

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
 Name : Nitric acid 60%
 Chemical name : Nitric acid
 EC-No. : 231-714-2
 CAS-No. : 7697-37-2
 REACH registration No : 01-2119487297-23-0027
 Formula : HNO₃

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Industrial use
 Professional settings
 See annex for more detailed information

1.2.2. Uses advised against

Restrictions on use : Consumer use

1.3. Details of the supplier of the safety data sheet

Supplier

OCI Nitrogen B.V.
 Poststraat 1
 P.O. Box 601
 6135 KR Sittard - The Netherlands
 T +31 (0) 46 7020111
info.agro@ocinitrogen.com - www.ocinitrogen.com

1.4. Emergency telephone number

Emergency number : Alert & Care Centre Chemelot (Geleen, The Netherlands): +31 (0) 46 4765555 (24/7)

Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	National Health Service (NHS)		111 999 (in life-threatening emergencies)	
Wales	National Health Service (NHS)		0845 46 47	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Corrosive to metals, Category 1 H290
 Acute toxicity (inhal.), Category 3 H331
 Skin corrosion/irritation, Category 1 H314
 Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

May be corrosive to metals. Toxic if inhaled. Causes severe skin burns and eye damage.

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Contains :

Nitric acid

Hazard statements (CLP) :

H290 - May be corrosive to metals.

H314 - Causes severe skin burns and eye damage.

H331 - Toxic if inhaled.

Precautionary statements (CLP) :

P260 - Do not breathe gas, mist, spray, vapours.

P280 - Wear eye protection, protective clothing, protective gloves.

P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water .

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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

P310 - Immediately call a POISON CENTER or doctor.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

EUH-statements :

EUH071 - Corrosive to the respiratory tract.

Extra phrases :

Optional measures : Diphoterine®.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	Conc. (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Nitric acid substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK); substance with a Community workplace exposure limit	(CAS-No.) 7697-37-2 (EC-No.) 231-714-2 (EC Index-No.) 007-004-00-1 (REACH-no) 01-2119487297-23	≥ 20 – ≤ 65	Ox. Liq. 2, H272 Met. Corr. 1, H290 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1, H314

Specific concentration limits:

Name	Product identifier	Specific concentration limits
Nitric acid	(CAS-No.) 7697-37-2 (EC-No.) 231-714-2 (EC Index-No.) 007-004-00-1 (REACH-no) 01-2119487297-23	(70 ≤C < 99) Ox. Liq. 3, H272 (99 ≤C ≤ 100) Ox. Liq. 2, H272

Full text of H- and EUH-statements: see section 16

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SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Call a physician immediately. Give first-aid treatment according to the nature of the injury. Rinse with plenty of water. Flush with Diphoterine®.
First-aid measures after inhalation	: Call a physician immediately. Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, trained personnel should give oxygen. Do not apply mouth-to-mouth resuscitation. Move the affected person away from the contaminated area and into the fresh air. Symptoms may be delayed.
First-aid measures after skin contact	: Call a physician immediately. Rinse skin with water/shower. Take off immediately all contaminated clothing. Flush with Diphoterine®. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: Call a physician immediately. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Flush with Diphoterine®.
First-aid measures after ingestion	: Call a physician immediately. Rinse mouth. Do not induce vomiting. Give water to drink if victim completely conscious/alert.

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

Symptoms/effects after skin contact	: Burns. irritation (itching, redness, blistering).
Symptoms/effects after eye contact	: Serious damage to eyes.
Symptoms/effects after ingestion	: Burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

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

Treat symptomatically. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
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5.2. Special hazards arising from the substance or mixture

Fire hazard	: The product is not flammable. Heating will cause a rise in pressure with a risk of bursting.
Hazardous decomposition products in case of fire	: Toxic fumes may be released. Under fire conditions, hazardous fumes will be present: Nitrogen oxides. Contact with metals could evolve flammable hydrogen gas.

5.3. Advice for firefighters

Firefighting instructions	: Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Evacuate unnecessary personnel. Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe Mist, spray, Vapours, fume, gas. Wear personal protective equipment. Stay upwind/keep distance from source.
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6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Avoid release to the environment.

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6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Stop leak without risks if possible.
- Methods for cleaning up : The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or calcium hydroxide. Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Do not breathe gas, Mist, spray, Vapours. Wear personal protective equipment. Handle in accordance with good industrial hygiene and safety procedures. Avoid contact with skin, eyes and clothing. Contact lenses should not be worn. Wash hands thoroughly after handling. Remove contaminated clothing. Do not eat, drink or smoke when using this product. See annex for more detailed information.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in accordance with local, regional, national or international regulation. Protect from sunlight. Keep only in original container. Store locked up. Keep container tightly closed. Store in a dry, cool and well-ventilated place.
- Incompatible materials : Refer to Section 10 on Incompatible Materials.
- Packaging materials : Stainless steel. Glass. Polyvinylchloride (PVC). Polytetrafluoroethylene (PTFE).

7.3. Specific end use(s)

See annex for more detailed information.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Nitric acid 60% (7697-37-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nitric acid
IOELV STEL (mg/m ³)	2.6 mg/m ³
IOELV STEL (ppm)	1 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
Ireland - Occupational Exposure Limits	
Local name	Nitric acid
OEL (15 min ref) (mg/m ³)	2.6 mg/m ³
OEL (15 min ref) (ppm)	1 ppm
Regulatory reference	Chemical Agents Code of Practice 2020
United Kingdom - Occupational Exposure Limits	
Local name	Nitric acid
WEL STEL (mg/m ³)	2.6 mg/m ³
WEL STEL (OEL STEL) [ppm]	1 ppm

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Nitric acid 60% (7697-37-2)	
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

Nitric acid (7697-37-2)

EU - Indicative Occupational Exposure Limit (IOEL)

Local name	Nitric acid
IOELV STEL (mg/m ³)	2.6 mg/m ³
IOELV STEL (ppm)	1 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC

Ireland - Occupational Exposure Limits

Local name	Nitric acid
OEL (15 min ref) (mg/m ³)	2.6 mg/m ³
OEL (15 min ref) (ppm)	1 ppm
Regulatory reference	Chemical Agents Code of Practice 2020

United Kingdom - Occupational Exposure Limits

Local name	Nitric acid
WEL STEL (mg/m ³)	2.6 mg/m ³
WEL STEL (OEL STEL) [ppm]	1 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Nitric acid 60% (7697-37-2)	
DNEL/DMEL (Workers)	
Long-term - local effects, inhalation	2.6 mg/m ³
DNEL/DMEL (General population)	
Long-term - local effects, inhalation	1.3 mg/m ³

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Additional advice: Portable Diphoterine® eyewashers. See annex for more detailed information.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

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Eye protection:

Chemical goggles or safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Type	Standard
Chemical resistant apron	
Boots	

Hand protection:

Protective gloves

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Protective gloves	Fluoroelastomer (FKM), Viton® II	6 (> 480 minutes)	0.4		EN 374
Protective gloves	Chloroprene rubber (CR), Polyvinylchloride (PVC)	4 (> 120 minutes)	0.5		EN 374

8.2.2.3. Respiratory protection

Respiratory protection:

Wear respiratory protection. Full face mask

Device	Filter type	Condition	Standard
	ABEK, NO P3 15		

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless, Brown
Odour	: Pungent
Odour threshold	: 0.75 – 2.5 ppm
Melting point	: -35 – -18 °C
Boiling point	: 104 – 122 °C
Flammability	: Not flammable
Explosive limits	: Not available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: > 200 °C
pH	: < 1
Viscosity, kinematic	: Not available
Viscosity, dynamic	: 0.75 mPa.s (25°C)
Solubility	: Soluble
Vapour pressure	: 9.4 – 9.5 hPa at 20 °C

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Density	: Not available
Relative density	: 1.35 (water = 1)
Relative vapour density at 20 °C	: 2.2 (air = 1)
Particle size	: Not available
Particle size distribution	: Not available
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Corrosive to metals.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

The product reacts with metals with evolution of highly flammable hydrogen. Exothermic reaction with water. Risk of explosion if heated in a confined system. May cause or intensify fire; oxidiser.

10.4. Conditions to avoid

Keep away from heat, sparks and flames.

10.5. Incompatible materials

Metals. Alkalis. Combustible materials. Organic materials. alcohols. Aldehydes. Amines. Strong alkalis. Halogens. Organic solvents. Polypropylene. Carbon steel.

10.6. Hazardous decomposition products

No other hazards identified Nitrogen oxides, Carbon oxides (CO, CO₂), Hydrogen.

SECTION 11: Toxicological information

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

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Toxic if inhaled.

Nitric acid 60% (7697-37-2)	
ATE CLP (gases)	700 ppmv/4h
ATE CLP (vapours)	3 mg/l/4h
ATE CLP (dust,mist)	0.5 mg/l/4h

Nitric acid (7697-37-2)	
LC50 Inhalation - Rat	> 2.65 mg/l/4h

Skin corrosion/irritation	: Causes severe skin burns. pH: < 1
Serious eye damage/irritation	: Serious damage to eyes pH: < 1
Respiratory or skin sensitisation	: Not classified

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Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified

Nitric acid (7697-37-2)	
NOAEL (oral, rat, 90 days)	1500 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEC (inhalation, rat, gas, 90 days)	2.15 ppm Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

Aspiration hazard : Not classified

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : Contains no substances identified as having endocrine disrupting properties

11.2.2 Other information

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Before neutralisation, the product may represent a danger to aquatic organisms.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Not classified

Nitric acid (7697-37-2)	
LC50 fish 1	72 mg/l

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Nitric acid (7697-37-2)	
Partition coefficient n-octanol/water (Log Pow)	-2.3 (at 25 °C)

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Nitric acid 60% (7697-37-2)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : Contains no substances identified as having endocrine disrupting properties

Nitric acid 60%

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

12.7. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems






SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations : Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

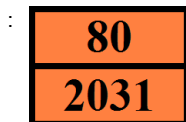
ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 2031	UN 2031	UN 2031	UN 2031	UN 2031
14.2. UN proper shipping name				
NITRIC ACID	NITRIC ACID	Nitric acid,	NITRIC ACID	NITRIC ACID
14.3. Transport hazard class(es)				
8	8	8	8	8
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Special transport precautions : See transport regulations for UN number specific special precautions.

Overland transport

Orange plates



EAC code : 2P

APP code : B

Transport by sea

No data available

Air transport

No data available

Inland waterway transport

No data available

Rail transport

No data available

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

Reference code	Applicable on	Entry title or description
3(a)	Nitric acid	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	Nitric acid 60% ; Nitric acid	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Other information, restriction and prohibition regulations : This product is subject to Regulation (EU) 2019/1148, all suspicious transactions, disappearances and thefts should be reported to the relevant authority.

Directive 2012/18/EU (SEVESO III)

Seveso Additional information : Dangerous substance category per Seveso Directive (2012/18/EU): H2 Quantity 1: 50t, Quantity 2: 200t.

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

See annex for more detailed information

SECTION 16: Other information

Indication of changes:

Details of the supplier of the safety data sheet.

Training advice : Ensure staff are informed of and trained on the nature of exposure and basic actions to minimise exposure.

Abbreviations and acronyms:

PBT	Persistent Bioaccumulative Toxic
vPvB	Very Persistent and Very Bioaccumulative
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

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ICAO	International Civil Aviation Organization
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
DNEL	Derived-No Effect Level
PNEC	Predicted No-Effect Concentration
EC50	Median effective concentration
NOEC	No-Observed Effect Concentration
BCF	Bioconcentration factor
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association

Full text of H- and EUH-statements:

Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
EUH071	Corrosive to the respiratory tract.
H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H331	Toxic if inhaled.
Met. Corr. 1	Corrosive to metals, Category 1
Ox. Liq. 2	Oxidising Liquids, Category 2
Ox. Liq. 3	Oxidising Liquids, Category 3
Skin Corr. 1	Skin corrosion/irritation, Category 1

Safety Data Sheet applicable for regions : IE - Ireland;GB - United Kingdom

SDS EU (REACH Annex II) - RHDHV

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

1. EXPOSURE SCENARIO

Exposure scenario 1
Title Manufacturing

Use descriptor

Process categories

PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure (e.g. sampling)
 PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or mixture (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
 PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
 PROC15 - Use as laboratory reagent

Environmental release categories ERC1 - Manufacture of substances

2. CONDITIONS OF USE AFFECTING EXPOSURE

Product characteristics
Physical state @20°C Liquid, Aqueous solution.
Concentration of substance in product 60%.

Frequency and duration of use ≤ 8 hours/day.

Contributing scenarios

Control of environmental exposure	
Environmental Release Category	ERC1 - Manufacture of substances
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Control of environmental exposure	Not required

Control of worker exposure	
Process category	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Technical conditions and measures at process level (source) to prevent release	Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. The activities take place in a standardized way, under controlled conditions with dedicated equipment. 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. Organisational measures: Minimise the number of staff in the working area. 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. Suitable material: The recommended material for tanks, vessels and accessories is low carbon

Annex to the Safety Data Sheet
Exposure scenario 1 Manufacturing

	<p>austenitic stainless steel. Unsuitable materials: Do not use any metal, carbon steel or polypropylene. Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour). Storage conditions: Store in a well-ventilated place (preferably outside). In an area equipped with acid resistant flooring. Protect from sunlight. Keep containers tightly closed. Keep away from combustible materials, heat, hot surfaces, sparks, open flames and other ignition sources. Gas monitoring: Use stationary and/or portable NOx monitors in the working place.</p>
Conditions and Measures Related to Personal Protection, Hygiene, and Health Evaluation	<p>General: Work under a high standard of personal hygiene. Wash hands and face before breaks. Do not eat, drink or smoke in the working area. Respiratory protection: 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. 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 (and chemical safety goggles/full-face shield conforming to EN166). 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. Suitable material: butyl/fluorinated rubber.</p>

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Environment Exposure Estimation	
Environment Exposure Estimation	Not determined Quantitative exposure and risk assessment not available

Health Exposure Estimation	
Health Exposure Estimation	Not determined Quantitative exposure and risk assessment not available

4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

Environmental exposure

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

Control of worker exposure

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For scaling see ECETOC TRA, ART, STOFFENMANAGER, EUSES.

1. EXPOSURE SCENARIO

Exposure scenario Title	2 Formulation [mixing] of preparations and/or re-packaging
Use descriptor	
Product category	PC12 - Fertilisers PC14 - Metal surface treatment products, including galvanic and electroplating products PC15 - Non-metal-surface treatment products PC35 - Washing and cleaning products (including solvent based products)
Process categories	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure (e.g. sampling) PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or mixture (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 PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Environmental release categories	ERC2 - Formulation of mixtures

2. CONDITIONS OF USE AFFECTING EXPOSURE

Product characteristics	
Physical state @20°C	Liquid, Aqueous solution.
Concentration of substance in product	60%.

Frequency and duration of use ≤ 8 hours/day.

Contributing scenarios

Control of environmental exposure

Environmental Release Category	ERC2 - Formulation of mixtures
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Control of environmental exposure	Not required

Control of worker exposure

Process category	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Technical conditions and measures at process level (source) to prevent release	Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. The activities take place in a standardized way, under controlled conditions with dedicated equipment. In case a certain amount of the substance is not

	<p>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.</p> <p>Organisational measures: Minimise the number of staff in the working area. 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.</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>Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour).</p> <p>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.</p> <p>Storage conditions: Store in a well-ventilated place (preferably outside). In an area equipped with acid resistant flooring. Protect from sunlight. Keep containers tightly closed. Keep away from combustible materials, heat, hot surfaces, sparks, open flames and other ignition sources.</p> <p>Gas monitoring: Use stationary and/or portable NOx monitors in the working place.</p>
Conditions and Measures Related to Personal Protection, Hygiene, and Health Evaluation	<p>General: Work under a high standard of personal hygiene. Wash hands and face before breaks. Do not eat, drink or smoke in the working area.</p> <p>Respiratory protection: 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>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 (and chemical safety goggles/full-face shield conforming to EN166). 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.</p> <p>When aerosols/mists of nitric acid can be formed, wear a suitable acid resistant chemical safety suit with a supplied air respirator/helmet/suit.</p> <p>Suitable material: butyl/fluorinated rubber.</p>

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Environment Exposure Estimation

Environment Exposure Estimation	Not determined Quantitative exposure and risk assessment not available
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Health Exposure Estimation

Health Exposure Estimation	Not determined Quantitative exposure and risk assessment not available
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4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

Environmental exposure

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

Control of worker exposure

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For scaling see ECETOC TRA, ART, STOFFENMANAGER, EUSES.

1. EXPOSURE SCENARIO

Exposure scenario Title	3 Industrial use, Use as an intermediate.
Use descriptor	
Sector of use	SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals SU0 - Other
Product category	PC19 - Intermediates
Process categories	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure (e.g. sampling) PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or mixture (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 PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Environmental release categories	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

2. CONDITIONS OF USE AFFECTING EXPOSURE

Product characteristics	
Physical state @20°C	Liquid, Aqueous solution.
Concentration of substance in product	60%.
Frequency and duration of use	≤ 8 hours/day.
Contributing scenarios	

Control of environmental exposure	
Environmental Release Category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Control of environmental exposure	Not required

Control of worker exposure	
Process category	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15 - Use as laboratory reagent
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Technical conditions and measures at	Containment: Under standard operating conditions the substance is rigorously contained by

Annex to the Safety Data Sheet

Exposure scenario 3 Industrial use, Use as an intermediate.

process level (source) to prevent release	<p>technical means in the working area. The activities take place in a standardized way, under controlled conditions with dedicated equipment. 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.</p> <p>Organisational measures: Minimise the number of staff in the working area. 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.</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>Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour).</p> <p>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.</p> <p>Storage conditions: Store in a well-ventilated place (preferably outside). In an area equipped with acid resistant flooring. Protect from sunlight. Keep containers tightly closed. Keep away from combustible materials, heat, hot surfaces, sparks, open flames and other ignition sources.</p> <p>Gas monitoring: Use stationary and/or portable NOx monitors in the working place.</p>
Conditions and Measures Related to Personal Protection, Hygiene, and Health Evaluation	<p>General: Work under a high standard of personal hygiene. Wash hands and face before breaks. Do not eat, drink or smoke in the working area.</p> <p>Respiratory protection: 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>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 (and chemical safety goggles/full-face shield conforming to EN166). 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.</p> <p>When aerosols/mists of nitric acid can be formed, wear a suitable acid resistant chemical safety suit with a supplied air respirator/helmet/suit.</p> <p>Suitable material: butyl/fluorinated rubber.</p>

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Environment Exposure Estimation	
Environment Exposure Estimation	Not determined Quantitative exposure and risk assessment not available

Health Exposure Estimation	
Health Exposure Estimation	Not determined Quantitative exposure and risk assessment not available

4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

Environmental exposure

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

Control of worker exposure

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For scaling see ECETOC TRA, ART, STOFFENMANAGER, EUSES.

1. EXPOSURE SCENARIO

Exposure scenario Title	4 Industrial use, Industrial cleaning.
Use descriptor	
Sector of use	SU2a - Mining, (without offshore industries) SU4 - Manufacture of food products SU6a - Manufacture of wood and wood products SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals SU10 - Formulation [mixing] of preparations and/or re-packaging SU12 - Manufacture of plastics products, including compounding and conversion SU14 - Manufacture of basic metals, including alloys SU15 - Manufacture of fabricated metal products, except machinery and equipment SU16 - Manufacture of computer, electronic and optical products, electrical equipment SU19 - Building and construction work SU23 - Recycling
Product category	PC0 - Other Products PC14 - Metal surface treatment products, including galvanic and electroplating products PC15 - Non-metal-surface treatment products PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecified PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals
Process categories	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure (e.g. sampling) PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC7 - Industrial spraying PROC8a - Transfer of substance or mixture (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 PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 - Roller application or brushing PROC13 - Treatment of articles by dipping and pouring PROC15 - Use as laboratory reagent
Environmental release categories	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC6b - Industrial use of reactive processing aids

2. CONDITIONS OF USE AFFECTING EXPOSURE

Product characteristics	
Physical state @20°C	Liquid, Aqueous solution.
Concentration of substance in product	60%.
Frequency and duration of use	≤ 8 hours/day.
Contributing scenarios	

Control of environmental exposure	
Environmental Release Category	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Annex to the Safety Data Sheet
Exposure scenario 4 Industrial use, Industrial cleaning.

	ERC6b - Industrial use of reactive processing aids
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Control of environmental exposure	Not required

Control of worker exposure	
Process category	<p>PROC1 - Use in closed process, no likelihood of exposure</p> <p>PROC2 - Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3 - Use in closed batch process (synthesis or formulation)</p> <p>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact)</p> <p>PROC7 - Industrial spraying</p> <p>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities</p> <p>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10 - Roller application or brushing</p> <p>PROC13 - Treatment of articles by dipping and pouring</p> <p>PROC15 - Use as laboratory reagent</p>
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Technical conditions and measures at process level (source) to prevent release	<p>Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. The activities take place in a standardized way, under controlled conditions with dedicated equipment. 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.</p> <p>Organisational measures: Minimise the number of staff in the working area. 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.</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>Ventilation conditions in the working area: Use only outdoors or in a well-ventilated area (approximately 5 air changes per hour).</p> <p>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.</p> <p>Storage conditions: Store in a well-ventilated place (preferably outside). In an area equipped with acid resistant flooring. Protect from sunlight. Keep containers tightly closed. Keep away from combustible materials, heat, hot surfaces, sparks, open flames and other ignition sources.</p> <p>Gas monitoring: Use stationary and/or portable NOx monitors in the working place.</p>
Conditions and Measures Related to Personal Protection, Hygiene, and Health Evaluation	<p>General: Work under a high standard of personal hygiene. Wash hands and face before breaks. Do not eat, drink or smoke in the working area.</p> <p>Respiratory protection: 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>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 (and chemical safety goggles/full-face shield conforming to EN166). 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.</p> <p>When aerosols/mists of nitric acid can be formed, wear a suitable acid resistant chemical safety suit with a supplied air respirator/helmet/suit.</p> <p>Suitable material: butyl/fluorinated rubber.</p>

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Environment Exposure Estimation	
Environment Exposure Estimation	Not determined Quantitative exposure and risk assessment not available

Health Exposure Estimation	
Health Exposure Estimation	Not available Quantitative exposure and risk assessment not available

4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE

WORKS INSIDE THE BOUNDARIES SET BY THE ES

Environmental exposure

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

Control of worker exposure

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For scaling see ECETOC TRA, ART, STOFFENMANAGER, EUSES.

1. EXPOSURE SCENARIO

Exposure scenario Title	5 Professional use, Professional cleaning.
Use descriptor	
Sector of use	SU1 - Agriculture, forestry, fishery SU2a - Mining, (without offshore industries) SU4 - Manufacture of food products SU6a - Manufacture of wood and wood products SU12 - Manufacture of plastics products, including compounding and conversion SU14 - Manufacture of basic metals, including alloys SU15 - Manufacture of fabricated metal products, except machinery and equipment SU16 - Manufacture of computer, electronic and optical products, electrical equipment SU19 - Building and construction work SU23 - Recycling
Product category	PC12 - Fertilisers PC14 - Metal surface treatment products, including galvanic and electroplating products PC15 - Non-metal-surface treatment products PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecified PC35 - Washing and cleaning products (including solvent based products)
Process categories	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure (e.g. sampling) PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or mixture (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 PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 - Roller application or brushing PROC11 - Non industrial spraying PROC13 - Treatment of articles by dipping and pouring PROC15 - Use as laboratory reagent PROC19 - Hand-mixing with intimate contact and only PPE available
Environmental release categories	ERC8b - Wide dispersive indoor use of reactive substances in open systems ERC8e - Wide dispersive outdoor use of reactive substances in open systems

2. CONDITIONS OF USE AFFECTING EXPOSURE

Product characteristics
Physical state @20°C Liquid, Aqueous solution.
Concentration of substance in product 60%.

Frequency and duration of use ≤ 8 hours/day.

Contributing scenarios

Control of environmental exposure	
Environmental Release Category	ERC8b - Wide dispersive indoor use of reactive substances in open systems ERC8e - Wide dispersive outdoor use of reactive substances in open systems
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Control of environmental exposure	Not required

Annex to the Safety Data Sheet

Exposure scenario 5 Professional use, Professional cleaning.

Control of worker exposure	
Process category	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10 - Roller application or brushing PROC11 - Non industrial spraying PROC13 - Treatment of articles by dipping and pouring PROC15 - Use as laboratory reagent PROC19 - Hand-mixing with intimate contact and only PPE available
Product characteristics	Liquid
Frequency and duration of use	≤ 8 hours/day
Technical conditions and measures at process level (source) to prevent release	Containment: Under standard operating conditions the substance is rigorously contained by technical means in the working area. The activities take place in a standardized way, under controlled conditions with dedicated equipment. 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. Organisational measures: Minimise the number of staff in the working area. 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. Suitable material: The recommended material for tanks, vessels and accessories is low carbon austenitic stainless steel. Unsuitable materials: Do not use any metal, carbon steel or polypropylene. 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. Storage conditions: Store in a well-ventilated place (preferably outside). In an area equipped with acid resistant flooring. Protect from sunlight. Keep containers tightly closed. Keep away from combustible materials, heat, hot surfaces, sparks, open flames and other ignition sources. Gas monitoring: Use stationary and/or portable NOx monitors in the working place.
Conditions and Measures Related to Personal Protection, Hygiene, and Health Evaluation	General: Work under a high standard of personal hygiene. Wash hands and face before breaks. Do not eat, drink or smoke in the working area. Respiratory protection: 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. 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 (and chemical safety goggles/full-face shield conforming to EN166). 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. Suitable material: butyl/fluorinated rubber.

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Environment Exposure Estimation

Environment Exposure Estimation | Not determined Quantitative exposure and risk assessment not available

Health Exposure Estimation

Health Exposure Estimation | Not determined Quantitative exposure and risk assessment not available

4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

Environmental exposure

Annex to the Safety Data Sheet

Exposure scenario 5 Professional use, Professional cleaning.

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

Control of worker exposure

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For scaling see ECETOC TRA, ART, STOFFENMANAGER, EUSES.