CYANTEK CORPORATION

CR-14

Material Safety Data Sheet

1 Product and Company Identification:

- **Product name: CR-14 Chromium Etchant**

- **Manufacturer:**
  CYANTEK CORPORATION
  3055 Osgood Court
  Fremont, CA 94538
  (510) 651-3341

- **24 Hour Emergency Telephone Number:**
  CHEMTREC: (800) 424-9300 (North America): (703) 527-3887 (Int'l.)

2 Composition/Information on Ingredients:

- **Chemical formula:** $CH_3COOH + Ce(NH_4)_2(NO_3)_6 + H_2O$
- **Hazardous components:**

Component	Percent by wt.	CAS Number
Ceric Ammonium Nitrate	22%	16774-21-3
Acetic Acid	9%	64-19-7
Water	69%	7732-18-5

3 Hazards identification

- **Hazard description:** Corrosive
- Irritating to eyes, skin and respiratory system.
- **Classification system**
  The classification was made from the hazardous components' MSDS's.

4 First aid measures

- **Inhalation:** Supply fresh air; consult doctor in case of complaint.
- **Skin contact:** Flush affected areas with plenty of water, remove contaminated clothing, get medical attention if irritation persists.
- **Eye contact:** Rinse opened eye for several minutes under running water. If irritation persists, consult a doctor.
- **Ingestion:** Give large amounts of water. Consult a doctor immediately.

5 Fire fighting measures

- **Suitable extinguishing agents:** CO_2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment** Wear goggles, rubber gloves and boots, self contained breathing apparatus, and acid protective clothing.

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6 Accidental release measures

- **Personal precautions:** Wear goggles, rubber boots and gloves, and acid-protective clothing
- **Environmental precautions:** Do not allow substance to enter sewage system, surface or ground water.
- **Methods for cleaning up:** Contain the spill by diking/absorbing with liquid-binding material (sand, diatomite, acid binders, universal binders). Ensure adequate ventilation.

7 Handling and storage

Handling

- **Information for safe handling:**
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
  No special measures required.

Storage

- Store between 50 and 77 Degrees F.
- Keep containers tightly sealed
- Store away from strong caustics

8 Exposure controls and personal protection

- **Engineering controls:**
  No further data; see section 7.
  Exposure limits (threshold limit values):

  Ceric Ammonium Nitrate: None established
  Acetic Acid: 10 ppm (TWA)

- **General protective and hygienic measures:**
  Keep away from foodstuffs and beverages.
  Immediately remove all soiled and contaminated clothing
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.
- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:** Acid resistant gloves.
- **Eye protection:** Tightly sealed goggles.
- **Body protection:** Acid resistant protective work clothing.

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9 Physical and chemical properties:

- **Physical state:** Liquid
- **Color:** Orange/red
- **Odor:** Vinegar-like odor
- **Boiling point:** Undetermined
- **Flash point:** Not applicable
- **Self ignition temperature:** Not applicable
- **Danger of explosion:** Product does not present an explosion hazard.
- **Vapor pressure** at (20 °C): Unknown
- **Density** at (20 °C): 1.2 g/cm3
- **Solubility in water:** Fully soluble

10 Stability and reactivity

- **Thermal decomposition:** NOx may be generated if heated to greater than 185 degrees C.
- **Dangerous reactions:** Avoid contact with organic solvents and strong Caustics.
- **Dangerous products of decomposition:** NOx upon heating to greater than 185 degrees C.
- **Avoid boiling of product**

11 Toxicological information

- **Acute toxicity:** Corrosive to skin, eyes, and mucous membranes
- **Primary irritant effect on the skin and eye:** Irritant
- **Sensitization:** No sensitizing effects known.

12 Ecological information:

- **General notes:**
  Do not allow product to reach ground water, water course or sewage system.
  Danger to drinking water if even small quantities leak into the ground.

13 Disposal considerations

- Do not allow product to reach sewage system.
- Dispose of product (including packagings) in accordance with applicable regulations.

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14 Transportation information

Land (CFR 49), Maritime (IMDG), Air (ICAO)

- **Class**: 8 (Corrosive Liquid)
- **UN Number:** 3264
- **Proper Shipping Name:** Corrosive liquid, acidic, inorganic n.o.s. (Ceric Ammonium Nitrate, Acetic Acid)
- **Packing Group:** III

15 Regulations

- **CERCLA Hazardous Substances (with reportable quantity):** Acetic Acid (5000#)
- **Extremely Hazardous Substances:** None
- **Toxic Chemicals (Section 313):** None
- **TSCA Inventory:** All ingredients on TSCA inventory
- **Proposition 65 List:** None
  Clean Water Act Hazardous Substance List (with reportable quantity): Acetic Acid (5000#)
- **Clean Air Act Synthetic Organic Chemical (CAA SOCMI):** Acetic Acid
- **Clean Air Act Accidental Release Prevention Substance, section 112 r (with threshold quantity):** None
- **PSM Highly Hazardous Chemical List (with threshold quantity):** None

- **Safety phrases:**

  Do not breathe fumes.
  In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  Wear suitable protective clothing.
  In case of accident seek medical advice immediately.

16 Other information:

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.