

**SAFETY DATA SHEET**

according to the Global Harmonized System (and with all of the information required by the HPR)

Revision Date 06/17/2018

Version 3.1

**SECTION 1. Identification****Product identifier**

Product number                      NX0409  
Product name                         Nitric Acid GR ACS

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

Identified uses                        Reagent for analysis

**Details of the supplier of the safety data sheet**

Company                                Millipore (Canada) Ltd | 109 Woodbine Downs Blvd. Unit 5 | Etobicoke  
| Ontario M9W 6Y1 | Canada | General Inquiries: +1 800-645-5476 |  
Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)  
MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.

**Emergency telephone**              800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

**SECTION 2. Hazards identification****GHS Classification**

Oxidizing liquid, Category 3, H272  
Corrosive to Metals, Category 1, H290  
Acute toxicity, Category 3, Inhalation, H331  
Skin corrosion, Category 1A, H314  
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

**GHS-Labeling***Hazard pictograms*

*Signal Word*  
Danger

*Hazard Statements*

H272 May intensify fire; oxidizer.  
H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.

# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

H331 Toxic if inhaled.

### *Precautionary Statements*

P210 Keep away from heat.

P220 Keep/Store away from clothing/ combustible materials.

P221 Take any precaution to avoid mixing with combustibles.

P234 Keep only in original container.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

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/shower.

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/doctor.

P321 Specific treatment (see supplemental first aid instructions on this label).

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P390 Absorb spillage to prevent material damage.

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

P405 Store locked up.

P406 Store in corrosive resistant stainless steel container with a resistant inner liner.

P501 Dispose of contents/ container to an approved waste disposal plant.

### **Other hazards**

None known.

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## **SECTION 3. Composition/information on ingredients**

Chemical nature

Aqueous solution

### **Hazardous ingredients**

*Chemical name (Concentration)*

CAS-No.

*nitric acid (>= 50 % - < 70 % )*

7697-37-2

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## **SECTION 4. First aid measures**

### **Description of first-aid measures**

*General advice*

First aider needs to protect himself.

*Inhalation*

After inhalation: fresh air. Call in physician.

If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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## SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

### *Skin contact*

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

### *Eye contact*

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

### *Ingestion*

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

### **Most important symptoms and effects, both acute and delayed**

Irritation and corrosion, Cough, Shortness of breath, Bloody vomiting, death, Risk of blindness!  
The following applies to nitrites/nitrates in general: methemoglobinemia after the uptake of large quantities.

### **Indication of any immediate medical attention and special treatment needed**

No information available.

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## **SECTION 5. Fire-fighting measures**

### **Extinguishing media**

#### *Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

### **Special hazards arising from the substance or mixture**

Not combustible.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapors.

Fire may cause evolution of:

nitrous gases, nitrogen oxides

### **Advice for firefighters**

#### *Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

#### *Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Cool closed containers exposed to fire with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols.

Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

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# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

Advice for emergency responders: Protective equipment see section 8.

## Environmental precautions

Do not empty into drains.

## Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H<sup>+</sup>, Art. No. 101595).

Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

### Conditions for safe storage, including any incompatibilities

*Requirements for storage areas and containers*

No metal or light-weight-metal containers.

Tightly closed. Do not store near combustible materials. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at room temperature.

SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number  
Product name

NX0409  
Nitric Acid GR ACS

Version 3.1

**SECTION 8. Exposure controls/personal protection**

**Exposure limit(s)**

*Ingredients*

Basis	Value	Threshold limits	Remarks
<i>nitric acid 7697-37-2</i>			
CAD AB OEL	Time Weighted Average (TWA):	2 ppm 5.2 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	4 ppm 10 mg/m <sup>3</sup>	
CAD BC OEL	Short Term Exposure Limit (STEL):	4 ppm	
	Time Weighted Average (TWA):	2 ppm	
CAD MB OEL	Time Weighted Average (TWA):	2 ppm	
	Short Term Exposure Limit (STEL):	4 ppm	
CAD ON OEL	Time Weighted Average (TWAEV):	2 ppm	
	Short Term Exposure Limit (STEV):	4 ppm	
OEL (QUE)	Time Weighted Average (TWA):	2 ppm 5.2 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	4 ppm 10 mg/m <sup>3</sup>	

**Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

**Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

*Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

*Eye/face protection*

Tightly fitting safety goggles

*Hand protection*

full contact:

Glove material: Viton (R)  
Glove thickness: 0.7 mm  
Break through time: > 480 min

splash contact:

Glove material: natural latex  
Glove thickness: 0.6 mm  
Break through time: > 120 min

# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 890 Vitoject® (full contact), KCL 706 Lapren® (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

*Other protective equipment:*

Acid-resistant protective clothing.

*Respiratory protection*

required when vapors/aerosols are generated.

Recommended Filter type: Filter E-(P3)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer. These measures have to be properly documented.

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## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	stinging
Odor Threshold	0.27 ppm (anhydrous substance)
pH	< 1 at 68 °F (20 °C)
Melting point	ca. -26 °F (-32 °C)
Boiling point/boiling range	250 °F (121 °C) at 1,013 hPa
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.

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# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

Vapor pressure	ca.9.4 hPa at 68 °F (20 °C)
Relative vapor density	No information available.
Density	1.39 g/cm <sup>3</sup> at 68 °F (20 °C)
Relative density	No information available.
Water solubility	at 68 °F (20 °C) soluble
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	Distillable in an undecomposed state at normal pressure.
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	The substance or mixture is classified as oxidizing with the category 3.
Ignition temperature	Not applicable
Corrosion	May be corrosive to metals.

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## SECTION 10. Stability and reactivity

### Reactivity

strong oxidizing agent

### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### Possibility of hazardous reactions

Risk of explosion with:

Acetone, acetonitrile, acetylidene, Alcohols, ANILINE, antimony hydride, arsenic hydride, Organic Substances, Benzene, phosphides, anilines, Amines, Halogenated hydrocarbon, Diethyl ether, dimethyl ether, hydrazines, Nitro compounds, Sulfides, Dioxane, acetic acid, Acetic anhydride, ethanol, Ethylene glycol, Fluorine, formaldehyde, rubber, oils, Hydrazine hydrate, Hydrocarbons, Copper, lithium silicide, organic solvents, Manganese, Cyanides, Powdered metals, Methanol, petrol, PHOSPHORUS TRICHLORIDE, phosphorus hydrogen, anhydrides, Reducing agents, sulfur dioxide, Boranes, thiocyanates, Titanium, toluene, Impurities, Nitric acid, hydrogen peroxide, Tin, sugars, xylene, dichloromethane, carbon/soot  
potassium chlorate, with, Organic Substances  
mercury(II) nitrate, with, ethanol

# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

Organic Substances, with, sulfuric acid

Nitrobenzene, with, sulfuric acid

potassium permanganate, with, Alcohols

glycerol, with, sulfuric acid

Risk of ignition or formation of inflammable gases or vapors with:

Amines, Ammonia, combustible substances, Aldehydes, furfuryl alcohol, hydrogen iodide, Potassium, Lithium, magnesium, phosphides, sodium, hydrides, phosphorus, pyridine, hydrogen sulfide, THIOPHENE

Violent reactions possible with:

Nitriles, antimony, arsenic, Boron, ferric oxide, alkalines, sodium hypochlorite, formic acid, halogen-halogen compounds, Germanium, glycerol, nitrides, Sodium hydroxide solution, Sodium hydroxide, sulfuric acid, selenium, Bismuth, chlorates

## Conditions to avoid

no information available

## Incompatible materials

Cellulose, Metals

Contact with metals may lead to the formation of nitrous gases and hydrogen.

## Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### Information on toxicological effects

#### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

#### *Acute oral toxicity*

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

#### *Acute inhalation toxicity*

Symptoms: burns of mucous membranes, Cough, Shortness of breath, Possible damages:, damage of respiratory tract, After a latency period:, Inhalation may lead to the formation of oedemas in the respiratory tract.

Acute toxicity estimate: 4.62 mg/l; 4 h ; vapor

Calculation method

#### *Skin irritation*

Mixture causes severe burns.

#### *Eye irritation*

Mixture causes serious eye damage. Risk of blindness!

#### *Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

#### *Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

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# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number  
Product name

NX0409  
Nitric Acid GR ACS

Version 3.1

## *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## **Further information**

After uptake:

Bloody vomiting, strong pain (risk of perforation!), tissue damage, death

The following applies to nitrites/nitrates in general: methemoglobinemia after the uptake of large quantities.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

## **Ingredients**

### *nitric acid*

#### *Acute inhalation toxicity*

LC50 Rat: > 2.65 mg/l; 4 h ; vapor  
OECD Test Guideline 403

#### *Germ cell mutagenicity*

##### *Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

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## **SECTION 12. Ecological information**

### **Ecotoxicity**

No information available.

### **Persistence and degradability**

#### *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

### **Bioaccumulative potential**

No information available.

# SAFETY DATA SHEET

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Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

## Mobility in soil

No information available.

### *Additional ecological information*

Biological effects:

Harmful effect due to pH shift. Forms corrosive mixtures with water even if diluted. Does not cause biological oxygen deficit. Hazard for drinking water supplies.

Discharge into the environment must be avoided.

## Ingredients

### *nitric acid*

#### *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

#### *Partition coefficient: n-octanol/water*

log Pow: -2.3

OECD Test Guideline 107

Bioaccumulation is not expected.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

#### *Henry constant*

2482 Pa·m<sup>3</sup>/mol

Method: (calculated)

(Lit.) Distribution preferentially in air.

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## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## SECTION 14. Transport information

### Land transport (DOT)

UN number	UN 2031
Proper shipping name	NITRIC ACID
Class	8 (5.1)
Packing group	II
Environmentally hazardous	--

### Air transport (IATA)

# SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the HPR)

Product number  
Product name

NX0409  
Nitric Acid GR ACS

Version 3.1

**UN number** UN 2031  
**Proper shipping name** NITRIC ACID  
**Class** 8 (5.1)  
**Packing group** II  
**Environmentally hazardous** --  
**Special precautions for user** yes  
**Not permitted for transport**

## Sea transport (IMDG)

**UN number** UN 2031  
**Proper shipping name** NITRIC ACID WITH AT LEAST 65% BUT NOT MORE THAN 70%  
**Class** 8 (5.1)  
**Packing group** II  
**Environmentally hazardous** --  
**Special precautions for user** yes  
**EmS** F-A S-Q

## SECTION 15. Regulatory information

### United States of America

### Canada

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

### Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL

## SECTION 16. Other information

### Training advice

Provide adequate information, instruction and training for operators.

### Labeling

#### Hazard pictograms



### Signal Word

Danger

# SAFETY DATA SHEET

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Product number

NX0409

Version 3.1

Product name

Nitric Acid GR ACS

---

## *Hazard Statements*

H272 May intensify fire; oxidizer.

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H331 Toxic if inhaled.

EUH071 Corrosive to the respiratory tract.

## *Precautionary Statements*

### Prevention

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

### Response

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

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

## **Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

Revision Date 06/17/2018

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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