

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

NPK-Fertilizer, NP-Fertilizer

Version 4.0

Revision Date 15.12.2014

Print Date 15.12.2014

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : COMPLEX (12/12/17 +2MgO+12SO₃; 12/12/17 +2MgO+15SO₃; 14/10/20 +10SO₃; 15/15/15; 15/15/15 +7SO₃; 15/5/18 +2,5MgO+25SO₃; 20/20 +7SO₃;; 20/8/8 +3MgO+10SO₃; 26/10 +10SO₃), .
., VARIO (6/12/26 +16SO₃; 6/21/21; 7/8/14 +19SO₃; 10/20/20 +10SO₃; 13/7/22 +11SO₃; 14/10/18 +12SO₃; 14/16/10 +17SO₃; 14/7/20 +10SO₃;; 15/14/14 +16SO₃; 15/22 +20SO₃; 16/10/18 +13SO₃; 18/11/11 +5SO₃; 18/17 +15SO₃; 20/7/7; 20/7/7 +17SO₃; 20/8/8 +10SO₃; 21/6/6 +12SO₃;; 21/7/7; 22/15 +15SO₃; 22/5/5; 22/5/5 +12SO₃; 23 N +25SO₃; 23/18; 24 N +27SO₃; 25 N +20SO₃; 26/16 +15SO₃; 36 N +23SO₃)

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

Use of the Substance/Mixture : Fertilizers

1.3 Details of the supplier of the safety data sheet

Supplier :
: Borealis L.A.T GmbH
St.-Peter-Strasse 25, 4021 Linz, Austria
Telephone: +43 732 6915-0

E-mail address : sds@borealisgroup.com

1.4 Emergency telephone number

||+44 (0) 1235 239 670 (24h)

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

|| Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Classification (67/548/EEC, 1999/45/EC)

The product is not classified as dangerous according to Directive 1999/45/EC.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

|| Not a hazardous substance or mixture.

Additional Labelling:

|| EUH210 Safety data sheet available on request.

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2.3 Other hazards

None known.

PBT and vPvB assessment:
Not applicable
(inorganic)

3. Composition/information on ingredients

Multi-nutrient fertilizer containing ammonium nitrate with trace-nutrients of B, Cu, Mg, S and Zn in variation of the composition depending on formulation.
These products comply with European regulation 2003/2003 "EC FERTILISER"

3.2 Mixtures

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
ammonium nitrate	6484-52-2 229-347-8 01- 2119490981- 27	O; R 8 Xi; R36	Ox. Sol. 3; H272 Eye Irrit. 2; H319	<= 70
Superphosphates	8011-76-5 232-379-5 01- 2119488967- 11	Xi; R41	Eye Dam. 1; H318	< 20
ammonium chloride	12125-02-9 235-186-4 01- 2119489385- 24	Xn; R22 Xi; R36	Acute Tox. 4; H302 Eye Irrit. 2; H319	< 3
calcium bis(dihydrogenorthopho sphate)	7758-23-8 231-837-1 01- 2119490065- 39	Xi; R41	Eye Dam. 1; H318	< 3
Substances with a workplace exposure limit :				
calcium fluoride	7789-75-5 232-188-7 01-			< 10

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	2119491248-30			
Remarks	: REACH Registration Numbers: www.borealisgroup.com , Company - REACH - Registered substances Mixtures containing less than 80% ammonium nitrate are not classified as irritating to eyes (OECD 405 and OECD 437 studies lead on similar mixtures). Mixtures containing SSP neutralized by ammonia or MgO are not classified as damaging/irritating to eyes (OECD 405 and OECD 437 studies lead on similar mixtures)			

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. First aid measures

4.1 Description of first aid measures

- If inhaled : Move to fresh air in case of accidental inhalation of dust.
Keep patient warm and at rest.
Give oxygen or artificial respiration if needed.
Seek medical advice.
- In case of skin contact : Wash off with plenty of water.
Get medical attention if irritation develops and persists.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention if irritation develops and persists.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Do NOT induce vomiting.
Get medical advice/ attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : Ingestion may provoke the following symptoms:
Gastrointestinal disturbance
The absorption of this product into the body may lead to the formation of methaemoglobine that, in sufficient concentration, causes cyanosis.

Effects of repeated or prolonged skin contacts may include:
Discomfort

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Keep under medical supervision for at least 48 hours.

Treat symptomatically.

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There is no specific antidote available.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water

Unsuitable extinguishing media : Dry chemical
Foam
Do not smother with steam or sand.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
See chapter 10.

: Hazardous decomposition products formed under fire conditions.
Nitrogen oxides (NOx)
Ammonia
Chlorine
Hydrogen chloride

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Complete suit protecting against chemicals

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.
Contact the proper local authorities.

: Ensure doors and windows are opened.
Avoid inhalation of decomposition fumes.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Sweep up to prevent slipping hazard.
Avoid dust formation.
Use personal protective equipment.

6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.
Inform the responsible authorities in case of entry into waterways or drains.

6.3 Methods and materials for containment and cleaning up

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Methods for cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.
Do not mix with sawdust, combustible or organic material.
Keep the container open.
After cleaning, flush away traces with water.

6.4 Reference to other sections

For personal protection see section 8.
For disposal considerations see section 13.

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid dust formation.
Ensure adequate ventilation.
Keep away from incompatible materials.
Use only clean equipment.

: Wash hands after handling.
Keep away from food, drink and animal feedingstuffs.
When using do not eat, drink or smoke.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Keep away from combustible material.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in a dry, cool and well-ventilated place.
Restrict stack size (according to local regulations) and keep at least 1m distance around the stacks of bagged products.
Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

: Suitable materials for containers:
Plastics
Stainless steel
Aluminium

: Unsuitable materials for containers:
Copper
Zinc

Further information on storage conditions : Protect from sunlight. Do not expose to temperatures exceeding 32 °C.
Avoid unprotected outdoor storage.
Protect from moisture.

Advice on common storage : Do not store near combustible materials.
Keep away from incompatible materials.
See chapter 10.

: On farm, ensure that the fertilizer is not stored near hay, straw, grain, diesel oil, etc.

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When stored loose, take particular care to avoid mixing with other fertilizers.

7.3 Specific end use(s)

Remarks : Consult the technical guidelines for the use of this substance/mixture.

8. Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
calcium fluoride	7789-75-5	TWA	2,5 mg/m ³	2009-12-19	2000/39/EC
Further information	:	Indicative Fluorine			

DNEL

ammonium nitrate

: End Use: Workers
Exposure routes: Skin contact
Potential health effects: Long-term, Systemic
Value: 21,3 mg/kg

End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term, Systemic
Value: 37,6 mg/m³

End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Long-term, Systemic
Value: 12,8 mg/kg

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term, Systemic
Value: 11,1 mg/m³

End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Long-term, Systemic
Value: 12,8 mg/kg

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ammonium nitrate	: Fresh water Value: 0,45 mg/l
	Marine water Value: 0,045 mg/l
	Intermittent use/release Value: 4,5 mg/l
	Sewage treatment plant Value: 18 mg/l

8.2 Exposure controls

Engineering measures

Avoid dust formation.
Provide adequate ventilation.
Before working with fire and hot materials on containers and apparatus remains of products must be deleted through efficient cleaning with water.

Personal protective equipment

Respiratory protection	: Dust safety masks are recommended when the dust concentration is more than 10 mg/m ³ . : Respiratory protection complying with EN 143 / EN 149. P1 filter
Hand protection	: For prolonged or repeated contact use protective gloves. Rubber or plastic gloves Leather gloves : The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Eye protection	: Safety glasses
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing. When using do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

Environmental exposure controls

General advice	: Do not flush into surface water or sanitary sewer system. Inform the responsible authorities in case of entry into waterways or drains.
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9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: solid
Colour	: Varies depending on the formulation: : colourless, yellowish-white
Odour	: odourless
Odour Threshold	: Not applicable
pH	: 4,5 - 8
Melting range	: 120 - 180 °C
Boiling point	: Decomposes below the boiling point.
Flash point	: Not applicable, (inorganic)
Flammability (solid, gas)	: The product is not flammable.
Lower explosion limit	: Not applicable
Upper explosion limit	: Not applicable
Vapour pressure	: Not applicable
Density	: 900 - 1.100 kg/m ³
Water solubility	: partly soluble 1.870 g/l, 20 °C, (Ammonium nitrate)
Partition coefficient: n-octanol/water	: Not applicable, (inorganic)
Auto-ignition temperature	: does not ignite
Thermal decomposition	: 130 - 210 °C
Viscosity, dynamic	: Not applicable, (solid)
Explosive properties	: Not explosive, Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
Oxidizing properties	: The substance or mixture is not classified as oxidizing.

9.2 Other information

Bulk density	: 900 - 1.100 kg/m ³
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10. Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions. Repeated heating and cooling above and below 32°C the product becomes porous through the change of crystalline structure, coupled with

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increased dust building and increased volume of prills. This can lead to a breaking of bags and to product withdrawal.

10.3 Possibility of hazardous reactions

Hazardous reactions : Contact with strong bases liberates ammonia.
Contact with strong acids liberates nitrous gases.
Decomposes on heating.

10.4 Conditions to avoid

Conditions to avoid : Temperature > 130 °C
Risk of explosion if heated under confinement.
Keep away from incompatible materials.
Exposure to air or moisture over prolonged periods.

10.5 Incompatible materials

Materials to avoid : Combustible material
Reducing agents
Strong acids and strong bases
Alkalis
sulphur
Chlorates
Chromates
Nitrites
permanganates
Powdered metals
Copper
Nickel
Cobalt
Zinc

10.6 Hazardous decomposition products

Hazardous decomposition products : Nitrogen oxides (NOx)
Ammonia
Chlorine
Hydrogen chloride

11. Toxicological information

11.1 Information on toxicological effects

Product

Skin corrosion/irritation : No skin irritation, Effects of repeated or prolonged skin contacts may include:, Discomfort

Serious eye damage/eye irritation : Result: No eye irritation, OECD Test Guideline 405 & 437, Information given is based on tests on mixtures with similar compositions.

Respiratory or skin sensitisation : Result: Does not cause skin sensitisation., OECD Test Guideline 429, Test substance: several

Components

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ammonium nitrate :

- Acute oral toxicity : LD50: 2.950 mg/kg, Rat, OECD Test Guideline 401
- Acute inhalation toxicity : LC50: > 88,8 mg/l, No information available.
- Acute dermal toxicity : LD50: > 5.000 mg/kg, OECD Test Guideline 402
- Skin corrosion/irritation : Rabbit, Result: No skin irritation, OECD Test Guideline 404
- Serious eye damage/eye irritation : Rabbit, Result: Irritating to eyes., OECD Test Guideline 405
- Respiratory or skin sensitisation : Mouse, Result: Does not cause skin sensitisation., OECD Test Guideline 429, Test substance: Calcium ammonium nitrate, Read-across (Analogy)
- Germ cell mutagenicity
- Genotoxicity in vitro : Ames test, Result: negative, OECD Test Guideline 471, Test substance: Ammonium calcium nitrate
- : Chromosome aberration test in vitro, Result: negative, OECD Test Guideline 473, Test substance: Ammonium calcium nitrate
- : In vitro gene mutation study in mammalian cells, Result: negative, OECD Test Guideline 476, Test substance: Potassium nitrate
- : Based on available data, the classification criteria are not met.
- Genotoxicity in vivo : Based on available data, the classification criteria are not met.
- Carcinogenicity : OECD Test Guideline 453, Test substance: Ammonium sulphate, Not classified based on available information.
- Reproductive toxicity : Rat, NOAEL: > 1.500 mg/kg, OECD Test Guideline 422, Test substance: Potassium nitrate
- Based on available data, the classification criteria are not met.
- STOT - single exposure : Assessment: Based on available data, the classification criteria are not met.
- STOT - repeated exposure : Rat, Oral, 28 d, NOAEL: 1.500 mg/kg, OECD Test Guideline 422, Test substance: Potassium nitrate
- : Rat, Oral, 364 d, NOAEL: 256 mg/kg, OECD Test Guideline 453, Test substance: Ammonium sulphate
- : Rat, Inhalation, 14 d, NOAEL: 0,185 mg/l, OECD Test Guideline 412
- : Based on available data, the classification criteria are not met.
- Aspiration toxicity : no data available

ammonium chloride :

- Acute oral toxicity : LD50: 1.410 mg/kg, OECD Test Guideline 401

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12. Ecological information

12.1 Toxicity

Components

ammonium nitrate :

- Toxicity to fish : LC50: 447 mg/l, 48 h, Cyprinus carpio (Carp), Short term
- Toxicity to daphnia and other aquatic invertebrates : EC50: 490 mg/l, 48 h, Daphnia magna (Water flea), Short term, Test substance: Potassium nitrate, Fresh water
- Toxicity to algae : EC50: > 1.700 mg/l, 10 d, Test substance: Potassium nitrate, Marine water
- Toxicity to bacteria : EC50: > 1.000 mg/l, 180 min, Respiration inhibition of activated sludge, OECD Test Guideline 209, Test substance: Sodium nitrate
- Toxicity to fish (Chronic toxicity) : no data available
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50: 555 mg/l, 7 d, Bullia digitalis (prosobranch gastropod)

12.2 Persistence and degradability

Product

- Biodegradability : The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Product

- Bioaccumulation : Bioaccumulation not expected.

12.4 Mobility in soil

Product

- Mobility : Not expected to adsorb on soil.

Components

ammonium nitrate :

- Mobility : Water, completely soluble
: Soil, (NO₃-), Not expected to adsorb on soil.
: Soil, (NH₄+), After release, adsorbs onto soil.

12.5 Results of PBT and vPvB assessment

Product

- Assessment : Not applicable, (inorganic)
: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or

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very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product

Additional ecological information : Do not allow product to reach ground water, water bodies or sewage system., Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters.

13. Disposal considerations

13.1 Waste treatment methods

Product : Can be landfilled or incinerated, when in compliance with local regulations.
Do not allow product to reach ground water, water bodies or sewage system.
Do not dispose of together with household waste.

: European waste code:
02 01 09 (agrochemical waste other than those mentioned in 02 01 08)

Contaminated packaging : Empty remaining contents.
Dispose of in accordance with local regulations.

14. Transport information

14.1 UN number

ADR
Not dangerous goods

14.2 Proper shipping name

ADR
Not dangerous goods
Not regulated as a dangerous good

14.3 Transport hazard class

ADR
Not dangerous goods

14.4 Packing group

ADR
Not dangerous goods

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14.5 Environmental hazards

ADR

Not dangerous goods

14.6 Special precautions for user

No specific instructions needed.

Not dangerous goods in the meaning of ADR/RID, ADNR, IMDG-Code, ICAO/IATA-DGR

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

Remarks : No data is available on the product itself.

15. Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Ammonium nitrate (AN)
Shall not be supplied to non-professional users.
See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction

Other regulations : Regulation (EC) No 2003/2003 relating to fertilizers
: Regulation (EU) No 98/2013 of the European Parliament and of the Council of 15 January 2013 on the marketing and use of explosives precursors:
Annex II

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.
(Ammonium nitrate)

16. Other information

Full text of R-phrases referred to under sections 2 and 3

R 8 Contact with combustible material may cause fire.
R22 Harmful if swallowed.
R36 Irritating to eyes.
R41 Risk of serious damage to eyes.

Full text of H-Statements referred to under sections 2 and 3.

H272 May intensify fire; oxidiser.
H302 Harmful if swallowed.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.

Further information

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Other information : Issued according to Regulation (EC) No 1907/2006, Annex II, and its amendments.
Changes since the last version are highlighted in the margin.
This version replaces all previous versions.

Issuer : Borealis, Group Product Stewardship / Maarit Vakkala

Sources of key data used to compile the Safety Data Sheet : Chemical Safety Report, Ammonium Nitrate. FARM REACH Consortium, 2010
EFMA / Fertilizers Europe Guidance documents

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

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Identified uses:

Use: Professional use, Formulation

- Chemical product category : **PC12:** Fertilizers
- Process categories : **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent
PROC19: Hand-mixing with intimate contact and only PPE available
- Environmental Release Categories : **ERC2, ERC8b, ERC8e:** Formulation of preparations, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems
- Activity : Blending with e.g. compost, substrates and pesticides, Packaging, dilution, suspension, Loading and unloading (bulk or bags), Equipment cleaning and maintenance
- Further information : A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary. The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. See sections 7 and 8 of this safety data sheet.

Use: Professional use, Distribution

- Chemical product category : **PC12:** Fertilizers
- Process categories : **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small

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containers (dedicated filling line, including weighing)

Environmental Release Categories : **ERC2, ERC8b, ERC8e**: Formulation of preparations, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems

Activity : Packaging, Loading and unloading (bulk or bags), Equipment cleaning and maintenance

Further information : A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary. The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. See sections 7 and 8 of this safety data sheet.

Use: Industrial use, Formulation

Chemical product category : **PC12**: Fertilizers

Process categories : **PROC5**: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental Release Categories : **ERC2**: Formulation of preparations

Activity : Blending with e.g. compost, substrates and pesticides, Packaging, dilution, suspension, Loading and unloading (bulk or bags), Equipment cleaning and maintenance

Further information : A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary. The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. See sections 7 and 8 of this safety data sheet.

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