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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK Developer D-76

Catalog Number(s): 123 0895 - To Make 1 quarts (U.S.)
 123 0937 - To Make 1 gallon (U.S.)
 146 4791 - To Make 1 quarts (U.S.)
 146 4809 - To Make 1/2 gallon (U.S.)
 146 4817 - To Make 1 gallon (U.S.)
 146 4825 - To Make 10 gallons (U.S.)
 827 5497 - 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 440508; PCD 5239; C-0027.100
 Working solution: C-0027.110

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Concentrate:

85-90 Sodium sulfite (007757-83-7)
 4 Hydroquinone (000123-31-9)
 1-5 Sodium tetraborate, pentahydrate (012179-04-3)
 1-5 4-(methylamino)phenol sulfate (000055-55-0)
 < 1 Boric anhydride (001303-86-2)

Working solution:

85-90 Water (007732-18-5)
 5-10 Sodium sulfite (007757-83-7)
 1-5 Sodium tetraborate, pentahydrate (012179-04-3)
 < 1 Hydroquinone (000123-31-9)
 < 1 4-(methylamino)phenol sulfate (000055-55-0)

3. HAZARDS IDENTIFICATION

Concentrate:

CONTAINS: Hydroquinone (000123-31-9), 4-(methylamino)phenol sulfate (000055-55-0), Sodium sulfite (007757-83-7), Sodium tetraborate, pentahydrate (012179-04-3)

DANGER!

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

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HMIS Hazard Ratings:
Health - 3 , Flammability - 0, Reactivity - 0, Personal Protection - D

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), Sodium tetraborate, pentahydrate (012179-04-3)

WARNING!
CAUSES EYE IRRITATION OR BURNS
CAUSES SKIN IRRITATION
MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR SWALLOWED
MAY CAUSE ALLERGIC SKIN REACTION

HMIS Hazard Ratings:
Health - 3 , Flammability - 0, Reactivity - 0, Personal Protection - B

NFPA Hazard Ratings:
Health - 1, 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: 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 immediately.

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: 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.

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

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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: 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

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.

7. HANDLING AND STORAGE

Personal Precautionary Measures:

Concentrate: Avoid breathing dust. Do not get in eyes and avoid contact with 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 tightly closed. Keep away from incompatible substances (see Incompatibility section).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Boric anhydride: 10 mg/m3 TWA
Hydroquinone: 2 mg/m3 TWA
Sodium tetraborate, pentahydrate: 1 mg/m3 TWA

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

Boric anhydride: 15 mg/m3 TWA total dust
Hydroquinone: 2 mg/m3 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:

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

Working solution: Wear safety glasses with side shields (or goggles) and a face shield.

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

Physical Form:

Concentrate: Solid
Working solution: Liquid

Color:

Concentrate: Off-white
Working solution: Colorless

Odor:

Concentrate: Odorless
Working solution: Slight

Specific Gravity (water = 1):

Concentrate: Not available
Working solution: 1.08-1.09

Vapor Pressure at 20°C (68°F):

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

Vapor Density (Air = 1):

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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
Solubility in Water:
Concentrate: Appreciable
Working solution: Complete
pH:
Concentrate: Not applicable
Working solution: 8.5
Flash Point:
Concentrate: Not applicable, noncombustible solid
Working solution: None, noncombustible liquid

10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility: Strong acids

Hazardous Decomposition Products:

Concentrate: Carbon dioxide, carbon monoxide, sulfur dioxide

Working solution: Sulfur dioxide

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General:

Concentrate

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

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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: Sodium tetraborate, pentahydrate. The toxicological properties of this material have not been fully evaluated. Health hazard evaluation based on a structurally similar material Based on repeated-dose ingestion studies in animals, may cause adverse reproductive and developmental effects. However, the doses administered were many times those to which humans would normally be exposed.

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: May cause irritation or burns. Airborne dust irritating. Repeated exposure to dust may cause eye injury.

Working solution: May cause irritation.

Skin:

Concentrate: Causes irritation. May cause allergic skin reaction based on human experience. May cause skin depigmentation. May be harmful if absorbed in toxic amounts through damaged or abraded skin.

Working solution: Causes irritation. May cause allergic skin reaction based on human experience. May be harmful if absorbed in toxic amounts through damaged or abraded skin.

Ingestion:

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

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irritation of the gastrointestinal tract.

12. ECOLOGICAL INFORMATION

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

	Concentrate	Working Solution
Potential Toxicity		
Fish LC50 mg/l:	1-10	10-100
Daphnid EC50 mg/l:	1-10	1-10
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):	260	30
BOD5 (approximate g/l):	205	20
Potential Toxicity Waste treatment microorganisms EC50 (mg/l):	Not available	Not available

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.

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): Group 3: not classifiable as to carcinogenicity to humans; sulfur dioxide, some sulfites, bisulfites and metasilfites: Group 3: not classifiable as to carcinogenicity to humans
 - American Conference of Governmental Industrial Hygienists (ACGIH) (hydroquinone): (A3) Confirmed animal carcinogen with unknown relevance to humans
 - National Toxicology Program (NTP): None

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- 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:

Concentrate:

CONTAINS: Hydroquinone (000123-31-9), 4-(methylamino)phenol sulfate (000055-55-0), Sodium sulfite (007757-83-7), Sodium tetraborate, pentahydrate (012179-04-3)

DANGER!
CAUSES EYE IRRITATION OR BURNS
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CAUSES SKIN IRRITATION
MAY LIBERATE SULFUR DIOXIDE
MAY CAUSE ALLERGIC SKIN REACTION
REPEATED EXPOSURE TO DUST MAY CAUSE EYE INJURY

Do not get in eyes and avoid contact with 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 immediately. 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.

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

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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), Sodium tetraborate, pentahydrate (012179-04-3)

WARNING!

CAUSES EYE IRRITATION OR BURNS

MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR SWALLOWED

CAUSES SKIN 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, 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 immediately. 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. 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.

Concentrate:R-2, S-3, F-0, C-0

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