

CYANTEK CORPORATION
MATERIAL SAFETY DATA SHEET
CR-9S



13 Disposal Considerations

Dispose of product (including containers) in accordance with applicable regulations.

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, Perchloric Acid)
Packing Group: III
Marine pollutant: No

15 Regulatory Information

CERCLA Hazardous Substances (with reportable quantity): None
Extremely Hazardous Substances (with threshold quantity): 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): None
Clean Air Act Synthetic Organic Chemical (CAA SOCM): None
Clean Air Act Accidental Release Prevention Substance, section 112 r (with threshold quantity): None
PSM Highly Hazardous Chemical List (with threshold quantity): Perchloric Acid (500#)

16 Other Information

MSDS document number: MSDS 17-051
Current date and revision: 7/18/08, revision G
Supercedes date and revision: 10/12/06, revision F
MSDS author: Gregg Harvey

Note: This Material Safety Data Sheet was created using the Globally Harmonized System (GHS) format for Safety Data Sheets (SDS).

Disclaimer: This information is based upon information and sources available at the time of preparation. This shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. It is the obligation of the user to determine product suitability and comply with the requirements of all applicable laws regarding use and disposal of this product.

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1 Product and Company Identification

Product name: CR-9S
Other product names: None
Product use: Chrome Etchant

Manufacturer: OM Group - Ultra Pure Chemicals
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 Hazards Identification

GHS classification:
Corrosive to metals: Category 1
Acute toxicity (oral): Category 4
Skin corrosion/irritation: Category 1B
Serious eye damage/eye irritation: Category 1

Signal word: Danger

Hazard statements: Harmful if swallowed or inhaled. Causes severe skin burns and eye damage. May be corrosive to metals.

Precautionary statements:

Absorb spillage to prevent material damage. Store in plastic containers. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

If swallowed: Call a POISON CENTER or doctor/physician. Do not induce vomiting.

Wear gloves/protective clothing/face and eye protection.

If on skin: Remove all contaminated clothing. Wash with plenty of water.

Dispose of contaminated clothing.

Avoid breathing vapors. Use only in a well-ventilated area.

If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician.

Dispose of contents/container in accordance with local/national regulations.

Pictograms:



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3 Composition/Information on Ingredients:

▪ **Chemical formula:** $\text{HClO}_4 + \text{Ce}(\text{NH}_4)_2(\text{NO}_3)_6 + \text{Surfactant} + \text{H}_2\text{O}$

• **Hazardous components:**

Component	Percent by wt.	CAS Number
Ceric Ammonium Nitrate	13%	16774-21-3
Perchloric Acid	6%	7601-90-3
Potassium Perfluoroalkyl Sulfonates	<1%	N/A
Water	81%	7732-18-5

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 eyes for several minutes under running water. Immediately consult a doctor.

Ingestion: Give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and may cause permanent injury. Do NOT give water to an unconscious patient. Consult a doctor immediately.

5 Fire Fighting Measures

Suitable extinguishing agents: CO₂, or water spray. Fight larger fires with water spray. Use water spray to cool exposed containers.

Specific hazards: Avoid contact with caustics.

Protective equipment: Wear goggles, rubber gloves and boots, self contained breathing apparatus, and acid protective clothing.

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. Dispose of material in accordance with local, regional, or national regulations.

7 Handling and Storage

Ensure good ventilation/exhaustion at the workplace.

Store between 50 and 77 Degrees F.

Keep containers upright and tightly sealed.

Store away from strong caustics.

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8 Exposure Controls and Personal Protection

Engineering controls and Ventilation: Use with adequate ventilation. Keep air below product exposure limits.

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.

Respiratory equipment: In case of brief exposure or low pollution use acid mist 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 or face shield.

Body protection: Acid resistant protective work clothing.

Exposure guidelines and limits:

Ingredient	ACGIH TLV	OSHA PEL	Other Limits
Ceric Ammonium Nitrate	None listed	None listed	None listed
Perchloric Acid	None listed	None listed	None listed
Potassium Perfluoroalkyl Sulfonates	None listed	None listed	1 mg/m ³ (TWA)*

TLV: Threshold limit value
 TWA: Time weighted average (8 hours)

PEL: Permissible exposure limit
 IDLH: Immediately dangerous to life and health

* Manufacturer's suggested limit

9 Physical and Chemical Properties:

Physical state: Liquid

Color: Orange

Odor: Faint acid odor

Odor threshold: Unknown

pH: <1

Melting point/freezing point: Not applicable

Initial boiling point and boiling range: Unknown

Flash point: Not applicable

Evaporation rate: Unknown

Lower explosion limits (LEL): Not applicable

Upper explosion limits (UEL): Not applicable

Vapor pressure (mm Hg): Unknown

Vapor density (air = 1): Unknown

Relative density at 20 °C (water = 1): 1.1 g/cm³

Solubility in water: 100%

Partition coefficient (n-Octanol/water): Unknown

Auto-ignition temperature: Not applicable

Decomposition temperature: Not applicable

Viscosity: Unknown

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10 Stability and Reactivity

Dangerous reactions: Reacts with caustics and water reactive materials. Avoid contact with organic solvents.

Danger of explosion: Explosive Perchlorate crystals may form if product allowed to dry.

Thermal decomposition : Nitrous Oxides may be generated if heated to greater than 185 degrees C.

Dangerous products of decomposition: Releases toxic gases (NOx) if heated to partial evaporation.

Hazardous polymerization: Does not occur

11 Toxicological Information

Toxicological data:

Ceric Ammonium Nitrate: None available

Perchloric Acid: LD50 (oral-rat) 1100 mg/kg

Potassium Perfluoroalkyl Sulfonates: None available

Potential side effects:

Eyes: Direct contact with eyes may cause severe burns.

Skin: Direct contact with the skin may cause irritation or damaging burns.

Ingestion: Swallowing may cause severe burns to the esophagus and digestive tract.

Inhalation: Respiratory tract irritation.

Acute health hazards: Repeated or prolonged contact may cause skin and respiratory system irritation.

Chronic health hazards: Chronic inhalation of mist may produce respiratory system irritation.

Medical conditions generally aggravated by exposure: Respiratory and skin diseases may predispose one to acute and chronic effects.

Sensitization: No sensitizing effects known.

12 Ecological Information:

Eco-toxicity/bioaccumulation data:

Ceric Ammonium Nitrate: None available

Perchloric Acid: None available

Potassium Perfluoroalkyl Sulfonates: Fathead minnow(96 hour LC50): 38 mg/l

Daphnia Magna (48 hour LC50): 50 mg/l

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.