

Infosafe No™ 3CHCF	Issue Date : February 2018	RE-ISSUED by ACR
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Product Name **SODIUM HYDROXIDE 5 - 60% Solutions**

Classified as hazardous

1. Identification

GHS Product Identifier SODIUM HYDROXIDE 5 - 60% Solutions

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 Used in chemical manufacturing (pH control, acid neutralization, off-gas scrubbing and catalyst); pulp and paper manufacturing; in petroleum and natural gas industry (removing acidic contaminants in oil and gas processing); manufacture of soap and detergents and other cleaning products; and cellulose, such as rayon, cellophane and cellulose ethers; cotton mercerizing and scouring; water treatment; food processing; flue-gas scrubbing; mining; glass making; textile processing, laundering, and bleaching; refining vegetable oils; rubber reclamation; metal processing; etching and electroplating; oxide coating; electrolytic extraction of zinc; tin plating; aluminium processing; metal degreasing; drain and pipe cleaning; adhesive preparations; paint remover; wood treatment; disinfectant; cleaning of non-disposable bottles by the drink and beer industry; batteries; oven-cleaner pads; rubber latex stabilizer; stabilization of sodium hypochlorite; in making plastics to dissolve casein; pharmaceutical aid (alkalizer) and laboratory reagent.

Other Names

<u>Name</u>	<u>Product Code</u>
Sodium Hydroxide 25% w/v Tech Grade	3142
SODIUM HYDROXIDE 50% w/w Solution TG	0565
Sodium Hydroxide 10% w/v	0555
Sodium Hydroxide 10N	0553
Sodium Hydroxide 15% w/v	1620
Sodium Hydroxide 15N	4987
Sodium Hydroxide 2.4N	5792
Sodium Hydroxide 20% w/v	0556
Sodium Hydroxide 25% w/v	1834
Sodium Hydroxide 25% w/w	5037
Sodium Hydroxide 28% w/v	5310
Sodium Hydroxide 28.6% w/w	5609
Sodium Hydroxide 2N	1057
Sodium Hydroxide 30% w/v	0558
Sodium Hydroxide 32% w/v AR	5100
Sodium Hydroxide 32% w/w	2461
Sodium Hydroxide 3M	3018
Sodium Hydroxide 40% w/v Tech Grade	0561
Sodium Hydroxide 4N	1048
Sodium Hydroxide 5% w/v	1151
Sodium Hydroxide 50% w/w AR	0564
Sodium Hydroxide 5N	0068
Sodium Hydroxide 6.25N	3897
Sodium Hydroxide 60% w/v Tech Grade	0566
Sodium Hydroxide 6N	1018
Sodium Hydroxide 9N	5981
Sodium Hydroxide Standard 10.0% w/v AR	3327
Sodium Hydroxide Standard 11.00%	3298
Sodium Hydroxide Standard 15.00%	3299
Sodium Hydroxide Standard 5.00%	3296
Sodium Hydroxide 10% TG w/w	0557

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

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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 Corrosive to Metals: Category 1
Skin Corrosion/Irritation: Category 1A

Signal Word (s) DANGER

Hazard Statement (s) H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Pictogram (s) Corrosion



Precautionary statement – Prevention
P234 Keep only in original container.
P260 Do not breathe dust/mist/vapours/spray.
P264 Wash skin thoroughly after handling.
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.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
P310 Immediately call a POISON CENTER or doctor/physician.

Precautionary statement – Storage
P405 Store locked up.
P406 Store in corrosive resistant/... container with a resistant inner liner.

Precautionary statement – Disposal
P501 Dispose of contents/container to an approved waste disposal plant.

Other Information
If Sodium hydroxide as such is sold or supplied in a container having a nominal capacity of 2.5 litres or less it must be closed with a child-resistant closure. (Commonwealth Department of Health and Aged Care, 'Standard for the Uniform Scheduling of Medicines and Poisons No. 19', Commonwealth of Australia, Canberra 2018).

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Water	7732-18-5	40-95 %
	Sodium hydroxide	1310-73-2	5-60 %

4. First-aid measures

Inhalation If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately medical attention is required.

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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	Immediately remove contaminated clothing and wash affected area with water for at least 15 minutes. Ensure contaminated clothing is washed before re-use. Seek medical advice /attention depending on the severity.
Eye contact	If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain, safety shower and a general washing facility in work area.
Advice to Doctor	Treat symptomatically and supportively as for strong alkalis. Burns are not immediately painful; onset of pain may be minutes to hours. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.
Protection for First Aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing, or wear gloves.
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

Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media.
Specific hazards arising from the chemical	Material does not burn.
Hazchem Code	2R
Decomposition Temp.	>1390 °C (boiling point of pure substance).

6. Accidental release measures

Personal Precautions	Avoid contact with skin, eyes. Use personal protective equipment listed in Section 8. Evacuate the area of all non-essential personnel.
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. Sweep up and remove to a suitable, clearly labelled container for disposal in accordance with local regulations.
Environmental Precautions	Do not discharge to the environment or sewer system. Prevent further leaking if safe to do so. If product contaminates rivers and lakes or drains inform respective authorities.

7. Handling and storage

Precautions for Safe Handling	Avoid contact with eyes, skin, and clothing. If ingested, seek medical advice immediately and show the container or the label. Wear appropriate protective clothing. Contaminated clothing and other protective equipment should be removed and washed before storage or re-use. Wash thoroughly after handling. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, acids, alkalis, organic materials and moisture.
Conditions for safe storage, including any incompatibilities	Store in the original, tightly closed container, in a cool, dry, well-ventilated area away from sources of heat, moisture and incompatible materials. Protect from physical damage, direct sunlight, air and moisture. Keep away from strong acids, metals, flammable liquids, ammonium salts, organic halogens, organic materials and foodstuffs. Do not allow contact with water. Keep containers closed when not in use.
Corrosiveness	Corrosivity to Metals: Corrosive to aluminium, tin, zinc, copper, brass and bronze. Corrosive to steel at elevated temperatures (above 40 °C). Not corrosive to nickel.

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Storage Regulations	Slowly attacks glass at room temperature.
Storage Temperatures	Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.
Unsuitable Materials	Store at room temperature (16 to 25 °C recommended). Store above 16 °C to prevent freezing.
	Aluminium, magnesium, tin, zinc or galvanised containers. Do not use die-cast zinc or aluminium bungs.

8. Exposure controls/personal protection

Other Exposure Information	A time weighted average (TWA) has been established for Sodium hydroxide (Safe Work Australia) of 2 mg/m ³ (Peak limitation). 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 - a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.
Appropriate engineering controls	Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.
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	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl. Good: Neoprene gloves Poor: Leather gloves. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
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 clothing or protective clothing should be worn, preferably with an apron. 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	Clear, colourless, water-white to slightly coloured viscous liquid.
Odour	Odourless.
Decomposition Temperature	>1390 °C (boiling point of pure substance).
Melting Point	-4 °C (5%w/w); -10 °C (10%w/w); -26 °C (20%w/w); 2 °C (30%w/w); 16 °C (40%w/w); 12 °C (50%w/w); 42 °C (60%w/w).
Boiling Point	102 °C (5%); 105 °C (10%); 110 °C (20%); 115 °C (30%); 128 °C (40%); 140 °C (50%); 160 °C (60%).

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Solubility in Water	Miscible (soluble) in all proportions.
Solubility in Organic Solvents	Soluble in all proportions in ethanol, methanol and glycerol.
Specific Gravity	1.05383 (5%); 1.0869 (8%); 1.1309 (12%); 1.1751 (16%); 1.2191 (20%); 1.2629 (24%); 1.3064 (28%); 1.349 (32%); 1.39 (36%); 1.43 (40%); 1.4685 (44%); 1.5065 (48%); 1.5253 (50%); 1.11 (3N Vol Sol.); 1.15 (4N Vol Sol.); 1.17 (5N Vol Sol.); 1.20 (6N Vol Sol.); 1.32 (10N Vol Sol.).
pH	Basic. >14.
Flammability	Non combustible material.
Explosion Properties	Reactions with a number of commonly encountered materials can generate sufficient heat to ignite nearby combustible materials. Reactions with metals, such as aluminium, tin and zinc, can form explosive/flammable hydrogen gas. Reaction with ammonia + silver nitrate forms explosive products. Reaction with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat can cause an explosion. Reaction with impure tetrahydrofuran, which can contain peroxides, can cause serious explosions. Benzene extract of allyl benzenesulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aqueous sodium hydroxide, under vacuum distillation, residue darkened and exploded.
Molecular Weight	40.00 (pure substance).
Saturated Vapour Concentration	1980 ppm (0.2%) at 20 °C (50% solution) (calculated).
Other Information	Taste: Tasteless; bitter, strong, alkaline taste.

10. Stability and reactivity

Chemical Stability	Stable at room temperature in tightly closed containers under ordinary conditions of use and storage. Sensitive to air. Sodium hydroxide rapidly absorbs carbon dioxide from the air (forming sodium carbonate). Moreover, contamination with iron is possible in carbon steel storage vessels or in lined carbon steel storage vessels where the liner has been impaired.
Conditions to Avoid	Extremes of temperature and direct sunlight, heat, moisture/water, light metals (aluminium, tin, or zinc), exposure to air, or carbon monoxide, and incompatible materials.
Incompatible Materials	Many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols and organic peroxides, water, acetaldehyde, acrolein or acrylonitrile, sodium tetrahydroborate or metals, such as aluminium, tin, or zinc, 1,2-dichloroethylene, trichloroethylene or tetrachloroethane, solutions of sugars, such as fructose, lactose and maltose.
Hazardous Decomposition Products	Toxic fumes of sodium/sodium oxides (Na ₂ O). Contact in moist air with light metals (like aluminium, zinc, tin and lead) may evolve combustible/explosive/flammable hydrogen gas.
Possibility of hazardous reactions	Reactions with many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols and organic peroxides are vigorous, violent or explosive. Reaction with water is violent, generating significant heat, causing possible localized overheating and dangerously spattering corrosive sodium hydroxide. Reactions with sodium tetrahydroborate or metals, such as aluminium, tin, or zinc produce flammable and explosive hydrogen gas. Reactions with 1,2-dichloroethylene, trichloroethylene or tetrachloroethane can form spontaneously flammable chemicals. Reactions with solutions of sugars, such as fructose, lactose and maltose can produce carbon monoxide.
Hazardous Polymerization	Violently polymerizes acetaldehyde, acrolein or acrylonitrile.

11. Toxicological Information

Ingestion	Corrosive! Causes severe irritation and severe corrosive burns to the mucous membranes of the mouth, throat, oesophagus, stomach and gastrointestinal tract. Swallowing can result in severe pain, burning of the mouth, throat and
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Inhalation	oesophagus, nausea, vomiting, diarrhoea, abdominal pain, swelling of the larynx and subsequent suffocation, severe and permanent damage to the digestive tract, perforation of the gastrointestinal tract (oesophagus and stomach), bleeding, severe scarring of tissue, shock, fall in blood pressure, cardiovascular collapse, collapse, coma and possible death. Burns to the oesophageal tissue may progress to stricture formation. Damage may appear days after exposure.
Skin	Sodium hydroxide has a negligible vapour pressure and is rapidly neutralized in air by carbon dioxide and therefore vapour exposure is not expected. Inhalation of aerosols may result in respiratory irritation, with coughing, sneezing, runny nose, sore throat, burning sensation, tightness of chest, dyspnoea (difficult breathing) and possible pulmonary oedema (severe, life-threatening lung injury), chemical pneumonitis, emphysema, irreversible obstructive lung disease and coma. Exposure and symptoms may be increased at higher temperatures.
Eye	Corrosive! Causes severe eye irritation and severe burns that may result in redness, stinging, pain, lacrimation (tearing), blurred vision, mild scarring, blistering, loss of colour vision (blue vision), corneal damage, corneal oedema, photophobia, chemical conjunctivitis, corneal burns, necrosis, disintegration, and severe scarring. In severe cases, there is progressive ulceration and clouding of eye tissue which may lead to permanent blindness. Possible late developments may include glaucoma and cataracts. Risk of blindness!
Skin Sensitisation	Sodium hydroxide has been used widely and for a long time and no human cases of skin sensitisation have been reported and therefore sodium hydroxide is not considered to be a skin sensitizer.
Carcinogenicity	Not listed in the IARC Monographs. Alkalis are known to increase the risk of oesophageal cancer, which can occur years after the initial injury. The incidence of carcinoma following oesophageal injury from sodium hydroxide is 0.8-4%. Of the fifteen patients (age range 38-83) in a study by Isolauri and Markkula (1989) twelve had accidentally swallowed sodium hydroxide at the age of two or three years, one at fifteen years and one at twenty-three years of age. The time between ingestion and the diagnosis of oesophageal cancer was 22-81 years. Appelqvist and Salmo (1980) describe similar results, out of sixty patients with oesophageal cancer for which the time of ingestion was known, fifty-two had ingested the sodium hydroxide at the age of ten years or younger.
Chronic Effects	Skin: Prolonged contact with dilute solutions or dust has a destructive effect upon tissue. Repeated or prolonged skin contact may lead to irritant contact dermatitis. Effects may be delayed. Lungs/Respiratory System: Repeated or prolonged exposure (2 hours per day over 20 years) to mists from boiling solutions of sodium hydroxide (exposure levels of the aerosols were not measured) in a small room with inadequate ventilation has resulted in the development of severe obstructive airway disease. The massive and prolonged exposure induced irritation and burns to the respiratory system, which eventually led to the disease. Chronic exposure had not previously been reported, probably since the strong and immediate irritation upon inhalation would normally deter workers from further exposure. Late onset asthma could not definitely be excluded as a cause of the worker's condition.

12. Ecological information

Ecotoxicity	Quantitative data on the ecological effect of this product are not available. Toxic effect on fish and plankton. Harmful effect due to pH shift. Death of fish possible.
Information on Ecological Effects	Does not cause biological oxygen deficit.

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Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	Onchorhynchus mykiss CL50 : 45,4 mg/l /96h. (anhydrous substance).
Acute Toxicity - Daphnia	Daphnia magna EC50: 76 mg/l /24h. (anhydrous substance).
Sewage Treatment	Neutralization possible in waste water treatment plants.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations.
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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	1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	8
Hazchem Code	2R
Packing Group	II
EPG Number	8A1
IERG Number	37
Environmental Hazards	Toxic effect on fish and plankton. Harmful effect due to pH shift. Death of fish possible.

15. Regulatory information

Regulatory Information	Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals. Listed in the Australian Inventory of Chemical Substances (AICS).
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 for 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

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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.

Empirical Formula & Structural Formula NaOH (pure substance).

...End Of MSDS...

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