

Kodak

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Material Safety Data Sheets**KODAK DEKTOL Developer**

MATERIAL SAFETY DATA SHEET

200000220/F/USA

Approval Date: 06/03/2002

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK DEKTOL Developer

Catalog Number(s): 146 4742 - To Make 25 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: KAN 354524; PCD 108; C-0018.000
Part B: KAN 354569; PCD 382; C-0019.000
Working solution: KAN 471363; C-0017.100-----
2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Part A:

67 Hydroquinone (000123-31-9)
30-35 4-(methylamino)phenol sulfate (000055-55-0)

Part B:

55-60 Sodium carbonate (000497-19-8)
35-40 Sodium sulfite (007757-83-7)
1-5 Sodium hexametaphosphate (010124-56-8)
1-5 Potassium bromide (007758-02-3)

Working solution:

90-95 Water (007732-18-5)
1-5 Sodium carbonate (000497-19-8)
1-5 Sodium sulfite (007757-83-7)
< 1 Hydroquinone (000123-31-9)
< 1 4-(methylamino)phenol sulfate (000055-55-0)-----
3. HAZARDS IDENTIFICATION

Part A:

CONTAINS: Hydroquinone (000123-31-9); 4-(methylamino)phenol sulfate
(000055-55-0)

WARNING!

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
REPEATED EXPOSURE TO DUST MAY CAUSE EYE INJURY
CAUSES SKIN AND EYE IRRITATION
MAY CAUSE ALLERGIC SKIN REACTION
POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURES

HMIS Hazard Ratings:

Health - * 2, Flammability - 1, Reactivity - 0, Personal Protection - F

NFPA Hazard Ratings:

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

Part B:

CONTAINS: Sodium carbonate (000497-19-8); Sodium sulfite (007757-83-7);
Sodium hexametaphosphate (010124-56-8)

WARNING!

MAY CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA
HARMFUL IF SWALLOWED
MAY BE HARMFUL IF INHALED
MAY LIBERATE SULFUR DIOXIDE
DUST IRRITATING TO THE EYES AND RESPIRATORY TRACT
CAUSES SKIN AND EYE IRRITATION

HMIS Hazard Ratings:

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

NFPA Hazard Ratings:

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

Working solution:

CONTAINS: Hydroquinone (000123-31-9); 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 - C

NFPA Hazard Ratings:

Health - 0, 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.

4. FIRST-AID MEASURES

Inhalation:

Part A: If symptomatic, move to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Part B & Working solution: 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:

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: Immediately flush 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.

Ingestion:

Part A: Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Part B: Do NOT induce vomiting. Give victim a glass of water. 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 of methylene blue, one milligram per kilogram of body weight, may be of value.

5. FIRE FIGHTING MEASURES

Extinguishing Media:

Part A: Water spray, carbon dioxide (CO₂), dry chemical

Part B & Working solution: Use appropriate agent for adjacent fire.

Special Fire-Fighting Procedures:

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

Working solution: Wear self-contained breathing apparatus and protective clothing.

Hazardous Combustion Products:

Part A: Carbon dioxide, carbon monoxide, oxides of sulfur, oxides of nitrogen

Part B: None (noncombustible) (see also Hazardous Decomposition Products section)

Working solution: None (noncombustible)

Unusual Fire and Explosion Hazards:

Part A: Powdered material may form explosive dust-air mixtures.

Part B & Working solution: None

6. ACCIDENTAL RELEASE MEASURES

Part A: Collect up and put in a suitable container. Avoid generation of dust. Clean surface thoroughly to remove residual contamination.

Part B: 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.

7. HANDLING AND STORAGE

Personal Precautionary Measures:

Part A & B: Avoid breathing dust. 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.

Working solution: 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:

Part A: Powdered material may form explosive dust-air mixtures. Minimize dust generation and accumulation. Use with adequate ventilation. Keep away from sources of ignition. Refer to NFPA Pamphlet No. 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastics Industries." Keep from contact with oxidizing materials.

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

Storage:

Part A & Working solution: Keep container closed.

Part B: Keep container closed. Keep away from incompatible substances (see

Incompatibility section).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Hydroquinone: 2 mg/m³ TWA
Sulfur dioxide: 2 ppm TWA; 5 ppm STEL

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

Hydroquinone: 2 mg/m³ TWA
Sulfur dioxide: 5 ppm TWA

Ventilation:

Part A: 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.

Part B & Working solution: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, mechanical generation of dusts, heating, drying, etc.

Respiratory Protection: If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Part A: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. Respirator type: Full-face organic vapor/N95.

Part B: 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.

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.

Eye Protection:

Part A: Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.

Part B & Working solution: 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, washing facilities, safety shower

9. PHYSICAL AND CHEMICAL PROPERTIES

Part A

Part B

Working solution

Physical Form:	solid	solid	liquid
Color:	off-white	white	light yellow
Odor:	odorless	odorless	odorless
Specific Gravity (water = 1):	> 1.0	not available	1.04-1.06
Vapor Pressure at 20°C (68°F):	negligible	negligible	24 mbar (18 mm Hg)
Vapor Density (Air = 1):	not applicable	not applicable	0.6
Volatile Fraction by Weight:	negligible	negligible	90-95%
Boiling Point:	not applicable	not applicable	>100°C (>212°F)
Melting Point:	not available	not available	not applicable
Solubility in Water:	appreciable	appreciable	complete
pH:	not applicable	not applicable	10.2-10.4
Flash Point:	not applicable, combustible solid	not applicable, noncombustible solid	none, noncombustible liquid

10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility:

Part A: Strong oxidizing agents

Part B: Strong acids

Working solution: None with common materials and contaminants with which the material may reasonably come into contact.

Hazardous Decomposition Products:

Part B: Sulfur dioxide, carbon dioxide, carbon monoxide

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General:

Part A:

Contains: 4-(methylamino)phenol sulfate. Based on animal data, may cause adverse effects on the following organs/systems: blood, kidney, spleen. 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.

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.

Part B:

Contains: sodium hexametaphosphate. Based on animal data, may cause adverse effects on the following organs/systems: kidney.

Inhalation:

Part A: Harmful if inhaled. Airborne dust irritating.

Part B: May be 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. May cause irritation to the mucous membranes and upper respiratory tract.

Working solution: Expected to be a low hazard for usual industrial or commercial handling by trained personnel. 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:

Part A: Causes irritation. Airborne dust irritating. Repeated exposure to dust may cause eye injury.

Part B & Working solution: Causes irritation.

Skin:

Part A & Working solution: Causes irritation. May cause allergic skin reaction based on human experience. May cause skin depigmentation. Prolonged or repeated contact with aqueous solutions may cause irritation.

Part B: Causes irritation. This material has a low potential to cause allergic skin reactions; however, cases of human skin sensitization have been reported.

Ingestion:

Part A: Harmful if swallowed.

Part B: Harmful if swallowed. May cause burns of the gastrointestinal tract if swallowed. Ingestion of large doses may cause nausea, vomiting, diarrhea, seriously reduce the serum level of ionic calcium. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

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.

Acute Toxicity Data:

Data for Part A:

Oral LD-50 (rat): 50-500 mg/kg
Skin irritation: slight irritation

Toxicity data for the components of this product are contained in individual material safety data sheets which are available on request.

12. ECOLOGICAL INFORMATION

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

	Part A	Part B	Working Solution
Potential Toxicity			
Fish LC50 mg/l:	<1	>100	10-100
Daphnid EC50 mg/l:	<1	10-100	10-100
Algal IC50 mg/l:	1-10	10-100	>100
Organics Readily Degradable (>70%):	Yes (7 days)	Not applicable	Yes (7 days)
Potential Bioaccumulation:	Log Pow 1	Log Pow <1	Log Pow <1
COD (approximate g/g):	1.69	0.04	0.01
BOD5 (approximate g/g):	0.99	0.04	0.01
Potential Toxicity Waste treatment microorganisms EC50 (mg/l):	10-100	>100	>100

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Since emptied containers retain product residue, follow label warnings even after container is emptied.

Part A:

For Small Amounts: Flush to sewer with large amounts of water.

For Large Amounts: Incinerate.

Part B & Working solution: Flush to sewer with large amounts of water.

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.

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): not classifiable - Group 3; (sulfur dioxide, some sulfites, bisulfites and metasulfites): not classifiable - Group 3
- American Conference of Governmental Industrial Hygienists (ACGIH) (hydroquinone): animal carcinogen (A3); (sulfur dioxide): not classifiable as a human carcinogen (A4)
- 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

16. OTHER INFORMATION

US/Canadian Label Statements:

Part A:

CONTAINS: Hydroquinone (000123-31-9); 4-(methylamino)phenol sulfate (000055-55-0)

WARNING!

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
REPEATED EXPOSURE TO DUST MAY CAUSE EYE INJURY
CAUSES SKIN AND EYE IRRITATION
MAY CAUSE ALLERGIC SKIN REACTION

Avoid breathing dust.

Avoid contact with eyes, skin, and clothing.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, induce vomiting immediately 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 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.

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

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

POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURES

Minimize dust generation and accumulation.

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

Part B:

CONTAINS: Sodium carbonate (000497-19-8); Sodium sulfite (007757-83-7); Sodium hexametaphosphate (010124-56-8)

WARNING!

MAY CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA

HARMFUL IF SWALLOWED

MAY BE HARMFUL IF INHALED

MAY LIBERATE SULFUR DIOXIDE

DUST IRRITATING TO THE EYES AND RESPIRATORY TRACT

CAUSES SKIN AND EYE IRRITATION

Avoid breathing dust.

Avoid contact with eyes, skin, and clothing.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, do NOT induce vomiting. Give victim a glass of water. 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.

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: Hydroquinone (000123-31-9); 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

Avoid breathing mist or vapor.

Avoid contact with eyes, skin, and clothing.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, seek medical advice. Never give anything by mouth to an unconscious person. 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.

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.

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

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

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



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