

Date of issue/ Date of revision : 05.08.2021
Date of previous issue : 00.00.0000
Version : 1.0



SAFETY DATA SHEET

Nitric Acid 60%

Section 1. Identification

Product identifier : Nitric Acid 60%
Product type : Liquid
Product code : PA03CL

Uses

Area of application : Industrial applications

Supplier

Supplier's details : Yara Pilbara Nitrates Pty Ltd

Address

Street : Level 5, 182 St Georges Terrace
Postal code : 6000
City : Perth
Country : Australia

Telephone number : +61 8 9183 4000
Fax no. : +61 8 9185 6776
e-mail address of person responsible for this SDS : info.yara.pilbara@yara.com
Emergency telephone number (with hours of operation) : 1800 117 506


Section 1. National advisory body/Poison Center

Name : Poisons Information Centre
Telephone number : 131126
Hours of operation : 24 hours, within Australia only

Section 2. Hazard(s) identification

Classification of the substance or mixture. : CORROSIVE TO METALS - Category 1
ACUTE TOXICITY inhalation - Category 3
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms	:	
Signal word	:	DANGER
Hazard statements	:	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled.
<u>Precautionary statements</u>		
Prevention	:	P280 Wear protective gloves/clothing and eye/face protection.
Response	:	P260 Do not breathe gas or vapour. P305 IF IN EYES: P351 Rinse cautiously with water for several minutes. P338 Remove contact lenses, if present and easy to do. Continue rinsing.
		P304 IF INHALED: P340 Remove person to fresh air and keep comfortable for breathing.
		P310 Immediately call a POISON CENTER or doctor/physician.
		P303 IF ON SKIN (or hair): P361 Take off immediately all contaminated clothing.
		P353 Rinse skin with water.
Storage	:	P234 Keep only in original packaging.
Supplemental label elements	:	Not applicable.
Other hazards which do not result in classification	:	None known.
Additional information	:	Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air.

Section 3. Composition and ingredient information

Substance/mixture : Substance

CAS number/other identifiers

Other means of identification : Nitric acid ... %

CAS number : 7697-37-2

Ingredient name	CAS number	% (w/w)
nitric acid	7697-37-2	60

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. Get medical attention immediately. Chemical burns must be treated promptly by a physician.
- Inhalation** : Avoid inhalation of vapor, spray or mist. If inhaled, remove to fresh air. Get medical attention immediately. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If necessary, call a poison center or physician.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Chemical burns must be treated promptly by a physician.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Get medical attention.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Toxic if inhaled. Vapor is strongly irritating to the eyes and respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following: pain, watering, redness
- Inhalation** : Adverse symptoms include the following: wheezing and breathing difficulties, asthma
- Skin contact** : Adverse symptoms may include the following: pain or irritation, blistering may occur
- Ingestion** : May cause burns to mouth, throat and stomach.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without

suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None identified.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst. Reacts violently with water. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Acidic. In a fire, decomposition may produce toxic gases/fumes.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials: nitrogen oxides, Avoid breathing dusts, vapors or fumes from burning materials., In case of inhalation of decomposition products in a fire, symptoms may be delayed.
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Remark** : Non-explosive.
- Hazchem or Emergency Action Code** : 2R

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution

(sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container. Spillages should be cleaned up promptly to avoid damage to surrounding materials.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental

contamination. Bund storage facilities to prevent soil and water pollution in the event of spillage.

Specific recommendations to end users : Store container tightly closed in well-ventilated place.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
nitric acid	Safe Work Australia (1995-05-01) STEL 10 mg/m ³ 4 ppm TWA 5.2 mg/m ³ 2 ppm

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.


Individual protection measures

Hygiene measures : A washing facility or water for eye and skin cleaning purposes should be present. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
Recommended: face shield, CEN: EN136,

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. For general applications, we recommend gloves with a thickness typically greater than 0.35 mm. It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. For products with high concentrations and high risk of exposure, testing of glove quality and resistance must be done.
4 - 8 hours (breakthrough time): Viton®, neoprene
1 - 4 hours (breakthrough time): PVC

Body protection	:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Recommended Protective clothing
Other skin protection	:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:	In case of inadequate ventilation wear respiratory protection. Recommended Filter ABEK NO P3 15.
Personal protective equipment (Pictograms)	:	

Section 9. Physical and chemical properties

Appearance

Physical state	:	Liquid
Color	:	Colorless to light yellow.,
Odor	:	pungent, acrid
Odor threshold	:	0.29 ppm
pH	:	< 1
Melting/freezing point	:	-21 °C
Boiling/condensation point	:	119.3 °C (246.7 °F)
Sublimation temperature	:	Not determined.
Flash point	:	Not determined.
Evaporation rate	:	Not determined.
Flammability (solid, gas)	:	Non-flammable.
Lower and upper explosive (flammable) limits	:	Lower: Not determined. Upper: Not determined.
Vapor pressure	:	8.6 hPa @ 20 °C (68 °F) 1.1 hPa @ 20 °C (68 °F) (HNO ₃)
Bulk density	:	1,366.7 kg/m ³
Density	:	1.3667 g/cm ³ @ 20 °C (68 °F)
Relative density	:	Not determined.
Solubility	:	Miscible in water.
Miscibility with water	:	> 100 g/l @ 20 °C (68 °F)
Partition coefficient: n-octanol/water	:	Not determined.
Auto-ignition temperature	:	Not determined.
Decomposition temperature	:	Not determined.
Viscosity	:	Dynamic: Not determined. Kinematic: Not determined.

Explosive properties : Non-explosive.
Oxidizing properties : None

Section 10. Stability and reactivity

Reactivity : May be corrosive to metals. Expert judgment

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid contamination by any source including metals, dust and organic materials.

Remark : Avoid contact with combustible materials.
Avoid contact with organic materials.

Incompatible materials : Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Reactive or incompatible with the following materials:., alkalis, metals

Remark : Corrosive to brass.
Corrosive to galvanized metal.
Reactive with copper, zinc, silver, magnesium.
- Product may release nitrogen oxides (NO, NO₂ etc.).

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Method	Species	Result	Exposure	References
nitric acid	OECD 403 LC50 Inhalation Vapor	Rat	2.65 mg/l	4 h	IUCLID 5

Conclusion/Summary : Toxic if inhaled.

Irritation/Corrosion

Conclusion/Summary

Skin : Corrosive to skin on contact.

Eyes : Corrosive to eyes.

Respiratory : Corrosive to the respiratory system.

Sensitization

Conclusion/Summary

- Skin** : Corrosive.
- Respiratory** : Corrosive.

Mutagenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Carcinogenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Reproductive toxicity

Product/ingredient name	Method	Species	Result	Exposure	References
nitric acid					
	OECD 422 Oral	Rat	Fertility effects- Negative Developmental- Negative > 1500 mg/kg	28 days	IUCLID 5

- Conclusion/Summary** : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

No known significant effects or critical hazards.

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

- Information on the likely routes of exposure:** : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Toxic if inhaled. Vapor is strongly irritating to the eyes and respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following: pain, watering, redness
- Inhalation** : Adverse symptoms include the following: wheezing and breathing difficulties, asthma
- Skin contact** : Adverse symptoms may include the following: pain or irritation, blistering may occur
- Ingestion** : May cause burns to mouth, throat and stomach.

Delayed and immediate effects and also chronic effects from short and long term exposure**Short term exposure**

Potential immediate effects : Causes severe burns.

Potential delayed effects : shortness of breath/breathing difficulty

Long term exposure

Potential immediate effects : Causes severe burns.

Potential delayed effects : shortness of breath/breathing difficulty skin necrosis

Potential chronic health effects

Product/ingredient name	Method	Species	Result	Exposure	References
nitric acid					
	OECD 422 Sub-acute NOAEL Oral	Rat	1,500 mg/kg	28 days	IUCLID 5

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Effects on or via lactation : No known significant effects or critical hazards.

Other effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following: pain, watering, redness

Inhalation : Adverse symptoms include the following: wheezing and breathing difficulties, asthma

Skin contact : Adverse symptoms may include the following: pain or irritation, blistering may occur

Ingestion : May cause burns to mouth, throat and stomach.

Numerical measures of toxicity**Acute toxicity estimates**

Route	ATE value
Inhalation (vapors)	4.417 mg/l

Section 12. Ecological information**Toxicity**

Product/ingredient name	Method	Species	Result	Exposure	References
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nitric acid					
	Acute LC50 Marine water	Carp	> 100 mg/l	96 h	IUCLID5
	Acute LC50 Marine water	Water flea	180 mg/l	48 h	IUCLID5
	OECD 209 Acute EC50 Activated sludge	Activated sludge	> 1,000 mg/l	3 h	IUCLID

Conclusion/Summary : The product is not expected to harm the environment when used properly according to directions.

Persistence and degradability

Conclusion/Summary : Readily biodegradable in plants and soils.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
nitric acid	-0.21	Not applicable.	low

Conclusion/Summary : This product is not expected to bioaccumulate through food chains in the environment.

Mobility in soil

Soil/water partition coefficient (KOC) : < 1

Mobility : Not available.


Other adverse effects : No known significant effects or critical hazards.


Section 13. Disposal considerations


Product

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.


Section 14. Transport information

Regulation: ADG	
14.1 UN number	
14.2 UN proper shipping name	NITRIC ACID
14.3 Transport hazard class(es)	8 
14.4 Packing group	
14.5 Environmental hazards	
Additional information Hazchem or Emergency Action Code: 2R	

Regulation: ADR/RID	
14.1 UN number	2031
14.2 UN proper shipping name	NITRIC ACID
14.3 Transport hazard class(es)	8 
14.4 Packing group	II
14.5 Environmental hazards	
Additional information Hazard identification number : 80 Tunnel code : (E) Hazchem or Emergency Action Code : 2R	

Regulation: IMDG	
14.1 UN number	2031
14.2 UN proper shipping name	NITRIC ACID
14.3 Transport hazard class(es)	8 
14.4 Packing group	II
14.5 Environmental hazards	

Additional information	
IMDG Code Segregation group	: SG1A
Emergency schedules (EmS)	: F-A, S-B

Regulation: IATA	
14.1 UN number	2031
14.2 UN proper shipping name	NITRIC ACID
14.3 Transport hazard class(es)	8 
14.4 Packing group	II
14.5 Environmental hazards	
Additional information	

14.6 Special precautions for user : Transport within user's premises: Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Remark : N3

The product is only regulated as an environmentally hazardous substance when transported in tank vessels.

IMSBC : Not applicable.

Transport in bulk according to IMO instruments	Proper shipping name	: Nitric acid (less than 70%)
	Ship type	: 2
	Pollution category	: Y

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines and Poisons

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Inventory list

Philippines inventory (PICCS): All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.

Korea inventory: All components are listed or exempted.

Japan inventory: All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

Australia inventory (AICS): All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.

United States inventory (TSCA 8b): All components are active or exempted.

EC INVENTORY (EINECS/ELINCS): All components are listed or exempted.

Canada: All components are listed or exempted.

Viet Nam: All components are listed or exempted.

Section 16. Any other relevant information

Key to abbreviations

- : ADG = Australian Dangerous Goods
- : ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- : ATE = Acute Toxicity Estimate
- : BCF = Bioconcentration Factor
- : bw = Body weight
- : GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- : IATA = International Air Transport Association
- : IBC = Intermediate Bulk Container
- : IMDG = International Maritime Dangerous Goods
- : LogPow = logarithm of the octanol/water partition coefficient
- : MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- : SGG = Segregation Group
- : SUSMP = Standard Uniform Schedule of Medicine and Poisons
- : UN = United Nations

Procedure used to derive the classification

Classification	Justification
CORROSIVE TO METALS - Category 1	Calculation method
ACUTE TOXICITY inhalation - Category 3	Calculation method
SKIN CORROSION/IRRITATION - Category 1	On basis of test data
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	On basis of test data

Key data sources

- : EU REACH ECHA/IUCLID5 CSR.
- : National Institute for Occupational Safety and Health, U.S. Dept. of Health, Education, and Welfare, Reports and Memoranda Registry of Toxic Effects of Chemical Substances.
- : Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec HAR 2P9, Canada.

History

- Date of printing** : 09.08.2021
- Date of issue/Date of revision** : 05.08.2021
- Date of previous issue** : 00.00.0000
- Version** : 1.0
- Prepared by** : Yara Chemical Compliance (YCC).

|| Indicates information that has changed from previously issued version.

Notice to reader

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