



## KODAK X-OMAT EX II Developer

### MATERIAL SAFETY DATA SHEET

000019166/F/USA  
 Approval Date: 02/18/2002  
 Print Date: 12/13/2002

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#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK X-OMAT EX II Developer

Catalog Number(s): 113 5433 - 10 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): Part A: CIN 10095088, PCD 6400  
 Part B: CIN 10095239, PCD 6381  
 Part C: CIN 10075768, PCD 6422

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#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

##### Part A:

60-65	Water (007732-18-5)
15-20	Potassium sulfite (010117-38-1)
< 11	Hydroquinone (000123-31-9)
1-5	Diethylene glycol (000111-46-6)
< 1	4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

##### Part B:

75-80	Water (007732-18-5)
20-25	Glutaraldehyde bis(sodium bisulfite) (007420-89-5)
< 1	Sodium bisulfite (007631-90-5)

##### Part C:

> 95	Diethylene glycol (000111-46-6)
< 1	1-phenyl-2-tetrazoline-5-thione (000086-93-1)
< 1	5-nitroindazole (005401-94-5)

##### Working solution:

85-90	Water (007732-18-5)
5-10	Potassium sulfite (010117-38-1)
1-5	Hydroquinone (000123-31-9)
1-5	Diethylene glycol (000111-46-6)
1-5	Glutaraldehyde bis(sodium bisulfite) (007420-89-5)
< 1	4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

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3. HAZARDS IDENTIFICATION

Part A:

CONTAINS: Potassium sulfite (010117-38-1), Hydroquinone (000123-31-9),  
Diethylene glycol (000111-46-6),  
4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

WARNING!

CAN CAUSE KIDNEY DAMAGE AND CNS EFFECTS FOLLOWING INGESTION  
CAUSES EYE IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION  
MAY BE HARMFUL IF SWALLOWED

HMIS Hazard Ratings:

Health - \* 2, Flammability - 1, Reactivity - 0, Personal Protection - C

NFPA Hazard Ratings:

Health - 2, Flammability - 1, Reactivity (Stability) - 0

Part B:

CONTAINS: Sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF SWALLOWED

HMIS Hazard Ratings:

Health - 1, Flammability - 1, Reactivity - 0, Personal Protection - A

NFPA Hazard Ratings:

Health - 2, Flammability - 1, Reactivity (Stability) - 0

Part C:

CONTAINS: Diethylene glycol (000111-46-6)

WARNING!

CAN CAUSE KIDNEY DAMAGE AND CNS EFFECTS FOLLOWING INGESTION

HMIS Hazard Ratings:

Health - \* 1, Flammability - 1, Reactivity - 0, Personal Protection - A

NFPA Hazard Ratings:

Health - 2, Flammability - 1, Reactivity (Stability) - 0

Working solution:

CONTAINS: Potassium sulfite (010117-38-1), Hydroquinone (000123-31-9),  
Diethylene glycol (000111-46-6),  
4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

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Health - \* 2, Flammability - 0, Reactivity - 0, Personal Protection - C

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:

Part A & Working solution: Immediately flush with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Part B & C: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

##### Skin:

Part A & Working solution: 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.

Part B & C: Wash with soap and water. Get medical attention if symptoms occur.

##### Ingestion:

Part A, Part C & Working solution: 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.

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

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#### 5. FIRE FIGHTING MEASURES

##### Extinguishing Media:

Part A, Part B & Part C: Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol foam

Working solution: Use appropriate agent for adjacent fire.

##### Special Fire-Fighting Procedures:

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

Part C: Wear self-contained breathing apparatus and protective clothing.

##### Hazardous Combustion Products:

Part A: Carbon dioxide, carbon monoxide, oxides of sulfur (see also Hazardous Decomposition Products section)

Part B: Carbon dioxide, carbon monoxide, oxides of sulfur

Part C: Carbon dioxide, carbon monoxide

Working solution: None (noncombustible) (see also Hazardous Decomposition Products section)

Unusual Fire and Explosion Hazards: None

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## 6. ACCIDENTAL RELEASE MEASURES

Consult state or local regulatory authorities before flushing to sewer with large amounts of water. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

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## 7. HANDLING AND STORAGE

### Personal Precautionary Measures:

Part A & Working solution: Avoid prolonged or repeated breathing of mist or vapor. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Part B & C: Avoid prolonged or repeated breathing of mist or vapor. Avoid contact with eyes and prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling.

### Prevention of Fire and Explosion:

Part A, B & C: Keep from contact with oxidizing materials.

Working solution: No special precautionary measures should be needed under anticipated conditions of use.

### Storage:

Part A & Working solution: Keep container closed. Keep away from incompatible substances (see Incompatibility section)

Part B & C: 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

#### Eastman Kodak Company industrial hygiene guideline:

4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone: 0.2 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

AIHA Workplace Environmental Exposure Level (WEEL):

Diethylene glycol: 10 mg/m<sup>3</sup> TWA, mist; 50 ppm TWA, total

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions.

Respiratory Protection:

Part A, B & 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.

Part C: None should be needed.

Eye Protection:

Part A & Working solution: Wear safety glasses with side shields (or goggles).

Part B & C: It is a good industrial hygiene practice to minimize eye contact. Wear safety glasses with side shields (or goggles).

Skin Protection:

Part A & Working solution: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

Part B & C: It is a good industrial hygiene practice to minimize skin contact. For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

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

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

	Part A	Part B	Part C	Working solution
Physical Form:	liquid	liquid	liquid	liquid
Color:	light yellow	colorless	orange	light yellow
Odor:	slight	odorless	slight	odorless
Specific Gravity (water = 1):	1.24	1.14	1.12	1.08
Vapor Pressure at 20°C (68°F):	24 mbar (18 mm Hg)			
Vapor Density (Air = 1):	0.6	0.6	0.6	0.6
Volatile Fraction by Weight:	60-70	70-80	not available	85-95

Boiling Point:	>100°C (>212°F)	>100°C (>212°F)	>100°C (>212°F)	>100°C (>212°F)
Solubility in Water:	complete	complete	complete	complete
pH:	11.0	4.8	3.1	10.5
Flash Point:	none	none	none	none, noncombustible liquid

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## 10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility:

Part A: Strong oxidizing agents, strong acids

Part B & C: Strong oxidizing agents

Working solution: Strong acids

Hazardous Decomposition Products:

Part A: Sulfur dioxide

Working solution: Carbon dioxide, carbon monoxide, sulfur dioxide

Hazardous Polymerization: Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General:

Contains diethylene glycol. Can cause kidney damage and CNS effects following ingestion.

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.

Contains glutaraldehyde bis(sodium bisulfite). Gluteraldehyde bis(sodium bisulfate) was not a skin sensitizer in animal studies and has not been reported to cause allergic skin reaction in humans. In an alkaline solution, gluteraldehyde bis(sodium bisulfite) may release free gluteraldehyde, a known skin sensitizer.

Inhalation:

Part A, B & 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.

Part C: Low hazard for recommended handling.

Eyes:

Part A & Working solution: Causes irritation.

Part B & C: No specific hazard known. May cause transient irritation.

Skin:

Part A: May cause allergic skin reaction based on human experience. May cause skin depigmentation.

Part B: Prolonged or repeated contact may cause drying, cracking, or irritation.

Part C: Low hazard for recommended handling.

Working solution: Causes irritation. May cause allergic skin reaction. May cause skin depigmentation.

Ingestion:

Part A & Working solution: May be harmful if swallowed. 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. Can cause kidney damage and CNS effects following ingestion.

Part B: May be harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Part C: Can cause kidney damage and CNS effects following ingestion.

Acute Toxicity Data:

Part A:

Oral LD-50 (rat): >2000 mg/kg

Part B:

Skin irritation: very slight  
Eye irritation: slight

Data for 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone:

Oral LD-50 (rat): 566 mg/kg  
Oral LD-50 (mouse): 283 mg/kg

Dermal LD-50: >1.0 mg/kg  
 Skin irritation: slight irritation  
 Repeated skin application: slight irritation  
 Skin sensitization: slight  
 Eye irritation: strong irritation

Definitions for the following section(s): LOEL = lowest-observed-effect level,  
 LOAEL = lowest-observed-adverse-effect,  
 NOAEL = no observed-adverse-effect level, NOEL = no-observed-effect level.

#### Subchronic Toxicity Data:

Oral study (12 days, rat): NOEL = 88 mg/kg/day  
 LOEL = 440 mg/kg/day (target organ effects:  
 blood), (target organ effects: testes)

Oral study (28 days, rat): NOEL = 10 mg/kg/day  
 LOEL = 40 mg/kg/day (target organ effects:  
 blood), (target organ effects: testes)

#### Data for glutaraldehyde bis(sodium bisulfite):

Oral LD-50 (rat): >3200 mg/kg  
 Dermal LD-50: >1.0 mg/kg  
 Eye irritation: slight  
 Skin irritation: moderate  
 Skin sensitization: negative

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## 12. ECOLOGICAL INFORMATION

The following properties are ESTIMATED from the components of the  
 preparations. The effects of hydroquinone are considered the most significant  
 in this estimation:

	Part A	Part B	Part C	Working Solution
Potential Toxicity				
Fish LC50 mg/l:	<1	10-100	>100	1-10
Daphnid EC50 mg/l:	<1	>100	>100	1-10
Algal IC50 mg/l:	1-10	Not available	>100	10-100
Organics Readily Degradable (>70%):	Yes (7 days)	Yes (14 days)	Yes (14 days)	Yes (14 days)
Potential Bioaccumulation:	Log Pow <1	Log Pow <1	Log Pow <1	Log Pow <1
COD (approximate g/l):	373	304	1731	131
BOD5 (approximate g/l):	188	127	166	57
Potential Toxicity				
Waste treatment microorganisms EC50 (mg/l):	>100	Not available	>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): hydroquinone: Group 3 - not classifiable; sulfur dioxide, some sulfites, bisulfites and metasilfites Group 3 - not classifiable
- 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:

Part A:

CONTAINS: Potassium sulfite (010117-38-1), Hydroquinone (000123-31-9), Diethylene glycol (000111-46-6), 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

WARNING!

CAN CAUSE KIDNEY DAMAGE AND CNS EFFECTS FOLLOWING INGESTION

CAUSES EYE IRRITATION

MAY CAUSE ALLERGIC SKIN REACTION

MAY BE HARMFUL IF SWALLOWED

Avoid prolonged or repeated breathing of 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.

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.

IN CASE OF FIRE: Use water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol foam

IN CASE OF SPILL: Absorb spill with inert material, then place in a chemical waste container. Flush residual spill or area with water. For large spills, dike for later disposal. Prevent runoff from entering drains, sewers, and streams.

#### Part B:

CONTAINS: Sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF SWALLOWED

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#### Part C:

CONTAINS: Diethylene glycol (000111-46-6)

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Working solution:

CONTAINS: Potassium sulfite (010117-38-1), Hydroquinone (000123-31-9), Diethylene glycol (000111-46-6), 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (013047-13-7)

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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:

IN CASE OF SPILL: Absorb spill with inert material, then place in a chemical waste container. Flush residual spill or area with water. For large spills, dike for later disposal. Prevent runoff from entering drains, sewers, and streams.

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

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



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