exposure controls

### Contributing scenario controlling environmental exposure for:

**Product characteristics** : Inorganic salt.

**Amounts used** : European Union 3000 Tonnes/year  
Solids  
5000 Tonnes/year  
Liquid

**Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil** : No additional information.

### Contributing scenario controlling worker exposure for:

**Product characteristics** : Inorganic salt.

**Concentration of substance in mixture or article** : Covers percentage substance in the product up to 100 %.  
aqueous preparations  
40 %

**Physical state** : Solid  
Granulate  
Powder.  
Aqueous solution

**Dust** : Solid, high dustiness

**Amounts used** : liquid preparations 56 kg/day  
  
solid preparations 1 kg/day



**Frequency and duration of use** : Contributing scenario : **ESCOM, ESCOM**  
150 days per year  
< 8 hours per day

**Conditions and measures related to personal protection and hygiene**

**Personal protection** : Use suitable eye protection and gloves.

Contributing scenario: **PROC11**

Wear suitable coveralls to prevent exposure to the skin., Wear protective gloves., Wear face shield., Wear protective shoes.

**Section 3 — Exposure estimation and reference to its source**

**Exposure estimation and reference to its source - Environment:**

**Exposure assessment (environment):** : Qualitative approach used to conclude safe use.

Contributing scenario	Annual site tonnage	Release rate	Protection target	Exposure estimate (PEC)	RCR	Remark
ERC08d						[1], [2]
ERC08b, ERC08e						[2], [3]

[1] Worst case assumption Not included in Fertilizer Sector Use Map

[2] Liquid

[3] Covered according to supplier communication

**Exposure estimation and reference to its source - Workers:**

**Exposure assessment (human):** : Used ECETOC TRA model (May 2010 release).

**Exposure estimation and reference to its source** : See Section 8 in SDS, DNEL.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Contributing scenario	General	Conc.	Duration	Protection efficiency (%)			RCR inhal.	RCR Dermal	Remark
				LEV	Respiratory	Dermal			
PROC08a, PROC19	Solids, Outdoor	<100 %	8 hours per day				0.0036	0,2109	[1], [2]
PROC05, PROC08a, PROC19	Liquid, Outdoor	<40 %	8 hours per day			99 %	0.706	0,033	[1], [2]
PROC08a, PROC11	Liquid, Outdoor	<40 %	8 hours per day			99 %	0.182	0,063	[1], [3]
PROC08b, PROC09, PROC15	Solids, Outdoor	<100%	8 hours per day				0.0036	0,2109	[4]
PROC08b, PROC09, PROC15	Liquid, Outdoor	<40%	8 hours per day			99 %	0.706	0,033	[4]

[1] PSD interpretation of German model (BBA, 1992)

[2] Mixing, loading and pouring

[3] Fertilizer application Wear suitable coveralls to prevent exposure to the skin. Wear protective shoes. Wear face shield.

[4] Covered according to ECHA Hierarchy of exposure potentials

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

<b>Environment</b>	: Refer to special instructions/safety data sheet., No additional risk management measures required.
<b>Health</b>	: 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.

#### Abbreviations and acronyms

<b>Process Category</b>	: 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)
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	PROC11 - Non industrial spraying PROC15 - Use as laboratory reagent PROC19 - Manual activities involving hand contact
<b>Environmental Release Category</b>	: ERC08b - Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC08d - Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC08e - Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
<b>Market sector by type of chemical product</b>	: PC12 - Fertilizers
<b>Sector of end use</b>	: SU01 - Agriculture, forestry, fishery SU22 - Professional uses