639
Photography

MATERIAL SAFETY DATA SHEET
EASTMAN KODAK COMPANY

Date of Revision: 10/17/85 Kodak Accession Number: 440508

PRODUCT INFORMATION

Product Name: KODAK Developer D-76
Formula: Solid Mixture
Product Use: Chemicals for processing photographic plates
Kodak Catalog Number(s): CAT 146 4817 - To Make 1 Gallon; CAT 123 0895 - To Make 1 Quart; CAT 123 0937 - To Make 1 Gallon; CAT 146 4791 - To Make 1 Quart; CAT 146 4809 - To Make 1/2 Gallon; CAT 146 4825 - To Make 10 Gallons
Mixture Number: 5239
Kodak's Hazard Rating Codes: R: 1 S: 2 F: 0 C: 0

Manufacturer/Supplier:
Eastman Kodak Company
343 State Street
Rochester, New York 14650
USA
For Emergency Information: (716) 722-5151
For other purposes, call the Marketing and Distribution Center in your area.

COMPONENT INFORMATION

	Weight Percent	CAS Number	Accession Number
Sodium sulfite	85-90	7757-83-7	901148
*Hydroquinone**	5	123-31-9	900356
*p-Methylaminophenol sulfate	1-5	55-55-0	900615
Sodium tetraborate, pentahydrate	1-5	1330-43-4	901365

*Principal Hazardous Component(s)

**Chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

PHYSICAL DATA

Appearance and Odor: Yellow powder; odorless
Melting Point: Not available for solid mixtures
Boiling Point: Not available for solid mixtures
Vapor Pressure: Negligible
Evaporation Rate (n-butyl acetate = 1): Negligible
Vapor Density (Air = 1): Not Applicable
Volatile Fraction by Weight: Negligible
Specific Gravity (H2O = 1): Not Available
Solubility in Water (by Weight): Appreciable

GT = Greater than; LT = Less than

FIRE AND EXPLOSION HAZARD

FLASHPOINT: Noncombustible
EXTINGUISHING MEDIA: Use agent appropriate for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Fire or excessive heat may cause production of hazardous decomposition products.

REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY: Acids
HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of sulfur may be present.
HAZARDOUS POLYMERIZATION: Will not occur.

TOXICOLOGICAL PROPERTIES

EXPOSURE LIMITS:
Component: Hydroquinone
ACGIH TLV: 2 mg/3
OSHA PEL: 2 mg/m3

EXPOSURE EFFECTS:
Inhalation: Low hazard for usual industrial handling.

Eyes: Causes irritation.

Skin: Causes irritation. Can cause allergic skin reaction.

PROTECTION AND PREVENTIVE MEASURES

VENTILATION: Good general ventilation should be sufficient.

SKIN AND EYE PROTECTION: Safety glasses with side shields are recommended. Impervious gloves should be worn. The routine use of a non-alkaline (acid) type of skin cleanser and regular cleaning of working surfaces, gloves, etc, will help minimize the possibility of allergic skin reaction.

STORAGE AND DISPOSAL

SPECIAL STORAGE AND HANDLING PERCAUTION: Keep container tightly closed and away from acids.

SPILL, LEAK, AND DISPOSAL PROCEDURES: Flush to an acid-free sewer with large amounts of water. Discharge, treatment, or disposal may be subject to federal, state, or local laws.

FIRST AID

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

Skin: Flush skin with plenty of water and wash with a non-alkaline (acid) type of skin cleanser. If skin irritation or an allergic skin reaction develops, get medical attention.

ENVIRONMENTAL EFFECTS DATA

Some laboratory test data and published data are available for the major components of this chemical formulation, and these data have been used to provide the following estimate of environmental impact: (1-12)

This chemical formulation is expected to have a moderate biological oxygen demand and it may cause oxygen depletion in aquatic systems. It is expected to have a high potential to affect aquatic organisms and secondary waste treatment microorganisms or moderate potential to affect the germination and growth of some plants. The organic components of this chemical formulation are biodegradable and are not expected to persist in the environment. They are not likely to bioconcentrate. The direct instantaneous discharge to a receiving body of water of an amount of this solution which will rapidly produce, by dilution, a final concentration of 0.04 mg/L or less is not expected to cause an adverse environmental effect. After dilution with a large amount of water, followed by secondary waste treatment, the chemicals in this formulation are not expected to have any adverse environmental impact.

TRANSPORTATION

For transportation information regarding this product, please phone the Eastman Kodak Distribution Center nearest you: Rochester, NY (716) 588-9232; Oak Brook, IL (312) 954-6000; Chamblee, GA (404) 455-0123; Dallas, TX (214) 241-1611; Whittier, CA (213) 693-5222; Honolulu, HI (808) 833-1661.

REFERENCES

1. Unpublished data, Health and Environment Laboratories, Eastman Kodak Company, Rochester, New York.

2. Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Second Edition, Van Nostrand Reinhold Company, New York, N.Y., 1983.

3. Battelle's Columbus Laboratories, Water Quality Criteria Data Book - Vol. 3 - Effects of Chemicals on Aquatic Life - Selected Data from the Literature Through 1968, for the U.S. Environmental Protection Agency, Project No. 18050 GWV, Contract No. 68-01-0007, May 1971.

4. National Association of Photographic Manufacturers, Inc. and Hydroscience, Inc., Environmental Effects of Photoprocessing Chemicals, National Association of Photographic Manufacturers, Harrison, New York, 1974, 2 Vols.

5. Kodak Publication J-41, "BOD5 and COD of Photographic Chemicals", Eastman Kodak Co., 1981.

6. Pitter, P., "Determination of Biological Degradability of Organic Substances," Water Res., 10(3), 231-5 (1976).

7. McKee, J.E. and Wolf, H.W., Eds., "Water Quality Criteria," State of California, Publication No. 3-A, 1963.

8. Bringmann, G. and Kuehn, R., "Results of the Damaging Effect of Water Pollutants on Daphnia magna," Z. Wasser Abwasser Forsch., 10(5), 161-6 (1977) (in German).

9. Bringmann, G. and Kuehn, R., "Results of Toxic Action of Water Pollutants on Daphnia magna (Straus) Tested by an Improved Standardized Procedure," Z. Wasser Abwasser Forsch., 15(1), 1-6 (1982) (in German).

10. Juhnke, I. and Luedemann, D., "Results of the Study of 200 Chemical Compounds on Acute Fish Toxicity Using the Golden Orfe Test," Z. Wasser Abwasser Forsch., 11(5), 161-4 (1978) (in German).

11. Wellens, H., "Comparison of the Sensitivity of Brachydanio rerio and Leuciscus idus in the Study of the Toxicity of Fish of Chemical Compounds and Waste Waters," Z. Wasser Abwasser Forsch., 15(2) 49-52 (1982) (in German).

12. Pomona College, Medicinal Chemistry Project, "Chemical Parameter Data Base," Leo, A.J. and Hansch, C., Eds., Seaver Chemistry Laboratory, Claremont, California, June 21, 1985.

==========

PREPARATION INFORMATION

==========

Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York 14650

==========

==========

C-0027.100C
85-0091