

# MATERIAL SAFETY DATA SHEET

## 1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive, Stop 2300  
Gaithersburg, Maryland 20899-2300

SRM Number: 1935a  
MSDS Number: 1935a  
SRM Name: Potassium Dichromate  
Solution for Use as an Ultraviolet  
Absorbance Standard

Date of Issue: 19 December 2011

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**Description:** A unit of Standard Reference Material (SRM) 1935a consists of ten 10 mL ampoules, each containing approximately 10 mL of solution. Five ampoules are perchloric acid "blank" solutions and the remaining five ampoules are potassium dichromate in perchloric acid.

**Substance:** Aqueous Potassium Dichromate, Perchloric acid solution.

### Other Designations:

Potassium dichromate (Cichromic acid; dipotassium salt; potassium bichromate).

## 2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

**Physical Hazards:** There are no known physical hazards associated with this potassium dichromate solution.

**Major Health Hazards:** Eye, skin, and respiratory irritation. Potassium dichromate is listed as a known human carcinogen.

### Potential Health Effects:

**Inhalation:** May cause irritation.

**Skin Contact:** Skin contact may result in irritation with redness.

**Eye Contact:** Irritation may occur.

**Ingestion:** Ingestion of this material is unlikely under normal conditions of use.

**Listed as a Carcinogen/Potential Carcinogen:** Potassium dichromate

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X*	_____
In the International Agency for Research on Cancer (IARC) Monographs	X*	_____
By the Occupational Safety and Health Administration (OSHA)	X*	_____

\*The NTP classifies potassium dichromate as a **Known Human Carcinogen**. The IARC classifies potassium dichromate as **Human Sufficient Evidence, Group 1**. OSHA Chromium (VI) compounds.

## 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Components	CAS Number	EC Number (EINICS)	Nominal Concentration (mass fraction)
Water, distilled	7732-18-5	231-791-2	≈94 %
Potassium dichromate	7778-50-9	231-906-6	6 %
Perchloric acid	7601-90-3	231-512-4	0.01 %

**Note:** This material contains aqueous solutions of perchloric acid and potassium dichromate with a trace amount of perchloric acid. The concentration of perchloric acid in these solutions do not meet OSHA minimum concentration for information to be listed in an MSDS – Health hazards 1% or greater; carcinogens 0.1% or greater, 29 CFR 1910.1200(d)(5)(ii).

**EC Classification (assigned):** Xi

**EC Risk (R):** R36/37/38, R45.

**EC Safety (S):** S53.

**EC Risk/Safety Phrases:** Refer to Section 15, "Regulatory Information".

NOTE: The EC classification for potassium dichromate varies based on the concentration.

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#### 4. FIRST AID MEASURES

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**Inhalation:** If adverse effects occur, remove to uncontaminated area. Seek medical attention if needed.

**Skin Contact:** Wash exposed skin with copious amounts of water for at least 15 minutes. Remove any contaminated clothing. Seek medical attention if needed.

**Eye Contact:** Immediately flush eyes with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.

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#### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Negligible fire hazard.

**Extinguishing Media:** Regular dry chemical, carbon dioxide, water, or regular foam.

**Fire Fighting:** Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

**Flash Point (°C):** Not applicable.

**Autoignition Temp. (°C):** Not applicable.

**Flammability Limits in Air**

**UPPER (Volume %):** Not applicable.

**LOWER (Volume %):** Not applicable.

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#### 6. ACCIDENTAL RELEASE MEASURES

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**Occupational Release:** Avoid contact. Absorb with sand or other non-combustible material. Collect spilled material and place in an appropriate container for disposal.

**Disposal:** Refer to Section 13, "Disposal Considerations".

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#### 7. HANDLING AND STORAGE

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**Storage:** Store and handle in accordance with all current regulations and standards. Store unopened ampoules in an upright position under normal laboratory conditions.

**Safe Handling Precautions:** Glass ampoules may shatter or break.

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#### 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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**Exposure Limits:**

**Potassium Dichromate:**

OSHA (PEL): 0.1 mg/m<sup>3</sup> (CrO<sub>3</sub>) ceiling

OSHA: 2.5 µg/m<sup>3</sup> (Cr[VI]) action level

OSHA (TWA): 5 µg/m<sup>3</sup> (Cancer hazard, see 29 CFR 1910.1026 as Cr).

NIOSH (TWA): 0.001 mg/m<sup>3</sup> (as Cr, related to Chromates).

NIOSH (IDLH): 15 mg/m<sup>3</sup> (as Cr, related to Chromates)

**Ventilation:** Use a local exhaust ventilation system.

**Respirator:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye Protection:** Wear splash resistant safety goggles. An eyewash station should be readily available near areas of use.

**Personal Protection:** Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Component:** Potassium dichromate, aqueous solution

**Chemical formula:** Not applicable.

**Physical State:** Liquid.

**Appearance and Odor:** Clear odorless liquid.

**Relative Molecular Mass:** Not applicable.

**Specific Gravity (water = 1):** ≈1

**Melting Point (° C):** Not applicable

**Volatility:** Not listed.

**Vapor Density (air =1):** Not listed.

**pH:** 4.04 (1 % solution).

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## 10. STABILITY AND REACTIVITY

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**Stability:**             Stable                             Unstable

**Conditions to Avoid:** Avoid heat, or flames.

**Incompatible Materials:** Metals; sulfuric acid; combustibles.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Miscellaneous decomposition products.

**Hazardous Polymerization:**             Will Occur                             Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Entry:**             Inhalation                             Skin                             Ingestion

**Toxicity Data:** Potassium dichromate (pure)

Rat, Oral LD<sub>50</sub>: 25 mg/kg

Rabbit, Dermal LD<sub>50</sub>: 14 mg/kg

Rabbit, Eye Irritation: 140 mg severe

### Health Effects

**(Acute and Chronic):** See Section 3: "Hazards Identification" for potential health effects.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** Potassium dichromate

**Fish:** Blue gill (*Lepomis macrochirus*) LC<sub>50</sub>: 113.6–155.7 mg/L 96 h flow through.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose in accordance with all applicable federal, state, and local regulations.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** Not regulated due to low concentration of potassium dichromate and perchloric acid.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Sections 302 (40 CFR 355.30): Not regulated.

SARA Title III Sections 304 (40 CFR 355.40): Not regulated.

SARA Title III Sections 313 (40 CFR 372.65): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No
CHRONIC HEALTH:	No
FIRE:	No
REACTIVE:	No
PRESSURE:	No

OSHA Process Safety (29 CFR 1910.119): Not regulated.

### State Regulations:

California Proposition 65: This product contains potassium dichromate (as Cr (VI) related compounds) that is known to the state of California to cause cancer and reproductive/developmental effects.

### CANADIAN Regulations:

WHMIS Classification: Not provided for this solution.

### EUROPEAN Regulations:

**EC Classification (assigned):** Xi - Irritant

**EC Risk Phrases:**

R36/37/38 – Irritating to eyes, respiratory system, and skin.

R45 – May cause cancer.

**EC Safety Phrases:**

R53 – Avoid exposure – obtain special instructions before use.

### National Inventory Status

**U.S. Inventory (TSCA):** Potassium dichromate is listed on inventory.

**TSCA 12 (b) Export Notification:** Not listed.

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## 16. OTHER INFORMATION

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**Sources:** ChemADVISOR, Inc., MSDS *Potassium dichromate*; 16 September 2011.

EC, European Chemical Substance Information System (ESIS), *Potassium Dichromate*, CAS No. 7778-0-9; available at <http://esis.jrc.ec.europa.eu> (accessed Dec 2011).

EC, European Chemical Substance Information System (ESIS), *Perchloric acid*, CAS No. 7601 90-3; available at <http://esis.jrc.ec.europa.eu> (accessed Dec 2011).

**Disclaimer:** Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.