Infosafe No™ 3CHEQ	Issue Date :December 2020	RE-ISSUED by ACR

Product Name **BUFFER SOLUTION HARDNESS**

Classified as hazardous

1. Identification

GHS Product Identifier	BUFFER SOLUTION HARDNESS
Product Code	2340
Company Name	AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)
Address	38 - 50 Bedford Street Gillman S.A. 5013 Australia
Telephone/Fax Number	Tel: (08) 8440 2000 Fax: (08) 8440 2001
Emergency phone number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)
Recommended use of the chemical and restrictions on use	Laboratory reagent.
Other Information	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday. Australian Chemical Reagents (ACR) does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Australian Chemical Reagents (ACR) with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Australian Chemical Reagents (ACR) is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture	Acute Toxicity - Oral: Category 4 Skin Corrosion/Irritation: Category 1C Acute Toxicity - Inhalation: Category 3 Hazardous to the Aquatic Environment - Acute Hazard: Category 1
Signal Word (s)	DANGER
Hazard Statement (s)	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled. H400 Very toxic to aquatic life.
Pictogram (s)	Corrosion,Skull and crossbones,Environment

Precautionary statement – Prevention	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P270 Do eat, drink or smoke when using this product. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement – Response	P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

	P363 Wash contaminated clothing before reuse. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P310 Immediately call a POISON CENTER or doctor/physician. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Precautionary statement – Storage	P403+P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Water	7732-18-5	72 %
	Ammonia	1336-21-6	28 %
	Ammonium chloride	12125-02-9	0.7 %

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discolouration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Immediately medical attention is required.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Remove contaminated clothing and wash before re-use. If persistent irritation occurs, obtain medical attention.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Obtain medical attention immediately.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Oxides of nitrogen.
Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media. Small fire: Use dry chemical, CO2 or water spray. If safe to do so, move undamaged containers from fire area. Large fire: Use dry chemical, CO2, foam or water spray - Do not use water jets. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.
Specific hazards arising from the chemical	Material does not burn. Fire or heat will produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Contact with metals may evolve flammable hydrogen gas. NOTE: Ammonia is not readily ignited, but explosions of air-ammonia mixtures have occurred in confined spaces.
Hazchem Code	2R
Precautions in connection with Fire	Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal ELIMINATE all ignition sources (no smoking, flares, sparks or flames) within at least 50m. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Cover with DRY earth, sand or other non-combustible material followed by plastic sheet to minimize spreading or contact with rain. DO NOT GET WATER INSIDE CONTAINERS.

Personal Precautions Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.

Clean-up Methods - Large Spillages Seek expert advice on handling and disposal.

Environmental Precautions Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

7. Handling and storage

Precautions for Safe Handling Do not breathe vapour. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.
Open containers slowly to prevent spurting.

Conditions for safe storage, including any incompatibilities Store in cool place and out of direct sunlight. Store in well ventilated area. Store away from sources of heat or ignition. Store away from oxidizing agents. Store away from acids. Keep containers securely sealed and protected against physical damage.

Corrosiveness Corrosive to copper, nickel, zinc and tin and their alloys such as brass. Not significantly corrosive to iron and steel.

Storage Regulations Refer Australian Standard AS 3780-2008 'The storage and handling of corrosive substances'.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Ammonia	24	35	17	25	
Ammonium chloride	20		10		

Other Exposure Information These Workplace 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 workplace 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.
A time weighted average (TWA) has been established for Ammonia, [Ammonia, anhydrous] [7664-41-7] (Safe Work Australia) of 17 mg/m³, (25 ppm). The corresponding STEL level is 24 mg/m³, (35 ppm). The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. 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.

Appropriate engineering controls Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

Respiratory Protection Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective

	Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.
Personal Protective Equipment	Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Clean impervious clothing should be worn, preferably with an apron for extra protection. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Colourless, clear to slightly turbid liquid.
Odour	Characteristic, pungent, stinging, irritating odour.
Boiling Point	18 - 37°C
Solubility in Water	Miscible in water.
Solubility in Organic Solvents	Soluble in ethanol and ether.
pH	10
Flammability	Vapours are combustible.
Flammable Limits - Lower	16%
Flammable Limits - Upper	25%

10. Stability and reactivity

Chemical Stability	Stable under normal pressures and cool temperatures.
Conditions to Avoid	Exposure to heat and light.
Incompatible Materials	Acids, alkalis (could form ammonia), acrolein antimony hydride/heat, various alloys (zinc, copper), boron, carbon dioxide, chromyl chloride, dimethylsulfate, ethylene oxide, halogens, hydrogen sulfide, halides, hydrogen bromide, hydrochloric acid, hydrogen fluoride, hydrogen peroxide, interhalogens, iodine, metal halides, mercury/water, various metals, metal salts (chromium VI oxide), nitrogen oxides, nitric acid, oxidising agents, oxygen, phosgene, phosphorus oxides, sulfur dioxide, silver compounds (during storage),

Hazardous Decomposition Products	Ammonia, nitrogen oxides.
Possibility of hazardous reactions	Reacts violently in contact with acids and oxidising agents. Reacts violently or forms explosive products in contact with halogens, interhalogens or halides. May form explosive compounds in contact with metal halides, silver compounds or mercury. Can cause ethylene oxide to polymerise explosively.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Toxicology Information	No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. If mishandled or overexposed to this product the following symptoms or effects may occur.
Ingestion	Harmful if swallowed. Causes severe burns and pain in the throat, chest and abdomen along with mucosal irritations, gastric pain, nausea, coughing, bloody vomiting, dyspnoea, collapse, shock and unconsciousness. Risk of perforation in the oesophagus and stomach.
Inhalation	Toxic if inhaled. May cause severe respiratory tract irritation. Causes irritations of the mucous membranes, coughing and dyspnoea bronchitis, pulmonary oedema. When vapours/aerosols are generated causes strong irritant effect. Brief exposure at 5,000 ppm may cause rapid death due to suffocation or fluid in the lungs.
Skin	Causes burns, irritations. May cause irritant and caustic effects (dermatitis, necrosis).
Eye	Causes burns. Risk of blindness. Vapour may cause irritation. Liquid may cause severe irritation, hemorrhage, swollen eyelids and partial or total blindness.
Respiratory sensitisation	Not classified based on available information.
Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	Not classified based on available information.
Reproductive Toxicity	Not classified based on available information.
STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Not classified based on available information.
Chronic Effects	Repeated exposure to gas may cause long-term irritation of the eyes, nose and upper respiratory tract. May cause chemical pneumonitis and kidney damage. Workers repeatedly exposed to ammonia may develop a tolerance to the irritating effects after several weeks.
Serious eye damage/irritation	H314 Causes severe skin burns and eye damage.
Mutagenicity	No evidence of mutagenic properties.
Skin corrosion/irritation	Skin Corrosion/Irritation: Category 1C H314 Causes severe skin burns and eye damage.

12. Ecological information

Ecotoxicity	Highly toxic for aquatic organisms. Harmful effect due to pH shift. Forms toxic mixtures in water, dilution measures notwithstanding.
Persistence and degradability	Abiotic degradation: slow degradation. Biologic degradation: not readily degradable.
Environmental Fate	Behaviour in environmental compartments: Distribution: log P (o/w): -1.38.
Bioaccumulative Potential	No bioaccumulation is to be expected (log P(o/w) <1.0).

Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	LC50 (Onchorhynchus mykiss): 0.53 mg/l/96 h.
Acute Toxicity - Daphnia	EC50 (Daphnia pulicaria): 1.16 mg/l/48 h. EC50 (Daphnia magna): 24 mg/l/48 h.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	2672
UN proper shipping name	AMMONIA SOLUTION
Transport hazard class(es)	8
Hazchem Code	2R
Packing Group	III
EPG Number	8A1
IERG Number	37

15. Regulatory information

Regulatory Information	All of the significant ingredients in this formulation are compliant with Australian Industrial Chemicals Introduction Scheme (AICIS) regulations. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	S6

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Australian Chemical Reagents (ACR) accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.

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