

Polyphosphoric acid, ammonium salts

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NOTICE : Important information

Please note that this generic exposure scenario is by no means intended to be mandatory, prescriptive or exhaustive. The content of this document is intended for guidance only and whilst the information on uses covered is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk. Ultimately, it is for each company to assess the appropriateness and completeness of the information on a case-by case basis and decide what elements they wish to adopt or to add. In particular, the preparation and content of the e-SDS is the legal responsibility of each company for its own products placed on the market, and the user should verify, complete, correct or adapt this generic document appropriately.

No representations or warranties are made with regards to its completeness or accuracy, in particular regarding the list of uses that are covered, and no liability will be accepted by [the consortium members] for damages of any nature whatsoever resulting from the use of or reliance on the information.

The consortium members acknowledge that any activities carried out under REACH have to be carried out in full compliance with EU competition law, in particular but not limited to Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) as well as any applicable national laws.

Polyphosphoric acid, ammonium salts**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier:**

Substance name: Polyphosphoric acid, ammonium salts

IUPAC name: Ammonium polyphosphate

EINECS Number: 269-789-9

CAS Number: 68333-79-9

REACH Registration number: [to be filled in by company]

Other identifiers:

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

ES 1: Formulation; Formulation of fertilisers containing ammonium polyphosphate; Fertilisers ; PC 12

ES 2: Use by professional worker; Professional use as a fertiliser; Fertilisers ; PC 12; SU 1

ES 3: Consumer Use; Indoor consumer use as fertilisers ; Fertilisers

ES 4: Formulation; Formulation of flame retardants containing ammonium polyphosphate ; Flame Retardants ; PC 0

ES 5: Use at industrial site; Industrial use as flame retardant agents; Flame Retardants ; PC 0; SU 6a; SU 6b; SU 18; SU 19; SU 0

ES 6: Use by professional worker; Professional use as flame retardant agents; Flame Retardants ; PC 0; SU 6a; SU 6b; SU 18; SU 19; SU 0

ES 7: Use by professional worker; Professional use as a forest fire fighting agent; Flame Retardants ; PC 0; SU 0

[company to insert any relevant uses advised against]

1.3 Details of the supplier of the safety data sheet:

[Insert relevant details including contact name, address, phone number, email here]

1.4 Emergency telephone number:

[Insert suitable emergency number and hours of operation]

Polyphosphoric acid, ammonium salts

SECTION 2. Hazards identification**2.1 Classification of the substance**

This material is a substance.

2.1.1 According to Regulation (EC) No. 1272/2008 (EU CLP):

Acute toxicity 4, H302: Harmful if swallowed

Skin corrosion 2, H319: Causes serious eye irritation

2.2 Label elements**2.2.1 According to Regulation (EC) No. 1272/2008 (EU CLP):**

Name: Polyphosphoric acid, ammonium salt

Index Number: N/A

CAS Number: 68333-79-9



Signal word: Warning

Hazard Statements:

H302: Harmful if swallowed

H319: Causes serious eye irritation

Precautionary Statements:

NOTE: ONLY 6 P-STATEMENTS TO BE INCLUDED IN SDS AND ON LABELS – DELETE AS APPROPRIATE.

P264 Wash hands thoroughly after handling

P270 Do not eat, drink or smoke when using this product

P280 Wear eye and face protection

P305 + P351 + P338 Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing

P337 If eye irritation persists: Get medical advice/attention

P501 Dispose of contents/container in accordance with local/regional/national/international regulations

NOTE: Information in Section 2.2 MUST be consistent with the information provided on the supplier's labels.

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2.3 Other hazards

The material is not considered to be PBT or vPvB.

SECTION 3. Composition / information on ingredients

3.1 Substance:

Name	EC Number	CAS Number	Typical concentration	Concentration Range
Polyphosphoric acids, ammonium salts	68333-79-9	269-789-9	[to be provided by company]	[to be provided by company]

Registration Number (if available): [specific to each registrant – insert number here]

EC name: Polyphosphoric acid, ammonium salt

Identification of hazardous impurities (where applicable):

Information on impurities is company specific therefore suppliers to update where necessary and in line with the data that is provided in their joint registration dossier Section 1.2.

SECTION 4. First aid measures

4.1 Description of first aid measures

General notes

Obtain medical advice. Show this safety data sheet to the doctor in attendance. Move the exposed person to fresh air at once. Treat symptomatically.

Inhalation

Move to fresh air. If not breathing provide artificial respiration. Obtain medical assistance.

Ingestion

Never give anything by mouth to an unconscious person. Rinse mouth with water. Do not induce vomiting. Obtain immediate medical assistance.

Skin Contact

Remove affected person from source of contamination. Wash the skin immediately with soap and water. Get medical attention if any discomfort continues.

Eye Contact

Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If irritation persists, get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed

Polyphosphoric acid, ammonium salt is irritating to the eyes.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5. Fire fighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide or extinguishing media.

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Unsuitable extinguishing media: None identified

Inappropriate extinguishing media:

None identified.

5.2 Special hazards arising from the substance or mixture

When heated to decomposition, may emit toxic fumes.

5.3 Advice for fire-fighters

Not flammable. Wear self-contained breathing apparatus and full protective clothing.
See Section 8.2.

SECTION 6. Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Do not breathe dust, vapours or mist.
Evacuate personnel from area of spillage.
Do not undertake actions that will create airborne dust.
Wear impervious safety shoes or rubber boots. Use rubber gloves.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Stop or confine leakage. Transfer the material to appropriate tanks or containers. Solution can be reused, recycled or disposed. Wash thoroughly after handling.

6.4 Reference to other sections

Refer to Section 8 for suitable PPE.
Refer to Section 13 for disposal considerations.

SECTION 7. Handling and storage**7.1 Precautions for safe handling**

Technical measures: sufficient ventilation and local suction is required in accordance with the details in the annex to the SDS.

Avoid generation of dust.

Avoid contact with skin, eyes and clothing.

Prevent inhalation or ingestion of dust. Provide good ventilation / extraction at the point of use or wherever dust is formed.

Maintain a high standard of industrial hygiene: do not eat, drink or smoke in the workplace. Wash hands after use. Remove contaminated clothing before entering eating areas.

Ensure good hygiene in the workplace; do not eat, smoke or drink when handling concentrated phosphoric acid. Do not breathe dust. Avoid contact with skin, clothing and eyes. Wash hands and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.

7.2 Conditions for safe storage, including any incompatibilities

Store away from highly flammable substance and in a dry place.

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7.3 Specific end use(s)

See annex for details of end uses covered in the exposure scenarios and CSR. The exposure scenarios detailed in the annex represent a worst case for exposure to humans and the environment.

SECTION 8. Exposure controls / personal protection

8.1 Control parameters

Workplace exposure limits: Not applicable

[please check occupational limits for the country you supply to and insert limit here if available]

DNELs (worker):

Exposure route	Exposure pattern	DNEL (workers)
Inhalation	Acute systemic effects	Not applicable
	Long term systemic	18.06 mg/m ³

DNELs (general population):

Exposure route	Exposure pattern	DNEL (general population)
Inhalation	Acute systemic effects	Not applicable
	Long term systemic	4.45 mg/m ³
Oral	Acute systemic effects	Not applicable
	Long term systemic	1.28 mg/kg bw/d

PNECs:

No hazard identified.

8.2 Exposure controls

Engineering measures

Provide adequate ventilation.

Personal protective equipment

Respiratory Protection:

No protection equipment under normal conditions of use. In case of ammonia emissions, use a facial mask with complete K2 filtrating cartridge.

Hand protection:

Wear suitable gloves. Wash hands thoroughly after handling.

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Eye protection:	Wear tightly sealed safety goggles that are compliant with EN 166.
Skin and body protection:	Wash hands thoroughly after handling.
Hygiene measures:	General industrial hygiene practice. Wash at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product

Environmental controls: Refer to Sections 6, 7, 12 and 13 of the SDS.

SECTION 9. Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Appearance:	Solid, powder
Colour:	White
Odour:	No data available
Odour threshold:	No data available
pH:	5.5 – 7.0
Melting point:	ca. 141 – 225 °C (Data taken from ECHA registration dossier.)
Boiling point:	Not applicable – substance decomposes before boiling.
Flash point:	Not applicable – inorganic substance
Evaporation rate:	No data available
Flammability	Substance is not considered to be flammable.
Upper/lower flammability or explosive limits:	No data available
Vapour pressure:	7.62×10^{-2} Pa (Data taken from ECHA registration dossier, read across to diammonium hydrogenorthophosphate)
Vapour density:	No data available
Relative density:	1.74 at 20 °C (Data taken from ECHA registration dossier)
Solubility:	Very soluble, > 10,000 mg/L (Data taken from ECHA registration dossier)
Partition coefficient n-octanol/water:	Not applicable – inorganic substance
Auto-ignition temperature:	Not applicable – substance is not considered to self-ignite
Decomposition temperature:	No data available
Viscosity:	Not applicable – solid substance
Explosive properties:	Substance is not considered to have explosive properties
Oxidising properties:	Substance is not considered to have oxidising properties

9.2 Other information

Testing has been performed on polyphosphoric acid, ammonium salt, in accordance with Annex X of REACH.

SECTION 10. Stability and reactivity**10.1 Reactivity**

Non-reactive under recommended storage and handling conditions (see Section 7)

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10.2 Chemical stability

Thermally stable under recommended storage and handling conditions.

10.3 Possibility of hazardous reactions

No hazardous reactions expected under recommended storage conditions

10.4 Conditions to avoid

None specified.

10.5 Incompatible materials

None specified.

10.6 Hazardous decomposition products

Toxic vapours. (NO, NO₂).

SECTION 11. Toxicological information**11.1 Information on toxicological effects****(a) Acute toxicity**

LD50 Oral:

LD50

Dose: 300-2000 mg/kg bw

According to OECD Guideline 401 (Acute Oral Toxicity), Reliability 1

Remark: Category 4

LC50 Inhalation:

LC50

Dose: > 4.85 mg/L

According to OECD Guideline 436 (Acute Toxic Class Method), Reliability 1

Remark: Not classified

LD50 Dermal:

No data available - testing of dermal route not required

(b) Skin corrosion/irritation

Not classified. According to OECD Guideline 431 (In Vitro Skin Corrosion: Human Skin Model Test). Reliability 1.

Data taken from ECHA registration dossier.

(c) Eye irritation

Not classified. According to OECD Guideline 405 (Acute Eye Irritation/Corrosion). Reliability 1. Data taken from ECHA registration dossier.

(d) Respiratory or skin sensitisation

Not classified. Weight of evidence approach consisting of 3 OECD 429 studies. Data taken from ECHA registration dossier.

(e) Germ cell mutagenicity

Not classified. Based on read across approach. Data taken from ECHA registration dossier

(f) Carcinogenicity

Not considered to be a carcinogen.

(g) Reproductive toxicity

Not classified. Based on read across approach. Data taken from ECHA registration dossier.

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- (h) Specific target organ toxicity – Single exposure No data available
- (i) Specific target organ toxicity – Repeated exposure Not classified. Based on read across approach. Data taken from ECHA registration dossier.
- (j) Aspiration hazard Not considered to be an aspiration hazard.
- (k) Likely routes of exposure
Inhalation
Ingestion
Skin
Eyes
- (l) Signs and symptoms of exposure
Not data available
- (m) Additional information
No data available

The substance has been assessed with regards to the data requirements of Annex X of REACH.

SECTION 12. Ecological information

12.1 Toxicity

Acute (short-term) toxicity:

Toxicity to fish:	OECD 203, 96h LC50 >100 mg/L. Based on read across to diammonium hydrogenorthophosphate. Data taken from ECHA registration dossier.
Toxicity to aquatic invertebrates	OECD 202, 48h EC50 > 100 mg/L. Based on read across to diammonium hydrogenorthophosphate. Data taken from ECHA registration dossier.
Toxicity to aquatic algae	NOEC Species: Pseudokirchnerella subcapitata (reported as Selenastrum capricornutum) Dose: 97.1 mg/L Exposure time: 72h Remark: not classified. Based on read across to diammonium hydrogenorthophosphate. Data taken from ECHA registration dossier.
Toxicity to microorganisms	OECD 209, 3h EC50 > 100 mg/L. Based on read across to diammonium hydrogenorthophosphate. Data taken from ECHA registration dossier.

Chronic (long-term) toxicity:

Toxicity to fish:	No data available
Toxicity to aquatic invertebrates	No data available
Toxicity to aquatic algae	No data available
Toxicity to microorganisms	OECD 209, 3h EC50 > 100 mg/L. Based on read across to diammonium hydrogenorthophosphate. Data taken from ECHA registration dossier.

The substance has been assessed with regards to the data requirements of Annex X of REACH

Polyphosphoric acid, ammonium salts**12.2 Persistence and degradability**

Polyphosphoric acid, ammonium salt is an inorganic substance, biodegradation studies are not applicable. No further testing is deemed to be necessary.

12.3 Bioaccumulative potential

Not relevant for inorganics.

12.4 Mobility in soil

Not data available, the methods available are not relevant for inorganics.

12.5 Results of PBT and vPvB assessment

According to the Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.11: PBT Assessment, the PBT and vPvB criteria of Annex XIII to the regulation do not apply to inorganic substances. Therefore, polyphosphoric acid, ammonium salt is not considered to require any further assessment of PBT properties.

12.6 Other adverse effects

No sediment or terrestrial toxicity data exists. Substance is not considered to be hazardous to sediment dwelling or terrestrial organisms. According to the criteria of the European classification and labelling system, the substance does not require classification as hazardous for the environment.

SECTION 13. Disposal considerations**13.1 Waste treatment methods**

Disposal recommendations are made based on the material as supplied. Disposal must be in accordance with current applicable laws and regulations.

Product

Non-hazardous waste according to European Directive 91/689/EEC. Place in an appropriate disposal facility in compliance with local and national regulations.

Packaging

Containers that cannot be cleaned must be treated as waste and disposed of in an approved industrial incineration facility. The empty and clean containers may be reused in conformity with regulations.

European waste codes: Waste producers need to assess the process used when generating the waste and its contaminants in order to assign the most appropriate waste disposal code(s).

Recommended code: European waste catalogue 16 03 03 inorganic wastes containing dangerous substances

SECTION 14. Transport information

Transport classifications (ADR/RID/IMDG/IATA) are not defined in the REACH Registration Dossier for the substance. The information provided here is therefore not derived from this Dossier and is based on other information available to the Consortium Members. The Transport classifications (ADR/RID/IMDG/IATA) provided here are indicative and based on the data in the REACH dossier for the pure substance only and may not be applicable for solutions or other preparations. Please seek advice from your Dangerous Good Safety Advisor.

14.1. UN number: n/a

	ADR/RID	ADN	IMDG	IATA:
14.2. UN proper shipping name	Not classified as a dangerous good for transport			

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14.3. Transport hazard class(s)	n/a	n/a	n/a	n/a
14.4. Packing group	n/a	n/a	n/a	n/a
14.5. Environmental hazards	n/a	n/a	Marine pollutant: No	n/a

14.6. Special precautions for user

None identified

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code

No information available

SECTION 15. Regulatory information

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

[COMPANY TO INCLUDE ANY INFORMATION RELEVANT TO THE COUNTRY OF PRODUCT AND/OR SUPPLY]

This safety data sheet is compliant with Regulation (EC) No 1907/2006 (REACH) (including the amendment, Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP).

15.2 Chemical Safety Assessment.

A Chemical Safety Assessment is available for polyphosphoric acid, ammonium salt.

SECTION 16. Other information

This SDS supersedes the SDS dated [TO BE COMPLETED BY COMPANY SUPPLYING SDS]

The following amendments have been made:

- SDS has been fully revised and re-written in accordance with Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP).
- Any further amendments to be detailed by supplier of SDS

Sources of Key data used:


- Registration dossier submitted to ECHA in accordance with Regulation (EC) No. 1907/2006 and therefore a full reference list can be found in the corresponding CSR.

Abbreviations and acronyms used:

ACGIH = American Conference of Industrial Hygienists
 AF = Assessment factor
 DNEL = Derived no effect level
 EC50 = Median effect concentration
 LC50 = Median lethal concentration
 LD50 = Median lethal dose
 LEV = Local Exhaust Ventilation
 NOAEL = No observed adverse effect level

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NOEC = No observed effect concentration
PBT = Persistent bioaccumulative toxic
PEC = Predicted effect level
PNEC = Predicted no effect level
PRE = Personal Respiratory Equipment
OEL = Occupational Exposure Limit
SCOEL = Scientific Community on Occupational Exposure Limits
SDS = Safety data sheet
STOT-SE = Specific target organ toxicity – single exposure
STOT-RE = Specific target organ toxicity – repeated exposure
STP = Sewage treatment plant
TWA = Time-weighted average
vPvB = Very persistent very bioaccumulative



Annex:

ES FOR COMMUNICATION

Substance Name:Ammonium polyphosphate

EC Number:269-789-9

CAS Number:68333-79-9

Registration Number:

Date of Generation/Revision: 03/08/2016

Author: Regulatory Facilitation Company Limited



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1. ES 1: Formulation or re-packing; Fertilizers (PC 12);

1.1. Title section

ES name: Formulation of fertilisers containing ammonium polyphosphate

Product category: Fertilizers (PC 12)

Environment	
CS 1: Formulation of fertilisers containing ammonium polyphosphate	ERC 2
Worker	
CS 2: Use in closed batch process (synthesis or formulation)	PROC 3
CS 3: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 6: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation of fertilisers containing ammonium polyphosphate (ERC 2)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 10.0 tonnes/day
Annual amount per site <= 1000 tonnes/year
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Assumed domestic sewage treatment plant flow >= 2000 m3/d
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Receiving surface water flow >= 18000 m3/d

1.2.2. Control of worker exposure: Use in closed batch process

**(synthesis or formulation) (PROC 3)**

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

1.2.3. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

1.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (Article) characteristics
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Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

1.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

1.2.6. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures



Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation of fertilisers containing ammonium polyphosphate (ERC 2)

Release route	Release rate	Release estimation method
Water	200 kg/day	ERC based
Air	250 kg/day	ERC based
Soil	1 kg/day	ERC based

1.3.2. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

1.3.3. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

1.3.4. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR



Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

1.3.5. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

1.3.6. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



2. ES 2: Widespread use by professional workers; Fertilizers (PC 12); Agriculture, forestry, fishery (SU 1);

2.1. Title section

ES name: Professional use as a fertiliser

Product category: Fertilizers (PC 12)

Sector of use: Agriculture, forestry, fishery (SU 1)

Environment	
CS 1: Professional use as a fertiliser	ERC 8e, ERC 8b
Worker	
CS 2: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
CS 6: Non industrial spraying	PROC 11
CS 7: Hand-mixing with intimate contact and only PPE available.	PROC 19

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Professional use as a fertiliser (ERC 8e, ERC 8b)

Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

2.2.2. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Product (Article) characteristics



Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

2.2.3. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

2.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure



Indoor use
Assumes process temperature up to 40.0 °C

2.2.5. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

2.2.6. Control of worker exposure: Non industrial spraying (PROC 11)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour) .
Other conditions affecting workers exposure
Ensure operation is undertaken outdoors.
Assumes process temperature up to 40.0 °C

2.2.7. Control of worker exposure: Hand-mixing with intimate contact and only PPE available. (PROC 19)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures



Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Professional use as a fertiliser (ERC 8e)

Release route	Release rate	Release estimation method
Water	5.5E-3 kg/day	ERC based
Air	- kg/day	ERC based
Soil	- kg/day	ERC based

2.3.2. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.1 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

2.3.3. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

2.3.4. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01



Route of exposure and type of effects	Exposure estimate	RCR
Combined, systemic, long term		< 0.01

2.3.5. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

2.3.6. Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	3.758 mg/m ³ (External Tool: <i>UK POEM v07</i>)	0.208
Combined, systemic, long term		0.208

2.3.7. Worker exposure: Hand-mixing with intimate contact and only PPE available. (PROC 19)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



3. ES 3: Consumer use; Fertilizers;

3.1. Title section

ES name: Indoor consumer use as fertilisers

Product category: Fertilizers (PC 12)

Environment	
CS 1: Consumer use as fertilisers	ERC 8e, ERC 8b
Consumer	
CS 2: Fertilisers	PC 12

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Consumer use as fertilisers (ERC 8e, ERC 8b)

Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Municipal sewage treatment plant is assumed.

3.2.2. Control of consumer exposure: Fertilisers (PC 12)

Product (article) characteristics
Limit the substance content in the product to 60.0 %
Oral exposure is considered to be not relevant.
Amount used (or contained in articles), frequency and duration of use/exposure
For each use event, assumes swallowed amount of = 1000 g/event
<i>Covers use less than twice a year</i>
Covers use up to 1.0 events/day
Information and behavioral advice for consumers
Outdoor use

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Consumer use as fertilisers (ERC 8e)



Release route	Release rate	Release estimation method
Water	0.011 kg/day	ERC based
Air	- kg/day	ERC based
Soil	- kg/day	ERC based

3.3.2. Consumer exposure: Fertilisers (PC 12)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.636 mg/m ³ (External Tool: <i>ECETOC TRA Consumer Tool V3.1</i>)	0.143
Oral, systemic, long term	0 mg/kg bw/day (External Tool: <i>ECETOC TRA Consumer Tool V3.1</i>)	< 0.01
Combined, systemic, long term		0.143

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



4. ES 4: Formulation or re-packing; Other (PC 0);

4.1. Title section

ES name: Formulation of flame retardants containing ammonium polyphosphate

Product category: Other (PC 0)

Environment	
CS 1: Dilution of ammonium polyphosphates solution with water	ERC 2
Worker	
CS 2: Use in closed batch process (synthesis or formulation)	PROC 3
CS 3: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 6: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Dilution of ammonium polyphosphates solution with water (ERC 2)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 10.0 tonnes/day
Annual amount per site <= 1000 tonnes/year
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Assumed domestic sewage treatment plant flow >= 2000 m3/d
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Receiving surface water flow >= 18000 m3/d

4.2.2. Control of worker exposure: Use in closed batch process

**(synthesis or formulation) (PROC 3)**

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

4.2.3. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

4.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (Article) characteristics
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Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

4.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

4.2.6. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.



Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Dilution of ammonium polyphosphates solution with water (ERC 2)

Release route	Release rate	Release estimation method
Water	200 kg/day	ERC based
Air	250 kg/day	ERC based
Soil	1 kg/day	ERC based

4.3.2. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

4.3.3. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

4.3.4. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01



4.3.5. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

4.3.6. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



5. ES 5: Use at industrial sites; Other (PC 0); Various sectors (SU 18, SU 0, SU 19, SU 6a, SU 6b);

5.1. Title section

ES name: Industrial use as flame retardant agents

Product category: Other (PC 0)

Sector of use: Manufacture of furniture (SU 18), Other (SU 0), Building and construction work (SU 19), Manufacture of wood and wood products (SU 6a), Manufacture of pulp, paper and paper products (SU 6b)

Environment	
CS 1: Industrial use as flame retardant agents	ERC 4
Worker	
CS 2: Use in closed batch process (synthesis or formulation)	PROC 3
CS 3: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 4: Industrial spraying	PROC 7
CS 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Industrial use as flame retardant agents (ERC 4)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 10.0 tonnes/day
Annual amount per site <= 1000 tonnes/year
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Assumed domestic sewage treatment plant flow >= 2000 m3/d
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Receiving surface water flow >= 18000 m3/d



5.2.2. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

5.2.3. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

5.2.4. Control of worker exposure: Industrial spraying (PROC 7)

Product (Article) characteristics
Covers concentrations up to 100.0 %



Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
<i>Local exhaust ventilation. Inhalation - minimum efficiency of 0.0 %</i>
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

5.2.5. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.; Ensure control measures are regularly inspected and maintained.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Industrial use as flame retardant agents (ERC 4)

Release route	Release rate	Release estimation method
Water	1E4 kg/day	ERC based
Air	1E4 kg/day	ERC based
Soil	500 kg/day	ERC based



5.3.2. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

5.3.3. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

5.3.4. Worker exposure: Industrial spraying (PROC 7)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

5.3.5. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



6. ES 6: Widespread use by professional workers; Other (PC 0); Various sectors (SU 18, SU 0, SU 19, SU 6a, SU 6b);

6.1. Title section

ES name: Professional use as flame retardant agents

Product category: Other (PC 0)

Sector of use: Manufacture of furniture (SU 18), Other (SU 0), Building and construction work (SU 19), Manufacture of wood and wood products (SU 6a), Manufacture of pulp, paper and paper products (SU 6b)

Environment	
CS 1: Professional use as flame retardant agents	ERC 8c
Worker	
CS 2: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
CS 5: Non industrial spraying	PROC 11

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Professional use as flame retardant agents (ERC 8c)

Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

6.2.2. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)



Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

6.2.3. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

6.2.4. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure



Indoor use
Assumes process temperature up to 40.0 °C

6.2.5. Control of worker exposure: Non industrial spraying (PROC 11)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a respirator providing a minimum efficiency of 90.0 %; For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Professional use as flame retardant agents (ERC 8c)

Release route	Release rate	Release estimation method
Water	5.5E-3 kg/day	ERC based
Air	- kg/day	ERC based
Soil	- kg/day	ERC based

6.3.2. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.1 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

6.3.3. Worker exposure: Transfer of substance or preparation



(charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

6.3.4. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

6.3.5. Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Polyphosphoric acid, ammonium salts

7. ES 7: Widespread use by professional workers; Other (PC 0); Other (SU 0);

7.1. Title section

ES name: Professional use as a forest fire fighting agent

Product category: Other (PC 0)

Sector of use: Other (SU 0)

Environment	
CS 1: Professional use as a forest fire fighting agent	ERC 8e
Worker	
CS 2: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
CS 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
CS 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
CS 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
CS 6: Non industrial spraying	PROC 11
CS 7: Hand-mixing with intimate contact and only PPE available.	PROC 19

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Professional use as a forest fire fighting agent (ERC 8e)

Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

7.2.2. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Product (Article) characteristics

Polyphosphoric acid, ammonium salts

Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

7.2.3. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

7.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure

Polyphosphoric acid, ammonium salts

Indoor use
Assumes process temperature up to 40.0 °C

7.2.5. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

7.2.6. Control of worker exposure: Non industrial spraying (PROC 11)

Product (Article) characteristics
Covers concentrations up to 100.0 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a respirator providing a minimum efficiency of 90.0 %; For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Ensure operation is undertaken outdoors.
Assumes process temperature up to 40.0 °C

7.2.7. Control of worker exposure: Hand-mixing with intimate contact and only PPE available. (PROC 19)

Product (Article) characteristics
Covers concentrations up to 100.0 %

Polyphosphoric acid, ammonium salts

Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8.0 hours/day
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) .
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40.0 °C

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Professional use as a forest fire fighting agent (ERC 8e)

Release route	Release rate	Release estimation method
Water	0.011 kg/day	ERC based
Air	- kg/day	ERC based
Soil	- kg/day	ERC based

7.3.2. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.1 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.3.3. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.3.4. Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Polyphosphoric acid, ammonium salts

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.3.5. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.3.6. Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.3.7. Worker exposure: Hand-mixing with intimate contact and only PPE available. (PROC 19)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.05 mg/m ³ (External Tool: <i>MEASE</i>)	< 0.01
Combined, systemic, long term		< 0.01

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES