

Product Name: **Liquid Color Standard - 9 through 18**

Revision Date: *January 30, 2008*



MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product name: **Liquid Color Standard – 9 through 18**

Product description: Colorimetric standards

Product code: Accessory for ACL-2

Intended use: Calibration standard for colorimeter

COMPANY IDENTIFICATION

Supplier: Cannon Instrument Company
2139 High Tech Road
State College, Pennsylvania 16803

Product Technical Information: (814) 353-8000

Product MSDS Information: (814) 353-8000

EMERGENCY TELEPHONE NUMBER:

24-Hour Transportation Emergency: (800) 255-3924 Domestic CHEM-TEL Inc.

24-Hour Health Emergency: +1 (813) 248-0585 Overseas CHEM-TEL Inc. (please call collect)

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Composition/ Reportable Hazardous Substance(s)

Name	CAS#	Concentration	Hazard/ basis
Hydrogen Chloride *	7647-01-0	2-4%	Corrosive, OSHA PEL, ACGIH TLV
Ferric Chloride	7705-08-0	2-25%	Corrosive, OSHA PEL, ACGIH TLV (iron)
Cobalt Chloride	7646-79-9	1-4%	Sensitizer (inhalation/skin), carcinogen OSHA PEL, ACGIH TLV (cobalt)
Water *	7732-18-5	balance	Not classified as hazardous

*** Constituents of 0.9 Normal Hydrochloric Acid**

SECTION 3 HAZARD IDENTIFICATION

This material is considered hazardous according to regulatory guidelines (See Section 15).

EMERGENCY OVERVIEW:

Note: Cannon Instrument Company supplies this product in sealed vials (small quantities), which greatly reduces the risk of significant exposure

Danger: Harmful or fatal if swallowed. Corrosive to skin and eyes. Causes irritation to eyes, skin and respiratory tract. May cause sensitization by inhalation and skin contact. Chronic exposure can adversely affect the liver, thyroid heart and male reproductive system. The cobalt constituent may cause cancer.

POTENTIAL PHYSICAL/CHEMICAL EFFECTS:

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- Corrosive to metals
- Avoid contact with non-compatible substances (e.g., metals, bases and other alkaline materials).
- This product does not present a fire or explosion hazard

POTENTIAL HEALTH EFFECTS:

EYE CONTACT:

Corrosive. Splashes may cause severe tissue burns and permanent eye damage

SKIN CONTACT:

Corrosive. Can cause redness, pain and severe skin burns. A potential skin sensitizer.

INHALATION:

Corrosive. Inhalation of vapors/ aerosol can cause coughing, choking, inflammation of the nose, throat and upper respiratory tract. In case of severe exposure pulmonary edema and death can result – though the nature of the packages and quantities supplied by Cannon Instrument Company significantly restrict the likelihood of such severe exposures. The cobalt constituent may cause cancer by inhalation.

INGESTION:

Corrosive. Swallowing can cause severe burns of the mouth, throat and stomach. Can cause sore throat, vomiting and diarrhea. Potential effects of metal poisoning, e.g. from iron (urine discoloration and liver damage), are unlikely to occur due to the quantities and the nature of containers as supplied by Cannon.

CHRONIC EFFECTS

Chronic exposure to the corrosive constituents can cause damage to tooth enamel. Chronic exposure to iron/ cobalt chlorides can cause damage to the liver, heart, blood, kidneys, pancreas, thyroid and the male reproductive system.

NFPA HAZARD ID: Health: 3 Flammability: 0 Reactivity: 1
(National Fire Protection Association)

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice

SECTION 4

FIRST AID MEASURES

INHALATION

Remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

SKIN CONTACT

Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, get medical attention.

EYE CONTACT

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

INGESTION

If swallowed, DO NOT induce vomiting. Keep at rest. Give large quantities of water, but give nothing by mouth to an unconscious person. Get prompt medical attention as necessary.

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NOTE TO PHYSICIAN

Treat according to symptoms.

PRE-EXISTING MEDICAL CONDITIONS THAT MAY BE AGGRAVATED BY EXPOSURE

None identified

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

This product is not combustible and will not contribute to any nearby fire.

Appropriate extinguishing media: As required by the nature of surrounding or exposure fires.

Inappropriate extinguishing media: Non identified with regard to this product.

FIRE FIGHTING

Not considered to be a fire hazard. Irritating hydrogen chloride gas can be released if product containers are impinged/ damaged by fire in the vicinity.

UNUSUAL FIRE HAZARDS:

None

HAZARDOUS COMBUSTION PRODUCTS:

None, but irritating hydrogen chloride gas can be released if equipment/containers become involved in the fire.

FLASH POINT: Not applicable

FLAMMABLE LIMITS: LEL: n/a UEL: n/a

AUTOIGNITION TEMP.: n/a

GENERAL HAZARD

Use protective clothing/ gear as required by the nature of any nearby/ exposure fire, recognizing that a fire involving this product can release irritating hydrogen chloride gas. Appropriate firefighting gear typically includes full protective clothing and self-contained breathing apparatus with full face piece.

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

Advise local and federal authorities as appropriate

SPILL/ CLEANUP

Ventilate area of leak or spill. Wear appropriate personal protective equipment. Contain/ recover liquid material when possible. Neutralize with alkaline material (soda ash, lime), then absorb with a neutral material (e.g., vermiculite, sand, earth) and place in a chemical waste container. Dispose according to local and national regulations/ requirements. Avoid release to water, sewer or sanitary systems.

SECTION 7 HANDLING AND STORAGE

HANDLING

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. The information and recommendations contained herein is compiled from suppliers' MSDS and are accurate and reliable to the best of Cannon Instrument Company's knowledge and belief as of the indicated revision date. No representation, warranty or guarantee, however, is made with regards to accuracy, reliability or completeness. Conditions of use of the material are under the control of the user; therefore, it is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.

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Loading/unloading temperature (°C/°F): Ambient
Transport temperature (°C/°F): Ambient
Transport pressure (kPa): Ambient
Static accumulator: no

STORAGE

Storage temperature (°C/°F): Ambient
Storage pressure (kPa): Ambient
Suitable materials and coatings: Containers as supplied with the product.
Unsuitable materials and coatings: Not determined

ELECTROSTATIC ACCUMULATION HAZARD:

Not applicable, not a fire hazard

STORAGE AND HANDLING:

Store in a cool, dry, ventilated storage area with acid-resistant materials of construction. Protect from physical damage. Protect from freezing.

SECTION 8

EXPOSURE CONTROLS/PERSONAL PROTECTION

WORKPLACE EXPOSURE GUIDELINES

OSHA REGULATION 29CFR1910.1000 PERMISSIBLE EXPOSURE LIMITS:

Hydrochloric acid: 5ppm (ceiling)
Iron: not available
Cobalt: 0.1mg/m³ (TWA)

ACGIH THRESHOLD LIMIT VALUES:

Hydrochloric acid: 2ppm (ceiling); A4, not classified as a human carcinogen.
Iron: 1mg/m³ soluble iron salt as Fe.
Cobalt: 0.02 mg/m³ (TWA) as Co, for inorganic cobalt compounds. A3 – Animal carcinogen

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Engineering controls are preferable to personal protective equipment. Control measures to consider:

Handle/ use in sealed containers as supplied. Otherwise, the use of local exhaust ventilation is recommended to control spills/ emissions near the source. Laboratory samples should be handled in a lab hood. Provide mechanical ventilation of confined spaces.
See respiratory protection recommendations.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Note: This product is supplied in small quantities in sealed containers. When used as supplied, this product requires no special protective equipment. In the event of breakage, see advisory for spill

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cleanup, Section 6 above.

General advice for handling this product

Handle/ used in supplied sealed containers. Otherwise, for open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.

Where contact may occur, wear safety glasses with side shields.

Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.

Respiratory Protection:

If engineering controls do not maintain airborne contaminant concentrations at a level that is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, as applicable.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

SPECIFIC HYGIENE MEASURES:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and personal protective equipment as they become contaminated. Discard contaminated clothing and footwear that cannot be cleaned.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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GENERAL INFORMATION

Physical state:	Liquid solution
Form:	Liquid, supplied for use in sealed containers
Color:	Characteristic as required for colorimetric standards
Odor:	Odorless, but acid vapors can be pungent/ irritating
Odor threshold:	Not identified

IMPORTANT HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION

Relative density (formerly Specific Gravity): not determined for this mixture

Bulk density g/cc: not determined

Flash point °C (°F) [method]: not applicable

Flammable limits (approx. Volume % in air) - LEL: n/a **UEL:** n/a

Autoignition temperature °C (°F): not applicable

Boiling point/range °C (°F): not determined for this mixture. >212°F(>100°C)

Vapor density @ 101 kPa (air =1): >1

Vapor pressure @ 20°C (68 °F), kPa (mm Hg): not determined for this mixture.

Evaporation rate (n-butyl acetate =1): not determined for this mixture

pH: Variable, depending on specific color standard, but not determined for these mixtures. The pH will generally be <1.

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Log Pow (n-Octanol/water partition coefficient): not determined
Solubility in water (25 °C): soluble
Viscosity @ 40°C cSt (mm²/sec): not determined
100°C cSt (mm²/sec): not determined

OTHER INFORMATION

Freezing point °C (°F): not determined for these mixtures, but <32°F (<0°C)
Melting Point °C (°F): not determined for these mixtures, but <32°F (<0°C)
Pour point °C (°F): not applicable
Molecular weight: not applicable, a solution/ mixture
Hygroscopic: not available
Coefficient of thermal expansion: not available

SECTION 10	STABILITY AND REACTIVITY
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STABILITY: Stable

CONDITIONS TO AVOID: Heat, direct sunlight and incompatible materials. Avoid breakage of sealed containers

MATERIALS TO AVOID: Concentrated acid is highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites and formaldehyde.

HAZARDOUS DECOMPOSITION PRODUCTS: not applicable. Potentially hazardous substances may be released under fire conditions (hydrogen chloride, metal oxides)

HAZARDOUS POLYMERIZATION: Not applicable

SECTION 11	TOXICOLOGICAL INFORMATION
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Please refer to Section 3 for available information on potential health effects.

SECTION 12	ECOLOGICAL INFORMATION
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The information given is based on data available for the constituents of the mixture and similar substances.

ENVIRONMENTAL FATE

The acid in this mixture (hydrochloric acid) is not expected to degrade; however, natural constituents in the environment will neutralize the acidity of the solution with time.
No ecological/ fate information was identified for the iron and cobalt constituents of this mixture.

When spilled to soil, this mixture can be expected to eventually leach into the groundwater.

ENVIRONMENTAL TOXICITY

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Based on the composition, this mixture would be expected to be toxic to aquatic life. The product has not been tested as a mixture.

MOBILITY No data are identified

PERSISTENCE AND DEGRADABILITY No data identified

Biodegradation: No data identified

Hydrolysis: No data identified

Photolysis: No data identified

Atmospheric oxidation: No data identified

BIOACCUMULATION POTENTIAL No data identified

OTHER ECOLOGICAL INFORMATION

VOC not applicable

COD: No data identified

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Empty packaging should be taken for recycling, recovery or disposal through a suitably qualified or licensed contractor. Care should in any case be taken to ensure compliance with national and local regulations.

This product is not suitable for disposal by either landfill or via municipal sewers, drains, natural streams or rivers.

REGULATORY DISPOSAL INFORMATION

All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

SECTION 14 TRANSPORT INFORMATION

Note: The information provided below may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations for additional requirements and mode-specific, material-specific, or quantity-specific shipping requirements.

United States Department of Transportation (US DOT):

UN/ID#	Proper Shipping Name	Class/Division	Hazard Label(s)	Packing Group
UN1789	Hydrochloric Acid Solution (Hydrogen Chloride/Ferric Chloride)	8	Corrosive	II

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United States Department of Transportation (US DOT):

International Air Transport Association (IATA):

UN/ID#	Proper Shipping Name	Class/Division	Hazard Label(s)	Packing Group
UN1789	Hydrochloric Acid Solution (Hydrogen Chloride/Ferric Chloride)	8	Corrosive	II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING:

This product, and/ or its constituents, are listed on the US EPA/ TSCA (Toxic Substances Control Act) Inventory

COMMUNITY RTK, CERCLA and SARA (313) TOXIC RELEASE INVENTORY:

Name	CAS#	Concentration	CERCLA RQ	SARA (313)
Hydrogen Chloride	7647-01-0	2-4%	500	listed
Ferric Chloride	7705-08-0	2-25%	1000	n/a
Cobalt Chloride	7646-79-9	1-4%	1	n/a
Water	7732-18-5	balance	n/a	n/a

CWA / OPA: n/a

SARA (311/312) REPORTABLE HAZARD CATEGORIES:

Acute -- yes; Chronic -- yes; Fire -- no; Pressure -- no

International chemical inventories and hazard classifications

This product and/ or its components are on the Canadian Domestic Substance List

WHMIS Classifications (Canada) – due to the presence of hydrochloric acid:

D1A - Poisonous and infectious material - Immediate and serious effects - Very toxic

E - Corrosive material



WHMIS Health Effects Criteria Met by this Chemical:

D1A - Acute lethality - very toxic - immediate

E - TDG class 8 - corrosive substance

WHMIS Ingredient Disclosure List:

Included for disclosure at 1% or greater.

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This product and/ or its components are on EINECS (European Inventory of Existing Chemical Substances) and/ or ELINCS (European Library of Notified Chemical Substances)

EU Hazard Classification, risk and safety phrases (Europe):



T

Toxic



C

Corrosive

R22: Harmful if swallowed

R34: Causes burns

R42/43: May cause sensitisation by inhalation and skin contact

R49: May cause cancer by inhalation

R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S1/2: Keep locked up and out of the reach of children

S9: Keep container in a well ventilated place

S26: In case of contact with eyes, rinse immediately with plenty of water

S36/37/39: Wear suitable protective clothing, gloves and eye/face protection

S45: In case of accident or if you feel unwell, seek medical advice immediately (show label where possible)

S53: Avoid exposure - obtain special instruction before use

S60: This material and/or its container must be disposed of as hazardous waste

S61: Avoid release to the environment. Refer to special instructions/safety data sheet

Some of the products in this series require classification as dangerous for the environment, due to the presence of higher concentrations of the cobalt compound. Therefore, in addition to the label information indicated above, Liquid Color Standards 12 through 18 should also include the following:



N

**Dangerous for
the Environment**

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

SECTION 16

OTHER INFORMATION

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Summary:

- **November 15, 2006 -- This MSDS has been fully reviewed and reformatted to conform to changes in standard format**
- **March 29, 2007: Added Canadian and European classification and labeling information, based on current regulations and/or recommendations from suppliers (see Section 15)**
- **January 30, 2008: This MSDS was originally MSDS [2] and has been renumbered to MSDS [30] since another MSDS already uses MSDS [2] as an identification number. Updated and standardized format of Transport Information (see Section 14).**

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NOTES: