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**24 Hour Emergency Numbers: (703) 590-9204**  
**(540) 439-3860**  
**Creation Date: 07/15/87 (1759-10)**  
**Revision Date: 9/26/08**

## MATERIAL SAFETY DATA SHEET

### I. CHEMICAL IDENTIFICATION

TRADE NAME: CYANIDE Titrets® and ACTIVATOR SOLUTION

KIT CATALOG NO.: K-3815

COMPONENT CATALOG NO.: A-3802

DESCRIPTION: Reagent ampoules, valve assemblies and activator solution for the titrimetric determination of cyanide in water. Each ampoule contains approximately 1 mL of liquid reagent sealed under vacuum. Each valve assembly contains approximately 0.05 mL of liquid reagent. The bottle of activator solution contains approximately 20 mL of accessory solution.

**In the Ampoule:**

NFPA RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

**In the Valve Assembly:**

NFPA RATINGS: HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0

**In the Activator Solution:**

NFPA RATINGS: HEALTH: 1 FLAMMABILITY: 3 REACTIVITY: 0

### II. COMPOSITION/INFORMATION ON INGREDIENTS

**In the Ampoule:**

COMPONENT: Silver Nitrate  
CAS NO.: 7761-88-8 PERCENT: < 0.1

COMPONENT: Nitric Acid  
CAS NO.: 7697-37-2 PERCENT: < 0.1

COMPONENT: Deionized Water  
CAS NO.: 7732-18-5 PERCENT: >99.8

**In the Valve Assembly:**

COMPONENT: Sodium Hydroxide  
CAS NO.: 1310-73-2 PERCENT: < 6.0

COMPONENT: Deionized Water  
CAS NO.: 7732-18-5 PERCENT: > 7.0

COMPONENT: Glycerin  
CAS NO.: 56-81-5 PERCENT: < 87.0

**In the Activator Solution:**

COMPONENT: 5-(p-Dimethylaminobenzylidene) rhodanine  
CAS NO.: 536-17-4 PERCENT: < 0.1

COMPONENT: Acetone  
CAS NO.: 67-64-1 PERCENT: > 99.9

### III. HAZARDS IDENTIFICATION

ACUTE TOXICITY: Irritation, headache, dizziness, CNS effects, nausea, vomiting

CHRONIC TOXICITY: Irritation, conjunctivitis, CNS effects, motor and speech effects

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Eye, skin, respiratory or CNS disorders

### IV. FIRST AID MEASURES

EYE AND SKIN CONTACT: Immediately flush eyes and skin with water for 15 minutes.

INGESTION: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Seek medical attention.

INHALATION: Remove individual to fresh air.

### V. FIRE FIGHTING MEASURES

FLASH POINT: -18°C (closed cup) AUTOIGNITION POINT: 465°C  
FLAMMABILITY LIMITS: UPPER: 12.8% LOWER: 2.6%  
EXTINGUISHING MEDIA: Water, dry chemical, foam or carbon dioxide

### VI. ACCIDENTAL RELEASE MEASURES

Take up with absorbent material. Place in small containers for disposal.

### VII. HANDLING AND STORAGE

**Always wear eye protection when working with these ampoules.**

**WARNING:** Do not break the tip of the ampoule unless it is completely immersed in your sample. Breaking the tip in the air may cause the glass ampoule to shatter.

If this product is used as directed, the user will not come in contact with or be exposed to any of its chemical components.

Wash thoroughly after handling. Avoid contact with eyes.

Fragile. Liquid in glass. Handle with care.

Exposure of this product to temperatures up to 120°F (49°C) or even below 32°F (0°C) will not create a safety hazard. For optimum analytical accuracy, the product should be stored in the dark at room temperature, and if applicable, product components should not be used beyond expiration date.

### VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

ACGIH TLV: 500 ppm TWA acetone, 10 mg/m<sup>3</sup> TWA glycerin, 2 mg/m<sup>3</sup> C sodium hydroxide, 0.01 mg/m<sup>3</sup> TWA silver, 2 ppm TWA nitric acid  
OSHA PEL: 1000 ppm TWA acetone, 15 mg/m<sup>3</sup> TWA glycerin (total dust), 2 mg/m<sup>3</sup> TWA sodium hydroxide, 0.01 mg/m<sup>3</sup> TWA silver, 2 ppm TWA nitric acid

PROTECTIVE EQUIPMENT: Safety glasses

### IX. PHYSICAL AND CHEMICAL PROPERTIES

**In the Ampoule:**

STATE: Liquid APPEARANCE: Colorless ODOR: None  
SOLUBILITY IN WATER: Complete pH: 2.1 SPECIFIC GRAVITY: 1.0  
BOILING POINT: 100°C MELTING POINT: 0°C  
VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

**In the Valve Assembly:**

STATE: Liquid APPEARANCE: Colorless ODOR: None  
SOLUBILITY IN WATER: Miscible pH: 12.6  
BOILING POINT: 290°C (Glycerin) MELTING POINT: 20°C (Glycerin)  
VAPOR PRESSURE: 0.0025 mm Hg @ 50°C (Glycerin)  
SPECIFIC GRAVITY: 1.26 (Glycerin) VAPOR DENSITY: 3.1 (Glycerin)

**In the Activator Solution**

STATE: Liquid APPEARANCE: Tangerine ODOR: Fragrant, mint-like  
SOLUBILITY IN WATER: Miscible pH: 5 SPECIFIC GRAVITY: 0.79  
BOILING POINT: 56.5°C MELTING POINT: -95°C  
VAPOR PRESSURE: 400 mm Hg @ 39.5°C VAPOR DENSITY: 2.0

### X. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to decomposition, toxic and corrosive vapors and oxides of carbon, nitrogen and silver may be emitted.

Stable under normal conditions.

### XI. TOXICOLOGICAL INFORMATION

CARCINOGENIC STATUS: Acetone: ACGIH - Group A4, not classifiable as a human carcinogen

No other data available at this time.

### XII. ECOLOGICAL INFORMATION

Glycerin is expected to readily biodegrade in soil and water, it is not expected to bioaccumulate or be toxic to aquatic organisms. Acetone is expected to volatilize and leach in soil, is expected to biodegrade rapidly and is not expected to bioconcentrate.

No other data available at this time.

### XIII. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with Federal, State, and Local Regulations.

### XIV. TRANSPORT INFORMATION

U.S. DOT: 49 CFR, 173.4 Exceptions for Small Quantities  
ATA: Dangerous Goods in Excepted Quantities  
IMDG: Dangerous Goods in Limited Quantities  
Hazard Class: 9 ID: UN 3316 GROUP: II

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## XV. REGULATORY INFORMATION

### EUROPEAN INFORMATION:

EU Symbols: F - HIGHLY FLAMMABLE, Xi - IRRITANT

Risk Phrases: Highly flammable. Irritating to eyes, respiratory system, and skin. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

Safety Phrases: Keep away from sources of ignition - No smoking. Avoid contact with eyes and skin. In case of contact with eyes or skin, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### CANADIAN INFORMATION:

WHMIS Classification: B2, D2B, E

All chemical components of this product are listed on Canada's DSL.

### U.S. INFORMATION:

RCRA: Contains RCRA regulated substances. EPA Waste ID Nos.:

Ampoules: D002, D011; Valve Assemblies: D002; Activator Solution: D001

OSHA: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard (29 CFR 1910.1200).

SARA Section 313: This product contains nitric acid and a silver compound which are subject to the reporting requirements of Section 313 of SARA Title III.

All chemical components of this product are listed on the TSCA Inventory.

## XVI. OTHER INFORMATION

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. ALL PRODUCTS ARE OFFERED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRODUCTION SPECIFICATIONS AND ARE INTENDED SOLELY FOR USE IN ANALYTICAL TESTING. THE MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE RESULTING FROM THE HANDLING, USE OR MISUSE OF THESE PRODUCTS.

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