

MATERIAL SAFETY DATA SHEET

200000434/F/USA  
Approval Date: 11/15/2003  
Print Date: 05/15/2006  
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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK T-MAX Developer

Catalog Number(s):       140 2767 - To Make 1 gallon (U.S.)  
                              159 9844 - To Make 5 gallons (U.S.)

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 444549; PCD 5337; C-0144.000  
                              Working solution: KAN 471328; C-0144.005

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Concentrate:

45-50     Diethanolamine-sulfur dioxide complex (063149-47-3)  
40-45     Water (007732-18-5)  
  1-5     Sodium bisulfite (007631-90-5)  
      4     Hydroquinone (000123-31-9)  
  < 1     Pentetic acid, pentasodium salt (000140-01-2)  
  < 1     4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

Working solution:

85-90     Water (007732-18-5)  
10-15     Diethanolamine-sulfur dioxide complex (063149-47-3)  
  < 1     Sodium bisulfite (007631-90-5)  
  < 1     Hydroquinone (000123-31-9)  
  < 1     Pentetic acid, pentasodium salt (000140-01-2)

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3. HAZARDS IDENTIFICATION

Concentrate:

CONTAINS: Hydroquinone (000123-31-9); Sodium bisulfite (007631-90-5);  
Diethanolamine-sulfur dioxide complex (063149-47-3);  
4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

WARNING!

HEAT SENSITIVE - CAN DECOMPOSE IF HEATED  
MAY CAUSE LIVER DAMAGE BASED ON ANIMAL DATA  
MAY CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA  
CAUSES EYE IRRITATION  
HARMFUL IF SWALLOWED  
MAY CAUSE ALLERGIC SKIN REACTION

HMIS Hazard Ratings:

Health - 2, Flammability - 1, Reactivity - 2, Personal Protection - B

NFPA Hazard Ratings:

Health - 2, Flammability - 1, Reactivity (Stability) - 2

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Working solution:

CONTAINS: Hydroquinone (000123-31-9); Diethanolamine-sulfur dioxide complex (063149-47-3); Sodium bisulfite (007631-90-5)

WARNING!  
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HMIS Hazard Ratings:  
Health - 2, Flammability - 1, Reactivity - 0, Personal Protection - B

NFPA Hazard Ratings:  
Health - 2, Flammability - 1, 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 and wash with a non-alkaline (acid) type of skin cleaner. Remove 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: Only induce vomiting at the instruction of medical personnel. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

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5. FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, carbon dioxide (CO2), dry chemical, alcohol foam

Special Fire-Fighting Procedures:

Concentrate: Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products. Use water spray to keep fire-exposed containers cool.

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

Hazardous Combustion Products: Carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulfur

Unusual Fire and Explosion Hazards:

Concentrate: Elevated temperature can cause decomposition.

Working solution: None

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6. ACCIDENTAL RELEASE MEASURES

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: Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling. The routine use of a nonalkaline (acid) type of hand cleaner and regular cleaning of working surfaces, gloves, etc. will help minimize the possibility of a skin reaction.

Prevention of Fire and Explosion:

Concentrate: Keep from contact with oxidizing materials. Keep away from heat.

Working solution: Keep from contact with oxidizing materials.

Storage:

Concentrate: Keep container closed. Store in a cool place. Keep away from incompatible substances (see Incompatibility section).

Working solution: Keep container closed.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Hydroquinone: 2 mg/m<sup>3</sup> TWA

Sodium bisulfite: 5 mg/m<sup>3</sup> TWA

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

Hydroquinone: 2 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.

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Respiratory Protection: 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: Liquid  
Color: Colorless  
Odor:  
    Concentrate: Amine  
    Working solution: Slight amine  
Specific Gravity (water = 1):  
    Concentrate: 1.23  
    Working solution: 1.04-1.05  
Vapor Pressure at 20°C (68°F): 24 mbar (18 mm Hg)  
Vapor Density (Air = 1): 0.6  
Volatile Fraction by Weight:  
    Concentrate: 40-45%  
    Working solution: 85-90%  
Boiling Point: >100°C (>212°F)  
Solubility in Water: Complete  
pH:  
    Concentrate: 8.3  
    Working solution: 8.3-8.4  
Flash Point: None

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10. STABILITY AND REACTIVITY

Stability:

Concentrate: Stable. Safe handling temperatures are dependent on specific conditions of use and are typically substantially below the onset temperature. Consult your technical safety experts. Materials containing similar structural groups can decompose if heated above 145°C (293°F).

Working solution: Stable

Incompatibility:

Concentrate: Strong oxidizing agents, strong acids

Working solution: Strong oxidizing agents

Hazardous Polymerization: Will not occur.

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11. TOXICOLOGICAL INFORMATION

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Effects of Exposure:

General:

Contains: Diethanolamine-sulfur dioxide complex. May cause kidney damage based on animal data. May cause liver damage based on animal data.

Concentrate:

Contains: Hydroquinone. In F-344 rats, chronic oral administration of hydroquinone has resulted in the formation of benign kidney tumors thought to be secondary to nephropathy. Hydroquinone-induced nephropathy following oral administration has been noted in the male F-344 rat, but not in other species or rat strains tested. Although an increase in mononuclear cell leukemia in F-344 female rats has been reported following chronic oral administration of hydroquinone, this finding was not reproduced in a subsequent study. There was no evidence of carcinogenicity in male mice following chronic oral administration of hydroquinone; some evidence of carcinogenic activity was shown in female mice by an increase in hepatocellular neoplasms which were primarily benign adenomas, although this finding was not reproduced in a subsequent study. No skin tumors were reported in mice following long-term dermal application of hydroquinone. Therefore, neoplastic responses have not been consistent across route of exposure, species, or sex. Hydroquinone is generally negative in bacterial mutagenicity tests; there is evidence for the clastogenicity (chromosome breakage) of hydroquinone in vivo and in vitro. The relevance of the chromosomal effects in test animals in predicting human risk is unclear.

Inhalation: 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: Causes irritation.

Skin:

Concentrate: Causes irritation. May cause allergic skin reaction based on human experience. May cause skin depigmentation.

Working solution: May cause allergic skin reaction based on human experience.

Ingestion: 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.

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12. ECOLOGICAL INFORMATION

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

	Concentrate	Working Solution
Potential Toxicity		

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Fish LC50 mg/l:	1-10	10-100
Daphnid EC50 mg/l:	1-10	1-10
Algal IC50 mg/l:	10-100	10-100
Organics Readily Degradable (>70%):	Yes (7 days)	Yes (7 days)
Potential Bioaccumulation:	Log Pow <1	Log Pow <1
COD (approximate g/l):	712	149
BOD5 (approximate g/l):	612	128
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. Flush 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): None
  - American Conference of Governmental Industrial Hygienists (ACGIH): Hydroquinone, A3; Confirmed animal carcinogen with unknown relevance to humans. Sodium bisulfite, A4; not classifiable as a human carcinogen.
  - 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: Hydroquinone
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16. OTHER INFORMATION

US/Canadian Label Statements:

Concentrate:

CONTAINS: Hydroquinone (000123-31-9); Sodium bisulfite (007631-90-5); Diethanolamine-sulfur dioxide complex (063149-47-3); 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

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HARMFUL IF SWALLOWED  
CAUSES EYE IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION

Store in a cool place.  
Avoid breathing mist or vapor.  
Avoid contact with eyes, skin, and clothing.  
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. 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 if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Keep out of reach of children.

Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood

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.

IN CASE OF FIRE: Use water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol foam. Use water spray to keep fire-exposed containers cool.

Working solution:

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attention if symptoms occur. Wash contaminated clothing before reuse.  
Destroy or thoroughly clean contaminated shoes.

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:

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IN CASE OF FIRE: Use water spray, carbon dioxide (CO2), dry chemical, alcohol foam

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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. The information relating to the working solution is for guidance purposes only, and is based on correct mixing and use of the product according to instructions.  
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R-1, S-2, F-1, C-1HT  
WS:R-1, S-2, F-1, C-0