SAFETY DATA SHEET

CHESSER CHEMICALS Pty Ltd
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ABN Number: 67 008 262 039

Product: SODIUM HYPOCHLORITE SOLUTION (10-15% Available Chlorine)

Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

SIGNAL WORD: DANGER

☎Emergency Response No: CHEMWATCH **1800 951 288**

RECOMMENDED PPE

Health hazards

H314 Causes severe skin burns and eye damage.

Environmental hazards

H400 Very toxic to aquatic life

Other hazards

AUH031 Contact with acids liberates toxic gas.

1 IDENTIFICATION

IDENTIFICATION

Product Code:	SHC
Product Name:	SODIUM HYPOCHLORITE SOLUTION (10-15% Available Chlorine)
Other Names:	HYPOCHLORITE SOLUTION; BLEACH; HYPOCHLOROUS ACID – SODIUM SALT
Product Use:	Sanitiser in Dairy Food and Beverage Industries, and Water Treatment. Bleaching agent in Textile Industry and Laundries.
Restrictions on use:	Use as directed. Do not mix with acids

COMPANY DETAILS

Company:	CHESSER CHEMICALS Pty Ltd
ABN Number:	67 008 262 039
Address:	124 Days Road FERRYDEN PARK SA 5010
Telephone Number:	(08) 8406 0000
Facsimile Number:	(08) 8406 0099
Emergency Telephone Number:	CHEMWATCH 1800 951 288

Other Information: This information summarises our best knowledge on the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

2 HAZARD IDENTIFICATION

Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Classification of the substance or mixture:

Skin Corrosion/irritation	- Category 1
Eye Damage/irritation	- Category 1
Acute Aquatic Toxicity	- Category 1

SIGNALWORD: DANGER

Corrosion

Environment

Hazard Statements

Physical hazards

Health hazards

H314	Causes severe skin burns and eye damage.

Environmental hazards

H400	Very Toxic to aquatic life.

Other hazards

AUH031	Contact with acids liberates toxic gas.

Precautionary statements

General precautionary statements

Prevention precautionary statements

P260	Do not breathe fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response precautionary statements

P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363	Wash contaminated clothing before re-use.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310	Immediately call a POISON CENTRE or doctor/physician.
P321	Specific treatment (see First Aid Measures on Safety Data Sheet).
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.
P391	Collect Spillage.

Storage precautionary statements

P405	Store locked up.

Disposal precautionary statements

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Poisons Schedule (SUSMP): S5

3 COMPOSITION

Ingredients

Chemical Entity	CAS Number	Proportion	Risk Phrases
WATER	[7732-18-5]	> 60%	
SODIUM HYPOCHLORITE	[7681-52-9]	10 - 15%	H314 H400
SODIUM HYDROXIDE	[1310-73-2]	0.7 – 2.0%	H290 H314 H318

4 FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of water. Get medical aid immediately.

Eye Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner, which limits further exposure.

Inhaled Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. DO NOT use mouth-to-mouth respiration.

Advice to Doctor Symptoms caused by exposure: Chlorine gas released from sodium hypochlorite causes irritation of respiratory system, consisting in coughing, difficult breathing, stomatitis, nausea and pulmonary oedema. Contact with skin can cause skin irritation, followed by blisters and eczema (especially at 12% concentration). The eye contact causes serious damages of eyes. Ingestion of tens of grams of sodium hypochlorite solution (12% concentration) can cause mucous membrane burns, perforation of the oesophagus and stomach, and laryngeal oedema. Medical Attention and Special Treatment: In case of eyes and face splashing, treat eyes firstly. Treat symptomatically and supportively.

Medical Conditions Aggravated by exposure: No information available on medical conditions aggravated by exposure to this product.

5 FIRE FIGHTING MEASURES

General Measures If safe to do so, remove containers from the path of fire.

Flammability Conditions Not considered to be a fire hazard. Sodium hypochlorite itself does not burn, but poisonous gases are produced in fire.

Extinguishing Media Suitable Extinguishing Media: Water. Use water spray to cool fire-exposed containers, to dilute liquid, and control vapour.

Fire and Explosion Hazard Contact with combustible materials can cause explosions.

Hazardous Products of Combustion	Emits toxic fumes of chlorine (hypochlorous acid and sodium chlorate) when heated to decomposition. The decomposition is an exothermal process.
Special Fire Fighting Instructions	Keep containers cool with water spray. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self- contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Containers may explode when heated.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit. Please note: Structural fire fighters uniform will provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	2X

6 ACCIDENTAL RELEASE MEASURES

General Response Procedure	Emergency procedures, Evacuate the danger area or to consult an expert. Approach from upwind. Isolate the area. Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions. Prevent further leakage or spillage if safe to do so. Keep away from incompatible products.
Clean Up Procedures	Spills/Leaks: The spills can be neutralized using light reducing agents such as sodium sulphite sodium bisulphite or sodium thiosulphate. Do not use sulphates or bi-sulphate! Contain and recover when is possible. Stop leak if safe to do so.
Containment Decontamination	Special precautions: Do not use combustible materials, such as saw dust! Do not use sulphates or bisulphates for spill neutralising!
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7 HANDLING AND STORAGE

Handling	Protect against physical damage. Personnel which handling the product must wear protective equipment for hand, skin or eyes, and including protective breathing apparatus. Area should be well ventilated. Advice on general occupational hygiene: Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. Chemicals should be used only by those trained in handling potentially hazardous materials. The electrical equipment should be corrosion resistant.
Storage	Keep in tightly closed containers, store in a cool, dry, well ventilated area. Isolate from incompatible substances. The aqueous solutions are sensitive to light and air. Avoid storage for long period because the product degrades over time. The recommended storing temperature is 15-25 C. Storage at 15 C reduces the rate of decomposition. This product has a UN classification of 1791 and a Dangerous

Goods Class 8 (Corrosive) according to The Australian Code for the Transport of Dangerous goods By Road and Rail.

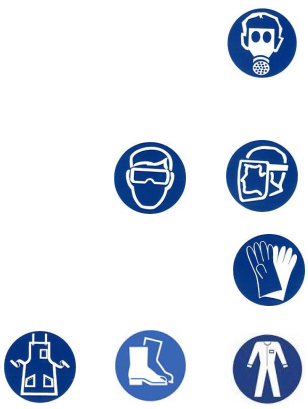
Container

Materials used for storage tanks:

- Polyethylene; 5-7 years life time. The outdoor tanks will be UV proof.
- Glass fibre reinforced plastics – designed accordingly
- Steel rubber-lined (thickness of lining - ¾")
- Steel Halar lined (Halar is a copolymer 1:1 ethylene-chlorotrifluoroetylene) 3-6 years life time function of quality of lining application.
- Titanium – the best material used for tank construction but because the high price is used only for specific applications.

Incompatible materials: reducing agents, combustible materials (wood, cellulose), organic materials, metals, acids.
Materials to avoid: carbon steel, stainless steel, copper and its alloys, aluminium, unprotected metals.

8 EXPOSURE CONTROL / PERSONAL PROTECTION

General	HSIS Airborne Exposure Limits: Chlorine: TWA 1 ppm (3 mg/m3 peak limitation) NOTE: 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 is a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes. These 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 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.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures 	These 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 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.
Personal Protection Equipment 	RESPIRATOR: Self-contained breathing apparatus with full face-piece operated in the pressure demand. For emergencies or instances where exposure levels are not known, use a full face piece positive pressure, air supplied respirator. Warning! Air -purifying respirators do not protect workers in oxygen deficient atmospheres (AS1715/1716). EYES: Chemical splash goggles and/or face shield must be worn when possibility exist for eye contact due to splashing or spraying liquid or vapour (AS1336/1337). HANDS: Wear PVC, rubber or neoprene gloves. Glove thickness has to be of minimum 1.2 mm. Do not use leather gloves (AS2161). CLOTHING: Wear impervious protective clothing including boots, lab coat, apron or coveralls and safety footwear (AS3765/2210).
Work Hygienic Practices	Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Odour	Chlorine odour
Colour	Clear, colourless
pH	>12
Vapour Pressure	2500 Pa (@ 20 °C)
Relative Vapour Density	No Data Available
Boiling Point	100 approx °C
Freezing Point	No Data Available
Specific Gravity	1.21 for 12.0%
Flash Point	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Octanol Water Coefficient	-3.42 (calculated value)
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	2.6 mPas (@ 20 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Specific density (water=1)	1.21 for 12.0%
Potential for Dust Explosion	Product is a liquid.

Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	No Data Available
Release of Invisible Flammable Vapours and Gases	No Data Available

Melting Point	No Data Available
Evaporation Rate	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Net Propellant Weight	No Data Available
Auto Ignition Temp	No Data Available

10 STABILITY AND REACTIVITY

General Information	Reactivity: Reacts violently with acids with chlorine released. Possibility of Hazardous Reactions: Sodium hypochlorite is extremely corrosive for aluminium, brass. Reacts with metals (nickel, cooper, tin) with oxygen release, with ammonia urea, oxidisable substances, ammonium nitrate, ammonium oxalate, ammonium phosphate, ammonium acetate, ammonium carbonate, cellulose and methanol.
Chemical Stability	Unstable. Stability decreases with concentration, heat, light exposure, decrease in pH and contamination with heavy metals, such as nickel, cobalt, copper and iron. In practice, a factor of 2 decrease in concentration produces nearly a factor of 5 decrease in decomposition rate at any given temperature with a pH range of approximately 11 to 13. At pH<11, sodium hypochlorite is unstable and decomposes with the release of chlorine.
Conditions to Avoid	Light, heat and incompatibles.
Materials to Avoid	Incompatible materials and possible hazardous reactions: aluminium, brass, cellulose, steel, stainless steel, bronzes. Strong acids, strong oxidizers, heavy metals (which act as catalysts), reducing agents, ammonia and ammonium salts, ether, and many organic and inorganic chemicals such as paint, kerosene, paint thinners, shellac.

Hazardous Decomposition Products Emits toxic fumes of chlorine (hypochlorous acid and sodium chlorate) when heated to decomposition. The decomposition is an exothermal process.

Hazardous Polymerisation Sodium hypochlorite is extremely corrosive for aluminium, brass. Reacts with metals (nickel, cooper, tin) with oxygen release, with ammonia, urea, oxidisable substances, ammonium nitrate, ammonium oxalate, ammonium phosphate ammonium acetate, ammonium carbonate, cellulose and methanol.

11 TOXICOLOGICAL INFORMATION

General Information

Acute toxicity: Sodium Hypochlorite:

Rat male Oral	LD_{50} = 1100 mg/kg	bw (for sodium hypochlorite sol. 12% free chlorine).	
Mouse male Oral	LD_{50} = 880 mg/kg	bw (for sodium hypochlorite sol. 12% free chlorine).	

Other routes: Intra-peritoneal

Rat	LD_{50} (1h)	> 10.7	mg/L	air, causes abundant tearing.
Rabbit male/female	LD_{50}	>20	g/kg	bw. Causes serious skin irritation.
Mouse	LD	240-250	mg/kg	bw,
Guinea pig	LD	63	mg/kg	bw.

Repeated dose toxicity:

Oral	NOAEL	50	mg/kg	bw/day

Respiratory or skin sensitisation: Not sensitising

Germ cell mutagenicity: No genetic toxicity effects

Carcinogenicity No carcinogenic potential

Reproductive toxicity Sodium hypochlorite has no genotoxic potential, therefore no classification is required according to 67/548/EEC and 1272/2008/EC (CLP) requirements.

Information on Possible routes of exposure: Ingestion, Inhalation, Skin/ eye exposure.

Interactive Effects:

Sodium hypochlorite reacts rapidly with the organic molecules and cellular components, forming organic chlorinated compounds which have their own toxicity (BIBRA 1990)

Eye Irritant Causes eye damage. Eye damage, category 1. Corrosive. Eye contact causes serious burns and discomfort. Prolonged contact may result in permanent damage.

Ingestion Causes severe pain, nausea, vomiting, diarrhoea, and shock. May cause haemorrhaging of the digestive tract. May cause corrosion and permanent tissue destruction of the oesophagus and digestive tract. May be harmful if swallowed.

Inhalation Irritant. Inhalation of sprayed solution and vapours can cause respiratory system irritation caught, difficulty of breathing, stomatitis, nausea and pulmonary oedema. Classified as STOT Single Exposure 3.

Skin Irritant Light irritant at low concentrations. Moderate irritant at medium concentrations (>5%). Corrosive at concentration higher than 10%. Skin corrosive category 1B.

Chronic

Other Prolonged inhalation may cause respiratory tract inflammation and lung damage. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis to serious eye damage.

Carcinogen Category No Data Available

12 ECOLOGICAL INFORMATION

Ecotoxicity Aquatic Toxicity

Tests demonstrate NOEC (7 days) = 0.0021 mg/L. Factor M=10.

Short-term toxicity to invertebrates (molluscs, Daphnia magna, Ceriodaphnia dubia)

- Fresh water: EC50/LC50 =0,141 mg/L
- Marine water: EC50/LC50 =0.026 mg/L

Long-term toxicity to invertebrates

- Marine water: LC100 (36days) 0,005mg/L
- NOEC for aquatic invertebrates = 0.007 mg/L

Short-term toxicity to fish
- Fresh water LC 50 =0.06 mg/l
- Marine water LC 50= 0.032 mg/l
Long-term toxicity to fish
- Marine water: NOEC= 0.04 mg CPO/L
Short-term toxicity to algae and aquatic plants: Not applicable, sodium hypochlorite decomposes rapidly.
Long-term toxicity to algae and aquatic plants
- Fresh water EC50/LC50=0.1 mg/l
- Marine water EC10/LC10 or NOEC =0.02 mg/L
PNEC (Predicted No Effect Concentration)
PNEC fresh water = Minimum long-term aquatic toxicity/10 = 0.21 µg/L
PNEC marine water = Minimum long-term aquatic toxicity /50 = 0.042 µg/L
Toxicity to sediment micro-organisms
There are not predicted exposures due the fact that sodium hypochlorite is destroyed quickly by oxy-reduction.
Sodium hypochlorite can not exist in presence of organic carbon.
PNEC=0 fresh water sediment / marine water sediment.
Terrestrial toxicity
Short/long -term toxicity to terrestrial invertebrates
Substance is not absorbed in soil and is not persistent in soil. TD50<1 min, PEC/PNEC soil<1.
Toxicity to soil micro-organisms
Short/long term toxicity to plants
Due the fact that PEC/PNEC for terrestrial toxicity is <1 and at contact with soil hypochlorite dissipates quickly (TD50 <1 min) there is not estimated short/long toxicity to plants. In accordance with column 2 of REACH Annexes IX and X, there is no need to further investigate the effects of the substance on plants.
Long-term toxicity to birds
EC10/LC10 or NOEC on long term: 200 mg/kg food
Biotic: The inorganic water can not be tested for biodegradability.
Abiotic: Hypochlorite degrades quickly during the transport through sewage system.
Photo-transforming (Photolysis)
Atmospheric degradation: At medium pH (6, 5-8, 5) value, half of sodium hypochlorite is present as hypochlorous acid and the other half is dissociate as hypochlorite ions.
In the atmosphere, hypochlorous acid degrades, generating atomic chlorine, which is destroyed by UV radiation. The half-life is115 days. Does not react with ozone layer.
Photolysis in water
Half-life for sodium hypochlorite solution, active chlorine 12-15%, at 250C is 220 days. In presence of light, the half-life decreases 3-4 times. The UV radiation decomposes the hypochlorite, generating chlorate, chlorite and oxygen:
3 ClO- => ClO3- + 2 Cl- (1)
2 ClO- => 2 Cl- + O2 (2)
In water, under photolysis, sodium hypochlorite with concentration of13-18 mg/L, has a half-life of 12 min. at pH = 8. This increases up to 60 min. with pH decreasing
Persistence/Degradability
Mobility: At medium pH (6,5-8,5) value, half of sodium hypochlorite is present as hypochlorous acid and the other half is dissociate as hypochlorite ions. The absorption of hypochlorous acid particles, the air volatilization and soil absorption are very low. Thus, hypochlorite remains in aqueous phase and degrades to chlorine.
Environmental Fate: Do NOT let product reach waterways, drains and sewers.
Bioaccumulation Potential: Hypochlorite reacts instantaneously with organic and oxidant materials. Has not potential for bioaccumulation.
PBT/vPvB: Hypochlorite does not fulfil the PBT criteria (not PBT) and not the vPvB criteria (not vPvB).
Environmental Impact: No Data Available

13 DISPOSAL CONSIDERATIONS

Disposal methods: Refer to Waste Management Authority. Dispose of material through a licensed waste contractor. Decontamination and destruction of containers should be considered

14 TRANSPORT INFORMATION

Road and Rail Transport

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name: HYPOCHLORITE SOLUTION
Hazchem or Emergency Action Code: 2X

Marine Transport

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name or Technical Name: HYPOCHLORITE SOLUTION
IMDG EMS Fire: F-A
IMDG EMS Spill: S-B

Air Transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name or Technical Name: HYPOCHLORITE SOLUTION

15 REGULATORY INFORMATION

Poisons Schedule S5
EPG 37 TOXIC and/or CORROSIVE SUBSTANCES
AICS Name All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16 OTHER INFORMATION

Literature References No data available.
Sources for Data No data available.

Legend to Abbreviations and Acronyms

<	less than
>	greater than
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstracts Service (Registry Number)
cm^2	square centimetres
CO_2	Carbon Dioxide
COD	Chemical Oxygen Demand
deg C (°C)	degrees Celsius
ERMA	Environmental Risk Management Authority
G	gram
g/cm^3	grams per cubic centimetre
LD50	LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals
Ltr	Litre
m^3	cubic metre
mbar	millibar
mg	milligram
mg/24H	milligrams per 24 hours
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic metre
Misc	miscible
g/l	grams per litre
HSNO	Hazardous Substance and New Organism
IDLH	Immediately Dangerous to Life and Health
Immiscible	liquids are insoluble in each other
Kg	kilogram
kg/m^3	kilograms per cubic metre
LC50	LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
Miscible	liquids form one homogeneous liquid phase regardless of the amount of either component present
mm	millimetre
mPa.s	milli Pascal per second
N/A	Not Applicable
NOHSC	National Occupational Health and Safety Commission
OECD	Organization for Economic Co-operation and Development
PEL	Permissible Exposure Limit
ppb	parts per billion
ppm	parts per million

ppm/2h	parts per million per 2 hours	**tne**	tonne
ppm/6h	parts per million per 6 hours	**TWA**	Time Weighted Average
RCP	Reciprocal Calculation Procedure	**ug/24H**	micrograms per 24 hours
STEL	Short Term Exposure Limit	**UN**	United Nations (number)
TLV	Threshold Limit Value	**Wt**	weight

Date Prepared:
Tuesday 6th February 2024 Version: 1.2 Supersedes: Friday 28th March 2019
Update dates

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