

## Praxair Material Safety Data Sheet

### 1. Chemical Product and Company Identification

<b>Product Name:</b> Color standards for acetylene control tests (MSDS No. P-4899-E)	<b>Trade Names:</b> Color Standards for Acetylene Control Tests
<b>Chemical Name:</b> Mixtures of hydrochloric acid, cobalt (II) chloride, copper (II) sulfate pentahydrate, ferric chloride, and water	<b>Synonyms:</b> Part No. 5738-8700
<b>Chemical Family:</b> Not applicable.	<b>Product Grades:</b> None assigned.
<b>Telephone:</b> <b>Emergencies:</b> 1-800-645-4633* <b>CHEMTREC:</b> 1-800-424-9300* <b>Routine:</b> 1-800-PRAXAIR	<b>Company Name:</b> Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

*\*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

### 2. Hazards Identification

#### EMERGENCY OVERVIEW

**WARNING! Toxic, corrosive, irritating liquid and vapor.**

**May be harmful if inhaled or swallowed.**

**Irritates the eyes, skin, and respiratory tract.**

**May cause liver, kidney, heart, and thyroid damage.**

**Self-contained breathing apparatus and protective clothing  
may be worn by rescue workers**

**Under ambient conditions, this is a liquid with a pungent, irritating odor.**

**OSHA REGULATORY STATUS:** The components of this mixture are considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

#### POTENTIAL HEALTH EFFECTS:

##### Effects of a Single (Acute) Overexposure

**Inhalation.** Vapors may irritate the respiratory tract, causing discomfort and discharge. If mists are inhaled, harmful amounts of material may be absorbed.

**Skin Contact.** May irritate the skin causing local redness and possible swelling. May sensitize the skin of susceptible individuals. If skin contact is prolonged or widespread, potentially harmful amounts of material may be absorbed.

**Swallowing.** May cause nausea, stomach pain, diarrhea, vomiting, and flushing of the skin. May lower body temperature and cause seizures and coma. May damage the liver, kidney, heart, and thyroid.

**Eye Contact.** May irritate the eyes, causing redness and swelling of the conjunctiva and excess tearing.

**Effects of Repeated (Chronic) Overexposure.** This solution contains copper sulfate pentahydrate, which has been associated with occupational liver disease. It also contains cobalt, which has been associated with chronic thyroid, liver, and heart damage in humans.

**Other Effects of Overexposure.** This solution may cause an allergic skin reaction and possibly pulmonary sensitization in susceptible individuals.

**Medical Conditions Aggravated by Overexposure.** The toxicology and the physical and chemical properties of the components suggest that overexposure is unlikely to aggravate existing medical conditions.

**CARCINOGENICITY:** None of the components of this material is listed by NTP, OSHA, or IARC.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known. For further information, see section 12, Ecological Information.

### 3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Hydrochloric acid	7647-01-0	1%
Cobalt (II) chloride	7646-79-9	1-5%
Copper (II) sulfate pentahydrate	7758-99-8	0.7-1%
Ferric chloride	7705-08-0	10-15%
Water	7732-18-5	87.3-78%

### 4. First Aid Measures

**INHALATION:** Remove to fresh air. Call a physician if symptoms persist or if a large amount of mist has been inhaled.

**SKIN CONTACT:** Remove contaminated clothing and shoes and wash skin with plenty of soap and water. Wash clothing before reuse. If irritation persists or if contact was prolonged, call a physician.

**SWALLOWING:** If victim is conscious and alert, give at least two glasses of milk or water and induce vomiting. Never give anything by mouth to an unconscious, convulsive, or unresponsive person. Call a physician.

**EYE CONTACT:** Immediately flush eyes thoroughly with plenty of water and continue for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, if discomfort persists.

**NOTES TO PHYSICIAN:** *In cases of massive exposure, chelation with EDTA (ethylenediaminetetra-acetic acid) may be helpful to reduce toxic effects of absorbed metal ions.*

**NOTE:** *These solutions are used for comparison standards to determine the purity of gaseous acetylene. Users must be familiar with the proper use of and hazards associated with the equipment used.*

### 5. Fire Fighting Measures

**FLAMMABLE PROPERTIES:** These solutions cannot catch fire.

**SUITABLE EXTINGUISHING MEDIA:** Use media appropriate for surrounding fire.

**PRODUCTS OF COMBUSTION:** Not applicable. Toxic fumes may result from heating to decomposition. Products of thermal decomposition include sulfur oxides, hydrogen chloride, and/or chlorine. (See section 10.)

**PROTECTION OF FIREFIGHTERS: WARNING! Toxic, corrosive, irritating liquid and vapor.** Do not get on skin, in eyes, or on clothing. Evacuate all personnel from danger area. Wear self-contained breathing apparatus and protective clothing where needed. Immediately deluge containers with water spray from maximum distance until cool; then move them away from fire area if without risk. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

**Specific Physical and Chemical Hazards.** Heat of fire may build pressure in container, causing rupture. No part of a container should be subjected to temperatures above 125°F (52°C).

**Protective Equipment and Precautions for Firefighters.** Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

## 6. Accidental Release Measures

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

**WARNING! Toxic, corrosive, irritating liquid and vapor.**

**Personal Precautions.** Do not get on skin, in eyes, or on clothing. Wear self-contained breathing apparatus and protective clothing where needed. Prevent runoff from contaminating surrounding environment. Use solid absorbent to pick up spilled material. Ventilate area of spill or move leaking container to a well-ventilated area.

**Environmental Precautions.** Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

## 7. Handling and Storage

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Do not get liquid or vapor in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available to exposed workers. Wash hands thoroughly after handling. Store and use with adequate ventilation at all times. Keep container closed when not in use, even when empty. Protect containers against physical damage. Keep container closed when not in use, even when empty. For other precautions in using this product, see section 16.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store in a cool, dry, well-ventilated area suitable for storage of chemical solutions. Store away from sources of heat and direct sunlight.

## 8. Exposure Controls/Personal Protection

COMPONENT	OSHA PEL	ACGIH TLV-TWA (2009)
Hydrochloric acid	5 ppm (ceiling)*	2 ppm (ceiling)*
Cobalt (II) chloride	N.E.**	N.E.
Copper (II) sulfate pentahydrate	N.E.	N.E.
Ferric chloride	N.E.	N.E.

Water | N.E. | N.E.

\*Ceiling values are not Time Weighted Average (TWA).

\*\*N.E.—Not Established.

IDLH = 50 ppm (Hydrochloric acid)

**ENGINEERING CONTROLS:**

**Local Exhaust.** Use local exhaust ventilation with sufficient air flow velocity to keep vapor concentrations below the applicable TLVs exposure limits in the worker's breathing zone.

**Mechanical (General).** Not recommended as a primary ventilation system to control worker's exposure.

**Special.** None.

**Other.** None.

**PERSONAL PROTECTIVE EQUIPMENT:**

**Skin Protection.** Wear rubber gloves. Select in accordance with OSHA 29 CFR 1910.132.

**Eye/Face Protection.** Select in accordance with OSHA 29 CFR 1910.133.

**Respiratory Protection.** A respiratory protection program that meet OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus.

**9. Physical and Chemical Properties**

<b>APPEARANCE:</b>	Clear, blue liquid
<b>ODOR:</b>	Pungent, irritating odor
<b>ODOR THRESHOLD:</b>	Not available.
<b>PHYSICAL STATE:</b>	Liquid at normal temperature and pressure
<b>pH:</b>	1.6
<b>FREEZING POINT</b> at 1 atm:	26.6°F (-3.00°C) to 28.6°F (-1.89°C) (calculated)
<b>BOILING POINT</b> at 1 atm:	212°F (100°C) (calculated)
<b>FLASH POINT</b> (test method):	Not applicable.
<b>EVAPORATION RATE</b> (Butyl Acetate = 1):	Low
<b>FLAMMABILITY:</b>	Nonflammable
<b>FLAMMABLE LIMITS IN AIR</b> , % by volume:	<b>LOWER:</b> Not applicable. <b>UPPER:</b> Not applicable.
<b>VAPOR PRESSURE</b> at 68°F (20°C):	0.3392 psig (2.34 kPa, 17.54 mm Hg) (estimated)
<b>VAPOR DENSITY</b> at 70°F (21.1°C) and 1 atm:	Not available.
<b>SPECIFIC GRAVITY</b> (H <sub>2</sub> O = 1) at 19.4°F (-7°C):	1.127 to 1.22 (calculated)
<b>SPECIFIC GRAVITY</b> (Air = 1) at 70°F (21.1°C) and 1 atm:	0.014 (estimated)
<b>SOLUBILITY IN WATER</b> 68°F (20°C):	100%
<b>PARTITION COEFFICIENT: n-octanol/water:</b>	Not available.

<b>AUTOIGNITION TEMPERATURE:</b>	Not applicable.
<b>DECOMPOSITION TEMPERATURE:</b>	Not available.
<b>PERCENT VOLATILES BY VOLUME:</b>	78.5% to 88%
<b>MOLECULAR WEIGHT:</b>	Not available.
<b>MOLECULAR FORMULA:</b>	Mixtures of HCl, CoCl <sub>2</sub> , CuSO <sub>4</sub> ·5H <sub>2</sub> O, FeCl <sub>3</sub> , & H <sub>2</sub> O

### 10. Stability and Reactivity

**CHEMICAL STABILITY:**  Unstable  Stable

**CONDITIONS TO AVOID:** Heat. These solutions are stable at normal temperatures and pressures.

**INCOMPATIBLE MATERIALS:** Aluminum and alloys, copper and alloys, carbon steel, oxidizers, strong alkalis, amines, carbonates. Water reactive compounds such as metal hydrides, alkali metals, metals and metal oxides, acetylene, hydrazine, nitromethane.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition may produce sulfur oxides, hydrogen chloride, and/or chlorine. Contact with most metals may produce hydrogen.

**POSSIBILITY OF HAZARDOUS REACTIONS:**  May Occur  Will Not Occur

Thermal decomposition may produce sulfur oxides, hydrogen chloride, and/or chlorine. Contact with most metals may produce hydrogen.

### 11. Toxicological Information

**ACUTE DOSE EFFECTS:** None known.

**STUDY RESULTS:** None known.

### 12. Ecological Information

**ECOTOXICITY:** No known effects.

**OTHER ADVERSE EFFECTS:** These solutions do not contain any Class I or Class II ozone-depleting chemicals.

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:** Dispose of this product in an environmentally acceptable manner in full compliance with federal, state, and local regulations. Do not pour down drains, into sewers, or otherwise release into the environment. Place into lab packs for pickup by a licensed hazardous waste disposal service or use other authorized means. See section 6 for disposal following spills.

### 14. Transport Information

DOT/IMO SHIPPING NAME: Not regulated

HAZARD CLASS:	PACKING GROUP/Zone:	IDENTIFICATION NUMBER:	PRODUCT RQ:
NA*	NA	NA	1000 lb (454 gm) ferric chloride; 5000 lb (2268 kg), hydrochloric acid

SHIPPING LABEL(s): Not regulated

PLACARD (when required): Not regulated

\*NA= Not applicable.

MARINE POLLUTANTS: None of the solution components are listed as marine pollutants by DOT.

### 15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

#### U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

**Reportable Quantity (RQ):** 1000 lb (454 gm) ferric chloride; 5000 lb (2268 kg), hydrochloric acid

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

**SECTIONS 302/304:** Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

**TPQ:** None

**EHS RQ (40 CFR 355):** None

**SECTIONS 311/312:** Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

**IMMEDIATE:** Yes

**DELAYED:** Yes

**PRESSURE:** No

**REACTIVITY:** No

**FIRE:** No

**SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

None of the components are subject to reporting under Section 313.

**40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION:** Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

None of the components is present in concentrations subject to this regulation.

**TSCA:** TOXIC SUBSTANCES CONTROL ACT: The components of this solution are listed on the TSCA inventory.

**OSHA:** OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Only the hydrochloric acid component is listed in Appendix A as a highly hazardous chemical in quantities of 5000 lb (2268 kg) or greater.

**STATE REGULATIONS:**

**CALIFORNIA:** None of the components of this solution are listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

**PENNSYLVANIA:** The components of this solution are subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

<b>16. Other Information</b>
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Read and understand all labels and instructions supplied with all containers of this product.

**OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:** *Toxic, corrosive, irritating liquid and vapor.*

**NOTE:** *Before using any plastics, confirm their compatibility with the components of this material.*

**Mixtures.** When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Remember, chemicals have properties that can cause serious injury or death.

**HAZARD RATING SYSTEMS:**

**NFPA RATINGS:**

HEALTH = 2  
FLAMMABILITY = 0  
INSTABILITY = 0  
SPECIAL = None

**HMIS RATINGS:**

HEALTH = 2  
FLAMMABILITY = 0  
PHYSICAL HAZARD = 0

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

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The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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