



## SAFETY DATA SHEET

in accordance with Regulation (EC) 1907/2006 (REACH) amended with  
 Commission Regulation (EU) 2015/830

▣ **V12** – amendments in this revision ▣

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING	
<b>1.1 Product identifier</b>	
Trade name	<b>NEOFERT®</b>
Synonyms	Ammonium nitrate 34.4% Ammonium nitrate EC fertilizer Ammonium Saltpeter Ammonium nitrate straight fertilizer
NEOCHIM PLC code	13-01
<b>1.2 Relevant identified uses of the substance or mixture and uses advised against</b>	
Uses:	Fertilizer <b>Note:</b> see section 16 for the complete list of uses covered by ES
▣ <b>V12</b> Uses advised against:	Use of Ammonium nitrate containing fertilizers if weight of nitrogen in relation to ammonium nitrate is equal or more than 16 %. Consumer products may contain up to 46% ammonium nitrate ▣.
<b>1.3 Details of the supplier of the safety data sheet</b>	
Manufacturer: Address: Tel./fax: URL website: Email:	NEOCHIM PLC East Industrial Zone, Himkombinatska Str.,6403 Dimitrovgrad, Bulgaria +359 391 65 205/ +359 391 60 555 <a href="http://www.neochim.bg">http:// www.neochim.bg</a> neochim@neochim.bg
▣ <b>V12</b> Company e-mail for SDS	reach-neochim@neochim.bg▣
<b>1.4 Emergency telephone number</b>	
▣ <b>V12</b> National Toxicology Information Center - HAMTEM "N.I.Pirogov"	+ 359 2 9154 233 + 359 2 9154 409
24/24 h      7/7 d ▣	
SECTION 2: HAZARDS IDENTIFICATION	
<b>The most important adverse effects</b>	
<b>Physicochemical effects:</b>	
The fertilizer is not itself combustible but it can support combustion, even in the absence of air. On heating it melts and further heating can cause decomposition, releasing toxic fumes containing nitrogen oxides and ammonia. Relatively resistant to detonation, but there is a risk of fire and explosion when heated in confined spaces and at high temperatures.	
<b>Human health effects:</b>	
The fertilizer causes eye irritation; inhalation of dust from ammonium nitrate can cause respiratory irritation and coughing; skin may become red in prolonged contact with the product.	
<b>Environmental effects:</b>	
Large amounts of fertilizer can cause eutrophication of surface waters.	
<b>2.1 Classification of the substance or mixture</b>	
2.1.1 Classification of the substance or mixture according to Regulation (EC) 1272/2008 and its amendments at the date of the issue of the document	
Oxidising solid, hazard category 3 (Oxid. Solid 3), H272 Serious eye damage/ eye irritation, hazard category 2 (Eye Irrit.2), H319	
2.1.2 Additional information	
For full text of H statement: see Section 16.	

2.2 Label elements						
Labelling according to Regulation 1272/2008 (CLP) and its amendments at the date of the issue of the document						
Hazard pictogram(s):		 				
		GHS03                      GHS07				
Signal word		<b>Warning</b>				
Hazard statement(s):		H272 H319 May intensify fire; oxidiser. Causes serious eye irritation.				
Precautionary statement(s):		P210 P220 P370+P378 P264 P280 P305+P351+P338 P337+P313 P411 P501 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing, reducing agents and other combustible materials. In case of fire: use plenty of dispersed and finely dispersed water jets to extinguish. Wash hands thoroughly after handling. Wear long sleeved overall, chemically resistant gloves. chemical goggles or full face shield IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical attention. Store in a well-ventilated, indoor and dry warehouses at temperatures not exceeding 30°C. Dispose of content/packing in accordance with national waste legislation.				
Hazardous components listed on the label: ammonium nitrate						
2.3 Other hazards						
■ V12 PBT/vPvB criteria:		This mixture does not contain any substances that are assessed to be a PBT or a vPvB				
others		Spilled wet product forms slippery surface ■.				
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS						
3.1 Substances - not relevant						
3.2 Mixtures						
CAS №	EC №	REACH registration №	Content, % (w/w)	Name	Classification according to Regulation (EC) No 1272/2008 (CLP)	Type
6484-52-2	229-347-8	01-2119490981-27	min 97.1	ammonium nitrate	Oxid. Solid 3; H272 Eye Irrit. 2; H319	[1] ■
<b>For full text of Hazard statements: see Section 16</b>						
Type [1] Substance classified with a physical, health or environmental hazard [2] Substance with a workplace exposure limit [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII [5] Substance of equivalent concern						
<b>Additional information:</b>						
■ V12 Mixture containing ammonium nitrate (main constituent), inorganic additive and organic anti-caking agent ■						

SECTION 4: FIRST- AID MEASURES	
<b>4.1 Description of first aid measures</b>	
- general notes	Speed is essential. If unconscious, place casualty in a recovery position with head sideways to avoid choking. Provide shower and a place to wash the eyes near the work place.
- following inhalation	Remove the exposed person to the fresh air. If adverse effects occur (e.g. dizziness, drowsiness or respiratory irritation) get medical attention immediately. If the person not breathing give artificial respiration.
- following skin contact	Wash the lesion area with plenty of water and soap for at least 15 minutes after removal of the clothes and shoes Seek medical advice if irritation develops and persists
- following eye contact	Rinse thoroughly with water for several minutes. Remove contact lenses if present and easy to do. Seek medical advice if irritation develops and persists.
- following Ingestion	<b>Do not induce vomiting.</b> Seek medical advice. Never give anything by mouth to an unconscious person.
- self-protection of the first aider	First aider should protect himself first
<b>4.2 Most important symptoms and effects, both acute and delayed</b>	
■ V12 Acute effects	Eye irritation, coughing and throat dryness, redness of the skin, gastrointestinal disorder.
Delayed effects	In case of inhalation of decomposition products in a fire symptoms may be delayed. The casualty may need to be kept under medical surveillance for 48 hours.
<b>4.3 Indication of any immediate medical attention and special treatment needed</b> Notes for the doctor: Treat symptomatically. Methaemoglobinaemia■	
SECTION 5: FIREFIGHTING MEASURES	
<b>5.1 Extinguishing media</b>	
Suitable extinguishing media:	<b>If fertilizer is not directly involved in the fire</b> - use most suitable means to extinguish the fire.  <b>If fertilizer is involved in the fire</b> - use plenty of dispersed and finely dispersed water jets to extinguish
Unsuitable extinguishing media:	Combustible materials. Do not use chemical extinguisher or foam and firefighting blanket and/or attempt to smother the fire with sand or steam.
<b>5.2 Special hazards arising from the substance or mixture</b> May be explosive in contact with flammable or organic substances and at confinement during fire. In case of fire, may produce hazardous decomposition products such as nitrogen oxides (NO, NO <sub>2</sub> etc.), ammonia (NH <sub>3</sub> ), amines.	
<b>5.3 Advice for firefighters</b> In the event of fire, wear a self-contained breathing apparatus and a chemical protective suit. Make sure that doors and windows of storerooms are opened.	

**SECTION 6: ACCIDENTAL RELEASE MEASURES**
**6.1 Personal precautions, protective equipment and emergency procedures**
**6.1.1. For non-emergency personal**
**■ V12 Protective equipment:**

Wear suitable personal protective equipment (listed in Section 8 on the safety data sheet)

**Emergency procedures:**

All activities should be carried out by well-trained staff. Do not allow untrained and unprotected personnel in the area or personnel not involved in the elimination of an incident and its consequences. Do not enter the area of spilled or scattered product. Avoid dusting the product. Avoid breathing dust from the product. Avoid contact with eyes, skin and clothing. Do not allow sources of ignition in the area ■.

**6.1.2. For emergency responders**

Protective clothing, protective masks, protective gloves, safety goggles. See Section 8.

**6.2 Environmental precautions**

Do not scatter the product. Do not allow spilled product to enter into the surface water or sanitary sewer system. Do not discharge directly to a water source. If accidental spillage or washings enter drains or watercourses contact local authority.

**6.3 Methods and material for containment and cleaning up**

Vacuum or sweep up the product and place it into suitable labelled containers for recovery or disposal. Clean up traces with water. Do not collect spilled material in sawdust, fuels and hydrocarbons based lubricants or other combustible material.

**6.4 Reference to other sections**

See section 8 for personal protective equipment and section 13 for waste disposal.

**SECTION 7: HANDLING AND STORAGE**

■ V12 The information in this Section contains general advice and guidance. For the availability of specific information of the use listed in Section 16, refer to the Exposure Scenarios (EC) attached ■.

**7.1 Precautions for safe handling**

Protective measures:	Provide adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid dust generation. Keep in original tightly closed containers, away from heat and ignition sources. Avoid contamination with metals, dust and organic materials. Keep away from moisture.
Advice on general occupation hygiene:	Work under a high standard of personal hygiene. Do not eat, drink or smoke in work areas. Wash hands after handling with the product. Remove clothing and protective equipment before visiting the catering.

**7.2 Conditions for safe storage, including any incompatibilities**

Technical measures and storage conditions:	<p>Storage premises should be comply with the requirements of national and regional laws.</p> <p>They should be dry and well ventilated. Provide a high level of security in the warehouse.</p> <p>Do not allow smoking and use of open fire in the warehouse.</p> <p>Store away from sources of fire and heat. Store away from combustible materials and reducing substances.</p> <p>Do not stack fertilizer near hay, straw, grain, fuel and lubricants hydrocarbon base and others on the field.</p> <p>Do not store in direct sunlight and under conditions that allowing the occurrence of the thermal phase / high temperature fluctuations / in order to avoid destruction of the granule.</p> <p>Store at temperature no higher than 30°C.</p> <p>The maximum size of the stack should be in compliance with national and regional regulations. Provide distance for quick access to stacks.</p> <p>Do not store together with other products of the same stack.</p> <p>According to Directive 2012/18/EU on the control of major accident hazards involving dangerous substances (Seveso III) qualifying</p>
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	quantities (tonnes) are: 1. - min.1250; 2.- min.5000 Storage class: 5.1C Packaging materials: stainless steel, synthetic material. Unsuitable: Zinc, Copper, Paper and Wood ■		
<b>7.2 Specific end use(s)</b>	For information of specific risk management measures: see annex of this safety data sheet (exposure scenarios).		
<b>SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION</b>			
<p>■ <b>V12</b> For the availability of specific information of the use listed in Section 16, refer to the Exposure Scenarios (ES) attached ■.</p> <p><b>8.1 Control parameters</b></p>			
Occupational exposure limit values	The product contains no substances with European Union limit values.		
<b>Ammonium nitrate - Derived No Effect Level (DNEL)</b>			
	Route of exposure	Type of effects	DNEL for workers
	inhalation	Systemic, long-term	36 mg/m <sup>3</sup>
	dermal	Systemic, long-term	5.12 mg/kg/bw/day
	ingestion	Systemic, long-term	-
			DNEL for customers
			8.9 mg/m <sup>3</sup>
			2.56 mg/kg/bw/day
			2.56 mg/kg/bw/day
<b>Ammonium nitrate - Predicted No Effect Concentration (PNEC)</b>			STP: 18 mg/L
<b>8.2 Exposure controls</b>			
<b>8.2.1. Appropriate engineering controls:</b>	Provide adequate ventilation. Location of eye flushing system and safety shower close to working place is a good industrial practice.		
<b>8.2.2. Individual protection measures, such as personal protective equipment</b>			
General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.		
Eye/face protection:	Chemical goggles (EN 166) or face shield		
<p>■ <b>V12</b> Dermal protection:</p> <p>Hands protection:</p> <p>Others:</p>	long sleeved overall chemically resistant gloves complying with EN 374, including: material - nitrile rubber breakthrough time - ≥ 480 min. Permeation class - 6 Please follow the supplier's instructions about conditions of use and expiration date Depending on the risk and on the work performed, adequate protective equipment such as long-sleeved overall and shoes should be selected and approved by a specialist ■.		
Respiratory Protection:	If dust concentration is high and /or ventilation is inadequate, use suitable dust mask or respiration with an appropriate filter (recommended: EN 143, 149, filters P2, P3).		
Environmental exposure controls:	Dispose of rinse water in accordance with local and national regulations.		
<b>SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES</b>			
<b>9.1 Information on basic physical and chemical properties</b>			
<b>Data for the main component - ammonium nitrate</b>			
Appearance;	White prills at 20 <sup>0</sup> C and 101,3 kPa		
Odour;	Odourless		
Odour threshold;	Not applicable		

pH of aq. solution at 20 <sup>0</sup> C; (10 g/ 100 cm <sup>3</sup> )	>4.5
Melting point /freezing point;	169.6 – 169.7°C at 101.3 kPa
Initial boiling point;	Not relevant, decomposes before boiling
Flash-point;	Not relevant, as the substance is an inorganic solid.
■ V12 Evaporation rate;	No data ■
Flammability;	Non flammable (based on molecular structure).
Upper/lower flammability or explosive limits;	Not relevant, incombustible substance
Vapour pressure;	Very low at room temperature (based on melting temperature and decomposition temperature)
Relative density;	1.72 at 20°C
Solubility;	>100 g/l in water at 20°C
Partition coefficient n-octanol/water;	Not relevant (inorganic salt)
Autoflammability/self-ignition temperature;	Ammonium nitrate is not expected to be self-heating and then followed self-ignition based on structure, use and transport information.
Decomposition temperature;	> 210 °C
Viscosity;	Not applicable to solids
Explosive properties;	Not classified as explosive
Oxidizing properties;	oxidiser
<b>9.2 Other information</b> - highly hygroscopic	
<b>SECTION 10: STABILITY AND REACTIVITY</b>	
<b>10.1 Reactivity</b>	
The product is unstable at high temperatures. A strong oxidizing agent and reacts violently with combustible materials, reducing agents (see Section 10.5)	
<b>10.2 Chemical stability</b>	
Stable under recommended storage and handling conditions (see Section 7, handling and storage).	
<b>10.3 Possibility of hazardous reactions</b>	
When heated, it decomposes. Contamination of the product with incompatible materials can cause an explosion (see Section 10.5)	
<b>10.4 Conditions to avoid</b>	
Uncontrolled heat. Contact with incompatibles. Confinement must be avoided. Exposure to air or moisture	
<b>10.5 Incompatible materials</b>	
Combustible materials, reducing agents, acids, alkalis, sulfur, chlorates, chlorides, chromates, nitrites, permanganates, metallic powders and substances containing metals such as copper, nickel, cobalt, zinc and their alloys. Do not mix solid urea with solid ammonium nitrate.	
<b>10.6 Hazardous decomposition products</b>	
Under normal conditions of storage and use, hazardous decomposition products should not be produced. In case of fire, nitrogen oxides (NO, NO <sub>2</sub> ), ammonia (NH <sub>3</sub> ), amines.	
<b>SECTION 11: TOXICOLOGICAL INFORMATION</b>	
<b>11.1 Information on toxicological effects</b>	
<b>Main component</b> - ammonium nitrate	

**Acute toxicity**

■ V12 Based on available data, the classification criteria are not met .

Method	Species	Route of exposure	Effective dose	Results
No study available		inhalation		
OECD Guideline 402	rat	dermal	LD <sub>50</sub> : > 5000 mg/kg bw	No adverse effect observed
OECD Guideline 401	rat	oral	LD <sub>50</sub> : 2950 mg/kg bw	No adverse effect observed

**Skin corrosion/irritation**

Based on available data, the classification criteria are not met.

Method	Species	Results
OECD Guideline 404	rabbit	No skin irritation

**Serious eye damage/irritation**

Method	Species	Results
OECD Guideline 405	rabbit	Eye irritant

**Respiratory or skin sensitisation**

Based on the available data for skin sensitisation, the classification criteria are not met.

Method	Species	Results
OECD Guideline 429	mouse	Not sensitising

Sensitisation of respiratory system - No relevant information available

**Mutagenicity**

Based on available data, the classification criteria are not met.

Genotoxicity in vitro	Method - Ames test OECD Guideline 471 ( with nitric acid ammonium calcium salt) Result negative
	Method - OECD Guideline 473 ( with nitric acid ammonium calcium salt) Result - negative
	Method - OECD Guideline 476 ( with potassium nitrate) Result - negative

**Carcinogenicity**

Based on available data, the classification criteria are not met.

Ammonium nitrate is not genotoxic and no substance related neoplastic lesions were observed in the chronic toxicity study. There is no positive correlation between nitrate intakes and the incidence of cancer.

**Reproductive toxicity**

Based on available data, the classification criteria are not met.

Method: OECD Guideline 422  
 Species: rat  
 Route of exposure: inhalation  
 Result: NOAEL ≥ 1500 mg/kg bw/day  
 Tested substance: potassium nitrate

STOT-single exposure  
 Based on available data, the classification criteria are not met.

STOT-repeated exposure  
 Based on available data, the classification criteria are not met.

Route of exposure: **oral**  
 Systemic effects  
 Species: rat  
 Result: NOAEL: 256 mg/kg bw/day  
 No adverse effect observed

Route of exposure: **inhalation**  
 Systemic effects  
 Species: rat  
 Result: NOAEC: 185mg/m<sup>3</sup>  
 Local effects: no study available

Route of exposure: **dermal**  
 Systemic and local effects: no study available ■

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### Main component - ammonium nitrate

■ **V12** Based on available data, the classification criteria are not met ■.

#### Short-term (acute) toxicity

Test material	Species	Result
Ammonium nitrate	Freshwater fish	LC <sub>50</sub> (48 часа): 447 mg/l
Potassium nitrate	Freshwater invertebrates	EC <sub>50</sub> (48 часа): 490 mg/l

#### Long-term toxicity

Test material	Species	Result
	Fish	No data
Potassium nitrate	Aq. Invertebrates	EC <sub>50</sub> (7 дни): 555 mg/l

Algae: 10-d EC<sub>50</sub>: > 1700 mg/l (seawater, no guideline followed, performed with potassium nitrate)

Inhibition of microbial activity: 3-h EC<sub>50</sub>: >1000 mg/l, NOEC: 180 mg/l (OECD 209, with sodium nitrate)

### 12.2 Persistence and degradability

Biodegradation: Standard test is not applicable as the substance is inorganic. In addition, in the anaerobic transformation of ammonium, one group of bacteria oxidizes ammonium to nitrite while another group oxidizes nitrite into nitrate. The average biodegradation rate in wastewater plant at 20°C is 52 g N/kg dissolved solid/day. Nitrate degradation is fastest in anaerobic conditions. In the anaerobic transformation of nitrate into N<sub>2</sub>, N<sub>2</sub>O and NH<sub>3</sub>, the biodegradation rate in wastewater plant at 20°C is 70 g N/kg dissolved solid/day.

Hydrolysis: No hydrolysable group is present, will completely dissociate into ions.



### 12.3 Bioaccumulative potential

■ **V12** Simple inorganic salts with high aqueous solubility will exist in a dissociated form in an aqueous solution. Such a substance has a low potential for bioaccumulation ■.

### 12.4 Mobility in soil

Adsorption coefficient: Low potential for adsorption (based on substance properties).



<b>12.5 Results of PBT and vPvB assessment</b> This mixture does not contain any substances that are assessed to be a PBT or a vPvB	
<b>12.6 Other adverse effects</b> Secondary poisoning Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant ▣.	
<b>SECTION 13: DISPOSAL CONSIDERATIONS</b>	
Waste treatment methods:	The generation of waste should be avoided or minimized wherever possible. Recycle processing, if possible. Do not mix with other waste. The waste product to remain in the original packaging.  Do not allow significant quantities of the product or residues to enter in the sewage system. Treat them in WWTP.  Disposal of this product or it's solutions must always comply with the requirements of environmental protection and local legal requirements in the field of waste management.
Package waste disposal:	The generation of waste should be avoided or minimized wherever possible. Empty packages should be for recycling. Incineration or landfill should be taken into account only when recycling is not possible. The national legal requirements for waste management to be observed.
<b>SECTION 14: TRANSPORT INFORMATION</b>	
▣ <b>V12 14.1 UN number</b> <b>ADR/RID/IMDG</b>	<b>UN2067</b>
<b>14.2 UN proper shipping name</b> <b>ADR/RID/IMDG</b>	AMMONIUM NITRATE BASED FERTILIZER
<b>14.3 Transport hazard class</b> <b>ADR/RID/IMDG</b>	<b>5.1</b>
<b>14.4 Packing group</b> <b>ADR/RID</b> <b>Classification code</b> Packing group Hazard identification number Label	<b>O2</b> <b>III</b> <b>50</b> <b>5.1</b> 
Tunnel restriction code	<b>E</b>
<b>IMDG</b> Packing group Label	<b>III</b> <b>5.1</b> 
EmS Code	<b>F-H, S-Q</b>

<b>14.5 Environmental hazard ADR/RID IMDG</b>	no no
<b>14.6 Special precautions for users</b>	The person transporting the product must be trained and know how to respond to an accident or spillage
<b>14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code</b>	<b>IMSBC code – Group B</b>

**SECTION 15: REGULATORY INFORMATION**

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	<p>Regulation EC 1907/2006 (REACH), Annex XVII, entry 58 concerning the restriction to place on a market of ammonium nitrate as such or in a mixture, see Annex for conditions of restriction,</p> <p>1. Shall not be placed on the market for the first time after 27 June 2010 as a substance, or in mixtures that contain more than 28 % by weight of nitrogen in relation to ammonium nitrate, for use as a solid fertiliser, straight or compound, unless the fertiliser complies with the technical provisions for ammonium nitrate fertilisers of high nitrogen content set out in Annex III to Regulation (EC) No 2003/2003 of the European Parliament and of the Council. 2. Shall not be placed on the market after 27 June 2010 as a substance, or in mixtures that contain 16 % or more by weight of nitrogen in relation to ammonium nitrate except for supply to: (a) downstream users and distributors, including natural or legal persons licensed or authorised in accordance with Council Directive 93/15/EEC ; (b) farmers for use in agricultural activities, either full time or part time and not necessarily related to the size of the land area.</p> <p>Regulation EC 2003/2003, Regulation EC 1272/2008, Regulation EC 98/2013 on the marketing and use of explosives precursors Annex II, Directive 2012/18/EU on the control of major accident hazards involving dangerous substances (Seveso III) qualifying quantities (tonnes) are: 1. - min.1250; 2.- min.5000</p> <p><u>* Regulations / legislation and amendments to the date of issue of the document are indicated</u></p>
15.2 Chemical safety assessment:	In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for this product.

**16. OTHER INFORMATION**

**Indication of changes:** Changes of the last version are highlighted with **■ V12...■** . This version replaces all previous versions.

**Uses:**

- \* Formulation of chemicals and fertilizers
- \* Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control
- \* Use at industrial site - Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control
- \* Widespread use by professional workers - Use by professional workers (outdoor and indoor of reactive substances in open systems)
- \* Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer.

**Classification in accordance with Regulation 1272/2008 (CLP)**
**H statement**

May intensify fire; oxidiser (H272).  
 Causes serious eye irritation (H319).

**List of abbreviations**

PBT – persistent, bioaccumulative and toxic  
vPvB - very persistent and very bioaccumulative  
NOAEL - no observed adverse effect level  
NOAEC - no observed adverse effect concentration  
DNEL - derived no-effect level  
PNEC - predicted no-effect concentration  
PEC - predicted environmental concentration  
LOEC - lowest observed effect concentration  
NOEC - no observed effect concentration  
OECD - Organisation for Economic Cooperation and Development  
LC<sub>x</sub> - lethal concentration  
EC<sub>x</sub> - effective concentration  
LD<sub>x</sub> - lethal dose

The information above is on the basis of our knowledge about the product and represents the data currently available to us at the moment of safety data sheet issue. This document is intended as guidance for the appropriate precautionary handling with the product by a properly trained person using this product, and does not legally bind in no way manufacturer with guarantee for specific properties, qualities and applications. Neochim PLC does not grant, guarantee or implies any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Neochim PLC does not carry any liability for damages resulting from the product use or reliance upon this information, data and recommendations for it. Users are responsible to make their own investigations to determine the suitability of the information and the product for their particular purposes, and to comply with applicable laws.

## ANNEX

<b>2. Exposure scenario 2: ▣ V12 Formulation or re-packing of chemicals and fertilizers▣</b>	
<b>2.1. Formulation or re-packing of chemicals and fertilizers</b>	
Product category / UCN code:	
PC 1, Adhesives, sealants	
PC 9a, Coatings and paints, thinners, paint removers	
PC 11, Explosives	
PC 12, Fertilizers	
PC 14, Metal surface treatment products, including galvanic and electroplating products	
PC 19, Intermediate	
PC 20, Products such as pH-regulators, flocculants, precipitants, neutralization agents	
PC 35, Washing and cleaning products (including solvent based products)	
PC 37, Water treatment chemicals	
P15900, Process regulators	
<b>Environment contributing scenario(s):</b>	
Formulation or re-packing of chemicals and fertilizers	ERC 2, ERC 3
<b>Worker contributing scenario(s):</b>	
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Treatment of articles by dipping and pouring	PROC 13
Production of preparations or articles by tableting, compression, extrusion, palletisation	PROC 14
Use as laboratory reagent	PROC 15
<b>2.2. Conditions of use affecting exposure</b>	
<b>2.2.1. Environmental contributing scenario (1):</b>	
▣ V12 Formulation into mixture (ERC 2)	
Formulation into solid matrix (ERC 3)	
Not required as the product is not classified as hazardous to the environment.	
2.2.2. Worker contributing scenario (1): Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) ▣.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Closed continuous process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid

(aqueous) mixtures of the substance)	
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.3. Worker contributing scenario (2): <b>■ V12</b> Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) <b>■</b>	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Closed batch process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	One hand face only (240 cm <sup>2</sup> )
2.2.4. Worker contributing scenario (3): <b>■ V12</b> Chemical production where opportunity for exposure arises (PROC4) <b>■</b>	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Semi-closed process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.5. Worker contributing scenario (4): <b>■ V12</b> Mixing or blending in batch processes (PROC5) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such

• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.6. Worker contributing scenario (5): <b>■ V12</b> Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands (960 cm <sup>2</sup> )
2.2.7. Worker contributing scenario (6): <b>■ V12</b> Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Semi-closed process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]

• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands (960 cm <sup>2</sup> )
2.2.8. Worker contributing scenario (7): <b>■ V12</b> Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Semi-closed process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.9. Worker contributing scenario (8): <b>■ V12</b> Treatment of articles by dipping and pouring (PROC13) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid

	(aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.10. Worker contributing scenario (9): ■ <b>V12</b> Tableting, compression, extrusion, pelletisation, granulation (PROC14) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.11. Worker contributing scenario (10): ■ <b>V12</b> Use as laboratory reagent (PROC15) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Advanced
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	One hand face only (240 cm <sup>2</sup> )
<b>2.3. Exposure estimation and reference to its source</b>	
<b>2.3.1</b> ■ <b>V12</b> Environmental exposure	
Exposure assessment risk characterization are neither required nor required as the product is not classified as hazardous to the	



environment.		
2.3.2. Exposure concentrations and risks for workers: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) ▣.		
Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.01 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.137 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.027
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.3. Exposure concentrations and risks for workers: ▣ <b>V12</b> Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) ▣.		
Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.069 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.016
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.4. Exposure concentrations and risks for workers: ▣ <b>V12</b> Chemical production where opportunity for exposure arises (PROC4) ▣.		
Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.5 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	<b>0.686 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.148
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.5. Exposure concentrations and risks for workers: ▣ <b>V12</b> Mixing or blending in batch processes (PROC5) ▣.		

Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.5 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	<b>1.371 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.282
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.6. Exposure concentrations and risks for workers: <b>■ V12</b> Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) <b>■</b> .		
Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.5 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	<b>1.371 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.282
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.7. Exposure concentrations and risks for workers: <b>■ V12</b> Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) <b>■</b> .		
Exposure concentrations and risks for workers		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>1.371 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.271
<b>*Conclusion on risk characterisation (qualitative)</b> <u>Dermal, local, long-term</u> As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled. <u>Eye, local</u> As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
2.3.8. Exposure concentrations and risks for workers: <b>■ V12</b> Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) <b>■</b> .		
Exposure concentrations and risks for workers		

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.686 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.137

**\*Conclusion on risk characterisation (qualitative)**

Dermal, local, long-term

As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local

As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

2.3.9. Exposure concentrations and risks for workers: **■ V12 Treatment of articles by dipping and pouring (PROC13) ■.**

Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>1.371 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.271

**\*Conclusion on risk characterisation (qualitative)**

Dermal, local, long-term

As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local

As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

2.3.10. Exposure concentrations and risks for workers: **■ V12 Tableting, compression, extrusion, pelletisation, granulation (PROC14) ■.**

Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.343 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.067
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR = 0.07

**\*Conclusion on risk characterisation (qualitative)**

Dermal, local, long-term

As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local

As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

2.3.11. Exposure concentrations and risks for workers: **■ V12 Use as laboratory reagent (PROC15) ■.**

Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01

Dermal, systemic, long-term	<b>0.034 mg/kg bw/day</b> (TRA Workers 3.0)	RCR < 0.01	
Dermal, local, long-term		Qualitative*	
Eye, local		Qualitative*	
Combined routes, systemic, long-term		RCR < 0.01	
<b>*Conclusion on risk characterisation (qualitative)</b>			
<u>Dermal, local, long-term</u>			
As a long sleeved overall (or lab coat) and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.			
<u>Eye, local</u>			
As eye protection is worn, the risk of causing ocular effects is considered to be controlled.			
<b>2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>			
Under the described conditions of use no additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers			
<b>5. Exposure scenario 5:</b>			
Widespread use by professional workers : Widespread use by professional workers (outdoor and indoor of reactive substances in open systems)			
<b>5.1. Widespread use by professional workers (outdoor and indoor of reactive substances in open systems)</b>			
<b>Sector of use / NACE code:</b>			
SU 1, Agriculture, forestry, fishery			
SU 2a, Mining (without offshore industries)			
SU 10, Formulation [mixing] of preparations and/or re-packaging (excluding alloys)			
SU 19, Building and construction work			
SU 23, Electricity, steam, gas water supply and sewage treatment			
B8.1, Quarrying of stone, sand and clay			
<b>Product category:</b>			
PC 11, Explosives			
PC 12, Fertilisers			
PC 37, Water treatment chemicals			
<b>Environment contributing scenario(s):</b>			
Widespread use by professional worker (outdoor and indoor of reactive substances in open systems)		ERC 8e, ERC 8b	
<b>Worker contributing scenario(s):</b>			
Use in closed process, no likelihood of exposure		PROC 1	
Use in closed, continuous process with occasional controlled exposure		PROC 2	
Use in closed batch process (synthesis or formulation)		PROC 3	
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)		PROC 5	
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities		PROC 8a	
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities		PROC 8b	
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)		PROC 9	
Non industrial spraying		PROC 11	
Use as laboratory reagent		PROC 15	
Hand-mixing with intimate contact and only PPE available		PROC 19	
<b>5.2. Conditions of use affecting exposure</b>			
<b>5.2.1. Environmental contributing scenario (1):</b>			
■ <b>V12</b> Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC8b			
Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) ERC8e			
Not required as the product is not classified as hazardous to the environment.			
<b>5.2.2. Worker contributing scenario (1):</b>			
Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1) ■.			

<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Closed system (minimal contact during routine operations)
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	One hand face only (240 cm <sup>2</sup> )
5.2.3. Worker contributing scenario (2): <b>■ V12</b> Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) <b>■</b>	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Closed continuous process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
5.2.4. Worker contributing scenario (3): <b>■ V12</b> Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours

<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Closed batch process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	One hand face only (240 cm <sup>2</sup> )
5.2.5. Worker contributing scenario (4): <b>■ V12</b> Mixing or blending in batch processes (PROC5) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
5.2.6. Worker contributing scenario (5): <b>■ V12</b> Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) <b>■</b> .	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.

• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands (960 cm <sup>2</sup> )
5.2.7. Worker contributing scenario (6): ■ <b>V12</b> Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Semi-closed process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands (960 cm <sup>2</sup> )
5.2.8. Worker contributing scenario (7): ■ <b>V12</b> Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	Semi-closed process with occasional controlled exposure
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor

• Skin surface potentially exposed:	Two hands face (480 cm <sup>2</sup> )
2.2.9. Worker contributing scenario (8): ■ <b>V12</b> Non industrial spraying (PROC11) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke. Keep dermal exposure to a minimum. Wear protective clothing and make sure that skin is not exposed.
• Dermal Protection (body and hands):	Yes (protective clothing (chemical suit) and chemically resistant gloves conforming to EN374, providing in total a dermal effectiveness of at least 96%). Wearing only gloves is not sufficient.
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	Two hands and upper wrists (1500 cm <sup>2</sup> )
5.2.10. Worker contributing scenario (9): ■ <b>V12</b> Use as laboratory reagent (PROC15) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)
• Concentration of substance (used for exposure estimates):	Substance as such
• Dustiness of material:	Low
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
• Duration of activity:	< 8 hours
<b>Technical and organisational conditions and measures</b>	
• General ventilation:	Basic general ventilation (1-3 air changes per hour)
• Containment:	No
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]
• Occupational Health and Safety Management System:	Basic
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
• Respiratory Protection:	No [Effectiveness Inhal: 0%]
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)
<b>Other conditions affecting workers exposure</b>	
• Place of use:	Indoor
• Skin surface potentially exposed:	One hand face only (240 cm <sup>2</sup> )
5.2.11. Worker contributing scenario (10): ■ <b>V12</b> Manual activities involving hand contact (PROC19) ■.	
<b>Product (article) characteristics</b>	
• Concentration of substance in mixture:	≤ 100% (solid or liquid)



• Concentration of substance (used for exposure estimates):	Substance as such	
• Dustiness of material:	Low	
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>		
• Duration of activity:	< 1 hours	
<b>Technical and organisational conditions and measures</b>		
• General ventilation:	Basic general ventilation (1-3 air changes per hour)	
• Containment:	No	
• Local exhaust ventilation:	no [Effectiveness Inhal: 0%]	
• Occupational Health and Safety Management System:	Basic	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
• General:	Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection:	Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	
• Respiratory Protection:	No [Effectiveness Inhal: 0%]	
• Eye Protection:	Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
<b>Other conditions affecting workers exposure</b>		
• Place of use:	Indoor	
• Skin surface potentially exposed:	Two hands and forearms face (1980240 cm <sup>2</sup> )	
<b>5.3. Exposure estimation and reference to its source</b>		
■ <b>V12 5.3.1</b> Environmental exposure		
Exposure assessment risk characterization are neither required nor required as the product is not classified as hazardous to the environment.		
5.3.2. Exposure concentrations and risks for workers: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1) ■.		
Exposure concentrations and risks for workers		
<b>Route of exposure and type of effects</b>	<b>Exposure concentration</b>	<b>Risk characterisation</b>
Inhalation, systemic, long-term	<b>0.01 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.003 mg/kg bw/day</b> (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR < 0.01
<b>*Conclusion on risk characterisation (qualitative)</b>		
<u>Dermal, local, long-term</u>		
As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.		
<u>Eye, local</u>		
As eye protection is worn, the risk of causing ocular effects is considered to be controlled.		
5.3.3. Exposure concentrations and risks for workers:		
■ <b>V12</b> Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) ■.		
Exposure concentrations and risks for workers		
<b>Route of exposure and type of effects</b>	<b>Exposure concentration</b>	<b>Risk characterisation</b>
Inhalation, systemic, long-term	<b>0.01 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.137 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic,		RCR = 0.027

long-term																				
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<p>Exposure concentrations and risks for workers</p> <table border="1"> <thead> <tr> <th>Route of exposure and type of effects</th> <th>Exposure concentration</th> <th>Risk characterisation</th> </tr> </thead> <tbody> <tr> <td>Inhalation, systemic, long-term</td> <td><b>1 mg/m<sup>3</sup></b> (TRA Workers 3.0)</td> <td>RCR = 0.028</td> </tr> <tr> <td>Dermal, systemic, long-term</td> <td><b>4.284 mg/kg bw/day</b> (TRA Workers 3.0)</td> <td>RCR = 0.837</td> </tr> <tr> <td>Dermal, local, long-term</td> <td></td> <td>Qualitative*</td> </tr> <tr> <td>Eye, local</td> <td></td> <td>Qualitative*</td> </tr> <tr> <td>Combined routes, systemic, long-term</td> <td></td> <td>RCR = 0.865</td> </tr> </tbody> </table>			Route of exposure and type of effects	Exposure concentration	Risk characterisation	Inhalation, systemic, long-term	<b>1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR = 0.028	Dermal, systemic, long-term	<b>4.284 mg/kg bw/day</b> (TRA Workers 3.0)	RCR = 0.837	Dermal, local, long-term		Qualitative*	Eye, local		Qualitative*	Combined routes, systemic, long-term		RCR = 0.865
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Eye, local		Qualitative*																		
Combined routes, systemic, long-term		RCR = 0.865																		
<p><b>*Conclusion on risk characterisation (qualitative)</b>  <u>Dermal, local, long-term</u></p>																				

As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local  
 As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

5.3.10. Exposure concentrations and risks for workers:  
 ■ **V12** Use as laboratory reagent (PROC15) ■.

Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>0.034 mg/kg bw/day</b> (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR < 0.01

**\*Conclusion on risk characterisation (qualitative)**  
Dermal, local, long-term  
 As a long sleeved overall (or lab coat) and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local  
 As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

5.3.11. Exposure concentrations and risks for workers:  
 ■ **V12** Manual activities involving hand contact (PROC19) ■.

Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	<b>0.1 mg/m<sup>3</sup></b> (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	<b>2.829 mg/kg bw/day</b> (TRA Workers 3.0)	RCR =0.552
Dermal, local, long-term		Qualitative*
Eye, local		Qualitative*
Combined routes, systemic, long-term		RCR =0.555

**\*Conclusion on risk characterisation (qualitative)**  
Dermal, local, long-term  
 As a long sleeved overall and chemically resistant gloves are worn, the risk of causing local effects via long-term dermal exposure is considered to be controlled.

Eye, local  
 As eye protection is worn, the risk of causing ocular effects is considered to be controlled.

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

Under the described conditions of use no additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers

**Exposure scenario 6: Consumer Use - Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer**

**6.1 Consumer Use - Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer**

**Product category / UCN code:**  
 PC 1, Adhesives, sealants; PC 12, Fertilisers;  
 S50200, Pyrotechnical products

**Environment contributing scenario(s):**

Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer		ERC 8e, ERC 8b
<b>Consumer contributing scenario(s):</b>		
Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches		PC 1
Consumer Use (outdoor and indoor) as part of fertilizer		PC 12
<b>6.2. Conditions of use affecting exposure</b>		
<b>6.2.1. Environmental contributing scenario (1)</b>		
<input type="checkbox"/> <b>V12</b> Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) ERC8e		
Not required as the product is not classified as hazardous to the environment <input type="checkbox"/> .		
<b>6.2.2. Consumer contributing scenario (1): Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches (PC 1)</b>		
<b>Product (article) characteristics</b>		
• Concentration of substance in mixture:	= 0.3 g/g (default)	
<b>Measures related to information and behavioural advice to consumers including personal protection and hygiene</b>		
• Adult/Child assumed:	Adult	
• Use frequency:	Infrequent	
• <input type="checkbox"/> <b>V12</b> Eye Protection:	Chemical goggles or safety glasses with side shields (when the concentration of the ammonium nitrate is $\geq 10\%$ )	
<b>Other conditions affecting consumers exposure</b>		
• Instructions:	Product labelling, showing that the product causes serious eye irritation (when the concentration of the ammonium nitrate is $\geq 10\%$ ) <input type="checkbox"/> .	
• Body parts potentially exposed:	Inside hands / one hand / palm of hands (428.8 cm <sup>2</sup> )	
• Dermal transfer factor:	= 1	
<b>6.2.3. Consumer contributing scenario (2): Consumer Use (outdoor and indoor) as part of fertilizer (PC 12)</b>		
<b>Product (article) characteristics</b>		
• <input type="checkbox"/> <b>V12</b> Concentration of substance in mixture:	= 0.46 g/g (default) <input type="checkbox"/>	
<b>Measures related to information and behavioural advice to consumers including personal protection and hygiene</b>		
• Adult/Child assumed:	Adult	
• Use frequency:	Infrequent	
• <input type="checkbox"/> <b>V12</b> Eye Protection:	Chemical goggles or safety glasses with side shields (when the concentration of the ammonium nitrate is $\geq 10\%$ )	
<b>Other conditions affecting consumers exposure</b>		
• Instructions:	Product labelling, showing that the product causes serious eye irritation (when the concentration of the ammonium nitrate is $\geq 10\%$ ) <input type="checkbox"/> .	
• Body parts potentially exposed:	Inside hands / one hand / palm of hands (428.8 cm <sup>2</sup> )	
• Dermal transfer factor:	= 1	
<b>6.3 Exposure estimation and reference to its source</b>		
<input type="checkbox"/> <b>V12 6.3.1 Environmental exposure</b>		
Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC8b		
Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) ERC8e		
Exposure assessment risk characterization are neither required nor required as the product is not classified as hazardous to the environment <input type="checkbox"/> .		
<b>6.3.2. Exposure and risk for consumers: Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches (PC 1)</b>		
Exposure concentration and risk for consumers		
<b>Route of exposure and type of effects</b>	<b>Exposure concentration</b>	<b>Risk characterisation</b>
Dermal, systemic, long-term	<b>0.858 mg/kg bw/day</b> (TRA Consumer 3.1)	RCR = 0.335

■ <b>V12</b> Eye, local		Qualitative■
Combined routes, systemic, long-term		RCR = 0.335
■ <b>V12</b> Eye, local As chemical goggles or safety glasses with side shields are worn (when the concentration of the substance is 10% or more), the risk of the substance for causing ocular effects is considered to be controlled ■.		
<b>6.3.3 Exposure and risk for consumers: Consumer Use (outdoor and indoor) as part of fertilizer (PC 12)</b>		
Exposure concentration and risk for consumers		
<b>Route of exposure and type of effects</b>	<b>Exposure concentration</b>	<b>Risk characterisation</b>
Dermal, systemic, long-term	<b>1.315 mg/kg bw/day</b> (TRA Consumer 3.1)	RCR = 0.514
■ <b>V12</b> Eye, local		Qualitative■
Combined routes, systemic, long-term		RCR = 0.514
■ <b>V12</b> Eye, local As chemical goggles or safety glasses with side shields are worn (when the concentration of the ammonium nitrate is 10% or more), the risk of the substance for causing ocular effects is considered to be controlled ■.		
<b>6.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>		
Under the described conditions of use no additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers		