

SAFETY DATA SHEET

in accordance with Regulation (EC) 1907/2006 (REACH) and its amendments

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

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	Nitric acid, technical grade
Synonyms	Nitric acid, 57% - 62%; nitric acid
NEOCHIM PLC code	11-01
Unique Formula Identifier (UFI)	YJ13-108J-Y00C-44Q0

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

Relevant identified uses:	Formulation (Fertilizers, Washing and cleaning products, Surface treatment); Intermediate; As reactive processing aid (Cleaning agent, pH regulator, Ion exchange resins regeneration); Wide dispersive use (Fertilizers, Cleaning agent, Metal treatment); Consumer uses (Polishes, Washing and cleaning products) Remarks: For more detail information please see ES provided in the annex
Uses advised against:	The threshold of 3% is to align to the EC regulation 2019/1148 on Precursors of explosives, forbidding to provide nitric acid >3% to consumer

1.3 Details of the supplier of the safety data sheet

Manufacturer: Address: Tel.: URL website: Email:	NEOCHIM PLC East Industrial Zone, Himkombinatska Str. 6403 Dimitrovgrad, Bulgaria +359 391 65 205 http:// www.neochim.bg office@neochim.bg
e-mail address of competent person responsible for the SDS	reach-neochim@neochim.bg

1.4 Emergency telephone number

National Toxicology Center Hospital for Active Medical Treatment and Emergency Medicine "N.I.Pirogov"	+ 359 2 9154 233	24/24 h	7/7 d
---	------------------	---------	-------



SECTION 2: HAZARDS IDENTIFICATION

The most important adverse effects

Physicochemical effects: Strong acid, corrosive and toxic

Human health effects: Nitric acid causes severe burns

Skin contact: Eye contact: Ingestion: Inhalation: Longlasting effect: Environmental hazards:	Highly corrosive, causes severe burns to all parts of the body. Causes severe burns and may cause blindness or permanent damage. Will immediately cause corrosion of and permanent damage to the gastrointestinal tract. Fumes are corrosive to the respiratory tract and will cause severe coughing, sore throat and difficulty in breathing. Fluid build up on the lung (pulmonary oedema) may occur up to 48 hours after exposure and could prove fatal. Acute effects predominate and their severity is such that significant repeated or prolonged exposure is unlikely. Repeated exposure to high levels produces adverse effects on lung and teeth. Harmful to aquatic life due to its acidity.
---	---

2.1 Classification of the substance or mixture in accordance with Regulation 1272/2008 (CLP) and its amendments at the date of the issue of the document		
Corrosive / irritant to skin, hazard category 1A (Skin Corr.1A), H314: Causes severe skin burns and eye damage Causes serious eye damage, hazard category 1 (Eye dam. 1) Substance or mixture, corrosive to metals, hazard category 1 (Met. Corr. 1), H290: May be corrosive to metals Acute toxicity, hazard category 3, (Acute tox. 3), H331: Toxic if inhaled.		
2.2 Label elements		
Labelling in accordance with Regulation 1272/2008 (CLP) and its amendments at the date of the issue of the document.		
Hazard pictogram(s):	 GHS06	 GHS05
Signal word	Danger	
Hazard statement(s):	H314 H290 H331	Causes severe skin burns and eye damage. May be corrosive to metals. Toxic if inhaled.
Supplemental Hazard Statement(s):	EUH071	Corrosive to the respiratory tract
Precautionary statement(s):	P260 P280 P301+P330+ P331 P305+P351+P338+ 310 P303+P361+P353+ 310 P304+P340+P311 P404+P233	Do not breathe vapours. Wear acid resistant protective gloves, chemical safety goggles or full-face shield, acid resistant clothing and boots. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor. Store in a well-ventilated place. Keep container tightly closed.
Additional Labelling: "Making available, introduction, possession or use by the general public is restricted"		
2.3 Other hazards		
PBT/vPvB criteria:	This product contains no substance considered to be persistent, bioaccumulating and toxic (PBT) as well as contains no substance considered to be very persistent and very bioaccumulating (vPvB) according to Regulation (EC) No 1907/2006, Annex XIII.	
Endocrine disrupting properties	Data lacking	

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances - not applicable

3.2 Mixtures - 57- 62% aqueous solution of nitric acid

CAS №	EC №	Index №	REACH registration №	Content, % (w/w)	Name	Classification according to Regulation (EC) No 1272/2008 (CLP), ▫ V12 ATE, SCL▫	Type
7697-37-2	231-714-2	007-030-00-3	01-2119487297-23-0007	57 + 62	Nitric acid	Oxid. Liquid 2, H272 Skin Corr. 1A, H314 Met. Corr. 1, H290 Acute Tox. 3, H331 (ATE = 2.65 mg/L (Vapours)) Specific concentration limits (%): >=99.0 Oxid. Liquid 2, >=65.0 Oxid. Liquid 3, >=20.0 Skin Corr. 1A, H314 >=5.0-<20.0 Skin Corr. 1B, H314	[1], [2]

For full text of Hazard statements: see Section 16

- 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

SECTION 4: FIRST- AID MEASURES

4.1 Description of first aid measures

- general notes	Speed is essential. If unconscious, place casualty in a recovery position with head sideways to avoid choking. Provide shower and eye wash station near the workplace. First-aiders should be protected adequately (see Section 8)
- following eye contact	Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Do not allow victim to rub eyes. Get medical advice/attention.
- following inhalation	Immediately remove contaminated clothing or footwear. Immediately rinse with plenty of water (for at least 15 minutes). Cover the wound with a sterile compress. Seek medical advice immediately.
- following ingestion	Do NOT induce vomiting. If the person is conscious, wash out mouth with water and give water to drink. Seek immediately medical attention.
- following inhalation	Immediately remove the casualty to fresh air and keep at rest in a position comfortable for breathing. If breathing slows down significantly or has completely stopped introduce artificial respiration using a barrier device. Mouth to mouth resuscitation may be dangerous. Administer oxygen if competent person is available.
self-protection of the first aider First aider should protect himself first	Self-protection of the first aider First aider should protect himself first

4.2 Most important symptoms and effects, both acute and delayed

Highly corrosive causes severe skin burns and eye damage. Toxic if inhaled.
Nitric acid fumes may cause immediate irritation of the respiratory tract, pain, and dyspnea which are followed by a period of recovery that may last several weeks. After this period a relapses may occur with death caused by bronchopneumonia and/or pulmonary fibrosis.

4.3 Indication of any immediate medical attention and special treatment needed

Follow advises given in section 4.1.
Following exposure to acid / NO_x fumes, the casualty should be kept under medical supervision for at least 48 hours as delayed pulmonary oedema may develop.

SECTION 5: FIREFIGHTING MEASURES**5.1 Extinguishing media**

Suitable extinguishing media:	Nitric acid is not combustible but if involved in a fire use plenty of water or CO ₂ for extinction.
Unsuitable extinguishing media:	Do not use chemical extinguishers or foams or attempt to smother the fire with steam or sand.

5.2 Special hazards arising from the substance or mixture

May accelerate the burning of other combustible materials (wood, cotton, straw)
Toxic gases are released (NO_x)
On contact with ordinary metals (steel, galvanized, aluminum) corrosion may occur and generate highly flammable hydrogen gas.
May explode in contact with a powerful reducing agent.

5.3 Advice for firefighters

Cool down the containers/equipment exposed to heat with a water spray.
Use water spray to disperse vapors and to protect personnel.
Avoid disposal of contaminated fire fighting water to the environment.
Do not attempt to fight the fire without suitable protective equipment :
- acid-resistant clothing
- complete protective clothing
- self-contained breathing apparatus

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Use suitable protective equipment (see Section 8).
Avoid skin and eye contact and inhalation vapours.
Knock down vapor cloud with water spray or other appropriate solution.
Evacuate unnecessary personnel.

6.2 Environmental precautions

Contain spillage where possible and safe to do.
Dilute with water and neutralise the acid with, for example soda or sodium carbonate, before discharging contaminated material into treatment plants or water courses.
Do not allow product to spread into the environment.
Do not discharge into drains or watercourses.
Inform appropriate authority in case of accidental contamination.

<p>6.3 Methods and material for containment and cleaning up</p> <p>Containment Stop the leak. Confine the product and direct it towards a watertight area. Pump up the product into a spare container suitably labeled.</p> <p>Neutralization Neutralize non-recoverable product with : - slaked lime - carbonates or bicarbonates</p> <p>Cleaning Wash dirty surfaces with water. Neutralize polluted soils with slaked lime, then wash. Never neutralize product whilst it is still inside closed packaging or in a closed emergency container.</p> <p>Disposal Dispose of contaminated materials in accordance with current regulations.</p>	
<p>6.4 Reference to other sections See section 1 for contacts in case of emergency, 8 for personal protective equipment and section 13 for waste disposal.</p>	
<p>SECTION 7: HANDLING AND STORAGE</p>	
<p>7.1 Precautions for safe handling</p>	
<p>7.1.1 Protective measures:</p>	<p>Provide adequate ventilation. Only use materials resistant to acids. For preference use pumping techniques for unloading and discharging. Avoid any direct contact with the product. Do not breathe vapors. Never introduce water or any aqueous agent into tanks or containers containing acids. Avoid spatters. Dilutions or neutralizations are very highly exothermic. Always add small quantities of acid to water, never the opposite. Always use stirring. Do not mix with incompatible materials (See section 10.5).</p>
<p>7.1.2 Advice on general occupation hygiene:</p>	<p>Work under a high standard of personal hygiene. Do not to eat, drink and smoke in work areas. Wash hands before breaks and after use. Remove contaminated clothing and protective equipment before entering eating areas.</p>
<p>7.2 Conditions for safe storage, including any incompatibilities</p>	
<p>Technical measures/ Storage conditions:</p>	<p>The floor of the depot should be impermeable, acid resistant and designed to form a water-tight basin. Corrosive to concrete. Storage tanks must be: - earthed and equipped with an adequate safety valve - linked to a desiccating column - anti-corrosion electrical installations</p> <p>Store in a cool, well-ventilated area (preferably outside). Keep away from heat, ignition sources, direct sunlight and incompatible substances (see section 10). Keep containers tightly closed. Protect containers from corrosion and physical damage.</p> <p>Suitable material: The recommended material for tanks, vessels and accessories is low carbon austenitic stainless steel.</p> <p>Unsuitable materials: Do not use any metal, carbon steel or polypropylene.</p>
<p>7.3 Specific end uses</p>	<p>Consult the provided exposute scenario for the uses of this mixture.</p>

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION	
8.1 Control parameters	
Regulated occupational exposure limit values:	EU Short-term exposure limit (15 minute reference period): 2.6 mg/m ³ (1ppm)
Derived No-Effect Level (DNEL) Nitric acid	<p>End Use: Workers Exposure routes: Inhalation Potential health effects: Acute, Local effects Value: 2,6 mg/m³</p> <p>End Use: Workers Exposure routes: Inhalation Potential health effects: Long-term, Local effects Value: 2,6 mg/m³</p> <p>End Use: Consumer use Exposure routes: Inhalation Potential health effects: Acute, Local effects Value: 1,3 mg/m³</p> <p>End Use: Consumer use Exposure routes: Inhalation Potential health effects: Long-term, Local effects Value: 1,3 mg/m³</p>
Predicted No-Effect Concentration (PNEC) Nitric acid	Not relevant - pH approach (pH should be in the ranger of 6 - 9).
8.2 Exposure controls	
Use closed systems or covering of open containers (e.g. screens). Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.). Use of pliers, grip arms with long handles with manual use "to avoid direct contact and exposure by splashes (no working over one's head)". Local exhaust ventilation is required except for closed processes and outdoor processes.	
8.2.1 Appropriate engineering controls:	Provide adequate ventilation in the workplace. Check regularly work environment factors (dust, noise, lighting, vibration).
8.2.2 Individual protection measures, such as personal protective equipment	
Depending on the risk and on the work performed, adequate protective equipment should be selected and approved by a specialist. Please follow the supplier's instructions about conditions of use and expiration date.	
Respiratory protection:	<p>In case there is any risk of inhalation exposure to the substance, always wear a full-face mask with an acid gas cartridge or wear a supplied air respirator/helmet/suit. Potential inhalation exposure to the substance must be kept to a minimum. The smallest amount inhaled may already have (acute and/or delayed) effects on the respiratory tract.</p> <p>Short- term exposure: Suitable masks EN149 type FF P3, EN 14387 type B or Type E model P3, EN 1827 class FMP3.</p> <p>Long-term of exposure Suitable full mask EN 136, EN 148-1, EN 143, EN 14387, EN 12083 class P3 or class XP3, EN12941 class TH3, EN 12942 TM3, EN14593 or EN138 Self-contained breathing apparatus (EN 133)</p>
Dermal and Eye protection:	In case there is any risk of dermal exposure (via contaminated equipment), always wear suitable acid resistant protective clothing in the working area and wear acid resistant gloves conforming to EN374 (suitable: butyl rubber), chemical safety goggles/full-face shield conforming to EN166 and acid resistant

	boots. Potential dermal exposure to the substance must be kept to a minimum. The smallest amount of an aqueous solution of the substance may already cause severe burns and/or eye damage. When aerosols/mists of nitric acid can be formed, wear a suitable acid resistant chemical safety suit with a supplied air respirator/helmet/suit.
Thermal hazards:	Not applicable
8.2.3 Environmental exposure controls	
8.2.3.1 Industrial uses	Avoid uncontrolled discharging of nitric acid solutions into municipal wastewater treatment station or to surface and underground water because such discharges are expected to cause significant pH changes. Check the pH value is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimized.
8.2.3.2 Professional uses	Avoid uncontrolled discharging of nitric acid solutions into municipal wastewater or to surface or underground water.
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
a) Physical state	Liquid at 20°C and 1013 hPa
b) Colour	Colourless
c) Odour	Pungent, Odour threshold: 0.75 mg/m ³ (0.29 ppm)
d) Melting/Freezing point	-24.96°C (1013 hPa, concentration 60 %)
e) Boiling point;	121.8°C (1013 hPa, concentration 60 %)
f) Flammability	Non flammable
g) Lower and upper exposure limit	Non explosive
h) Flash-point	Not applicable (inorganic substance)
i) Auto-ignition temperature	Not applicable (inorganic substance)
j) Decomposition temperature	No data available
k) pH	< 1 at 20°C
l) Kinematic Viscosity	2.00 mPa s (25°C, concentration 60%)
m) Solubility	500 g/L at 20°C in water
n) Partition coefficient n-octanol/water:	Not applicable (inorganic substance)
o) Vapour pressure:	7.4 hPa (20°C, concentration 60 %)
p) Density and/or relative density	1.366 kg/m ³ (20°C, concentration 60 %)
q) Relative vapour density	No data available
r) Particle characteristics	Not applicable
9.2 Other information	
9.2.1. Information with regards to physical hazard classes	
Oxidising properties:	non oxidizer (<65% HNO ₃)
9.2.2 Other safety characteristics	

Miscible with water in all proportion.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage and handling conditions (see section 7)

10.2 Chemical stability

The product is chemically stable. Thermally stable under recommended storage conditions. Slightly decompose to nitrogen oxides when in contact with light or organic matter.

10.3 Possibility of hazardous reactions

May react violently with reducing agents, strong bases, organic material, chlorides and finely divided metals. Exothermic reaction with water. Reacts with common metals liberating hydrogen.

10.4 Conditions to avoid

High temperature, light.

10.5 Incompatible materials

- reducing materials
- alkalis and caustic products.
- metallic powders
- hydrogen sulphide
- chlorates
- carbides
- non noble metals
- alcohols

10.6 Hazardous decomposition products

When nitric acid is heated, Nitrogen oxides (NO_x) may be formed.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) №1272/2008


Component: nitric acid

Acute Toxicity	Toxic if inhaled
Acute oral toxicity :	No data Remarks: study scientifically unjustified (corrosive)
Acute inhalation toxicity:	LC50 (rats, male): >2 650 mg/m ³ Method: OECD Test Guideline 403
Acute dermal toxicity:	No data Remarks: study scientifically unjustified (corrosive)
Skin corrosion/Irritation	Causes severe burns. Remarks: study scientifically unjustified (corrosive)
Serious eye damage/irritation	Causes serious eye damage. Remarks: study scientifically unjustified (corrosive)
Respiratory or skin sensitisation	
Skin sensitisation:	Based on available data, the classification criteria are not met.
Respiratory sensitisation:	Based on available data, the classification criteria are not met. Remarks: study scientifically unjustified (corrosive)

Mutagenicity	Based on available data, the classification criteria are not met.
Genotoxicity in vitro:	<p>Test Type: Ames test Method: OECD Test Guideline 471 Result: negative</p> <p>Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative Test substance: Sodium nitrate Remarks: Read-across (Analogy)</p> <p>Test Type: In vitro gene mutation study in mammalian cells Method: OECD Test Guideline 476 Result: negative Test substance: Potassium nitrate Remarks: Read-across (Analogy)</p> <p>Remarks: In vitro tests did not show mutagenic effects</p>
Genotoxicity in vivo:	<p>Test Type: in vivo assay Species: Mouse (male) Application Route: Oral Method: No guideline followed Result: negative Test substance: Sodium nitrate Remarks: Read-across (Analogy)</p>
Carcinogenicity	Based on available data, the classification criteria are not met. Remarks: In vitro tests did not show mutagenic effects
Toxicity for reproduction	Based on available data, the classification criteria are not met.
Effects on fertility	<p>Species: Rat Application Route: Ingestion General Toxicity - Parent: No observed adverse effect level (NOAEL): 1 500 mg/kg bw/day General Toxicity F1: No observed adverse effect level (NOAEL) : 1 500 mg/kg bw/day Method: OECD Test Guideline 422 Remarks: Read-across (Analogy)</p>
Effects on fetal development	<p>Species: Rat Application Route: Ingestion General Toxicity Maternal: NOAEL: 1 500 mg/kg bw/day Teratogenicity: NOAEL: 1 500 mg/kg bw/day Method: OECD Test Guideline 422 Remarks: Read-across (Analogy)</p>
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.
	<p>Species: Rat NOAEL: 1 500 mg/kg/day Application Route: Oral Method: OECD Test Guideline 422 Test substance: Potassium nitrate Remarks: Read-across (Analogy)</p>

	<p>Species: Rat NOAEC: $\geq 2,15$ ppm Application Route: Inhalation Method: OECD Test Guideline 413 Test substance: Nitrogen dioxide Remarks: Read-across (Analogy)</p>
Aspiration toxicity	<p>Based on available data, the classification criteria are not met.</p> <p>Remarks: Aspiration of nitric acid vapours may cause pulmonary oedema and bronchopneumonia and/or pulmonary fibrosis. Symptoms may be delayed.</p>
11.2 Information on other hazards	
11.2.1 Endocrine disrupting properties - data lacking	
11.2.2 Other information - data lacking	
SECTION 12: ECOLOGICAL INFORMATION	
12.1 Toxicity <i>Components: nitric acid</i>	
Fish (short-term):	<p>Median lethal pH (Lepomis macrochirus (Bluegill sunfish)): 3 - 3,5 Exposure time: 96 h Method: No guideline followed Remarks: Fresh water</p> <p>Median lethal pH (Oncorhynchus mykiss (rainbow trout)): ca. 3,7 Exposure time: 96 h Method: No guideline followed Remarks: Fresh water</p>
Aquatic invertebrates (short-term):	<p>Median lethal pH (Ceriodaphnia dubia (water flea)): 4,4 - 4,7 Exposure time: 48 h Method: US EPA Guideline Remarks: Fresh water</p>
Algae:	<p>NOEC (algae): 6,75 mmol/l Exposure time: 10 d Test Type: Growth inhibition Test substance: Potassium nitrate Remarks: Marine water Read-across (Analogy)</p>
Microorganizims:	<p>EC50 : > 1 000 mg/l Exposure time: 3 h Test Type: Respiration inhibition of activated sludge Test substance: Sodium nitrate Method: OECD Test Guideline 209 Remarks: Read-across (Analogy)</p>
Fish (long-term):	<p>NOEC: 268 mg nitrate/l Exposure time: 30 d Test substance: Sodium nitrate Remarks: Read-across (Analogy)</p> <p>NOEC: 157 mg nitrate/l Exposure time: 32 d Species: fathead minnow (Pimephales promelas)</p>

Ecotoxicology Assessment Acute aquatic toxicity :	Test substance: Sodium nitrate Remarks: Read-across (Analogy) Toxic effects caused by acidity of the mixture.
12.2 Persistence and degradability <i>Components: nitric acid</i>	
Biodegradability	Remarks: study scientifically unjustified (inorganic)
Impact on Sewage Treatment	Not relevant
12.3 Bioaccumulative potential <i>Components: nitric acid</i>	
Bioaccumulation	Remarks: Does not accumulate in organisms. (inorganic, completely soluble in water)
Partition coefficient: n-octanol/water	log Pow: -0,21 Remarks: concentration 70 %
12.4 Mobility in soil <i>Components: nitric acid</i>	
Mobility	Medium: Water Remarks: completely soluble Medium: Soil Remarks: Not expected to adsorb on soil.
12.5 Results of PBT and vPvB assessment Product: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT). This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB) according to Regulation (EC) No 1907/2006, Annex XIII. <i>Components: nitric acid</i> The substance is not considered to be persistent, bioaccumulating and toxic (PBT) as well as is not considered to be very persistent and very bioaccumulating (vPvB) according to Regulation (EC) No 1907/2006, Annex XIII.	
12.6 Endocrine disrupting properties - Data lacking	
12.7 Other adverse effects – no other information available	
12.8 Additional information - Data lacking	

SECTION 13: DISPOSAL CONSIDERATIONS	
Waste treatment methods	Residue of the product to be neutralized carefully with lime or carbonates Dispose of in accordance with relevant local regulations. Avoid solution of nitric acid to enter into municipal wastewater or to surface or underground water. Deliver this product to licensed companies only for disposal.
Package waste disposal:	The used packing is designed only for packing of this product. After usage, empty the packing completely. Empty packages should be kept separately and provided for recycling. Reuse of packages are not allowed. Incineration or landfill should be taken into account only when recycling is not possible. The national legal requirements for waste management to be observed.
SECTION 14: TRANSPORT INFORMATION	
14.1 UN number ADR/RID	UN2031
14.2 UN proper shipping name ADR/RID	NITRIC ACID, other than red fuming, with less than 65% nitric acid
14.3 Transport hazard class ADR/RID	8
14.4 Packing group ADR/RID Classification code Packing group Hazard identification number Label	C1 II 80 
Tunnel restrictions (ADR)	E
14.5 Environmental hazard	no
14.6 Special precautions for users	The person transporting the product must be trained and know how to respond to an accident or spillage
14.7 Maritime transport in bulk according to IMO instruments	Not applicable

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/ legislation specific for the substance or mixture:	<p>Regulation EC 1907/2006 (REACH), Regulation EC 1272/2008 (CLP), Directive 2012/18/EU (SevesoIII), Quantity 1) 50 t; Quantity 2) - 200 t</p> <p>“Making available, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148 on the marketing and use of explosive precursors.” All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://home-affairs.ec.europa.eu/system/files/2021-11/list_of_competent_authorities_and_national_contact_points_en.pdf</p> <p>"</p> <p>* Regulations / legislation and amendments to the date of issue of the document are indicated</p>
15.2 Chemical safety assessment:	In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for this product.

Other EU regulations: Nitric acid is not the ozone depletion substance as well as persistent organic pollutant

SECTION 16: OTHER INFORMATION

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

16.2 Abbreviations and acronyms

H314: Causes severe skin burns and eye damage.
H272: May intensify fire; oxidiser.
H290: May be corrosive to metals.
EUH071: Corrosive to the respiratory tract.

Oxid. Liquid 3 – Oxidising liquid, hazard category 3
Skin Corr. 1A - Corrosive / irritant to skin, hazard category 1A
Met. Corr. 1 - Substance or mixture, corrosive to metals, hazard category 1
Acute tox. 3 - Acute toxicity, hazard category 3

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
LOEC - lowest observed effect concentration
NOEC - no observed effect concentration

16.3 Sources of key data used to compile the Safety Data Sheet. Chemical Safety Report, Nitric acid. FARM REACH Consortium, 2017

16.4 Life cycle stages of the mixture for which the exposure scenarios are provided in the annex

- ES 1: Manufacture of nitric acid <70%.
- ES 2: Formulation of mixtures using Nitric acid < 70%.
- ES 3: Use of Nitric acid < 70% at industrial site as intermediate
- ES 4: Use of Nitric acid < 70% at industrial site as reactive processing aid.
- ES 5: Widespread use of Nitric acid < 70% by professional workers.
- ES 6: Consumer use - Use of Nitric acid containing products (< 3%) .

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 - EXPOSURE SCENARIOS

1. Exposure scenario (2): Formulation or (re)packing - Formulation of mixtures using Nitric acid < 70%

Description of activities and processes covered in the exposure scenario

Main User Groups (SU)	SU 3: Industrial uses: Uses of substances as such or in a mixture at industrial sites
Product category (PC)	PC12: Fertilisers PC 14: Metal surface treatment products, including galvanic and electroplating products PC 15: Non-metal-surface treatment products PC 35: Washing and cleaning products (including solvent based products)
Process category (PROC)	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 15: Use as laboratory reagent.
Environmental release category (ERC)	ERC 2: Formulation of preparations

2.1. Contributing scenario controlling environmental exposure for: ERC 2: Formulation of preparations

Conditions of use affecting exposure	
Amount used, frequency and duration of use (or from service life)	
Annual use amount at site	Not relevant for the required assessment(s)
Daily use amount at site	Not relevant for the required assessment(s)
Conditions and measures related to biological sewage treatment plant	
Biological STP	Not relevant for the required assessment(s)
Other conditions affecting environmental exposure	

Adjust pH of waste water when containing the substance	
There is no release of the substance to air (as the substance is rigorously contained by technical means)	
2.2. Contributing scenario controlling worker exposure for:	
<p>General measure. All worker activities combined in one scenario</p> <p>Use in closed process, no likelihood of exposure.</p> <p>Use in closed, continuous process with occasional controlled exposure.</p> <p>Use in closed batch process (synthesis or formulation).</p> <p>Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>Use as laboratory reagent.</p>	<p>PROC 1</p> <p>PROC 2</p> <p>PROC 3</p> <p>PROC 4</p> <p>PROC 5</p> <p>PROC 8a</p> <p>PROC 8b</p> <p>PROC 9</p> <p>PROC 15</p>
Conditions of use affecting exposure	
Product characteristics	
Percentage (w/w) of substance in mixture/article:	< 70%
Physical form of the used product:	Liquid (aqueous solution)
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration of activities in the working area:	≤ 8 hours/day (all worker activities combined)
Amount used:	Not relevant
Technical and organisational conditions and measures	
<ul style="list-style-type: none"> • Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. In case a certain amount of the substance is not contained, a worker is not exposed to the substance as the use takes place in a fume hood or as the worker wears personal protective equipment and uses local exhaust ventilation. Formation of aerosols/mists/splashes is prevented. • Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour) • Local exhaust ventilation: Use indoor local exhaust ventilation when vapour/mist/spray of nitric acid could be present in the air within the breathing zone of a worker. • Gas monitoring: Use stationary and/or portable NOx monitors in the working place, monitoring normal NOx levels at well below 2.6 mg/m³ • Organisational measures: Minimise the number of staff in the working area where there is potential for exposure. Minimise manual activities. Train employees how to safely handle the substance, incl. how to use personal protection equipment. Regularly clean up the working area. Have supervision in place to regularly check that the conditions of use are followed by the workers. Ensure that all equipment is well maintained. Ascertain that personal protection equipment is available and used according to the instructions. Ensure that eyewash stations and safety showers are available in the working area. 	
Conditions and measures related to personal protection, hygiene and health evaluation	
For personal protection and hygiene see Section 8 and Section 7.	
3. Exposure estimation and reference to its source	
3.1 Contributing scenario controlling environmental exposure for ERC 2	
Local releases to the environment	

Release	Release estimation method	Explanations
Water	Not applicable, see explanations	The release to waste water is not determined nor needed for the required assessment(s). Moreover, independent on this release, the risk management measure of adjusting the pH of the waste water is only needed.
Air	Estimated release rate	Local release rate: 0 kg/day The substance is rigorously contained by technical means.
Non-agricultural soil	Not applicable, see explanations	The release to non-agricultural soil is not determined nor needed for the required assessment(s).

Exposure and risk

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (systemic effects)	Concentration in air: 0 mg/m ³	Qualitative risk (see below)
Man via environment - Inhalation (local effects)	Concentration in air: 0 mg/m ³	RCR < 0.01
Man via environment - Oral		Qualitative risk (see below)

Man via environment - Inhalation (systemic effects):

Local effects emerge before systemic effects potentially appear. Moreover, nitric acid is not expected to become systemically available. The performed exposure assessment and risk characterisation for Man via environment - Inhalation (local effects) is therefore protective for Man via environment - Inhalation (systemic effects).

Man via environment - Oral:

Potential risks from oral indirect exposure to nitric acid is considered negligible. Indirect oral exposure to humans, through the consumption of food (e.g. fish, crops, meat and milk) and drinking water, is not relevant for nitric acid. As soon as nitric acid is in contact with water, it is present as nitrate, considered to be regulated in the human body similar to the endogenous nitrate. Nitric acid is not expected to become systemically available.

3.2 Contributing scenario controlling worker exposure for all activities

Route of exposure and type of effects	Risk quantification
Inhalation, systemic, long term	Qualitative (see below)
Inhalation, systemic, acute	Qualitative (see below)
Inhalation, local, long term	Qualitative (see below)
Inhalation, local, acute	Qualitative (see below)
Dermal, systemic, long term	Qualitative (see below)
Dermal, systemic, acute	Qualitative (see below)
Dermal, local, long term	Qualitative (see below)
Dermal, local, acute	Qualitative (see below)
Eye, local	Qualitative (see below)

■ **Conclusion**

Taking into account the operational conditions and risk management measures (when there is any possibility of exposure), the risk of causing effects is considered to be controlled. Potential exposure to the substance is kept to a minimum.

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

Risk management measures and operational conditions which enables users to work safely with the mixture are described in the provided data sheet.

1. Exposure scenario (3): Use at industrial sites - Use of Nitric acid < 70% as intermediate

Description of activities and processes covered in the exposure scenario

Main User Groups (SU)	SU 3: Industrial uses: Uses of substances as such or in a mixture at industrial sites
Sector of end use	SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 0: Other: nuclear fuel cycle
Process category (PROC)	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 15: Use as laboratory reagent.
Environmental release category (ERC)	ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)

2.1. Contributing scenario controlling environmental exposure for: ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Conditions of use affecting exposure	
Amount used, frequency and duration of use (or from service life)	
Annual use amount at site	Not relevant for the required assessment(s)
Daily use amount at site	Not relevant for the required assessment(s)
Conditions and measures related to biological sewage treatment plant	
Biological STP	Not relevant for the required assessment(s)
Other conditions affecting environmental exposure	
Adjust pH of waste water when containing the substance	
There is no release of the substance to air (as the substance is rigorously contained by technical means)	

2.2. Contributing scenario controlling worker exposure for:

<p>General measure. All worker activities combined in one scenario</p> <p>Use in closed process, no likelihood of exposure.</p> <p>Use in closed, continuous process with occasional controlled exposure.</p> <p>Use in closed batch process (synthesis or formulation).</p> <p>Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>Use as laboratory reagent.</p>	<p>PROC 1</p> <p>PROC 2</p> <p>PROC 3</p> <p>PROC 4</p> <p>PROC 5</p> <p>PROC 8a</p> <p>PROC 8b</p> <p>PROC 9</p> <p>PROC 15:</p>
---	---

Conditions of use affecting exposure

Product characteristics		
Percentage (w/w) of substance in mixture/article:	< 70%	
Physical form of the used product:	Liquid (aqueous solution)	
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration of activities in the working area:	≤ 8 hours/day (all worker activities combined)	
Amount used:	Not relevant	
Technical and organisational conditions and measures		
<ul style="list-style-type: none"> • Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. In case a certain amount of the substance is not contained, a worker is not exposed to the substance as the use takes place in a fume hood or as the worker wears personal protective equipment and uses local exhaust ventilation. Formation of aerosols/mists/splashes is prevented. • Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour) • Local exhaust ventilation: Use indoor local exhaust ventilation when vapour/mist/spray of nitric acid could be present in the air within the breathing zone of a worker. • Gas monitoring: Use stationary and/or portable NO_x monitors in the working place, monitoring normal NO_x levels at well below 2.6 mg/m³ • Organisational measures: Minimise the number of staff in the working area where there is potential for exposure. Minimise manual activities. Train employees how to safely handle the substance, incl. how to use personal protection equipment. Regularly clean up the working area. Have supervision in place to regularly check that the conditions of use are followed by the workers. Ensure that all equipment is well maintained. Ascertain that personal protection equipment is available and used according to the instructions. Ensure that eyewash stations and safety showers are available in the working area. 		
Conditions and measures related to personal protection, hygiene and health evaluation		
For personal protection and hygiene see Section 8 and Section 7.		
3. Exposure estimation and reference to its source		
<p>▣ V10 3.1 Contributing scenario controlling environmental exposure for ERC 6a Local releases to the environment and</p>		
Release	Release estimation method	Explanations
Water	Not applicable, see explanations	The release to waste water is not determined nor needed for the required assessment(s). Moreover, independent on this release, the risk management measure of adjusting the pH of the waste water is only needed.
Air	Estimated release rate	Local release rate: 0 kg/day The substance is rigorously contained by technical means.
Non-agricultural soil	Not applicable, see explanations	The release to non-agricultural soil is not determined nor needed for the required assessment(s).
Exposure and risk		
Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (systemic effects)	Concentration in air: 0 mg/m ³	Qualitative risk (see below)
Man via environment - Inhalation (local effects)	Concentration in air: 0 mg/m ³	RCR < 0.01
Man via environment - Oral		Qualitative risk (see below)
<p><i>Man via environment - Inhalation (systemic effects):</i> Local effects emerge before systemic effects potentially appear. Moreover, nitric acid is not expected to become</p>		

systemically available. The performed exposure assessment and risk characterisation for Man via environment - Inhalation (local effects) is therefore protective for Man via environment - Inhalation (systemic effects).

Man via environment - Oral:

Potential risks from oral indirect exposure to nitric acid is considered negligible. Indirect oral exposure to humans, through the consumption of food (e.g. fish, crops, meat and milk) and drinking water, is not relevant for nitric acid. As soon as nitric acid is in contact with water, it is present as nitrate, considered to be regulated in the human body similar to the endogenous nitrate. Nitric acid is not expected to become systemically available.

3.2 Contributing scenario controlling worker exposure for all activities

Route of exposure and type of effects	Risk quantification
Inhalation, systemic, long term	Qualitative (see below)
Inhalation, systemic, acute	Qualitative (see below)
Inhalation, local, long term	Qualitative (see below)
Inhalation, local, acute	Qualitative (see below)
Dermal, systemic, long term	Qualitative (see below)
Dermal, systemic, acute	Qualitative (see below)
Dermal, local, long term	Qualitative (see below)
Dermal, local, acute	Qualitative (see below)
Eye, local	Qualitative (see below)

▣ **Conclusion**

Taking into account the operational conditions and risk management measures (when there is any possibility of exposure), the risk of causing effects is considered to be controlled. Potential exposure to the substance is kept to a minimum.

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

Risk management measures and operational conditions which enables users to work safely with the mixture are described in the provided data sheet.

1. Exposure scenario (4): Use at industrial sites - Use of Nitric acid < 70% as reactive processing aid (Cleaning agent, pH regulator, waste gas treatment, ion exchange resins regeneration, metal treatment, plastic treatment, surface treatment product, water treatment).

Description of activities and processes covered in the exposure scenario

Main User Groups (SU)	SU 3: Industrial uses: Uses of substances as such or in a mixture at industrial sites
Sector of end use	SU 2a: Mining (without offshore industries) SU 4: Manufacture of food products SU 6a: Manufacture of wood and wood products SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 12: Manufacture of plastics products, including compounding and conversion SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 16: Manufacture of computer, electronic and optical products, electrical equipment SU 19: Building and construction work SU 23: Electricity, steam, gas water supply and sewage treatment SU 0: Other: C21-Manufacture of basic pharmaceutical products, nuclear fuel cycle
Product category (PC)	PC 14: Metal surface treatment products, including galvanic and electroplating products PC 15: Non-metal-surface treatment products PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 35: Washing and cleaning products (including solvent based products) PC 37: Water treatment chemicals PC 0: Other: UCN code : A052 50 ion exchanger

Process category (PROC)	<p>PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 7: Industrial spraying PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 10: Roller application or brushing PROC 13: Treatment of articles by dipping and pouring PROC 15: Use as laboratory reagent.</p>	
Environmental release category (ERC)	<p>ERC 6b: Industrial use of reactive processing aids ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles</p>	
2.1. Contributing scenario controlling environmental exposure for: ERC 6b: Industrial use of reactive processing aids, ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles		
Conditions of use affecting exposure		
Amount used, frequency and duration of use (or from service life)		
Annual use amount at site	Not relevant for the required assessment(s)	
Daily use amount at site	Not relevant for the required assessment(s)	
Conditions and measures related to biological sewage treatment plant		
Biological STP	Not relevant for the required assessment(s)	
Other conditions affecting environmental exposure		
Adjust pH of waste water when containing the substance		
There is no release of the substance to air (as the substance is rigorously contained by technical means)		
2.2. Contributing scenario controlling worker exposure for:		
<p>General measure. All worker activities combined in one scenario Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Use in batch and other process (synthesis) where opportunity for exposure arises. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Industrial spraying Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Roller application or brushing Treatment of articles by dipping and pouring Use as laboratory reagent.</p>	<p>PROC 1 PROC 2 PROC 3 PROC 4 PROC 5 PROC 7</p> <p>PROC 8a</p> <p>PROC 8b</p> <p>PROC 9 PROC 10 PROC 13 PROC 15</p>	
Conditions of use affecting exposure		
Product characteristics		

Percentage (w/w) of substance in mixture/article:	< 70%
Physical form of the used product:	Liquid (aqueous solution)
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration of activities in the working area:	≤ 8 hours/day (all worker activities combined)
Amount used:	Not relevant

Technical and organisational conditions and measures

- **Containment:** Under standard operating conditions the substance is rigorously contained by technical means in the working area. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. In case a certain amount of the substance is not contained, a worker is not exposed to the substance as the use takes place in a fume hood or as the worker wears personal protective equipment and uses local exhaust ventilation. Formation of aerosols/mists/splashes is prevented.
- **Ventilation conditions in the working area:** Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour)
- **Local exhaust ventilation:** Use indoor local exhaust ventilation when vapour/mist/spray of nitric acid could be present in the air within the breathing zone of a worker.
- **Gas monitoring:** Use stationary and/or portable NOx monitors in the working place, monitoring normal NOx levels at well below 2.6 mg/m³
- **Organisational measures:** Minimise the number of staff in the working area where there is potential for exposure. Minimise manual activities. Train employees how to safely handle the substance, incl. how to use personal protection equipment. Regularly clean up the working area. Have supervision in place to regularly check that the conditions of use are followed by the workers. Ensure that all equipment is well maintained. Ascertain that personal protection equipment is available and used according to the instructions. Ensure that eyewash stations and safety showers are available in the working area.

Conditions and measures related to personal protection, hygiene and health evaluation

For personal protection and hygiene see Section 8 and Section 7.

3. Exposure estimation and reference to its source

3.1 Contributing scenario controlling environmental exposure for ERC 4; ERC 66

Local releases to the environment

Release	Release estimation method	Explanations
Water	Not applicable, see explanations	The release to waste water is not determined nor needed for the required assessment(s). Moreover, independent on this release, the risk management measure of adjusting the pH of the waste water is only needed.
Air	Estimated release rate	Local release rate: 0 kg/day The substance is rigorously contained by technical means.
Non-agricultural soil	Not applicable, see explanations	The release to non-agricultural soil is not determined nor needed for the required assessment(s).

Exposure and risk

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (systemic effects)	Concentration in air: 0 mg/m ³	Qualitative risk (see below)
Man via environment - Inhalation (local effects)	Concentration in air: 0 mg/m ³	RCR < 0.01

Man via environment - Oral

Qualitative risk (see below)

Man via environment - Inhalation (systemic effects):

Local effects emerge before systemic effects potentially appear. Moreover, nitric acid is not expected to become systemically available. The performed exposure assessment and risk characterisation for Man via environment - Inhalation (local effects) is therefore protective for Man via environment - Inhalation (systemic effects).

Man via environment - Oral:

Potential risks from oral indirect exposure to nitric acid is considered negligible. Indirect oral exposure to humans, through the consumption of food (e.g. fish, crops, meat and milk) and drinking water, is not relevant for nitric acid. As soon as nitric acid is in contact with water, it is present as nitrate, considered to be regulated in the human body similar to the endogenous nitrate. Nitric acid is not expected to become systemically available.

3.2 Contributing scenario controlling worker exposure for all activities

Route of exposure and type of effects	Risk quantification
Inhalation, systemic, long term	Qualitative (see below)
Inhalation, systemic, acute	Qualitative (see below)
Inhalation, local, long term	Qualitative (see below)
Inhalation, local, acute	Qualitative (see below)
Dermal, systemic, long term	Qualitative (see below)
Dermal, systemic, acute	Qualitative (see below)
Dermal, local, long term	Qualitative (see below)
Dermal, local, acute	Qualitative (see below)
Eye, local	Qualitative (see below)

Conclusion

Taking into account the operational conditions and risk management measures (when there is any possibility of exposure), the risk of causing effects is considered to be controlled. Potential exposure to the substance is kept to a minimum.

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

Risk management measures and operational conditions which enables users to work safely with the mixture are described in the provided data sheet.

1. Exposure scenario (5): Widespread use by professional workers - Use of Nitric acid < 70% by professional worker (outdoor and indoor of reactive substances in open systems as cleaning agent, pH regulator, metal treatment)

Description of activities and processes covered in the exposure scenario

Main User Groups (SU)	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of end use	SU 1: Agriculture, forestry and fishing SU 2a: Mining (without offshore industries) SU 4: Manufacture of food products SU 6a: Manufacture of wood and wood products SU 12: Manufacture of plastics products, including compounding and conversion SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 16: Manufacture of computer, electronic and optical products, electrical equipment SU 19: Building and construction work SU 23: Electricity, steam, gas water supply and sewage treatment
Product category (PC)	PC 12: Fertilisers PC 14: Metal surface treatment products, including galvanic and electroplating products PC 15: Non-metal-surface treatment products PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 35: Washing and cleaning products (including solvent based products)

Process category (PROC)	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 7: Industrial spraying PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 10: Roller application or brushing PROC 11: Non industrial spraying PROC 13: Treatment of articles by dipping and pouring PROC 15: Use as laboratory reagent. PROC 19: Hand-mixing with intimate contact and only PPE available.	
Environmental release category (ERC)	ERC 8e: Wide dispersive outdoor use of reactive substances in open systems ERC 8b: Wide dispersive indoor use of reactive substances in open systems	
2.1. Contributing scenario controlling environmental exposure for: ERC 8e: Wide dispersive outdoor use of reactive substances in open systems, ERC 8b: Wide dispersive indoor use of reactive substances in open systems		
Conditions of use affecting exposure		
Amount used, frequency and duration of use (or from service life)		
Annual use amount at site	Not relevant for the required assessment(s)	
Daily use amount at site	Not relevant for the required assessment(s)	
Conditions and measures related to biological sewage treatment plant		
Biological STP	Not relevant for the required assessment(s)	
Other conditions affecting environmental exposure		
Adjust pH of waste water when containing the substance		
2.2. Contributing scenario controlling worker exposure for:		
General measure. All worker activities combined in one scenario Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Industrial spraying Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Roller application or brushing Non industrial spraying Treatment of articles by dipping and pouring Use as laboratory reagent. Hand-mixing with intimate contact and only PPE available.	PROC 1 PROC 2 PROC 3 PROC 5 PROC 7 PROC 8a PROC 8b PROC 9 PROC 10 PROC 11 PROC 13 PROC 15 PROC 19	
Conditions of use affecting exposure		

Product characteristics		
Percentage (w/w) of substance in mixture/article:	< 70%	
Physical form of the used product:	Liquid (aqueous solution)	
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration of activities in the working area:	≤ 8 hours/day (all worker activities combined)	
Amount used:	Not relevant	
Technical and organisational conditions and measures		
<ul style="list-style-type: none"> • Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. In case a certain amount of the substance is not contained, a worker is not exposed to the substance as the use takes place in a fume hood or as the worker wears personal protective equipment and uses local exhaust ventilation. Formation of aerosols/mists/splashes is prevented. • Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour) • Local exhaust ventilation: Use indoor local exhaust ventilation when vapour/mist/spray of nitric acid could be present in the air within the breathing zone of a worker. • Gas monitoring: Use stationary and/or portable NO_x monitors in the working place, monitoring normal NO_x levels at well below 2.6 mg/m³ • Organisational measures: Minimise the number of staff in the working area where there is potential for exposure. Minimise manual activities. Train employees how to safely handle the substance, incl. how to use personal protection equipment. Regularly clean up the working area. Have supervision in place to regularly check that the conditions of use are followed by the workers. Ensure that all equipment is well maintained. Ascertain that personal protection equipment is available and used according to the instructions. Ensure that eyewash stations and safety showers are available in the working area. 		
Conditions and measures related to personal protection, hygiene and health evaluation		
For personal protection and hygiene see Section 8 and Section 7.		
3. Exposure estimation and reference to its source		
3.1 Contributing scenario controlling environmental exposure for ERC 8e; ERC 8b		
Local releases to the environment		
Release	Release estimation method	Explanations
Water	Not applicable, see explanations	The release to waste water is not determined nor needed for the required assessment(s) Moreover, independent on this release, the risk management measure of adjusting the pH of the waste water is only needed.
Air	Estimated release rate	Local release rate: negligible
Non-agricultural soil	Not applicable, see explanations	The release to non-agricultural soil is not determined nor needed for the required assessment(s).
Exposure and risk		
Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (systemic effects)	Concentration in air: negligible	Qualitative risk (see below)
Man via environment - Inhalation (local effects)	Concentration in air: negligible	RCR < 0.01
Man via environment - Oral		Qualitative risk (see below)

Man via environment - Inhalation (systemic effects):

Local effects emerge before systemic effects potentially appear. Moreover, nitric acid is not expected to become systemically available. The performed exposure assessment and risk characterisation for Man via environment - Inhalation (local effects) is therefore protective for Man via environment - Inhalation (systemic effects).

Man via environment - Oral:

Potential risks from oral indirect exposure to nitric acid is considered negligible. Indirect oral exposure to humans, through the consumption of food (e.g. fish, crops, meat and milk) and drinking water, is not relevant for nitric acid. As soon as nitric acid is in contact with water, it is present as nitrate, considered to be regulated in the human body similar to the endogenous nitrate. Nitric acid is not expected to become systemically available.

3.2 Contributing scenario controlling worker exposure for all activities

Route of exposure and type of effects	Risk quantification
Inhalation, systemic, long term	Qualitative (see below)
Inhalation, systemic, acute	Qualitative (see below)
Inhalation, local, long term	Qualitative (see below)
Inhalation, local, acute	Qualitative (see below)
Dermal, systemic, long term	Qualitative (see below)
Dermal, systemic, acute	Qualitative (see below)
Dermal, local, long term	Qualitative (see below)
Dermal, local, acute	Qualitative (see below)
Eye, local	Qualitative (see below)

Conclusion

Taking into account the operational conditions and risk management measures (when there is any possibility of exposure), the risk of causing effects is considered to be controlled. Potential exposure to the substance is kept to a minimum.

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

Risk management measures and operational conditions which enables users to work safely with the mixture are described in the provided data sheet.

1. Exposure scenario (6): Consumer use - Use of Nitric acid containing products (< 3%)

Description of activities and processes covered in the exposure scenario	
Main User Groups (SU)	SU 21: Consumer uses: Private households (= general public = consumers)
Product category (PC)	PC 3: Air care products PC 12: Fertilisers PC 31: Polishes and wax blends PC 35: Washing and cleaning products (including solvent based products)
Environmental release category (ERC)	ERC 8e: Wide dispersive outdoor use of reactive substances in open systems ERC 8b: Wide dispersive indoor use of reactive substances in open systems

2.1. Contributing scenario controlling environmental exposure for: ERC 8e: Wide dispersive outdoor use of reactive substances in open systems, ERC 8b: Wide dispersive indoor use of reactive substances in open systems

Conditions of use affecting exposure

Amount used, frequency and duration of use (or from service life)

Annual use amount at site	Not relevant for the required assessment(s)
Daily use amount at site	Not relevant for the required assessment(s)

Conditions and measures related to biological sewage treatment plant		
Biological STP	Not relevant	
2.2. Contributing scenario controlling consumers exposure for:		
Air care products Fertilisers Polishes and wax blends Washing and cleaning products (including solvent based products)	PC 3 PC 12 PC 31 PC 35	
Exposure assessment and risk characterisation are not required		
Nitric acid	< 3%	
3. Exposure estimation and reference to its source		
V10 3.1 Contributing scenario controlling environmental exposure for ERC 8e; ERC 8b Local releases to the environment		
Release	Release estimation method	Explanations
Water	Not applicable, see explanations	The release to waste water is not determined nor needed for the required assessment(s). See chapter 9.0.3.2. for further details. Moreover, independent on this release, only a pH effect is possible, which is not considered likely given the very low amounts possibly released to waste water during these uses.
Air	Estimated release rate	Local release rate: negligible
Non-agricultural soil	Not applicable, see explanations	The release to non-agricultural soil is not determined nor needed for the required assessment(s).
Exposure and risk		
Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (systemic effects)	Concentration in air: negligible	Qualitative risk (see below)
Man via environment - Inhalation (local effects)	Concentration in air: negligible	RCR < 0.01
Man via environment - Oral		Qualitative risk (see below)
<i>Man via environment - Inhalation (systemic effects):</i> Local effects emerge before systemic effects potentially appear. Moreover, nitric acid is not expected to become systemically available. The performed exposure assessment and risk characterisation for Man via environment - Inhalation (local effects) is therefore protective for Man via environment - Inhalation (systemic effects).		
<i>Man via environment - Oral:</i> Potential risks from oral indirect exposure to nitric acid is considered negligible. Indirect oral exposure to humans, through the consumption of food (e.g. fish, crops, meat and milk) and drinking water, is not relevant for nitric acid. As soon as nitric acid is in contact with water, it is present as nitrate, considered to be regulated in the human body similar to the endogenous nitrate. Nitric acid is not expected to become systemically available.		
3.2 Contributing scenario controlling consumers, Use of Nitric acid containing products (< 3%)		
Exposure assessment and risk characterisation are not needed		
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES		
Not relevant		