Material Safety Data Sheets

Revision 2

1. IDENTIFICATION

Product Name	**Nitric Acid 55%**
Other Names	Nitric Acid
Code No	100-NA-3
Uses	Explosives, Decolorizer, Synthesis fibre, Nitro cellulose, DNT, MNB, Medecines
Chemical Family	No Data Available
Chemical Formula	HNO_3
Chemical Name	Nitric Acid 55%
Product Description	No Data Available
Company	Arman sina.co
Contact Information	info@armansina.com www.armansina.com

2. HAZARD IDENTIFICATION

Hazard Categories	Corrosive
Risk Phrases	Causes severe burns.
	Contact with combustible material may cause fire.
Safety Phrases	Do not breathe fumes/vapour.
	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	Wear suitable protective clothing.
	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Symbol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Nitric Acid	HNO_3	7697-37-2	55.00 %
Water	H_2O	7732-18-5	Balance %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	**Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.**
Eye	**Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Take care not to rinse contaminated water into the non-affected eye. Seek immediate medical attention.**
Skin	**Remove contaminated clothing. Immediately flush affected area with plenty of water for at least 15 minutes. Seek immediate medical attention. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.**
Inhaled	**Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth to mouth method. Induce artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device. Seek medical attention immediately.**
Advice to Doctor	**Treat symptomatically based on judgement of doctor and individual reactions of patient. Causes severe burns. Material is destructive to tissues of the mucous membranes and upper respiratory tract, eyes and skin. Inhalation may provoke the following symptoms: spasm, inflammation and edema of the bronchi. Symptoms and signs of poisoning are: burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, pulmonary edema. Effects may be delayed. Large doses may cause conversion of hemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure leading to collapse, coma and possibly death.**
Medical Conditions Aggravated by Exposure	**No Data Available**

5. FIRE FIGHTING MEASURES

General Measures	**Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.**
Flammability Conditions	**Product is a non-flammable liquid.**
Extinguishing Media	**Water spray, alcohol resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.**
Fire and Explosion Hazard	**OXIDIZING! Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire. Some will react explosively with hydrocarbons (fuels). Some may decompose explosively when heated or involved in a fire. Runoff may create fire or explosion hazard.**
Hazardous Products of Combustion	**Fire may produce irritating, corrosive and/or toxic gases.**
Special Fire Fighting Instructions	**Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.**
Personal Protective Equipment	**Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.**
Flash Point	**No Data Available**
Lower Explosion Limit	**No Data Available**
Upper Explosion Limit	**No Data Available**
Auto Ignition Temperature	**No Data Available**
Hazchem Code	**2R**

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	**Eliminate all sources of ignition. Avoid accidents, clean up immediately. Increase ventilation. Ventilate closed spaces before entering them. Avoid walking through spilled product as it is slippery when spilled. Use clean, non-sparking tools and equipment. Keep upwind. Keep out of low areas. Keep combustibles (wood, paper, oil, etc.) away from spilled material.**
Clean Up Procedures	**Dike far ahead of spill for later disposal. Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated, collect the material and transfer to a suitable, labelled chemical waste container and dispose of promptly as hazardous waste. Never return spills to original containers for re-use.**
Containment	**Stop leak if safe to do so.**
Decontamination	**Neutralize spill area and washings with soda ash or lime.**
Environmental Precautionary Measures	**Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.**
Evacuation Criteria	**Evacuate all unnecessary personnel.**

Personal Precautionary Measures Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	**Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Keep away from clothing and other combustible materials. Do not taste or swallow. Do not eat, drink or smoke when using the product. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.**
Storage	**Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Keep away from heat and sources of ignition. Do not store near combustible materials. This product has a UN classification of 2031, Dangerous Goods Class 8 (Corrosive), and Subsidiary Risk 5.1 (Oxidiser) according to the Australian Code for the Transport of Dangerous Goods By Road by Road and Rail.**
Container	**Store in original packaging as approved by manufacturer. Do not store in metal containers.**

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	**The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Product Name: Nitric Acid. CAS number: 7697-37-2 TWA = 2ppm (5.2mg/m3) STEL = 4ppm (10mg/m3)** **NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. Peak limitation is a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.** **These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.**
Exposure Limits	**No Data Available**
Biological Limits	**No information available on biological limit values for this product.**
Engineering Measures	**A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Adequate ventilation should be provided so that exposure limits are not exceeded.**
Personal Protection Equipment	**RESPIRATOR: Where risk shows air purifying respirators are appropriate, use a full face respirator with multi purpose type ABEK respirator cartridges (AS1715/1716).** **EYES: Tightly fitting safety goggles with face shield. (AS1336/1337).** **HANDS: Elbow length impervious gloves (AS2161).** **CLOTHING: Chemical-resistant coveralls, splash apron and safety footwear (AS3765/2210).**
Work Hygienic Practices	**Provide eyewash station and safety shower.** **Keep from contact with clothing and other combustible materials.** **Remove and wash contaminated clothing promptly.** **Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking.** **Routinely wash work clothing and protective equipment to remove contaminants.** **Launder contaminated clothing before reuse.**

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	**Liquid**
Appearance	**Liquid**
Odour	**Irritating**
Colour	**Colourless or light yellow**
pH	**<1**
Vapour Pressure	**No Data Available**
Relative Vapour Density	**2.2**
Boiling Point	**120ºC**
Melting Point	**-22ºC**
Freezing Point	**No Data Available**
Solubility	**Completely Soluble**
Specific Gravity	**No Data Available**
Flash Point	**No Data Available**
Auto Ignition Temp	**No Data Available**
Evaporation Rate	**No Data Available**
Bulk Density	**No Data Available**
Corrosion Rate	**No Data Available**
Decomposition Temperature	**No Data Available**
Density	**1.37 g/cm3**
Specific Heat	**No Data Available**
Molecular Weight	**63.01**
Net Propellant Weight	**No Data Available**

Octanol Water Coefficient	**No Data Available**
Particle Size	**No Data Available**
Partition Coefficient	**No Data Available**
Saturated Vapour Concentration	**No Data Available**
Vapour Temperature	**No Data Available**
Viscosity	**No Data Available**
Volatile Percent	**No Data Available**
VOC Volume	**No Data Available**
Additional Characteristics	**Odour threshold: 0.29ppm** **Melting / freezing point: -29.1 as 65%; -35.9 as 68%; -41.0 as 70%** **Initial boiling point range: 119.6 as 65%; 120.05 as 68%; 119.9 as 70%** **Vapour Pressue: 3.0mmHG, 4.0hPa, as 70%**
Potential for Dust Explosion	**Product is a liquid.**
Fast or Intensely Burning Characteristics	**OXIDIZING! Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire.** **Some will react explosively with hydrocarbons (fuels).** **Some may decompose explosively when heated or involved in a fire.** **Runoff may create fire or explosion hazard.**
Flame Propagation or Burning Rate of Solid Materials	**No Data Available**
Non-Flammables That Could Contribute Unusual Hazards to a Fire	**No Data Available**
Properties That May Initiate or Contribute to Fire Intensity	**No Data Available**
Reactions That Release Gases or Vapours	**No Data Available**
Release of Invisible Flammable Vapours and Gases	**No Data Available**

10. STABILITY AND REACTIVITY

General Information	**Strong oxidiser.** **Non Flammable liquid.**
Chemical Stability	**Decomposes on heating.** **Material is stable under normal conditions.**
Conditions to Avoid	**Reacts violently with strong alkaline substances.** **This product may react with reducing agents.** **Do not mix with other chemicals.** **Avoid heat.** **Exposure to light.**
Materials to Avoid	**Incompatible with bases. Alcohols. Combustible material. This product may react with reducing agents.** **May be corrosive to metals.** **On contact with water an exothermic reaction may occur emitting steam, heat and toxic fumes.**
Hazardous Decomposition Products	**Nitrogen oxides (NOx). May decompose upon heating to produce corrosive and/or toxic fumes.**
Hazardous Polymerisation	**Hazardous polymerization does not occur**

11. TOXICOLOGICAL INFORMATION

General Information	**Inhalation LC50 Rat 4 hrs: 67 ppm** **Acute Inhalation LC50 Rat: 65 mg/l 4.00 Hoursd** **Acute Inhalation LC50 Rat: 96.3 mg/l estimated** **Acute effects: Strongly corrosive. May cause deep tissue damage. Vapors are corrosive. After some hours, injured persons may develop serious shortness of breath and lung edema.** **Symptoms and signs of poisoning are: burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, pulmonary edema.** **Large doses may cause conversion of hemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure leading to collapse, coma and possibly death.** **Symptoms may be delayed.**
EyeIrritant	**Causes severe burns. Material is destructive to tissues of the eyes and skin.**
Ingestion	**Causes severe burns. Material is destructive to tissues of the mucous membranes. Symptoms and signs of poisoning are: burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, pulmonary edema.**
Inhalation	**Causes severe burns. Material is destructive to tissues of the mucous membranes and upper respiratory tract. Inhalation may provoke the following symptoms: spasm, inflammation and edema of the bronchi.**
SkinIrritant	**Causes severe burns. Material is destructive to skin.**
Carcinogen Category	**No Data Available**

12. ECOLOGICAL INFORMATION

Ecotoxicity	**Fish: LC50 48hr: Asterias rubens / Starfish: 100 ~ 300 mg/L** **The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.**
Persistence/Degradability	**log Kow - 2.3 (25 deg C)** **Expected to be readily biodegradable**
Mobility	**No Data Available**
Environmental Fate	**Do NOT let product reach waterways, drains and sewers.**
Bioaccumulation Potential	**No Data Available**
Environmental Impact	**No Data Available**

13. DISPOSAL CONSIDERATIONS

General Information	**Dispose of in accordance with all local regulations.** **All empty packaging should be disposed of in accordance with Local Regulations or recycled/reconditioned at an approved facility.**
Special Precautions for Land Fill	**Contact a specialist disposal company or the local waste regulator for advice.** **Incinerate at an approved site following all local regulations.** **Waste codes D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]**

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	NITRIC ACID other than red fuming, with at least 55% but not more than 70% nitric acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	5.1 Oxidising Substances
ERG	157 Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)
UN Number	2031
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Sea Transport

Proper Shipping Name	NITRIC ACID other than red fuming, with at least 55% but not more than 70% nitric acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	5.1 Oxidising Substances
UN Number	2031
Hazchem	2R
Pack Group	II
Special Provision	No Data Available
EMS	FA,SQ
Marine Pollutant	No

Air Transport

Proper Shipping Name	NITRIC ACID other than red fuming, with at least 55% but not more than 70% nitric acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	5.1 Oxidising Substances
UN Number	2031
Hazchem	2R
Pack Group	II
Special Provision	A1

15. OTHER INFORMATION

Revision	2
Key/Legend	< Less Than > Greater Than atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm Square Centimetres CO2 Carbon Dioxide COD Chemical Oxygen Demand Degrees Celcius

Degrees Farenheit
g Grams
g/cm Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight