AgEtal

Nitrate Reagent

Safety Data Sheet | Issue Date: 31/01/2019 | Version: 1.1

SECTION 1 – IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product identifier

Product Form: Mixture
Product Name: Nitrate Reagent
Product Code: FSTK01
Synonyms: Diphenylamine Solution
Appearance: Light tan to pale grey transparent solution

1.2 Relevant uses of substance or mixture

Use of substance/preparation: Laboratory and field chemical

1.3 Name, Address and Telephone of the Manufacturer

AgEtal Pty Ltd
9/24 Carroll Street
Wilsonton QLD 4350
Company Phone Number:
(+61) 7 4633-3223

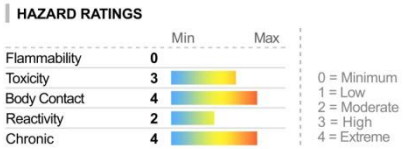
1.4 Emergency telephone number

Emergency Phone Number:
(+61) 4 2819-8850

SECTION 2 – HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to WHS Regulations and the ADG Code.



Emergency Overview

GHS Label elements:

GHS06 GHS07 GHS05 GHS08 GHS09

Signal Word: Danger!

Target Organs: *Eyes, skin, respiratory tract, liver, kidneys, teeth, central nervous system, red blood cells, bladder*

Hazard Statements: Severity of injury depends on the duration of exposure

H290	:	May be corrosive to metals
H300+H330	:	Fatal if swallowed or inhaled

H301+H331	:	Toxic if swallowed or inhaled
H304	:	May be fatal if swallowed and enters airways
H311	:	Toxic in contact with skin
H314	:	Causes severe skin burns and eye damage
H350	:	May cause cancer
H371	:	May cause damage to organs: liver and kidney
H317	:	May cause allergic skin reaction May cause methaemoglobinaemia
H373	:	May cause damage to organs through prolonged or repeated exposure
H410	:	Very toxic to aquatic life with long-lasting effects

Precautionary Statement(s): (Prevention)

P101	:	Obtain special instructions before use
P202	:	Do not handle until all safety precautions have been read and understood
P260	:	Do not breathe dust, fumes, gas, mist, vapours, spray
P280	:	Wear protective gloves/protective clothing/eye protection/face protection
P271	:	Use only outdoors or in a well-ventilated area
P264	:	Wash all exposed skin thoroughly after handling

Precautionary Statement(s): (Response)

P301	:	IF SWALLOWED: Rinse mouth—DO NOT induce vomiting—
P303	:	If ON SKIN (or HAIR): Remove/take off immediately all contaminated clothing . Rinse skin with water/shower
P304	:	If INHALED: Remove victim to fresh air and keep in a position comfortable for breathing
P305	:	If IN EYES: Rinse continuously with water for several minutes, occasionally lifting upper and lower eyelids. Remove contact lenses, if present and easy to do. Continue rinsing. DO NOT allow victim to rub or keep eyes closed
P313	:	Get medical advice/attention if exposed/concerned
P362	:	Take off contaminated clothing and wash before reuse

Precautionary Statement(s): (Storage)

P403+P403	:	Store in a well-ventilated place. Keep container tightly closed.
P405+P420	:	Store locked up, away from children and other materials

Precautionary Statement(s): (Disposal)

P501	:	Dispose of contents/container according to local regulations

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

CAS#	Chemical Name	UN Number	%	Classification (GHS)
7732-18-5	Water	None	balance	Not Classified
7664-93-9	Sulphuric acid	1830	70 - <75%	Skin Corr. 1A, H314 Carc. 1A, H350
122-39-4	Diphenylamine	3077	0.1 - <1.0%	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation), H331 STOT RE 2, H373

SECTION 4 – FIRST AID MEASURES

4.1 Description of First Aid Measures

Eyes:	If product comes in contact with eyes: • Immediately hold eyelids apart and flush eyes continuously with running water for at least 15 minutes, or longer, as advised by Poisons Information Centre or a medical professional • Ensure complete irrigation of eye by occasionally lifting the upper and lower eyelids • Seek medical attention without delay • Removal of contact lenses after an eye injury should only be undertaken by skilled personnel • Do NOT allow victim to rub or keep eyes closed
Skin:	If product contacts skin or hair: • Immediately flush affected skin, hair and any contaminated clothing with large volumes of water for at least 15 minutes, or longer, as advised by Poisons Information Centre of a medical professional • Use a safety shower if available • Quickly remove all contaminated clothing and footwear • Contact with skin can cause severe skin burns • Severity of injury depends on the duration of exposure • Seek medical advice without delay • Wash contaminated clothing before reuse
Inhalation:	If product is inhaled: • Remove affected person/s from exposure and move to fresh air immediately • Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures • If not breathing, give artificial respiration, preferably with a demand valve rescuscitator, bag-valve mask device, or pocket mask as trained • Perform CPR if necessary • Never give anything by mouth to an unconscious person • Seek medical advice IMMEDIATELY, transporting to hospital or doctor without delay
Ingestion:	If product is ingested: • Immediately rinse mouth with plenty of water and call a Poisons Information Centre • If swallowed DO NOT induce vomiting unless directed to do so by medical personnel • If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration • Observe patient carefully • Never give anything by mouth to an unconscious person • Seek medical advice IMMEDIATELY, transporting to hospital or doctor without delay

Notes to Physician:	• May cause irreversible eye injury, blindness and permanent corneal opacification • Treat dermal irritation or burns with standard topical therapy • Strong acids produce a coagulation necrosis characterised by formation of a coagulum as a result of the desiccating action of the acid • Cleansing of the entire contaminated area of the body is of utmost importance • If breathing is difficult, give oxygen • Inhalation of vapours or aerosols (mists, fumes) may cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary lung oedema • Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs), a reaction that may be delayed up to 24 hours after exposure • Affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested. • Monitor arterial blood gases, chest x-ray, and pulmonary function tests if respiratory tract irritation or respiratory depression is evident • Do NOT use sodium bicarbonate in an attempt to neutralize the acid as exothermic reaction may extend the corrosive injury • Absorption of this product into the body may cause cyanosis (bluish discolouration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown coloured blood • Moderate degrees of cyanosis need to be treated only by supportive measures: bed rest and oxygen inhalation • For methaemoglobinaemia, administer oxygen alone or with Methylene Blue depending on the methaemoglobin concentration in the blood.

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Extinguishing Media

Suitable extinguishing media:

- Dry chemical powder
- Carbon dioxide
- Water spray or fog
- Alcohol-resistant foam
- Sand

Unsuitable extinguishing media:

- Do not use a heavy water stream if it can enter the containers because it can generate heat and possibly spatter chemical over a wider area

5.2 Special Hazards Arising from the Substrate or Mixture

Fire Incompatibility: None Known

Auto-ignition Temperature: Not available.

Flash Point: Not applicable.

NFPA Rating:

CAS# 7732-18-5: Health- 0, Flammability- 0, Instability- 0

CAS# 7664-93-9: Health- 3, Flammability- 0, Instability- 2

CAS# 122-39-4: Health- 2, Flammability- 1, Instability- 0

5.3 Advice for Fire Fighters

Fire Fighting	• Alert Fire Brigade and notify them of location and nature of hazard • Product may be violently or explosively reactive • Wear full body protective clothing with breathing apparatus • Do not enter fire area without proper protective equipment, including a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear • Contact with water can cause liberation of heat and splattering of the material • Approach fire from upwind to avoid hazardous vapours and toxic decomposition products • Use water spray to keep fire-exposed containers cool • Prevent, by any means available, spillage from entering drains or water courses
Fire/Explosion Hazard	• Non combustible • Not considered a significant fire risk • Acids may react with metals to product hydrogen, a highly flammable and explosive gas • Heating may cause expansion or decomposition leading to violent rupture of containers • Decomposition may product toxic fumes of sulphur oxides (SOx)
HAZCHEM	2P

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

General Information:

- Control personal contact with the substance by using proper personal protective equipment as indicated in Section 8

Minor Spills/Leaks:

- Clean up spills immediately, observing precautions in Section 8
- Carefully contain and absorb spill with sand, earth, inert material or vermiculite, then scoop up and place into appropriate container labelled for disposal
- Avoid breathing vapours and contact with skin and eyes
- Do not get water inside containers
- Prevent entry into sewers or waterways

Major Spills/Leaks:

- Clear area of personnel and move upwind
- Alert Fire Brigade and notify them of the location and nature of hazard
- Substance may be violently or explosively reactive
- Wear full body protective clothing with breathing apparatus
- Prevent entry into sewers or waterways

6.1.1. For non-emergency personnel

Emergency procedures: Evacuate unnecessary personnel

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection
Emergency procedures: Ventilate area

6.2. Environmental precautions

- Avoid runoff into storm sewers and ditches that lead to waterways
- Notify authorities if liquid enters sewers or public waters

6.3. Methods and material for containment and cleaning up

Methods for cleaning up:

- Drains for storage or use areas should have retention basins for pH adjustment and dilution of spills before discharge or disposal of material
- Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible
- Store away from other materials

SECTION 7 – HANDLING AND STORAGE

7.1 Precautions for Safe Handling:

- Thoroughly wash hand and other exposed areas with mild soap and water immediately after handling
- Do not eat, drink or smoke while using reagent
- Do not get in eyes, on skin, or on clothing
- Remove contaminated clothing and wash before reuse
- Discard contaminated shoes
- Inform laundry personnel of contaminant's hazards
- Do not allow water to get into the container because of violent reaction
- Keep container tightly closed
- Use only in a well ventilated area and prevent formation vapour
- Do not breathe spray or mist
- Do not use with metal spatula or other metal items

7.2 Conditions for Storage:

Storage conditions:

- Keep only in original container
- Store in a cool, dry, well-ventilated area away from incompatible substances, foodstuffs and food containers
- Keep container closed when not in use
- Store protected from light

Suitable containers:

- Check regularly for leaks
- Lined metal can or pail
- Plastic pail or acid resistant container
- Polyliner drum

Incompatible products and materials:

- Substance attacks some plastics, rubber and coatings
- Reacts violently with many substances including reducing agents, combustible materials, organic substances, alkalis
- Do not store near combustible materials or sources of ignition
- Do not store near alkaline substances
- Keep from contact with oxidising materials
- DO NOT use aluminium or galvanised container

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Engineering Controls:

- Facilities storing or utilising this material should be equipped with an eyewash facility and a safety shower
- Use adequate ventilation to keep airborne concentrations below the permissible exposure limits

8.2 Exposure Limits:

Sulphuric acid (7664-93-9)	TWA (ppm)	TWA (mg/m^3)	STEL (ppm)	STEL (mg/m^3)
HCIS	-	1	-	3

Diphenylamine (122-39-4)	TWA (ppm)	TWA (mg/m^3)	STEL (ppm)	STEL (mg/m^3)
HCIS	-	10	-	-

Water: None listed

8.3 Personal Protective Equipment

Avoid all unnecessary exposure

Eyes	• Wear appropriate protective eyeglasses with unperforated side shields or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166 or AS/NZS 1336:2014 Eye and Face Protection Guidelines • Spectacles are not sufficient where complete eye protection is needed • Whenever there is a danger of the material coming in contact with the eyes, wear properly fitted chemical goggles, such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure • Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes • Alternatively a gas mask may replace splash goggles and face shields

Skin	• Wear appropriate protective gloves to prevent skin exposure • When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots • Elbow length PVC gloves are recommended • The selection of suitable gloves not only depends on the material, but also on further marks of quality which vary from manufacturer to manufacturer • Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and therefore has to be checked prior to the application to determine exact break through time when making a final choice • See other protection below
Other protection	• Overalls • PVC Apron • PVC protective suit may be required if exposure severe • Eyewash unit
Respiratory	• If exposure limits are exceeded or if irritation or other symptoms are experienced, use a NIOSH/MSHA or European Standard EN 149 or AS/NZS 1716:2012 approved respirator with Type E-P Filter of sufficient capacity
Clothing	• Wear appropriate protective clothing to prevent skin exposure
Thermal hazards	• Not Available

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Colour: Light tan to pale grey
Odour: Slight odour
pH: Strongly acidic (<1)
Vapour Pressure (kPa): 0.133 @ 146°C
Vapour Density (Air=1): 3.40
Evaporation Rate: Non Vol. @ 38°C
Viscosity: Not available
Initial Boiling Point & Boiling Point Range (°C): 315-338
Freezing/Melting Point (°C): 3-10
Decomposition Temperature: Not available
Solubility in water: Soluble (exothermic reaction)
Specific Gravity/Density (Water=1): 1.48 – 1.50
Molecular Formula: Not applicable
Molecular Weight: Not applicable
Self ignition temperature: Not available
Flammability (solid, gas): Not available
Explosive Properties: Not available
Oxidising Properties: Not available

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability	• Stable under normal temperatures and pressures (see Section 7)
Conditions to Avoid	• Incompatible materials, exposure to light and heat
Incompatible Materials	• Metals, oxidising agents, reducing agents, bases, acrylonitrile, chlorates, finely powdered metals, nitrates, perchlorates, permanganates, epichlorohydrin, aniline, carbides, fulminates, picrates, organic materials, flammable liquids
Hazardous Decomposition Products	• Sulphur oxides (SOx), including sulphur oxide and sulphur dioxide, nitrogen oxides, carbon monoxide, carbon dioxide. Explosive hydrogen gas is evolved from contact with metals.
Hazardous Polymerisation	• Has not been reported.

SECTION 11 – TOXICOLOGICAL INFORMATION

Inhalation	• Inhalation of vapours or aerosols (mists, fumes) may cause irritation and chemical burns of the respiratory tract, with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary lung oedema • Inhalation may be fatal as a result of spasm, inflammation, oedema of the larynx and bronchi, chemical pneumonitis and pulmonary oedema • Exposure may impair lung function and cause mucostasis, methaemoglobinaemia, cyanosis, convulsions, tachycardia, dyspnoea (laboured breathing), and death • May cause adverse central nervous system effects including headache, convulsions, and possible death • May cause bladder injury and hypertension
Ingestion	• Ingestion causes gastrointestinal tract burns • Absorption of this product into the body may cause cyanosis (bluish discolouration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown coloured blood
Skin Contact	• Strong acids produce a coagulation necrosis characterised by formation of a coagulum as a result of the desiccating action of the acid
Eye	• May cause irreversible eye injury, blindness and permanent corneal opacification
Chronic	• May cause severe and permanent damage to the digestive tract • Prolonged or repeated skin contact may cause dermatitis • Prolonged or repeated inhalation may cause nosebleeds, nasal congestion, erosion of the teeth, perforation of the nasal septum, chest pain, asthma-like symptoms and bronchitis • Prolonged or repeated eye contact may cause conjunctivitis • Workers chronically exposed to sulphuric acid mists may show various lesions of the skin, tracheobronchitis, stomatitis, conjunctivitis, or gastritis • Occupational exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to humans • Adverse effects may be delayed • Reproductive effects have been reported in animals

CAS#	RTECS	LD50/LC50		Carcinogenicity
		Oral (mg/kg)	Inhalation (mg/m^3)	
7732-18-5	ZC0110000	Rat: 99999		Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65
7664-93-9	WS5600000	Rat: 2140	Mouse: 320 Rat: 510/2H Human: 5/15min	ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists) OSHA: Select carcinogen IARC: Group 1 carcinogen
122-39-4	JJ7800000	Mouse: 1750 Rat: 2000 Guinea Pig: 300		Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65

Epidemiology: Diphenylamine may cause allergic skin reactions
Teratogenicity: No information found
Reproductive: Adverse reproductive effects of Diphenylamine have been reported in animals, including fertility effects and developmental abnormalities of the urogenital system in rats
Mutagenicity: No information found
Neurotoxicity: No information found

SECTION 12 – ECOLOGICAL INFORMATION

Diphenylamine (CAS# 122-39-4) is highly toxic to aquatic organisms and contaminates soil and water*
Diphenylamine is easily degraded by sunlight and not expected to bioaccumulate
Toxicity of sulphuric acid (CAS# 7664-93-9) to aquatic life is a function of the resulting pH
Prevent, by any means available, spillage from entering drains or water courses

**Diphenylamine in this substance is not at a high enough concentration to be considered a significant threat unless large volumes of the mixture are released*

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of in accordance with Federal, State, and local regulations

SECTION 14 – TRANSPORT INFORMATION

In accordance with ICAO/IATA/ADG:

Labels Required:
Marine Pollutant: NO
HAZCHEM: 2P
UN Number (Sulphuric acid): 1830
UN Proper Shipping Name: Sulphuric acid solution

(**IMDG-Code/GGVSee**: Sulphuric acid solution with more than 51% acid)
Transport Hazard Class: 8
Packing Group (Sulphuric acid): II
ERG Code: 8L
EMS Number: F-A, S-B
Environmental Hazard (Sulphuric acid): Not applicable
Environmental Hazard (Diphenylamine): Environmentally hazardous substance
Transport in bulk: According to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15 – REGULATORY INFORMATION

Water (7732-18-5) is found on the following Regulatory Lists
Australia Inventory of Chemical Substances (AICS)

Sulphuric acid (7664-93-9) is found on the following Regulatory Lists
Australia Exposure Standards
Australia Hazardous Substances Information System – Consolidated Lists
Australia Inventory of Chemical Substances (AICS)
International Agency for Research on Cancer (IARC) – Agents Classified by the IARC Monographs
International Air Transport Association (IATA) Dangerous Goods Regulations – Prohibited List Passenger and Cargo Aircraft
This material contains Sulphuric acid (CAS# 7664-93-9, 50%), which is subject to the reporting requirements of Section 313 of CERCLA/SARA Title III and 40 CFR Part 373

Diphenylamine (122-39-4) is found on the following Regulatory Lists
Australia Inventory of Chemical Substances (AICS)
Australia Exposure Standards
Australia Hazardous Substances Information System – Consolidated Lists
Diphenylamine (CAS# 122-39-4) in this substance is not at a high enough concentration to be reportable under CERCLA/SARA Section 313

SECTION 16 – OTHER INFORMATION

MSDS Creation Date: January 31, 2019
Information in this MSDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and AgEtal Pty Ltd. assumes no liability resulting from the use of this MSDS. The user must determine suitability of this information for their application.