

SECTION 3: Composition/information on components**3.2. Mixtures**

The components of the mixture not affecting its classification:

Ingredient	CAS number	EC number	The approximate amount of the component
ammonium dihydrogenorthophosphate	10124-34-9	233-330-0	10 - 50 %
Registration number: 01-2119488166-29-0027			
ammonium sulphate	7783-20-2	231-984-1	10 - 40 %
Registration number: 01-2119455044-46-0038			
ammonium chloride	12125-02-9	235-186-4	3 - 7 %
Registration number: 01-2119489385-24-0012			
urea	57-13-6	200-315-5	0 - 15 %
Registration number: 01-2119463277-33-0044			
potassium chloride (natural KCl)	7447-40-7	231-211-8	0 - 50 %
Exemption from the obligation of registration according to Annex V			
magnesite (natural MgCO ₃)	999999-99-4	-	0 - 25 %
Exemption from the obligation of registration according to Annex V			

SECTION 4: First aid measures**4.1. Description of first aid measures**

<i>Inhalation</i>	Remove the injured from dusted area. Provide medical assistance if disease symptoms occur.
<i>Skin contact</i>	Treat contaminated skin with water and soap.
<i>Eye contact</i>	Wash eyes with plenty of water, for at least 10 minutes. If irritation maintains, provide medical aid.
<i>Swallowing</i>	Rinse out mouth and then drink plenty of water (approx. 500 ml). Do not bring on vomiting. Consult a doctor in case of ingestion of large amount.

4.2. Most important symptoms and effects, both acute and delayed

Acute and delayed symptoms and effects of exposure do not occur under normal conditions (see section 11).

4.3. Indication of any immediate medical attention and special treatment needed

Medical assistance is needed in case of inhalation of large amounts of dust.

SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable extinguishing media	Use fire fighting measures suitable for burning materials. CO ₂ , extinguishing powder or water jet. Fight larger fires with foam.
Unsuitable extinguishing media	None

5.2. Special hazards arising from the mixture

If the fertilizer is exposed to fire

Call fire brigade.

Avoid inhaling of acrid smokes (they are toxic). Stand with a face towards fire, always back to a wind. If vapors are released (acrid smokes), use breathing apparatus. Use plenty of water.

Prevent release of a melted fertilizer to sewage ducts. If water containing dissolved fertilizer is released to sewage or waters, inform immediately local authorities.

Fire and products of thermal decomposition

Contact with skin

A contaminated skin to be treated with water and soap. Seek medical aid.

Inhalation

Remove injured from area of acrid smokes. Provide injured with warmth and calmness even if poisoning symptoms do not occur.

Persons exposed to inhalation of gases coming from thermal decomposition of a fertilizer should be provided with immediate medical attention.

Fire, heating, explosion

Fertilizers are not combustible mixtures and they do not maintain burning. During thermal decomposition, water vapour and toxic gases like: ammonia, sulphur oxides, chlorine and hydrogen chloride may be released. In case of urea-containing fertilizers release of toxic gases containing nitrogen oxides (NO_x) is possible.

5.3. Advice for firefighters

Standard protective equipment for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

When there is excessive dusting use dustproof glasses and masks protecting the respiratory system.

6.2. Environmental precautions

Avoid pouring large amounts of the mixture to the environment or into watercourses.

Pay attention to avoid pollution of waters or sewage ducts. Inform proper authorities in case of their pollution.

6.3. Methods and materials avoiding pollution and cleaning up methods

All scatterings of fertilizers should be immediately cleaned up and placed in a special labelled container. Depending on a degree and type of contamination, use collected fertilizer for agricultural purposes or pass it on to a specialized company for neutralization.

6.4. Reference to other sections

Information about waste disposal - see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid excessive formulation of dusts.

Avoid unnecessary exposure to atmospheric air to prevent moisture absorption. While handling the product for a longer time, wear proper protective clothes, e.g. protective gloves.

7.2. Conditions for safe storage, including any incompatibilities

Keep away products from ignition sources. Storage buildings should be dry and well vented. Storage rooms should be kept clean.

7.3. Specific end use(s)

No specific use is identified.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****DNEL¹ for workers**

		ammonium dihydrogen orthophosphate	ammonium sulphate	urea	ammonium chloride
Long-term - systemic effects	Dermal	42.667 mg/kg b.m./d	34.7 mg/kg b.m./d	580 mg/kg b.m./d	190 mg/kg b.m./d
Long-term - systemic effects	Inhalation	11.167 mg/m ³	6.1 mg/m ³	292 mg/m ³	33.5 mg/m ³

DNELs for the general population

		ammonium dihydrogen orthophosphate	ammonium sulphate	urea	ammonium chloride
Long-term - systemic effects	Dermal	20.8 mg/kg b.m./d	12.8 mg/kg b.m./d	580 mg/kg b.m./d	114 mg/kg b.m./d
Long-term - systemic effects	Inhalation	1.8 mg/m ³	3.04 mg/m ³	125 mg/m ³	9.9 mg/m ³
Long-term - systemic effects	Oral	2.1 mg/kg b.m./d	-	42 mg/kg b.m./d	11.4 mg/kg b.m./d

PNEC²

	ammonium dihydrogen orthophosphate	ammonium sulphate	urea	ammonium chloride
PNEC aqua freshwater	1.7 mg/L	0.312 mg/L	0.047 mg/L	1.2 mg/L
PNEC aqua marine	0.17 mg/L	0.031 mg/L	0.047 mg/L	11.2 mg/L
PNEC intermittent release	17 mg/L	0.53 mg/L	-	1.2 mg/L
PNEC STP	10 mg/L	16.18 mg/L	-	16.2 mg/L
PNEC soil	-	-	-	0.163 mg/kg soil

8.2. Exposure controls**Precautions and technical undertakings**

Avoid high accumulation of dusts and provide ventilation, where necessary.

Individual protection measures

During continuous work with the product use protective gloves. If concentration of dust is high, use dust-masks. Wash hands and follow general hygiene principles. Avoid skin and eyes contact with the product.

<i>Respiratory protection</i>	Use breathing protection in case of insufficient ventilation. Dust mask according to DIN EN 140 or 149 (FFP1 or FFP2).
<i>Hand protection</i>	In case of contact with thrown fertilizer at least protection index 2 is recommended, according to more than 30 min. penetration time (EN 374).

¹ DNEL Derived No-Effect Level

² PNEC Predicted No-Effect Concentration

	<p>Thickness of the layer of gloves at least: 0.4 mm In case of prolonged and intensive contact protection index 6 is recommended, according to more than 480 min. penetration time (EN 374).</p> <p>Thickness of the layer of gloves at least: 0.7 mm <u>Material of gloves:</u> Butyl rubber, BR; Fluorocarbon rubber (Viton); Nitrile rubber, NBR; Natural rubber, NR; Chloroprene rubber, CR; Neoprene gloves. Penetration time given by the manufacturer of the protective gloves has to be obeyed.</p>
<i>Eye protection</i>	Safety glasses (DIN 58211, EN 166).
<i>Skin protection</i>	Light weight protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties of fertilizer

Appearance	White, grey or brown granules
Water solubility	Soluble in water, forms water suspensions, solubility depends on composition. Urea-containing fertilizers are hygroscopic
State of the substance at 20 °C and 101.3 kPa	Solid Colour: white to grey or brown Odour: no characteristic odour
Boiling point	There is no need for testing (according to annex VII)
Vapour pressure	There is no need for testing (according to annex VII)
Surface tension	There is no need for testing (according to annex VII)
Partition coefficient n-octanol/water	Does not apply to inorganic substances
Flash-point	Does not apply to inorganic substances
Flammability	Not flammable
Explosive properties	No explosive properties
Self-ignition temperature	No self-ignition temperature
Oxidising properties	No oxidizing properties
Stability in organic solvents and identity of relevant degradation products	Does not apply to inorganic substances
Viscosity	No study is necessary - solid

9.2. Other information

No other information.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity during storage, handling and application under normal conditions.

10.2. Chemical stability

Stable during storage, handling and application under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known.

10.4. Conditions to avoid

Unnecessary exposure to atmospheric conditions. Proximity of ignition sources. Welding or heat treatment of equipment on the installation, where a fertilizer may be present without earlier thorough washing to remove all residue of a fertilizer.

10.5. Incompatible materials

Strong acids, alkalis, sodium hypochlorite, copper and its alloys.

10.6. Hazardous decomposition products

During reactions with alkalis and alkaline materials like lime, gas ammonia is released.

SECTION 11: Toxicological information**11.1. Information on toxicological effects**

Acute toxicity	<p><u>Oral:</u> LD50³ > 2000 mg/kg b.w./d - rat (Sprague-Dawley) male/female - ammonium dihydrogenorthophosphate LD50 = 4250 mg/kg b.w./d - rat (Gassner) male/female - ammonium sulphate LD50 = 14300 mg/kg bw - rat (Wistar) male/female - urea LD50 = 1410 mg/kg b.w./d - rat (Wistar) male/female - ammonium chloride</p> <p><u>Inhalation:</u> LD50 > 5000 mg/m³ - rat (CrI:WI(Han)) male/female - ammonium dihydrogenorthophosphate LD50 = 1000 mg/m³ - rat (Sprague-Dawley) male - ammonium sulphate</p> <p><u>Skin:</u> LD50 > 5000 mg/kg b.w./d - rat (Sprague-Dawley) male/female - ammonium dihydrogenorthophosphate LD50 = 2000 mg/kg b.w./d - rat (Wistar) male/female - ammonium sulphate LD50 > 2000 mg/kg b.w./d - rat (Wistar) male/female - ammonium chloride</p>
Irritation/Corrosivity	Not irritating
Skin sensitization	Not sensitizing
Repeated dose toxicity	NOAEL ⁴ (oral): 2250 mg/kg bw/day (rat, mouse) - urea NOAEL (oral): 684 mg/kg b.w./d (rat (Sprague-Dawley) male) - ammonium chloride
Mutagenicity	Genetic toxicity: negative
Carcinogenicity	NOAEL (oral): 2250 mg/kg bw/day (NCI screening studies in the rat and mouse) - urea
Toxicity for reproduction	<p><u>Effects on fertility</u> No laboratory studies are provided for the endpoint "toxicity to reproduction". Phosphates are broadly used as food additives, urea is naturally present in human organism. There is no evidence that main fertilizer components are harmful for reproduction.</p> <p><u>Developmental toxicity</u> Lack of standard tests for main fertilizer components. Tests on diammonium hydrogenorthophosphate showed NOAEL > 1500 mg/kg b.w./d. LOAEL⁵: 500 mg/kg bw/day - urea</p>

SECTION 12: Ecological information**12.1. Toxicity**

The fertilizer has a low toxicity of its own, but significantly increases the oxygen demand, if in large quantities is introduced into the water and can cause damage to aquatic organisms.

No main fertilizer component fulfills the T criteria.

Aquatic compartment (including sediment)

Short-term toxicity to fish	ammonium dihydrogenorthophosphate LC50 ⁶ for freshwater fish: >85.9 mg/L (<i>Oncorhynchus mykiss</i>)
------------------------------------	---

³ LD50 Median Lethal Dose

⁴ NOAEL No Observed Adverse Effect Level

⁵ LOAEL Lowest Observed Adverse Effect Level

⁶ LC50 Lethal concentration

	<p><u>ammonium sulphate</u> LC50 for freshwater fish: 53 mg/L (<i>Oncorhynchus mykiss</i>)</p> <p><u>urea</u> LC50 for freshwater fish: >6810 mg/L</p> <p><u>ammonium chloride</u> LC50 for freshwater fish: 209 mg/L (<i>Cyprinus Carpio</i>) LC50 for marine water fish: 174 mg/L</p>
Long-term toxicity to fish	<p><u>ammonium chloride</u> EC10/LC10 or NOEC for freshwater fish: 11.8 mg/L (<i>Pimephales promelas</i>) EC10/LC10 or NOEC for marine water fish: 8 mg/L</p>
Short-term toxicity to aquatic invertebrates	<p><u>ammonium dihydrogenorthophosphate</u> EC50⁷/LC50 for freshwater invertebrates: 1790 mg/L (<i>Daphnia carinata</i> (water flea))</p> <p><u>ammonium sulphate</u> EC50/LC50 for freshwater invertebrates: 169 mg/L (<i>Daphnia magna</i>)</p> <p><u>urea</u> EC50 /LC50 for freshwater invertebrates: 10000 mg/L (Daphnia, freshwater snails and <i>Aedes aegypti</i> larvae)</p> <p><u>ammonium chloride</u> EC50/LC50 for freshwater invertebrates: 101 mg/L</p>
Long-term toxicity to aquatic invertebrates	<p><u>ammonium chloride</u> EC10/LC10 or NOEC for freshwater invertebrates: 14.6 mg/L (<i>Daphnia magna</i>)</p>
Algae and aquatic plants	<p><u>ammonium dihydrogenorthophosphate</u> EC50/LC50 for freshwater algae: >100 mg/L EC10/LC10 or NOEC⁸ for freshwater algae: >100 mg/L</p> <p><u>ammonium sulphate</u> EC50 for freshwater algae: 1600 mg/L (<i>Chlorella vulgaris</i> (algae))</p> <p><u>urea</u> EC10/LC10 lub NOEC for freshwater algae: 47 mg/L - blue-green algae.</p> <p><u>ammonium chloride</u> EC50/LC50 for freshwater algae: 1300 mg/L EC50/LC50 for marine water algae: 90.4 mg/L EC10/LC10 or NOEC for marine water algae: 26.8 mg/L</p>
Toxicity to aquatic micro-organisms	<p>Key studies to assess the toxicity of ammonium dihydrogenorthophosphate and calcium bis(dihydrogenorthophosphate) to STP microorganisms are those conducted on an analogous substance. On this basis sodium, potassium, calcium and magnesium phosphates are not considered to be toxic to STP microorganisms.</p> <p>EC50/LC50 for aquatic micro-organisms: 1000 mg/L EC10/LC10 or NOEC for aquatic micro-organisms: 1000 mg/L Ammonium sulphate and urea are not considered toxic for STP microorganisms.</p> <p>The 72 hour toxicity threshold of <i>Entosiphon sulcatum</i> to urea was 29 mg/l, and the 16 hour toxicity threshold of urea to <i>Pseudomonas putida</i> was > 10000 mg/L.</p> <p><u>ammonium chloride</u> EC50/LC50 for aquatic micro-organisms: 1618 mg/L</p>

12.2. Persistence and degradability

Nitric compounds pass through a natural cycle of nitrification or denitrification producing nitrogen or nitric oxides. Ammonium phosphates are transformed to calcium phosphates, ferrous phosphates or aluminium phosphates or they combine with organic soil matter. Phosphate compounds are absorbed mainly by clayey materials or they remain in a form of K⁺ ion in soil solutions.

Main fertilizer components do not fulfill the P or vP criteria.

⁷ EC50 Half maximal effective concentration

⁸ NOEC No Observed Effect Concentration

12.3. Bioaccumulative potential

The fertilizer has a low potential.

Main fertilizer components do not fulfill the B or vB criteria.

12.4. Mobility in soil

Ammonium NH_4^+ is absorbed by soil particles. Phosphates, both dissolving in water and in citrate are transferred in soil only for a short period time, and then they are immobilized in soil. Potassium ion K^+ dissolved in soil solutions is absorbed by clayey minerals; but in light soils, where these minerals are not present, a part of potassium can be rinsed.

12.5. Results of PBT and vPvB assessment

Main fertilizer components are neither PBT nor vPvB substances.

12.6. Other adverse effects

No data.

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

Remains of the product, including packaging waste transfer to the specialized companies with an appropriate waste management permit.

Depending on a degree and type of contamination, the product is either used as a fertilizer for agricultural purposes or passed on to the specialized company to neutralization purposes.

In case of spill of fertilizer, - see Section 6 of the safety data sheet.

SECTION 14: Transport information

Fertilizers are not classified, that means they are not considered as dangerous materials according to Orange Book of UN and international transport codes, eg. RID (railway), ADR (roads transport) and IMDG (see transport).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Not applicable.

14.6. Special precautions for user

Not applicable.

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

Not applicable.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the mixture**

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EEC and 2000/21/EC. (*Official Journal of the European Union of 30.12.2006, L 396. with later changes*)
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (*Official Journal of the European Union of 31.12.2008, L 353. with later changes*)

15.2. Chemical safety assessment

The chemical safety assessments for main fertilizer components have been made.

SECTION 16: Other information

Training Employees should be trained in the proper mixture handling. Read the safety data sheet before use.

Changes Section 1, 2, 12.