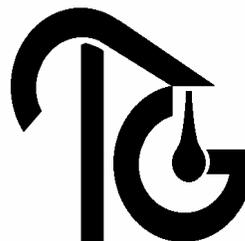


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PRODUCT DATA SHEET

(This booklet incorporates the Specification and M.S.D.S.)

PRODUCT	NITRIC ACID - COMMERCIAL	
CAS NO.	7697-37-2	
TARIFF NO.	280800000	
U.N NO.	8-2031	
EINECS NO.	231-714-2	
IMCO CLASS	8-OXIDISING (CORROSIVE)	
HAZARDS	CORROSIVE	
SPECIFICATION REFERENCE	NA266/273/8	DATE FEB 95
REFERENCE NO.	NIAC/2	DATE SEPT 07
PREVIOUS EDITION.	NIAC/1	DATE FEB 95

PRODUCT SPECIFICATION			
Product Name		Nitric Acid	
Alternative Name			
Product Grade		HNO ₃	
SALES SPECIFICATION			
PROPERTIES	GUARANTEE CHARACTERISTICS	PROPERTIES	GUARANTEE CHARACTERISTICS
	60%		70%
Nitric Acid Content	59.0 to 61.0% m/m	Nitric Acid content	68.5-71.0% m/m
Nitrous Acid content	< 50 ppm m/m	Nitrous Acid content	< 5 ppm m/m
Combined ammonia content	< 5 ppm m/m	Total sulphate content (as H ₂ SO ₄)	< 10 ppm m/m
Chloride as Cl	< 1 ppm m/m	Chloride content	< 1 ppm m/m
Fluoride as F	< 0.3 ppm m/m	Iron content	< 5 ppm m/m
Sulphate as H ₂ SO ₄	< 2 ppm m/m	Specific gravity at 20°C	1.407-1.418
Calcination residue	< 50 ppm m/m		
As an indication of the purity of Ince nitric acid, the following typical analysis was carried out to detect the present of a range of metals associated with other process routes:			
Aluminium as Al		< 0.10 ppm m/m	
Total Silicon as SiO ₂		< 0.50 ppm m/m	
Calcium as Ca		0.03 ppm m/m	
Vanadium as V		< 0.10 ppm m/m	
Chromium as Cr		0.19 ppm m/m	
Iron as Fe		0.60 ppm m/m	
Copper as Cu		< 0.01 ppm m/m	
Zinc as Zn		< 0.01 ppm m/m	
Silver as Ag		< 0.05 ppm m/m	
Platinum at Pt		< 0.20 ppm m/m	
Sulphated Ash		< 9.00 ppm m/m	
User Responsibility	<p>This Safety Data Sheet provides Health and Safety information. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information.</p> <p>The product information on this sheet is, to the best of this Company's knowledge, correct as at the date of publication. The user must be satisfied that the product is entirely suitable for the purpose for which it is being used.</p> <p>The Company accepts no liability for any loss or damage (other than that arising from death or personal injury caused by negligence if proved) resulting from reliance on this information.</p> <p>Reference</p> <ol style="list-style-type: none"> 1) HSC "The Chemicals (Hazard Information and Packaging) Regulations 1993" and associated approved documents 2) Ullmann, Encyclopaedia of Technical Chemistry 3) Croner Publications Ltd, Substances Hazardous to Health 4) Croner Publications Ltd, Dangerous Substances 		

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Product:	NITRIC ACID 60%/70%	
COMPANY:	TENNANTS DISTRIBUTION LIMITED	
	Hazelbottom Road	Botany Way
	Cheetham	Purfleet
	Manchester	Essex
	M8 0GR	RM19 1SN
	Tel No. 44(0)161 205 4454	Tel No. 44(0)1708 860075
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	Emergency Tel No.	01865 407333

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Nitric Acid
CAS No.	7697-37-2
EINECS No.	231-714-2
Classification	C, R35

3. HAZARDS IDENTIFICATION

Human Skin	Corrosive - causes severe burns Vapour or liquid acid will attack the skin causing severe irritation as a minimum effect and serious burns in more extreme cases.
Eyes	Causes severe damage to the eyes, pain and blurred vision.
Ingestion	Causes serious burns and abdominal pain
Inhalation	Acid vapour and decomposition gases are both toxic. Acid vapour (normally colourless) is highly irritating to the respiratory tract. Decomposition gases (containing NO _x - oxides of nitrogen, recognizable by their brown colouration) can have a delayed poisoning effect.
Fire: Oxidising Substance	Contact with combustible material may cause fire. Nitric Acid is not flammable, but can initiate fire by chemical reaction with reducing agents/combustible materials. Exposure to fire will result in increased evolution of acid vapour and decomposition gases which, in inhaled, may cause delayed lung effects.
Environment	Nitric Acid reacts violently with some combustible materials and many organic compounds. Being a strong mineral acid, nitric acid will cause immediate scorching of vegetation; in water courses the resulting depression of pH may be fatal to aquatic life.

4. FIRST AID MEASURES

Skin Contact	Whilst removing contaminated clothing, rinse affected areas thoroughly, preferably under a water shower. Seek immediate medical attention
Eye Contact	Immediately flood eyes with copious amounts of cold clean tap water for at least 15 minutes. Hold eye open in necessary. Obtain immediate medical attention.
Ingestion:	Rinse mouth with water and give plenty of water to drink. Do not induce vomiting, but seek urgent medical assistance immediately.
Inhalation	Move patient into fresh air, rest and keep warm. Persons affected should be kept under medical observation for 24 to 48 hours and oxygen administered if breathing difficulties arise. Pulmonary oedema may develop within 24 – 48 hours

5. FIRE FIGHTING MEASURES

Nitric Acid is non-flammable. However, due to the reactive/oxidising properties, avoid contact with organic and combustible materials.

If involved in a fire, keep storage tanks and containers cool to prevent decomposition and evolution of toxic fumes. Water sprays are suitable, but avoid direct water impingement on strong acid, since this creates heat increasing toxic fume production. Avoid breathing fumes, wear breathing apparatus as necessary

Suitable extinguishing media are foam, water and dry powder

6. ACCIDENTAL RELEASE MEASURES

Spillages	In the event of product spillage, avoid contact by wearing full protective clothing. The spillages should be contained with an inert, impermeable barrier of earth or sand. This will give time to decide on the most appropriate method of dealing with the spillage. Refer to specific sections for Personal Protection measures and Disposal Considerations. Inform relevant authorities if contamination of water courses or drains is likely.
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7. HANDLING AND STORAGE	
Handling	Exposure to nitric acid is avoided by handling in closed tanks and pipework systems. If part of a system must be indoors, then care should be taken to isolate from occupied work areas and provide an adequate level of ventilation Low carbon or stabilised stainless steel such as 304L, 315L, 321 or 347 can be used for storage tanks, pipework and fittings at ambient temperature. However once the acid is heated only 304L should be used. Corrosion rates increase significantly above 60°C and specialist advice should be taken when operating above the temperature Pipework should be designed to minimise the number of flanged joints and measures should be taken to minimise the heat input and metal temperatures when welding. Screwed fittings should be avoided where ever possible. Jointing materials are normally manufactured from PTFE based products: plastics and rubbers are not generally suitable
Storage	Bulk tanks and delivery points are best located away from combustible and organic material stores, sources of heat and fire. Tanks should be banded to facilitate protection from accidental impact and secondary containment in the event of tank failure or spillage. Stainless steels are appropriate tank construction materials (grades as in Handling section)
8. EXPOSURE CONTROLS/PERSONAL PROTECTION	
Occupational Exposure Standard for Nitric Acid Vapour	(Ref: HSE Guidance Note EH40 October 2007) OES 1 ppm (15 min TWA)
For Oxides of Nitrogen	HSE recommends that exposure to nitrogen dioxide should not exceed 1 ppm
Engineering Control Measures	Handle Nitric Acid within closed systems wherever possible. Provide adequate ventilation particularly at low level
Where risk of exposure exists, such as	tanker loading/unloading procedures, non routine operations or emergency circumstances, the following personal protection measures are recommended:
Hand Protection	Self contained breathing apparatus recommended where risk of exposure to nitric acid or decomposition fumes exists
Respiratory Protection	
Hand Protection	PVC or rubber gloves satisfactory for splashes.
Eye Protection	Chemical splash goggles (gas tight type preferred) or full face visor
Skin Protection	PVC suits or rubber aprons, industrial rubber boots, dependant on degree of splash risk
9. PHYSICAL AND CHEMICAL PROPERTIES	
Appearance	Clear, colourless or pale yellow liquid
Odour	Pungent
pH	Highly Acidic (pH <1)
Boiling Point	121°C (60% soln)
Freezing Point	- 22°C (60% soln)
Specific Gravity	1.37 @ 15°C (60% soln)
Vapour Relative Density	2.2 (air = 1) (60% soln)
Vapour Pressure	0.8 m bar @ 15°C (60% soln)
Solubility	Miscible with water in all proportions
Flammability	Not flammable, but may react vigorously with common organic materials, generating sufficient heat to cause a fire.
10. STABILITY AND REACTIVITY	
Stability	Nitric Acid is chemically stable at ambient conditions. Decomposes with heat or in strong sunlight giving off toxic fumes of oxides of nitrogen and nitric acid vapour.
Reactivity	Nitric Acid is highly corrosive reacting rapidly with many metals, bases, organic compounds and common construction materials such as concrete, mild steel, limestone and mortar. It is a strong oxidant than can react vigorously with combustible and reducing materials Any of the above reactions can evolve toxic fumes of No _x (oxides of nitrogen)
Hazardous Reactions	Nitric Acid may react violently with powerful reducing agents, causing fire and explosion hazards.
11. TOXICOLOGICAL INFORMATION	
Toxicity Data	Highly Corrosive to all parts of the body
Skin and Eyes	Highly corrosive material will cause severe burns and eye damage.
Ingestion	Causes severe burns and abdominal pain.
Inhalation	Acid vapour and decomposition fumes are both toxic. Acid vapour is highly irritation to the respiratory tract. Decomposition fumes containing oxides of nitrogen can have delayed poisoning effects, possibly fatal.

NO ₂ Concentration (ppm)	Duration (mins)	Effect
25	60	Respiratory irritation and chest pain
50	15	Respiratory irritation and chest pains
100	15	Pulmonary oedema with possible sub-acute or chronic lung lesions
200	5	Pulmonary oedema with possible sub-acute or chronic lung lesions
100	60	Pulmonary oedema and death
400	5	Pulmonary oedema and death

NOTE: Poisoning as a result of exposure to oxides of nitrogen is a prescribed industrial disease under the Social Security (Industrial Injuries) (Prescribed Diseases) Regulations 1985 (S.I. No. 967).

Carcinogenicity /Mutagenicity/Teratogenicity No evidence

12. ECOLOGICAL INFORMATION

General	Vegetation contacted with undiluted Nitric Acid will be destroyed by the corrosive action. In rivers, lakes etc. Nitric Acid will cause a lowering of pH which may prove fatal to aquatic life forms.
Mobility	Highly mobile due to high water solubility. Therefore rapidly diluted in water courses and leached from soils although low pH in soils may require rectifying by lime additions.
Persistence/Degradability	Non persistent and degraded by bacterial action.
Bio-accumulation	Not considered to bio-accumulate
Ecotoxicity	Discharge into the environment should be avoided. Nitric Acid is harmful to aquatic life even in low concentrations due to its acid nature. Neutralisation is generally required prior to discharge. Nitric Acid can cause damage to vegetation. Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations

13. DISPOSAL CONSIDERATIONS

General	<p>Relevant authorities must be consulted before disposal of Nitric Acid to drains or water courses. Avoid contact with combustible materials.</p> <p>Possible disposal methods to be considered are:</p> <ol style="list-style-type: none"> 1. Transfer bulk of spilled acid into suitable non-corrodible containers for treatment elsewhere. Dilute or neutralise residual acid as in following methods. 2. Neutralise the acid by adding soda ash (sodium carbonate) or limestone chippings slowly to the edges of the spillage. Reaction will initially be vigorous, with evolution of oxides of nitrogen and carbon dioxide. When fully neutralised mix residue with earth or sand for collection and disposal elsewhere. 3. Dilute the acid by carefully adding large quantities of water prior to disposal via effluent system
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14. TRANSPORT INFORMATION

UN No.	2031
Hazard Class	8 - corrosive substance
Packing Group	II - medium danger
Tremcard No.	CEFIC TEC(R) – 80S2031-II
EAC (UK)	2R
Shipping Name	Nitric Acid
ADR/RID (HI No.)	80
ADR Classification	CO1
IMDG	
UN No.	2031
Class	8
Label	8
Packing Group	II

15. REGULATORY INFORMATION

CHIP Approved Supply List	
List Index No.	007-004-00-1
Classification	C - corrosive
Label Requirements	
Risk Phrases	R35 - causes severe burns
Safety Phrases	S1/2 Keep locked up and out of reach of children
	S23 do not breath fumes
	S26 in case of contact with eyes rinse immediately with plenty of water and seek medical advice
	S36 wear suitable protective clothing

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

16. OTHER INFORMATION

Full text of R Phrases in Section 2
R35 Causes severe burns

The Safety data sheets have been revised in Sections 8 (please see attached note), 12 and 15. The specification remains the same

Revision Date: 17/09/07