SAFETY DATA SHEET

Nickel Carbonate 49%

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Nickel Carbonate 49%**
Product code:	
Recommended use of the chemical and restrictions on use:	Chemical plating of metals, Production of catalysts and catalyst precursors
Chemical family:	Inorganic acid.
Name, address and phone # of supplier:	Aqua Bond Inc. PO Box 63635 Toronto, ON, M1V 5K2 (416) 754-7211
24 Hr. Emergency phone #	**CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: GHS Classification (29 CFR 1910.1200) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
- Acute toxicity (Inhalation): Category 2
- Skin Irritation: Category 2
- Eye Irritation: Category 2A
- Respiratory Sensitization: Category 1
- Skin sensitisation: Category 1
- Germ Cell Mutagenicity: Category 2
- Carcinogenicity (inhalation): Category 1A
- Reproductive Toxicity: Category 1B
- Specific target organ toxicity - repeated exposure: Category 1
- Short-term (acute) aquatic hazard: Category 1
- Long-term (chronic) aquatic hazard: Category 1

Label elements:



Signal word: Danger

Hazard statements:
- H302 + H332 Harmful if swallowed or if inhaled.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H330 Fatal if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H341 Suspected of causing genetic defects.
- H350 May cause cancer by inhalation.
- H360 May damage fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
P284 Wear respiratory protection.
P285 In case of inadequate ventilation wear respiratory protection.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards: None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/ mixture: Pure Substance

Ingredient name	CAS Number	Concentration (%)
Nickel hydroxycarbonate	12607-70-4	<=100

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

Ingestion: Clean mouth with water and drink afterwards plenty of water.

Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

Inhalation	Call a physician or poison control centre immediately.
	Move to fresh air. If unconscious, place in recovery position and get medical attention immediately.
Skin contact	If on skin, rinse well with water. If on clothes, remove clothes.
	If skin irritation persists, call a physician.
	Wash contaminated clothing before reuse.
Eye contact	Remove contact lenses.
	Immediately flush eye(s) with plenty of water. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

Most important symptoms and effects, both acute and delayed:
Skin contact may provoke the following symptoms: Allergic reactions Redness Inhalation may provoke the following symptoms: Shortness of breath Asthma Ingestion may provoke the following symptoms: Stomach/intestinal disorders Eye contact Excessive lachrymation.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable	High volume water jet
Special hazards arising from the substance:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous thermal decomposition products:	Nickel compounds
Special protective actions for fire-fighters:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental precautions:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and	Wipe up with absorbent material (e.g. cloth, fleece).

cleaning up:

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. ADVICE ON PROTECTION AGAINST FIRE AND EXPLOSION 6 / 101: Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. HYGIENE MEASURES: Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.
Conditions for safe storage:	REQUIREMENTS FOR STORAGE AREAS AND CONTAINERS: Prevent unauthorized access. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leak- age. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. To maintain product quality, do not store in heat or direct sunlight. OTHER DATA: Keep in a dry place. No decomposition if stored and applied as directed.
Incompatible materials:	Strong Acids

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

Exposure limits

Ingredient	**Exposure limits**
Nickel hydroxycarbonate (12607-70-4)	1 mg/m3 TWA OSHA Z-1, OSHA P0 0.015 mg/m3 TWA NIOSH REL 0.2 mg/m3 Inhalable fraction TWA ACGIH

Engineering controls:	Handle only in a place equipped with local exhaust (or other appropriate exhaust).
Individual protection measures:	Eye protection : Safety glasses with side-shields conforming to EN166 Hand protection Material : Nitrile rubber Break through time : > 480 min Glove thickness : 0,12 mm Material : PVC Break through time : > 480 min Glove thickness : 1,1 mm Material : Neoprene gloves Break through time : > 480 min Glove thickness : 0,35 mm

Glove length : Long sleeve gloves

Glove length : Long sleeve gloves

Skin and body protection : Dust impervious protective suit

Respiratory protection : Suitable mask with particle filter P3 (European Norm 143)

In the case of dust or aerosol formation use respirator with an approved filter. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Protective measures: Ensure that eye flushing systems and safety showers are located close to the working place. Avoid contact with skin, eyes and clothing. General industrial hygiene practice. Wash hands before breaks and immediately after handling the product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid Powder Green.
Odour:	Odourless.
Odour threshold:	Not available.
pH:	Not available.
Melting point:	Decomposition.
Freezing point:	Not available.
Initial boiling point and boiling range:	
Flash point:	Not available.
Evaporation rate:	Not available.
Flammability:	The product is not flammable.
Self-ignition	> 752 °F / > 400 °C
Relative density:	2,96 g/cm3 (72.5 °F, 22.5 °C)
Solubility:	Water 0.0329 g/l practically insoluble
Auto-ignition temperature:	> 752 °F / > 400 °C
Decomposition temperature:	464 °F / 240 °C
Viscosity:	Not available.
Explosive properties:	No data available
Oxidizing properties:	No data available
Self-heating substances:	Not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Stable at normal ambient temperature and pressure.
Chemical stability:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	None Known

Incompatible materials:	Strong acids.
Hazardous decomposition products:	No decomposition if stored normally

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity

Product:

Acute oral toxicity:	No data available
Acute inhalation toxicity:	No data available
Acute dermal toxicity:	No data available
Potential health effects (acute):	EYE: Dust in the eyes will cause irritation. Direct contact with eyes may cause temporary irritation. INHALATION: Harmful if inhaled. May cause cancer by inhalation. May cause damage to organs through prolonged or repeated exposure by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. SKIN: Causes skin irritation. May cause an allergic skin reaction. INGESTION: Harmful if swallowed.

Components:

nickel hydroxycarbonate:

Acute oral toxicity:	LD50 (Rat, female): 2,000 mg/kg Method: OECD Test Guideline 425
Acute inhalation toxicity:	LC50 (Rat, male): 0.2437 mg/l Exposure time: 4 h. Test atmosphere: dust/mist Method: OECD Test Guideline 403

Skin corrosion/irritation

Product:

Remarks	May cause skin irritation and/or dermatitis.

Components:

nickel hydroxycarbonate:

Species:	Rabbit
Exposure time:	4 h
Method:	OECD Test Guideline 404.
Result:	Skin irritation.
GLP:	yes.

Serious eye damage/eye irritation

Product:

Remarks:	No data available.

Components:

nickel hydroxycarbonate:

Species:	Rabbit
Result:	Eye irritation
Method:	OECD Test Guideline 405

Respiratory or skin sensitisation

Product

Remarks:	May cause sensitisation of susceptible persons by skin contact

Components:

nickel hydroxycarbonate:

Exposure routes:	Inhalation
Species :	Humans
Result:	May cause sensitisation by inhalation.
GLP:	no
Exposure routes	Skin contact
Species:	Humans
Result:	May cause sensitisation by skin contact.
GLP:	no

Germ cell mutagenicity

Product:

Genotoxicity in vitro:	Remarks: No data available

Components:

nickel hydroxycarbonate:

Genotoxicity in vitro:	Test system: Mammalian-Animal Method: OECD Test Guideline 476 Result: Conflicting results have been seen in different studies. GLP: yes
Genotoxicity in vivo:	Species: Mammalian-Animal Method: OECD Test Guideline 474 Result: negative. Remarks: Based on read across from structural related substance nickel sulphate

Carcinogenicity

Product:

Remarks:	No data available

Components:

nickel hydroxycarbonate:

Species:	Rat, male and female
Application Route:	Oral
Exposure time:	104 weeks
Dose:	10; 30; 50 mg/kg body weight
Frequency of Treatment:	daily
NOAEL:	11 mg/kg bw/day
Method:	OECD Test Guideline 476
Result:	negative
GLP:	yes
Remarks:	unit expressed as mg metal/kg based on read across from structural related substance nickel sulphate

IARC	Group 1: Carcinogenic to humans nickel hydroxycarbonate 12607-70-4 (Nickel compounds)
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	Known to be human carcinogen nickel hydroxycarbonate 12607-70-4 (Nickel compounds)

Reproductive toxicity

Product:

Effects on fertility: Remarks: No data available

Components:

nickel hydroxycarbonate:

Effects on fertility:

Species: Rat
Application Route: Oral
Dose: 0; 1; 2,5; 5;10 milligram per kilogram
General Toxicity - Parent: NOAEL: 10 mg/kg body weight
General Toxicity F1: NOAEL: 10 mg/kg body weight
Method: OECD Test Guideline 416
Remarks: Based on read across from structural related substance nickel sulphate

Species: Rat
Application Route: inhalation (dust/mist/fume)
Duration of Single Treatment: 13 Weeks
General Toxicity - Parent: NOAEL: 0.45 mg/m³
Remarks: unit expressed as mg metal/m³
Based on read across from structural related substance nickel sulphate

STOT - single exposure

Product:

Remarks: No data available

STOT - repeated exposure

Product:

Remarks: No data available

Components:

nickel hydroxycarbonate:

Assessment: Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

nickel hydroxycarbonate:

Species:	Rat, male and female.
NOAEL:	2.2 mg/kg
LOAEL:	6.7 mg/kg
Application Route:	Oral
Exposure time:	104 weeks
Dose:	10; 30; 50
Method:	OECD Test Guideline 451

GLP:	Yes
Remarks:	unit expressed as mg metal/kg Based on read across from structural related substance nickel sulphate
Species:	Rat, females.
NOAEL:	0.2 mg/kg
Application Route:	Inhalation
Exposure time:	13 weeks
Method:	OECD Test Guideline 413
Remarks:	unit expressed as mg metal/kg Based on read across from structural related substance nickel sulphate

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):	NOEC (Daphnia dubia (water flea)): 0.0124 mg/l Exposure time: 7 DAYS Remarks: Fresh water

Components:

nickel hydroxycarbonate:

Toxicity to fish:	C50 (Oncorhynchus mykiss (rainbow trout)): 15.3 mg/l Exposure time: 96 h Remarks: Based on read across from structural related substance Nickel chloride unit expressed as mg metal/l Fresh Water
Toxicity to daphnia and other aquatic invertebrates:	LC50 (Ceriodaphnia dubia (water flea)): 0.013 mg/l Exposure time: 48 h Remarks: unit expressed as mg metal/l Fresh water Based on read across from structural related substance Nickel chloride
Toxicity to algae:	EC50 (Pseudokirchneriella subcapitata (algae)): > 0.0815 - <0.148 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Fresh water Based on read across from structural related substance EC50 (Pseudokirchneriella subcapitata (algae)): > 0.0253 - <0.365 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Fresh water Based on read across from structural related substance NOEC (Desmodesmus sp.): 0.0225 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: unit expressed as mg metal/l Fresh water

	Based on read across from structural related substance
M-Factor (Acute aquatic toxicity):	1
Toxicity to fish (Chronic toxicity):	NOEC (Danio rerio (zebra fish)): 0.04 mg/l Exposure time: 8 days Remarks: Fresh water Based on read across from structural related substance nickel sulphate NOEC (Pimephales promelas (fathead minnow)): 0.057 mg/l Exposure time: 32 days Remarks: Fresh water Based on read across from structural related substance nickel sulphate
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):	NOEC (Daphnia magna (Water flea)): 0.04 mg/l Exposure time: 42 days Remarks: Fresh water Based on read across from structural related substance Nickel chloride
M-Factor (Chronic aquatic toxicity):	1
Toxicity to microorganisms:	EC50: 33 mg/l Exposure time: 30 min Method: ISO 8192 Remarks: unit expressed as mg metal/l Based on read across from structural related substance
Toxicity to soil dwelling organisms:	NOEC (Eisenia fetida (earthworms)): 180 mg/kg Exposure time: 21 days Remarks: unit expressed as mg metal/kg Based on read across from structural related substance NOEC: 320 mg/kg Exposure time: 28 days Remarks: unit expressed as mg metal/kg Based on read across from structural related substance
Plant toxicity:	NOEC: 88 mg/kg Exposure time: 60 d Species: Avena sativa (oats) Remarks: unit expressed as mg metal/kg Based on read across from structural related substance EC10: 34 mg/kg Exposure time: 63 d Species: Lactuca sativa (lettuce) Remarks: unit expressed as mg metal/kg Based on read across from structural related substance
Sediment toxicity:	EC10 (Chironomus riparius): 762 mg/kg Remarks: unit expressed as mg metal/kg Fresh water Based on read across from structural related substance EC10 (Tubifex tubifex): 1103 mg/kg

	Remarks: unit expressed as mg metal/kg Fresh water Based on read across from structural related substance EC10 (Hyalella azteca): 82 mg/kg Remarks: unit expressed as mg metal/kg Fresh water Based on read across from structural related substance
Toxicity to terrestrial organisms:	NOEC (Anas platyrhynchos (Mallard duck)): 800 Exposure time: 90 days Remarks: Based on read across from structural related substance

Persistence and degradability
No data available
Bioaccumulative potential
Components:
nickel hydroxycarbonate:

Bioaccumulation:	Bioconcentration factor (BCF): > 1,631 Method: field study Remarks: terrestrial environment Based on read across from structural related substance Bioconcentration factor (BCF): 270 Method: field study Remarks: Fresh water Based on read across from structural related substance

Mobility in soil
No data available

Other adverse effects
Product:

Ozone-Depletion Potential:	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information:	Very toxic to aquatic life with long lasting effects.

Components:
nickel hydroxycarbonate:

Results of PBT and vPvB assessment:	not applicable for inorganic substances

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods:
Waste from residues: The product should not be allowed to enter drains, water courses or the soil. Dispose of in accordance with the European Directives on waste and hazardous waste. In accordance with local and national regulations. Do not contaminate ponds, waterways or ditches with chemical or used

container. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: TRANSPORT INFORMATION

TDG

UN Number:	UN 3288
UN proper shipping name:	Toxic solid, inorganic, n.o.s. (Nickel Carbonate)
Transport hazard class:	6.1
Packing group:	II
Environmental hazard:	Marine Pollutant
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 or spillage.

SECTION 15: REGULATORY INFORMATION

Canada inventory (DSL): All components are listed. HS Code: 2836:99:90 ECCN: EAR99

SECTION 16: OTHER INFORMATION

Revision date: August 31, 2023
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit during x minutes.
IDLH: Immediately Dangerous to Life or Health
WEEL: Workplace Environmental Exposure Levels
CEIL: Ceiling