


물질명	CAS No.	KE No.	UN No.	EU No.
Nitric Acid(60~70%)	7697-37-2	KE-25911	2031	231-714-2
Water(H ₂ O) (30~40%)	7732-18-5	KE-35400	-	231-791-2

1. PRODUCT AND COMPANY IDENTIFICATION

a. Product Name	Nitric Acid 60~70%
b. Recommendation & restriction of product	
Recommendation of product	Explosives, Decolorizer, Synthesis fiber, Nitro cellulose, DNT, MNB, Medicines
Restriction of Product	Toxic and non-flammable corrosive substances (sensitive to moisture)
c. Manufacturer/Supplier/Distributor Information	
Company	HUCHEMS
Address	963, Sangam-ro Yesou City Jeonnam, 555-260, Korea
Telephone	82-61-680-4611 ~ 4619

2. HAZARDOUS IDENTIFICATION

a. Classification	Oxidizing liquids : Category1 Skin Corrosion/Irritation : Category1 Serious Eye Damage/Irritation : Category1 Specific Target Organ Toxicity(One time exposure) : Category1 Specific Target Organ Toxicity(Repeated exposure) : Category1 Aspiration Hazard : Category1
b. Label elements including precautionary statements	
Symbol	
Signal Word	Hazardous
Hazard .Risk Statement	H271 May cause fire or explosion; strong oxidizer H304 May be fatal if swallowed and enters airways H314 Causes severe skin burns and eye damage H318 Causes serious eye damage H370 Causes damage to organs (Respiratory system) H372 Causes damage to organs(Respiratory system) through prolonged or repeated exposure
Precautionary Statement	
Prevention	P210 Keep away from heat/sparks/open flames/hot surfaces. – no Smoking. P220 Keep/Store away from clothing any combustible materials. P221 Take any precaution to avoid mixing with combustibles P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash hand thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing/eye protection/face protection. P283 Wear fire/flamm resistant/retardant clothing.

Response	<p>P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</p> <p>P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P306+P360 IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.</p> <p>P308+P311 IF exposed or concerned: Get medical advice/attention.</p> <p>P310 Immediately call a POISON CENTER or doctor/physician.</p> <p>P314 Get medical advice/attention if you feel unwell.</p> <p>P321 Specific treatment (Diluting and neutralizing)</p> <p>P331 Do NOT induce vomiting.</p> <p>P363 Wash contaminated clothing before reuse.</p> <p>P370+P378 In case of fire:Use water/extinguisher/sand for extinction.</p> <p>P371+P380+P375 : In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.</p> <p>P405 Store locked up.</p> <p>P501 Dispose of contents/container as follow regulation</p>
Storage	
Disposal	
c. Other Hazard .Risk which are not included in the classification criteria (NFPA)	
Health	4
Fire	0
Reactivity	0

3.COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Other name	CAS number	Content (%)
Nitric Acid (HNO ₃)	Aqua FORTIS	7697-37-2	60~70%
water	DIHYDROGEN OXIDE	7732-18-5	30~40%

4. FIRST AID MEASURES

a. Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician
b. Skin contact	<p>Take off contaminated clothing and shoes immediately.</p> <p>Wash off with plenty of water before take off clothing.</p> <p>Wash off the contaminated skin with plenty of water at least 15 minutes.</p> <p>Incase of serious skin contact wash with disinfected soap and cover the contaminated skin with an anti-bacterial cream and consult a physician</p> <p>Washing clothing before reuse or remove.</p>
c. Inhalation	<p>If breathed in, move person into fresh air. If not breathing, give artificial respiration (do not apply mouse to mouse ventilation).</p> <p>Consult a physician</p>
d. Ingestion	<p>Do NOT induce vomiting. Never give anything by mouth to an unconscious person.</p> <p>Rinse mouth with water.</p> <p>Consult a physician</p>
e. Note to physician antidote	<p>Material is destructive to tissue 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,</p>

5. FIRE-FIGHTING MEASURES

a. Suitable(Non suitable) extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Dry sand or dirt can be used.
b. Specific hazards arising from the chemical	Dry residus can react as oxidizer. Extremely react with organic materials(polymerization) and cause fire or explosion. Hazardous gas (NOx) can be emitted during burning. Heating or water contamination can cause vessel explosion Combustible H2 gas can be emitted by contacting with metal. By heating corrosive/toxic fume can cause Reaction with water can emit heat.
c. Special protective equipment and precautions for fire-fighters	Rescuer shall use appropriate personal protection. Wear self contained breathing apparatus for fire fighting if necessary. If tank fire is out of control immediately evacuate the sight. Keep safety distance from the fire. Make ditch to keep contaminated fire water. Combustible, corrosive/toxic gas can be released by contacting with water. Avoid water contacting In case of tank fire keep a distance or use remote fire extinguisher. Vapour can be accumulated in closed vessel Keep cooling down the tank with plenty of water after fire extinguishing

6. ACCIDENTAL RELEASE MEASURES

a. Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Stop the reakage immediately Evacuate personnel to safe areas. Isolate the contaminated area. Prohibit access to the site without proper protective equipment.
b. Environmental precautions	Do not let product enter drains or closed room.
c. Methods and materials for containment and cleaning up	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in chemiacle container for disposal according to local regulations (see section 13). Do not use any combustibles like sawdust. Dry sand or dirt can be applied for absorbing spillage. Neutralize the contaminated area with proper chemical and absorbed the remains before washing with water.

7. HANDLING AND STORAGE

a. Precautions for safe handling	Avoid inhalation of vapour or mist. Be carefull in opening procedure. Prohibit body contact.
b. Conditions of safe storage (including any incompatibilities)	Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep away from sources of heating. Empty container shall be treated as containing materials inside following MSDS. Store in cool place, keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

a. Control parameters (e.g. occupational exposure limit values, biological limit values):	
Domestic regulation	TWA – 2ppm 5mg/m3, STEL – 4ppm 10mg/m3
ACGIH regulations	STEL 4 ppm TWA 2 ppm

Biological exposure limitations	No data
b. Appropriate engineering controls	<p>Handle in accordance with good industrial hygiene and safety practice. Wash hands the end of work day</p> <p>To keep exposure limitations against emission of dust, fume or mist during operation ensure adequate ventilation.</p> <p>Safety shower and eye shower should be installed at the place for handling or storage.</p> <p>For exposure control, process isolation or partial ventilation can be applied.</p>
c. Personal protective equipment.	
Respiratory protection.	<p>Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as KOSHA(Korea), NIOSH (US) or CEN (EU).</p> <p>Exposure limitations under 20ppm : Half face mask with filter or purifying cartridge</p> <p>Exposure limitations under 50ppm : Loose-fitting hood with appropriate filter or purifying cartridge, electrical respiratory protector or continuous flow dust mask.</p> <p>Exposure limitations under 100ppm : Full-face mask with appropriate filter or purifying cartridge, Half-face electrical respiratory protector or atmosphere-supplying continuous flow/pressure demand half-face respiratory protector.</p> <p>Exposure limitations under 2,000ppm : Full-face or helmet/hood type with appropriate filter or purifying cartridge, pressure demand respiratory protector.</p> <p>Exposure limitations under 20,000ppm : Self-Contained Breathing Apparatus (SCBA) with appropriate filter or purifying cartridge.</p>
Eye protection	Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as KOSHA(Korea), NIOSH (US) or EN 166(EU).
Hand protection	<p>The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Handle with gloves.</p> <p>Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.</p> <p>Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.</p>
Body protection	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance	
Physical state	Liquid
Color	Colourless or Light yellow
b. Odour	Irritant.
c. Odour threshold	Lower odor:0.75mg/m ³ , Upperodor:2.50mg/m ³ , Irritant concentration:155mg/m ³ , 0.27ppm(Detection)
d. pH	no data
e. Melting / freezing point	-30°C
f. Initial boiling point and boiling range	119 °C
g. Flash point	not applicable
h. Evaporation rate	no data
i. Flammability(Solid,Gas)	not applicable
j. Upper/lower flammability or explosive limits	incombustibility
k. Vapour pressure	6.4 kPa (20 °C)
l. Solubility	9.09 g/100ml (25 °C (Estimates))
m. Vapour density	2.2

n. Relative density	1.4
o. Partition coefficient : n-octanol/water	-2.3 (25°C)
p. Auto ignition point	nonflammable
q. Ddecomposition point	no data
r. Viscosity	0.746 cP (25°C)
s. Molecular mass	63.01

10. STABILITY AND REACTIVITY

a. Chemical stability and possibility of hazardous reaction	May cause fire or explosion; strong oxidizer Decomposed under high temperature and emit toxic gas Corrosive/Toxic : inhalation or ingestion of vapour, mist, dust can cause serious damage or death. Incombustible but cause fire and toxic Emit Hydrogen gas with matal. Cause explosion of container by heating Rapid polymerization can cause fire or explosion
b. Conditions to avoid	May discolor on exposure to air and light
c. Incompatible material	Isolate from any combustible material Alkali metals, organic materials, acetic anhydride, acetontnitrile, acrylonitrile.
d. Hazardous decomposition products	Irritating and hazardous gas emission corrosive and toxicity fume

11. TOXICOLOGICAL INFORMATION

a. Information on the likey routes of	no data
b. Health Hazard Information	
Acute Toxicity	
Oral	no data
Skin	no data
Inhallation	no data
Skin corrosion/irritati	Extremely corrosive and destructive to tissuse.- Draize test : rabbit
Serious eye damage/irritation	Extremely burn, corneal opacity, visual impairment, blindness.
Respiratory sencitization	no data
Skin sencitization	no data
Carcinogenicity	
KOREA (Industrial Safety and Health	no data
KOREA (Department of Labor Notice)	no data
IARC	no data
OSHA	no data
ACGIH	no data
NTP	no data
EU CLP	no data
Germ cell mutagenicity	no data
Reproductivity toxicity	no data
Specific target organ toxicity (single exposure)	Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Can cause Cough, dyspnoea, thracodynia and pulmonamy.
Specific target organ toxicity (repeated exposure)	Chronic bronchitis and tooth erosion.
Aspiration hazard	Chemical pneumonia

12. ECOLOGICAL INFORMATION

a. Aquatic and terrestrial ecotoxicity	
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Fish	LC50 72mg/L/96hr/Gambusia affinis(ECBIUCLID)
Crustacea	no data
Bird	no data
b. Persistence and degradability	
Persistence	-0.21 log Kow ()
Degradability	no data
다. Bioaccumulative potential	
concentration	no data
Biodegradable	no data
라. Mobility in soil	no data
마. Other adverse effects	no data

13. DISPOSAL CONSIDERATIONS

a. Disposal method	Waste must be disposed of in accordance with environmental control regulation
b. Disposal Considerations	Waste container must be disposed of in accordance with environmental control regulation

14. TRANSPORT INFORMATION

a. UN No.	2031
b. UN proper shipping name.	NITRIC ACID other than red fuming
c. Transport hazard class(es)	8
d. Packaging group	1
e. Environmental hazards	no data
f. Special precautions for user or Transportation	
Emergency action against fire	F-A
Emergency action against release	S-Q

15. REGULATORY INFORMATION

a. Occupational safety and Health Act (KOREA)	Working environment measurement (period : 1 per 6 Months) Management Harmful Substances Special medical examination (Period : 1 per 12 Months) Exposure limits set material
b. Management of hazardous chemicals Act (KOREA)	Awareness materials Toxic substances
c. Dangerous Material Safety Control Act (KOREA)	not applicable
d. Wastes Management Act (KOREA)	Designated waste material
e. Other requirements in domestic and other countries	
Domestic (Korea)	
Persistent organic pollutants	not applicable
International	
OSHA	226.7995 kg 500 lb
CERCLA	453.599 kg 1000 lb
EPCRA 302	453.599 kg 1000 lb
EPCRA 304	453.599 kg 1000 lb
EPCRA 313	applicable
Rotterdam Convention PIC	not applicable
Stockholm Convention POPs	not applicable
Montreal Protocol SDOL	not applicable
EU Classification (Confirmed result)	O; R8C; R35
EU Classification (Warning phrase)	R8, R35

16. OTHER INFORMATION**a. Reference**

(1) ICSC (1994)(2) SRC(3) IUCLID (2000)(4) HSDB (2005)(5) NLM(6) ACGIH (2001)(7) DFGOT vol.3 (1991)(8) DFGOT vol.3 (1991)
 ICSC(Persistence)
 ICSC (1994)(Specific target organ toxicity – 1 time)
 HSDB (2005)(Specific target organ toxicity – 1 time)
 DFGOTvol.3 (1991)(Specific target organ toxicity – 1 time)
 ACGIH (2001)(Inhalation hazardous)
 ACGIH (2001)(Specific target organ toxicity – 1 time)
 4(Viscosity)
 2(Solubility)
 1(Vapour pressure)
 1(Vapour density)
 1(Auto ignition point)
 1(Flash point)
 1(Upper/lower flammability or explosive limits)
 1(Melting / freezing point)

b. Created 2016-07-18

c. final check 2016-07-18

d. Revision

Revision number 0

Last update 2016-07-18

e. Others

The MSDS / GHS will not be sold for commercial purposes.

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