

MATERIAL SAFETY DATA SHEET

200000354/F/USA  
Approval Date: 08/20/2004  
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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK MICRODOL-X Developer

Catalog Number(s):        123 0044 - To Make 1 quart (U.S.)  
                             123 0689 - To Make 128 ounce(s)  
                             156 5647 - To Make 5 gallons (U.S.)  
                             196 9690 - To Make 1 quart (U.S.)  
                             196 9724 - To Make 1 gallon (U.S.)  
                             855 1780 - To Make 1 litre

Manufacturer/Supplier: EASTMAN KODAK COMPANY, Rochester, New York 14650

For Emergency Health, Safety & Environmental Information, call (585) 722-5151

For other information or to request an MSDS, call (800) 242-2424.

Synonym(s):    Concentrate: KAN 449571; PCD 5642  
                             Working solution: KAN 965989

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Concentrate:

70-75        Sodium sulfite (007757-83-7)  
20-25        Sodium chloride (007647-14-5)  
1-5         4-(methylamino)phenol sulfate (000055-55-0)  
< 1         Boric anhydride (001303-86-2)  
< 1         Sodium hexametaphosphate (010124-56-8)

Working solution:

85-90        Water (007732-18-5)  
5-10        Sodium sulfite (007757-83-7)  
1-5         Sodium chloride (007647-14-5)  
< 1         4-(methylamino)phenol sulfate (000055-55-0)  
< 1         Boric anhydride (001303-86-2)

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3. HAZARDS IDENTIFICATION

Concentrate:

CONTAINS: 4-(methylamino)phenol sulfate (000055-55-0); Sodium sulfite (007757-83-7)

WARNING!

CAUSES SKIN AND EYE IRRITATION  
MAY CAUSE BLOOD DISORDERS BASED ON ANIMAL DATA  
MAY CAUSE CYANOSIS BASED ON ANIMAL DATA  
HARMFUL IF INHALED OR SWALLOWED  
DUST IRRITATING TO THE EYES AND RESPIRATORY TRACT  
MAY LIBERATE SULFUR DIOXIDE  
MAY CAUSE ALLERGIC SKIN REACTION

HMIS Hazard Ratings:

Health - 3 \*, Flammability - 0, Reactivity - 0, Personal Protection - F

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NFPA Hazard Ratings:  
Health - 3, Flammability - 0, Reactivity (Stability) - 0

Working solution:

CONTAINS: 4-(methylamino)phenol sulfate (000055-55-0); Sodium sulfite (007757-83-7)

WARNING!  
MAY BE HARMFUL IF SWALLOWED  
CAUSES SKIN AND EYE IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION

HMIS Hazard Ratings:  
Health - 2 , Flammability - 0, Reactivity - 0, Personal Protection - B

NFPA Hazard Ratings:  
Health - 2, Flammability - 0, Reactivity (Stability) - 0

NOTE: HMIS and NFPA hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the magnitude of the potential hazards. The personal protection index is only intended for general guidance on personal protection equipment (PPE) that is suitable for the potential hazards of the material. PPE (e.g., respirators) may not be needed if engineering controls (e.g., local ventilation) are adequate. An asterisk (\*), in the HMIS health field, designates potential chronic or target organ hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

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#### 4. FIRST-AID MEASURES

Inhalation: If symptomatic, move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eyes: Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

Skin: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion:

Concentrate: Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Working solution: Drink 1-2 glasses of water. Seek medical attention. Never give anything by mouth to an unconscious person.

Note to Physicians: Absorption of this material into the body leads to the formation of methemoglobin that, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures such as bed rest and oxygen inhalation. Thorough cleansing of the entire contaminated area of the body, including scalp and nails, is of utmost importance. If cyanosis is severe, intravenous injection

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of methylene blue, one milligram per kilogram of body weight, may be of value.

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5. FIRE FIGHTING MEASURES

Extinguishing Media: Use appropriate agent for adjacent fire.

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

Hazardous Combustion Products: None (noncombustible) (see also Hazardous Decomposition Products section)

Unusual Fire and Explosion Hazards: None

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6. ACCIDENTAL RELEASE MEASURES

Concentrate: Flush to sewer with large amounts of water. Otherwise, sweep up and place in a container for chemical waste. Clean surface thoroughly to remove residual contamination.

Working solution: Flush to sewer with large amounts of water. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination.

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7. HANDLING AND STORAGE

Personal Precautionary Measures:

Concentrate: Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Working solution: Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: No special precautionary measures should be needed under anticipated conditions of use.

Storage: Keep container closed. Keep away from incompatible substances (see Incompatibility section).

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Boric anhydride: 10 mg/m<sup>3</sup> TWA  
Sulfur dioxide: 2 ppm TWA, 5 ppm STEL

OSHA (USA) Permissible Exposure Limit (PEL - 1971 Table Z-1 Values):

Boric anhydride: 15 mg/m<sup>3</sup> TWA, total dust

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Sulfur dioxide: 5 ppm TWA; 13 mg/m<sup>3</sup> TWA

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

Respiratory Protection:

Concentrate: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn.  
Respirator type: N95 Particulate Filter. A respirator should be worn if hazardous decomposition products are likely to be or have been released.  
Respirator type: Acid gas. See Stability and Reactivity Section. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Working solution: None should be needed. A respirator should be worn if hazardous decomposition products are likely to be or have been released.  
Respirator type: Acid gas. See Stability and Reactivity Section. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Eye Protection: Wear safety glasses with side shields (or goggles).

Skin Protection: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

Recommended Decontamination Facilities: Eye bath, safety shower, washing facilities

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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form:

Concentrate: Solid  
Working solution: Liquid

Color:

Concentrate: Tan  
Working solution: Colorless

Odor: Odorless

Specific Gravity (water = 1):

Concentrate: Not available  
Working solution: 1.09-1.11

Vapor Pressure at 20°C (68°F):

Concentrate: Negligible  
Working solution: 24 mbar (18 mm Hg)

Vapor Density (Air = 1):

Concentrate: Not applicable  
Working solution: 0.6

Volatile Fraction by Weight:

Concentrate: Negligible  
Working solution: 85-90%

Boiling Point:

Concentrate: Not applicable  
Working solution: >100°C (>212°F)

Melting Point:

Concentrate: Not available  
Working solution: Not applicable

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Solubility in Water:

Concentrate: Appreciable  
Working solution: Complete

pH:

Concentrate: Not applicable  
Working solution: 7.7-7.9

Flash Point:

Concentrate: Not applicable, noncombustible solid  
Working solution: None, noncombustible liquid

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10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility: Strong acids

Hazardous Decomposition Products:

Concentrate: Hydrogen chloride, sulfur dioxide

Working solution: Sulfur dioxide

Hazardous Polymerization: Will not occur.

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11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General: Contains 4-(methylamino)phenol sulfate. Based on animal data this material can produce methemoglobin which, in sufficient concentration, causes cyanosis, a blue-gray discoloration of the skin and lips caused by a reduced ability of the blood to carry oxygen. Based on animal data, may cause adverse effects on the following organs/systems: blood, kidney, spleen.

Inhalation:

Concentrate: Harmful if inhaled. Airborne dust irritating. In contact with strong acids or if heated, sulfites may liberate sulfur dioxide gas. Sulfur dioxide gas is irritating to the respiratory tract. Some asthmatics or hypersensitive individuals may experience difficult breathing.

Working solution: Expected to be a low hazard for recommended handling. In contact with strong acids or if heated, sulfites may liberate sulfur dioxide gas. Sulfur dioxide gas is irritating to the respiratory tract. Some asthmatics or hypersensitive individuals may experience difficult breathing.

Eyes:

Concentrate: Causes irritation. Airborne dust irritating.

Working solution: Causes irritation.

Skin: Causes irritation. May cause allergic skin reaction.

Ingestion:

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Concentrate: Harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea. May cause burns of the gastrointestinal tract if swallowed.

Working solution: May be harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea. May cause irritation of the gastrointestinal tract if swallowed.

Acute Toxicity Data:

Data for Concentrate:

Oral LD-50 (rat): 0.5-5.0 g/kg  
Skin irritation: slight to moderate

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12. ECOLOGICAL INFORMATION

The following properties are ESTIMATED from the components of the preparations.

	Concentrate	Working Solution
Potential Toxicity		
Fish LC50 mg/l:	10-100	10-100
Daphnid EC50 mg/l:	10-100	>100
Algal IC50 mg/l:	10-100	>100
Organics Readily Degradable (>70%):	Yes (7 days)	Yes (7 days)
Potential Bioaccumulation:	Log Pow <1	Log Pow <1
COD (approximate g/l):	18	18
BOD5 (approximate g/l):	15	15
Potential Toxicity Waste treatment microorganisms EC50 (mg/l):	>100	>100

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13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Consult state or local regulatory authorities before flushing to sewer with large amounts of water. Since emptied containers retain product residue, follow label warnings even after container is emptied.

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14. TRANSPORT INFORMATION

For transportation information regarding this product call the Kodak Worldwide Transportation Hazmat Hot Line: (585) 722-2400 between 8 a.m. and 5 p.m. (Eastern Standard Time), Monday through Friday.

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15. REGULATORY INFORMATION

- Material(s) known to the State of California to cause cancer: None
- Material(s) known to the State of California to cause adverse reproductive effects: None

Carcinogenicity Classification (components present at 0.1% or more):

- International Agency for Research on Cancer (IARC): Sulfur dioxide, some sulfites, bisulfites and metasulfites, Group 3; Not classifiable.
- American Conference of Governmental Industrial Hygienists (ACGIH): None
- National Toxicology Program (NTP): None
- Occupational Safety and Health Administration (OSHA): None
  
- Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: None

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16. OTHER INFORMATION

US/Canadian Label Statements:

Concentrate:

CONTAINS: 4-(methylamino)phenol sulfate (000055-55-0); Sodium sulfite (007757-83-7)

WARNING!

CAUSES SKIN AND EYE IRRITATION  
MAY CAUSE BLOOD DISORDERS BASED ON ANIMAL DATA  
MAY CAUSE CYANOSIS BASED ON ANIMAL DATA  
HARMFUL IF INHALED OR SWALLOWED  
MAY LIBERATE SULFUR DIOXIDE  
MAY CAUSE ALLERGIC SKIN REACTION  
DUST IRRITATING TO THE EYES AND RESPIRATORY TRACT

Avoid contact with eyes, skin, and clothing.  
Avoid breathing dust.  
Use with adequate ventilation.  
Wash thoroughly after handling.

FIRST AID: If swallowed, only induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. If inhaled, move to fresh air. Treat symptomatically. In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Note to Physicians: Absorption of this material into the body leads to the formation of methemoglobin that, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures such as bed rest and oxygen inhalation. Thorough cleansing of the entire contaminated area of the body, including scalp and nails, is of utmost importance. If cyanosis is severe, intravenous injection of methylene blue, one milligram per

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kilogram of body weight, may be of value.

Keep out of reach of children.

For additional information, see Material Safety Data Sheet (MSDS) for this material.

Additional hazard precautions for containers greater than 1 gallon of liquid or 5 pounds of solid:

Since emptied containers retain product residue, follow label warnings even after container is emptied.

Working solution:

CONTAINS: 4-(methylamino)phenol sulfate (000055-55-0); Sodium sulfite (007757-83-7)

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The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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R-2, S-2, F-0, C-0  
WS:R-1, S-2, F-0, C-0