SAFETY DATA SHEET

Ortho-Chlorobenzaldehyde

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Ortho-Chlorobenzaldehyde**
Product code:	1083
CAS-No.:	89-98-5
Synonyms:	2-Chlorobenzaldehyde, o-Chlorobenzaldehyde
Recommended use of the chemical and restrictions on use:	Chemical reagent, metal plating additive
Chemical family:	Chlorinated Aromatic Aldehyde
Chemical formula:	C_7H_5ClO
Name, address and phone # of supplier:	Aqua Bond Inc. 440 Passmore Ave. Toronto, ON, M1V 5J8 (416) 754-7211
24 Hr. Emergency phone #:	**CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical:	This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).
Hazard classification:	GHS Classification : Flammable liquids (Category 4), H227 Skin corrosion (Category 1B), H314 Serious eye damage (Category 1), H318
Label elements:	
Signal word:	DANGER
Hazard statements:	H227 Combustible liquid. H314 Causes severe skin burns and eye damage.

Precautionary statements:

Precaution

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

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.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue
rinsing. Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage and Disposal

P403 Store in a well-ventilated place.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other Hazards: No data available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient name	Synonyms	CAS Number	Concentration (wt. %)
2-Chlorobenzaldehyde	Ortho-Chlorobenzaldehyde	89-98-5	≥ 99 %

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

General information: Consult a physician. Show this safety data sheet to the doctor.

Inhalation	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician if necessary.
Eye contact	Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Consult a physician.
Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Give one or two glasses of water to drink. Consult a physician.

Most important symptoms and effects, both acute and delayed:
Inhalation: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
Skin contact: Caustic burns/corrosion of the skin.
Eye contact: Corrosion of the eye tissue.

Indication of any immediate medical attention and special treatment needed: No data available.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media:	Use media appropriate for the surrounding fire.
Suitable	Dry chemical, CO2, water spray or foam. Dike fire-control water for later disposal.
Unsuitable	Not Available.
Flash point:	Not Available.
Autoignition Temperature:	Not Available.
Specific hazards arising from the substance:	Release of toxic and corrosive gases/vapours (Carbon monoxide, carbon dioxide, hydrogen chloride, phosgene).
Hazardous thermal decomposition products:	Toxic and corrosive gases/vapours (Carbon monoxide, carbon dioxide, hydrogen chloride, phosgene).
Special protective equipment and precautions for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid breathing vapours, mist or gas. Avoid dust formation. Ensure adequate ventilation. Wear respiratory protection. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Prevent from reaching drains, sewer, or waterway. Report releases as required by local and national authorities. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Methods and materials for containment and cleaning up:	Wear protective eyeware, gloves, and clothing. Refer to Section 8. Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Keep in suitable closed containers for disposal. Dispose contaminated material as waste according to section 13. Always obey local regulations. If necessary use trained response staff or contractor.
Special spill response procedures:	In case of transportation accident, contact CHEMTREC at 1-800-424-9300.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Keep away from sources of ignition, heat, flames. No smoking. Take measures to prevent the build up of electrostatic charge. Avoid contact with skin and eyes. Avoid inhalation. Keep containers tightly closed.
Conditions for safe storage:	Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat. Store separately from foodstuff containers or incompatible materials. May be stored under nitrogen. Storage class (TRGS 510): 8A: Combustible, corrosive hazardous materials
Incompatible materials:	Water/moisture, (strong) bases, reducing agents, oxidizing agents.
Hazardous decomposition products:	Carbon monoxide, carbon dioxide, hydrogen chloride, phosgene.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Ingredient	**Exposure limits**
o-Chlorobenzaldehyde (CAS No. 89-98-5)	STEL 4 ppm, 23 mg/m^3 Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.

Engineering controls: Use earthed equipment. Keep away from naked flames/heat. Ensure adequate ventilation, especially in confined areas. Provide safety showers, eyewash stations, ventilation systems.

Individual protection measures:

Eye Protection: Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and safety shower facilities in work area.

Skin Protection: Wear appropriate protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Handle with gloves. Gloves must be inspected prior to use.

Respiratory protection: Where ventilation is not adequate, respiratory protection may be required. Where risk assessment shows air-purifying respirators are appropriate use a gas mask with filter type A. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Avoid breathing dust, vapours or mists.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear colorless to yellowish liquid
Odour:	Pungent
Odour threshold:	Not available.
pH:	Not available.
Melting point/Freezing point:	9 - 11 °C
Initial boiling point/boiling range:	209 - 215 °C
Flash point:	87 °C (189 °F)
Evaporation rate:	Not available.
Flammability (solid; gas) :	Not available.
Lower flammable/explosive limit:	Not available.
Upper flammable/explosive limit:	Not available.
Vapour pressure:	Not available.
Vapour density:	0.46 hPa at 20 °C
Relative density:	1.248 g/cm^3 at 25 °C
Solubility:	Water: 1.47 g/l at 20 °C
Partition coefficient (n-octanol/water) :	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.

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Viscosity:	Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Temperature above flashpoint: fire/explosion hazard.
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	Not available.
Conditions to avoid:	Heat, flames and sparks.
Incompatible materials:	Strong bases, Strong oxidizing agents, Strong reducing agents
Hazardous decomposition products:	Carbon dioxide, carbon monoxide, hydrogen chloride, phosgene

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity data	
Acute toxicity:	LD50 Oral - Rat - 2,160 mg/kg
2-chlorobenzaldehyde	Remarks: Behavioral: Somnolence (general depressed activity). Behavioral: Tremor. Diarrhoea.
Information on the likely routes of exposure:	Skin, eyes, ingestion, inhalation
Potential health effects (acute):	Inhalation: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Skin contact: Caustic burns/corrosion of the skin. Eye contact: Corrosion of the eye tissue.
Target organ effects:	No information available.
Carcinogenicity:	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Potential chronic health effects:	No information available.
Teratogenicity:	No information available.
Developmental effects:	No information available.
Fertility effects:	No information available.
Irritation/corrosion:	No information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: no data available
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

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Other adverse effects: no data available
Persistence and degradability: Readily biodegradable in water. OECD 302B: Inherent Biodegradability: Zahn-Wellens/EMPA Test: Experimental Value: 100%, Duration: 13 days.
Bioaccumulative potential: no data available

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

UN Number:	3265 (DOT, IMDG, IATA)
UN proper shipping name:	**DOT**: Corrosive liquid, acidic, organic, n.o.s. (o-Chlorobenzaldehyde)
	IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (o-Chlorobenzaldehyde)
	IATA: Corrosive liquid, acidic, organic, n.o.s. (o-Chlorobenzaldehyde)
Transport hazard class:	8 (DOT, IMDG, IATA)
Packing group:	III (DOT, IMDG, IATA)
Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident.

SECTION 15: REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: OTHER INFORMATION

Revision date: January 31, 2020
UN = United Nations

Disclaimer

While the information and recommendations set forth are believed to be accurate as of data hereof, Aqua Bond Inc., makes no warranty with respect thereto and disclaims all liability from reliance thereon.