MATERIAL SAFETY DATA SHEET

1. Identification of the substance/preparation and of the company/undertaking

Product name: KODAK D-76R Replenisher

Product code: 1464833

Manufacturer: KODAK LIMITED, Acornfield Road, Liverpool, L33 7UF; EASTMAN KODAK COMPANY, 343 State Street, Rochester, New York, 14650

Supplier: EASTMAN KODAK COMPANY, 343 State Street, Rochester, New York, 14650

For Emergency Health, Safety & Environmental Information, call (585) 722-5151 (USA)

For other information or to request an MSDS, call (800) 242-2424.

Synonyms: PCD 5204

2. Hazards identification

CONTAINS: Hydroquinone (123-31-9), Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0), Sodium sulphite (7757-83-7), Sodium tetraborate, pentahydrate (12179-04-3)

WARNING!
MAY CAUSE BLOOD DISORDERS BASED ON ANIMAL DATA
MAY CAUSE CYANOSIS BASED ON ANIMAL DATA
HARMFUL IF INHALED OR SWALLOWED
MAY LIBERATE SULFUR DIOXIDE
DUST, MIST OR VAPOUR 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
MAY BE HARMFUL IF ABSORBED THROUGH SKIN

HMIS II Hazard Ratings:
Health - 2*, Flammability - 0, Reactivity (Stability) - 0

NFPA Hazard Ratings:
Health - 2, Flammability - 0, Instability - 0

NOTE: HMIS II 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. An asterisk (*), in the HMIS II health field, designates potential chronic or target organ hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

3. Composition/information on ingredients

Weight %	Components (CAS-No.)
75 - 80	Sodium sulphite (7757-83-7)
10 - 15	Sodium tetraborate (1330-43-4)

6	Hydroquinone (123-31-9)
1 - 5	Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0)
1 - 3	Pentetic acid, pentasodium salt (140-01-2)
< 1	Boric anhydride (1303-86-2)

4. First aid measures

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

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin: In case of contact, immediately flush 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.

Ingestion: Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Notes to physician:

Treatment: 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: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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

Methods for cleaning up: Flush into sewer with plenty of water. Otherwise, collect up and put in a suitable container. Clean surface thoroughly to remove residual contamination.

7. Handling and storage

Personal precautions: Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Ensure adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: No special technical protective measures required.

Storage: Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section.)

8. Exposure controls / personal protection

Occupational exposure controls

Chemical Name	Regulatory List	Value Type	Value
Sodium tetraborate	ACGIH	Time Weighted Average (TWA):	1 mg/m3
	ACGIH	time weighted average	2 mg/m3
		Form of exposure: Inhalable fraction.	
	ACGIH	Short term exposure limit	6 mg/m3
		Form of exposure: Inhalable fraction.	
Hydroquinone	ACGIH	Time Weighted Average (TWA):	2 mg/m3
	OSHA Z1	PEL:	2 mg/m3
Sulphur dioxide	ACGIH	Time Weighted Average (TWA):	2 ppm
	ACGIH	Short Term Exposure Limit (STEL):	5 ppm
	OSHA Z1	PEL:	5 ppm 13 mg/m3
Boric anhydride	ACGIH	time weighted average	10 mg/m3
	OSHA Z1	Permissible exposure limit	15 mg/m3
		Form of exposure: Total dust.	

Ventilation: Good general ventilation should be used. Ventilation should be sufficient so that applicable occupational exposure limits are not exceeded. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances.

Respiratory protection: 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 29CFR 1910.134 and 29CFR1910.1048.

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

Skin and body protection: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

Recommended Decontamination Facilities: Safety shower, eye wash, washing facilities as appropriate to condition of use.

9. Physical and Chemical Properties

Physical form: solid

Colour: yellow

Odour: odourless

Specific gravity: No data available

Vapour pressure: negligible

Vapor density (air = 1): not applicable

Volatile fraction by weight: negligible

Melting point/range: No data available

Water solubility: appreciable

pH: not applicable

Flash point: not applicable, noncombustible solid

10. Stability and reactivity

Stability: Stable.

Incompatibility: Acids. Contact with strong acids liberates sulphur dioxide.

Hazardous decomposition products: Carbon oxides, sulphur oxides.

Hazardous Polymerization: Will not occur.

11. Toxicological information

Effects of Exposure

General advice:

Contains: Bis(4-hydroxy-N-methylanilinium) sulphate. 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. There is insufficient evidence for classifying hydroquinone as a suspected carcinogenic or mutagenic substance in humans. No increases in cancer rates were observed in an epidemiology study which looked at mortality among more than 800 persons employed primarily in the manufacture of hydroquinone. Carcinogenicity studies in animals were inconclusive. Rats and mice were given hydroquinone by stomach tube or at high concentrations in the diet. Responses were not consistent across route of exposure, species or

sex. The International Agency for Research on Cancer (IARC) has classified hydroquinone in Group 3, i.e., "not classifiable" as a carcinogen. 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 chromosomal effects in test animals in predicting human risk is unclear.

Contains: Sodium tetraborate, pentahydrate. 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: Harmful if inhaled. Airborne dust irritating. May cause irritation to the mucous membranes and upper respiratory tract. In contact with strong acids or if heated, sulphites may liberate sulphur dioxide gas. Sulphur dioxide gas is irritating to the respiratory tract. Some asthmatics or hypersensitive individuals may experience difficult breathing.

Eyes: Causes eye irritation. Airborne dust/mist/vapor irritating. Repeated exposure to dust may cause eye injury.

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

Ingestion: Harmful if swallowed. May cause irritation of the gastrointestinal tract. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Data for Hydroquinone:

Acute Toxicity Data:

- Oral LD50 (rat): 400 mg/kg

12. Ecological information

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

Potential Toxicity:

Fish LC50:	1 - 10 mg/l
Daphnid EC50:	< 1 mg/l
Algal IC50:	10 - 100 mg/l
Waste treatment organisms EC50:	> 100 mg/l
Organics Readily Degradable:	Readily biodegradable
Potential Bioaccumulation:	log Pow < 1
COD (approximate):	< 1 g/g
BOD (approximate):	< 1 g/g

13. Disposal considerations

Discharge, treatment, or disposal is subject to national, state, provincial, or municipal 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.

14. Transport information

Not regulated for all modes of transportation.

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. In Canada: General Shipping Information, call: (416) 766-8233.

15. Regulatory information

U.S. California Prop. 65: none

Carcinogenicity Classification (components present at 0.1% or more):

International Agency for Research on Cancer (IARC): Hydroquinone: 3 (not classifiable as to carcinogenicity to humans), Sulphur dioxide: 3 (Classification not possible from current data.), Sodium sulphite: 3 (Classification not possible from current data.)
American Conference of Governmental Industrial Hygienists (ACGIH): Hydroquinone: Group A3 (Confirmed animal carcinogen with unknown relevance to humans.)
U.S. National Toxicology Program (NTP): none
U.S. Occupational Safety and Health Administration (OSHA): none

Chemical(s) subject to the reporting requirements of U.S. 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:

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Keep container tightly closed.
Avoid breathing dust.
Avoid contact with eyes, skin, and clothing.
Ensure 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. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes.

Notes to physician: 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.

R-2, S-2, F-0, C-0