

MATERIAL SAFETY DATA SHEET - BLEACH

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1. IDENTIFICATION

Product Name:	BLEACH - INSTITUTIONAL
Manufacturer:	RW Packaging Ltd. 200 Omand's Creek Blvd. Winnipeg, Manitoba Canada R2R 1V7 Ph: (204) 786-6873
Emergency Telephone No.:	(613) 996-6666 (Canutec)
Composition/Purity of Hazardous Ingredients:	3-6% w/v Sodium Hypochlorite (Aqueous).
IUPAC Chemical Name:	Sodium Hypochlorite.
Synonym(s):	Liquid bleach, hypochlorous acid, (sodium, salt), soda bleach liquor, javel water, chlorox, industrial bleach, sodium oxychloride.
CAS Registry Number:	7681-52-9
PIN-UN/NA Number(s):	N/A
TDG Classification (Class, Division and Packing Group):	Not regulated
Chemical Family:	Hypochlorous acid salt.
Molecular Formula:	Na OCl
Structural Formula:	Na-O-Cl
WHMIS Classification:	E, D2B, C
Warning Properties:	Irritant and an oxidizing material.

GENERAL DESCRIPTIONS

Appearance, Odour and State:	Clear, greenish-yellow aqueous solution with a strong chlorine odour.
Odour Threshold:	Odour is due to breakdown products such as chloramines and hypochlorite vapours
Uses and Occurrences:	Household disinfectant, laundry bleach.

2. PHYSICAL DATA

Boiling Point:	95.0°C to 96°C
Molecular Weight:	74.44
Melting Point/Freezing Point:	
Specific Gravity (Water=1):	3.0% 1.043 – 1.045 @20° C 4.25% 1.055 - 1.060 @ 20 ° C 5.25% 1.078 – 1.0785@ 20 ° C 6.0% 1.088 – 1.089 @ 20 ° C
Solubility in Water:	100%
pH:	11.1 – 11.4
Solubility in Other Liquids:	Soluble in alcohol, glycol
Vapour Density (Air=1):	2.49
Vapour Pressure	17.5 (Torr) @ 20 ° C.
% Volatiles:	100% (by volume)
Saturation Vapour Concentration:	No data.
Evaporation Rate (Butyl Acetate = 1):	No data.
Co-efficient of Water/Oil Distribution:	No data.

3. FIRE AND EXPLOSION HAZARDS

Flash Point and Method:	Non flammable.
Lower Explosive Limit/Lower Flammable Limit (%):	N/A
Upper Explosive Limit/Upper Flammable Limit (%):	N/A
Autoignition Temperature:	N/A

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Extinguishing Media:	Sodium hypochlorite is non-flammable. Use any media to control surrounding fire. Use water spray to cool containers of sodium hypochlorite and to control vapour.
Special Fire Fighting Procedures:	In the event of a fire, use NIOSH approved full face piece, SCBA respirators and full body suits.
Combustion Products:	Although sodium hypochlorite does not burn, it easily decomposes to release chlorine and oxygen gases.
Hazardous Explosion Data	
- Sensitivity to Impact:	Aqueous sodium hypochlorite is not sensitive to impact.
- Sensitivity to Static Discharge:	Aqueous sodium hypochlorite is not sensitive to static discharge.

4. REACTIVITY DATA

Chemical Stability:	Under certain conditions, product can decompose at room temperature to release nascent/oxygen/oxygen gas, and/or hypochlorite vapours/chloramines.
Incompatibility:	The decomposition rate is enhanced by direct sunlight, temperature increase or contact with acids or other strong oxidizers such as hydrogen peroxide and other reactants such as amines, ammonium salts, oxidine, methanol, phenyl acetonitrile, cellulose, ethyleneimine, oxidizable metals. If it comes in contact with ammonia, it may form the explosive nitrogen trichloride or give off irritating chloramine vapours.
Hazardous Decomposition Products:	Toxic chlorine gas when in contact with acids and oxygen gas when in contact with metals.
Hazardous Polymerization:	Will not occur.
Corrosiveness to Metals:	Copper, zinc, nickel, tin, manganese, iron, brass, and aluminum.

5. HEALTH HAZARD DATA**A. ROUTES OF ENTRY**

	<u>Yes</u>	<u>No</u>
i) Inhalation	X	
ii) Eye Contact	X	
iii) Skin Contact	X	
iv) Skin Absorption		X
v) Ingestion	X	

B. EFFECTS OF SHORT-TERM (ACUTE EXPOSURE)

Inhalation: Excessive inhalation of vapours, mists or fumes may cause bronchial irritation, coughing, laboured breathing, nausea and pulmonary edema.

Eye Contact: May cause severe irritation and conjunctivitis. In swimming pools, NaOCl in concentrations to 1-3 ppm is not irritating to the eyes if the ambient pH is kept higher than 7.2. However, at a slightly lower pH, a sensation of smarting and stinging of the eyes and accompanying reddening of the eyes may occur.

Skin Contact: May cause irritation.

Ingestion: May cause burning in mouth and throat, pain, vomiting, diarrhea, lowered blood pressure and shock.

C. ANIMAL TOXICITY DATA

Toxicity: Inhalation, rat LC-50 293 ppm/1 hour.
Undetermined { Inhalation, rat LC-50 >10, 500 ppm (31,900 ppm) Concentration { Oral, rat LD-50 8.91 g/kg { Dermal, rabbit LD-50 >10,000 mg/kg. Oral, rat LD-50 5800 mg/kg

D. EFFECTS OF LONG-TERM (CHRONIC) EXPOSURE

Irritancy of Product:
Skin:

Prolonged or repeated skin contact with solutions containing as little as 4-6% NaOCl can cause allergic contact dermatitis.

Ingestion/Inhalation:

There is 1 case of evidence that bronchial asthma was due to sodium hypochlorite. Inhalation or ingestion of excessive exposure to NaOCl may result in burns in mouth and throat, damage to stomach, esophagus and small intestine.

Sensitizing Capability:

May cause allergic responses to skin and lungs in prolonged and repeated exposures. However, testing is not conclusive.

Carcinogenicity:

Low concentrations are not carcinogenic but some evidence exists that 10% solutions do have some effects. However, testing is not conclusive.

Mutagenicity:

Data is not conclusive.

Teratogenicity:

High concentrations of NaOCl do have some reproductive effects in mice, but testing is not conclusive.

Synergistic Materials:

None known.

E. OCCUPATIONAL EXPOSURE LIMITS

Threshold Limited Values (TLVS):

ACGIH

Time-Weighted Average
(TLV-TWA):

1 mg (Cl)/m³ (0.3 ppm) (Chlorine)

Short-Term Exposure Limit
(TLV-STEL):

9 mg (Cl)/m³ (3 ppm) (Chlorine)

6. FIRST AID

IN ALL CASES, GET IMMEDIATE MEDICAL ATTENTION!

Inhalation:	Take proper precautions to ensure your own safety before attempting rescue. Remove victim to fresh air. If breathing has stopped give A.R. If breathing is laboured, get qualified personnel to administer oxygen.
Eye Contact:	Immediately flush contaminated eye(s) for 20 minutes with lukewarm flowing water. Take care not to rinse contaminated water into the non-affected eye.
Skin Contact:	Flush contaminated area with running water for 20 minutes. Ensure that sodium hypochlorite is not kept in close contact with skin by means of watch bands, belts, restrictive clothing, etc.
Ingestion:	If victim is conscious and not convulsing, rinse mouth and throat with water. Dilute stomach contents with 1-2 glasses of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.
Special Equipment/Antidotes:	None.
First Aid Comments:	None.

7. PREVENTATIVE MEASURES

A. ENVIRONMENTAL AND DISPOSAL INFORMATION

Spill and Leak Procedures:	Ventilate area and allow qualified personnel to stop or control the leak. For small spills, flush area with plenty of water and mop up. For large spills, dike the ingredient and transfer to appropriate salvage containers.
Disposal:	Consult Federal, Provincial and Municipal regulations on waste disposal. Sodium hypochlorite may be neutralized with sodium bisulphite, sodium sulphite or dilute hydrogen peroxide.

B. STORAGE AND HANDLING

Storage:	Store in a cool, dry, well ventilated place away from incompatibles and direct sunlight. Vented containers should be used and kept closed when not in use. Long-term storage is impossible without decomposition.
Handling:	Protect containers from damage and freezing.
Exposure Control:	No comment.
Engineering Controls:	These are the desired controls either with adequate ventilation methods or personnel or process isolation.

C. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection:	If the TLV is exceeded, a full face-piece chemical cartridge respirator may be worn (up to 100X TLV). If in excess of this, a SCBA must be used.
Respiratory Protection Guidelines:	As above.
Eye/Face Protection:	Chemical safety goggles and/or full face shield. Do not wear contact lenses.
Skin Protection:	Wear impervious protective clothing, ie. hard hat, boots, gloves, apron or coveralls etc.
Resistance of Materials for Protective Clothing:	Latex or nitrile materials.
Personal Protection Comments:	Work areas should included an eyewash station and/or safety shower.

8. REFERENCES

- NIOSH Pocket Guide to Chemical Hazards
- Canada Centre for Occupational Health and Safety.
- Trade names - data base
- CHEM INFO - data base
- RTECS - data base
- Supplier Material Safety Data Sheets -
Manufacturing Chemists Association - Material
Safety Data Sheets.
- American Conference of Governmental
Industrial Hygienists Handbook of Threshold
Limit Values and Biological Indices.

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