

Revision Date: 2012-05-25
Reason for Revision: Section 14 Updated

SECTION 1: IDENTIFICATION OF THE PRODUCT AND COMPANY

Product Name: HI 4016-00 ISA Solution for Sodium

Application: ISA Solution

Company Information (USA):

Hanna Instruments, Inc.
584 Park East Dr, Woonsocket, Rhode Island, USA 02895

Technical Service Contact Information:

1-800-426-6287 (8:30AM - 5:00PM ET)
+1-401-766-4260 (8:30AM - 5:00PM ET)

USA Emergency Contact Information:

1-800-424-9300 (Chemtrec 24Hr. Emergency)

International Emergency Contact Information:

+1-703-527-3887 (Chemtrec 24Hr. Emergency)

E-mail Address:

tech@hannainst.com

SECTION 2: HAZARD IDENTIFICATION

Causes burns.

SECTION 3: COMPOSITION AND COMPONENT INFORMATION

Component:	Ammonium Chloride	Ammonium Hydroxide Solution
EC-No.:	235-186-4	215-647-6
CAS-No.:	12125-02-9	123333-90-4
Hazard:	Xn	C, N
Phrases:	R: 22-36	R: 34-50
Content:	> 20% - < 25%	> 10% - < 15%

SECTION 4: FIRST AID MEASURES

After Inhalation: Remove to fresh air. Call in physician.

After Skin Contact: Wash affected area with plenty of water. Dab with polyethylene glycol 400. Immediately remove contaminated clothing.

After Eye Contact: Rinse out with plenty of water for at least 10 minutes with the eyelid held wide open. Immediately call in ophthalmologist.

After Swallowing: Make victim drink plenty of water (if necessary several liters), avoid vomiting (risk of perforation!). Immediately call in physician. Do not attempt to neutralize.

General Information: Not available

SECTION 5: FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Water spray, Carbon Dioxide, Dry Chemical Powder, Appropriate Foam.

Special Risks:

Development of hazardous combustion gases or vapors possible in the event of fire. The following may develop in the event of fire: Nitrogen Oxides, Hydrochloric Acid

Special Protective Equipment:

Do not stay in dangerous zone without suitable chemical protection clothing and self-contained breathing apparatus.

Additional Information:

Contain escaping vapors with water. Prevent fire-fighting water from entering surface water or groundwater.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Do not inhale vapors/aerosols. Avoid substance contact. Ensure supply of fresh air in enclosed rooms. Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

Environmental Precautions:

Do not allow to enter sewerage system.

Additional Notes:

Take up with liquid-absorbent material. Clean up affected area and dispose according to local regulation.

SECTION 7: HANDLING AND STORAGE

Handling:

Avoid generation of vapors/aerosols. Do not inhale substance.

Storage:

Store at room temperature (+15 to +25 °C). Tightly closed in a dry and well-ventilated place.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Type	Value	Source	Type	Value	Source
Ammonium Chloride					
TWA (8hr)	10 mg/m ³ (fume)	Belgium	TWA (8hr)	10 mg/m ³ (fume)	Canada (Ontario)
TWA (8hr)	10 mg/m ³ (fume)	Canada (Quebec)	TWA (8hr)	10 mg/m ³ (fume)	France
TWA (8hr)	10 mg/m ³	Greece	TWA (8hr)	10 mg/m ³ (steam and fumes)	Poland
TWA (8hr)	10 mg/m ³ (fume)	Portugal	TWA (8hr)	5 mg/m ³	Romania
TWA (8hr)	10 mg/m ³	Spain	TWA (8hr)	10 mg/m ³ (fume)	UK

Ammonium Hydroxide Solution

TWA (8hr)	14 mg/m ³ (as ammonia)	Belgium	TWA (8hr)	17 mg/m ³	Canada (Ontario)
TWA (8hr)	17 mg/m ³	Canada (Quebec)	TWA (8hr)	7 mg/m ³ (as ammonia)	France
TWA (8hr)	14 mg/m ³ (as ammonia)	Germany	TWA (8hr)	35 mg/m ³ (as ammonia)	Greece
TWA (8hr)	14 mg/m ³ (as ammonia)	Hungary	TWA (8hr)	14 mg/m ³ (as ammonia)	Netherlands
TWA (8hr)	14 mg/m ³ (as ammonia)	Poland	TWA (8hr)	25 ppm (as ammonia)	Portugal
TWA (8hr)	14 mg/m ³ (as ammonia)	Romania	TWA (8hr)	14 mg/m ³ (as ammonia)	Spain
TWA (8hr)	18 mg/m ³ (as ammonia)	UK	TWA (8hr)	25 ppm (as ammonia)	USA (ACGIH)
TWA (8hr)	50 ppm (as ammonia)	USA (OSHA)			

Engineering:

Safety shower and eye wash.

Personal Protective Equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory Protection:

Required when vapors/aerosols are generated. Work under hood.

Protective Gloves:

Rubber or plastic

Eye Protection:

Goggles or face mask

Industrial Hygiene:

Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance.

SECTION 9: PHYSICAL/CHEMICAL PROPERTIES

Appearance:	Colorless liquid	Odor:	Pungent of ammonia	Density at 20°C:	1 g/cm ³
Melting Point:	NA	Boiling Point:	ND	Solubility:	Soluble
pH at 20°C:	~ 9.8	Explosion Limit:	ND	Flash Point:	ND
Thermal Decomp.:	NA				

SECTION 10: STABILITY AND REACTIVITY

Conditions to be Avoided:

Heating

Hazardous Polymerization:

Will not occur.

Further Information:

Explosible with air in a vaporous/gaseous state when heated.

Hazardous Decomposition Products:

In the event of fire: See section 5.

Substances to be Avoided:

Alkali hydroxides, acids, halogen-halogen compounds nitrates, chlorates, heavy metal salts, nitrites, hydrogen cyanide, chlorine

SECTION 11: TOXICOLOGICAL INFORMATION

Product Toxicity

Quantitative data on the toxicity of this product is not available.

Potential Health Effects:

- Inhalation:** Irritations of the mucous membranes, coughing, bronchitis, pulmonary oedema.
- Skin Contact:** Irritant and caustic effects (dermatitis, necrosis).
- Eye Contact:** Burns. Risk of blindness!.
- Ingestion:** Mucosal irritations, gastric pain, nausea, bloody vomiting, collapse, shock, dyspnoea, unconsciousness. Risk of perforation in the oesophagus and stomach.
- Further Data:** The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis. Further hazardous properties cannot be excluded. The product should be handled with the usual care when dealing with chemicals.

Component Toxicity

Acute Toxicity:

Chronic Toxicity:

Not Available

Ammonium Chloride

LD50: Oral - Rat - 1650 mg/kg

Ammonium Hydroxide Solution

LD50: Oral - Rat - 350 mg/kg

Additional Data:

APPLICABLE TO PARTIAL COMPONENT:

The following applies to Ammonium chloride – as the pure substance

Acute toxicity

Specific symptoms in animal studies:

Eye irritation test (rabbit): Irritations (External MSDS).

Skin irritation test (rabbit): No irritation (External MSDS).

Subacute to chronic toxicity

Sensitization:

In animal experiments: negative. (External MSDS)

Noncarcinogenic in animal experiments. (External MSDS)

Mutagenicity (mammal cell test): micronucleus negative. (IUCLID)

Bacterial mutagenicity: Ames test: negative. (IUCLID)

No teratogenic effect in animal experiments. (IUCLID)

Further toxicological information

After inhalation: Irritations of the mucous membranes, coughing, and dyspnoea.

After skin contact: slight irritation symptoms.

After eye contact: Irritations.

After swallowing: mucosal irritations.

After swallowing of large amounts: headache, nausea, unconsciousness.

Other notes:

The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

APPLICABLE TO PARTIAL COMPONENT:

The following applies to Ammonium hydroxide solution – as the pure substance

Acute toxicity

Subacute to chronic toxicity

Sensitization:

Sensitization test (guinea pig): negative.

No carcinogenic properties suspected.

No mutagenic properties suspected.

Bacterial mutagenicity: Salmonella typhimurium: negative.

Bacterial mutagenicity: Escherichia coli: negative.

Further toxicological information

After inhalation: Possible symptoms: coughing, bronchitis, pulmonary oedema.
 When vapours/aerosols are generated: strong irritant effect.
 After skin contact: Possible effect after contact with substance: irritant and caustic effects (dermatitis, necrosis).
 After eye contact: burns. Risk of blindness!
 After swallowing: mucosal irritations, gastric pain, nausea, bloody vomiting, collapse, shock, dyspnoea, unconsciousness. Risk of perforation in the oesophagus and stomach.

SECTION 12: ECOLOGICAL INFORMATION

Quantitative data on the ecotoxicity of this product is not available.

APPLICABLE TO PARTIAL COMPONENT:

The following applies to Ammonium chloride – as the pure substance

Biologic degradation:

Methods for the determination of biodegradability are not applicable to inorganic substances.

Behavior in environmental compartments:

Distribution: log Pow: -4.37 (calculated).

No bioaccumulation is to be expected (log Pow <1).

Ecotoxic effects:

Biological effects:

Fish toxicity: C.carpio LC50: 209 mg/L /96 h (IUCLID).

Daphnia toxicity: Daphnia magna EC50: >100 mg/L /48 h (Lit.).

Further ecologic data:

Do not allow to enter waters, waste water, or soil!

APPLICABLE TO PARTIAL COMPONENT:

The following applies to Ammonium hydroxide solution – as the pure substance

Abiotic degradation:

Slow degradation.

Biologic degradation:

Not readily degradable.

Behavior in environmental compartments:

Distribution: log p(o/w): -1.38 (experimental).

No bioaccumulation is to be expected (log P(o/w) <1).

Ecotoxic effects:

Biological effects:

Highly toxic for aquatic organisms. Harmful effect due to pH shift. Forms toxic mixtures in water, dilution measures notwithstanding.

Fish toxicity: Onchorhynchus mykiss LC50: 0.53 mg/L /96 h (anhydrous substance).

Daphnia toxicity: Daphnia pulicaria EC50: 1.16 mg/L /48 h (anhydrous substance).

Daphnia magna EC50: 24 mg/L /48 h (anhydrous substance).

Bacterial toxicity: Photobacterium phosphoreum EC50: 2 mg/L /5 min (anhydrous substance).

Further ecologic data:

The following applies to ammonium ions in general: biological effects: fish: toxic as from 0.3 mg/L ; nourishment for fish: toxic as from 0.3 mg/L .

Further Data: Do not allow to enter waters, waste water, or soil!

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal: Chemical residues are generally classified as special waste and thus covered by local regulations. Contact local authorities or disposal companies for advice. Handle contaminated packaging in the same way as the substance itself.

SECTION 14: TRANSPORTATION INFORMATION

	Land (ADR/RID):	Sea (IMDG):	Air (ICAO/IATA):
UN No.:	2672	2672	2672
Proper Shipping Name:	Ammonia solution	Ammonia solution	Ammonia solution
Class (Sub Risk):	8	8	8
Packing Group:	III	III	III

SECTION 15: REGULATORY INFORMATION**Labeling according to EC Directives:****Symbol:** C: Corrosive**R-phrases:** 34: Causes burns.**S-phrases:** 26-37/39-45: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).**Contains:** Ammonium hydroxide**SECTION 16: OTHER INFORMATION****Text of R-phrases under Section 3**22: Harmful if swallowed.
34: Causes burns.
36: Irritating to eyes
50: Very toxic to aquatic organisms.**Revision Information****Revision Date:** 2012-05-25
Supersedes edition of: 2009-06-10
Reason for revision: Section 14 Updated**Legend**NA: Not Applicable
ND: Not Determined

THE INFORMATION CONTAINED HEREIN IS BASED ON THE PRESENT STATE OF OUR KNOWLEDGE. IT CHARACTERIZES THE PRODUCT WITH REGARD TO THE APPROPRIATE SAFETY PRECAUTIONS. IT DOES NOT REPRESENT A GUARANTEE OF THE PROPERTIES OF THE PRODUCT.