

MATERIAL SAFETY DATA SHEET

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

Product name: KODAK DEKTOL Developer (Single Powder)

Product code: 1464734

Manufacturer: 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 224

2. Hazards identification

CONTAINS: Hydroquinone (123-31-9), Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0), sodium carbonate, monohydrate (5968-11-6), Sodium sulphite (7757-83-7), Sodium hexametaphosphate (10124-56-8)

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 CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA

LOW PHYSICAL HAZARD FOR USUAL INDUSTRIAL OR COMMERCIAL HANDLING

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.)
50 - 55	sodium carbonate, monohydrate (5968-11-6)

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30 - 35	Sodium sulphite (7757-83-7)
6	Hydroquinone (123-31-9)
1 - 5	Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0)
1 - 5	Sodium hexametaphosphate (10124-56-8)
1 - 5	Potassium bromide (7758-02-3)

4. First aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention.

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 re-use. Destroy or thoroughly clean contaminated shoes.

Ingestion: 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.

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.

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7. Handling and storage

Personal precautions: Avoid breathing dust at concentrations greater than the exposure limits. 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 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
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

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 29 CFR 1910.134.

Eye protection: Wear safety glasses with side shields (or goggles) and a face shield. 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: white

Odour: odourless

Specific gravity: not available

Vapour pressure (at 20.0 °C (68.0 °F)) : negligible

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Vapor density (air = 1): not applicable

Volatile fraction by weight: negligible

Boiling point/range: not applicable

Melting point/range: not available

Water solubility: appreciable

pH: not applicable

Flash point: not applicable, noncombustible solid

10. Stability and reactivity

Stability: Stable

Incompatibility: strong acids.

Hazardous decomposition products: Carbon oxides, sulphur dioxide.

Hazardous Polymerization: Hazardous polymerization does not occur.

11. Toxicological information

Effects of Exposure

General advice:

Contains: Sodium hexametaphosphate. May cause kidney damage based on animal data.

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.

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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 irritation. Airborne dust 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.

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

Acute Toxicity Data:

- Oral LD50 (rat): 500 - 5,000 mg/kg
- Skin irritation: moderate

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
COD (approximate):	< 1 g/g
BOD (approximate):	< 1 g/g

13. Disposal considerations

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

14. Transport information

Not regulated for all modes of transportation.

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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), 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:

CONTAINS: Hydroquinone (123-31-9), Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0), sodium carbonate, monohydrate (5968-11-6), Sodium sulphite (7757-83-7), Sodium hexametaphosphate (10124-56-8)

WARNING!

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CAUSES SKIN AND EYE IRRITATION

MAY CAUSE ALLERGIC SKIN REACTION

MAY CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA

LOW PHYSICAL HAZARD FOR USUAL INDUSTRIAL OR COMMERCIAL HANDLING

Avoid breathing dust.

Avoid contact with eyes, skin, and clothing.

Keep container closed.

Ensure 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

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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.

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.

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

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

Product name: KODAK DEKTOL Developer (Single Powder), Working Solution

Product code: 1464734 - Working Solution

Manufacturer: 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: None.

2. Hazards identification

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

WARNING!

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LOW PHYSICAL HAZARD FOR USUAL INDUSTRIAL OR COMMERCIAL HANDLING

HMIS II Hazard Ratings:

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

NFPA Hazard Ratings:

Health - 1, 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.)
90 - 95	Water (7732-18-5)
1 - 5	Sodium carbonate (497-19-8)
1 - 5	Sodium sulphite (7757-83-7)
< 1	Hydroquinone (123-31-9)
< 1	Bis(4-hydroxy-N-methylanilinium) sulphate (55-55-0)

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4. First aid measures

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

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

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, 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 precautions: Avoid breathing mist or vapour at concentrations greater than the exposure limits. 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

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Chemical Name	Regulatory List	Value Type	Value
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

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. 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).

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: liquid

Colour: light yellow

Odour: odourless

Specific gravity: 1.04 - 1.06

Vapour pressure (at 20.0 °C (68.0 °F)) : 24 mbar (18.0 mm Hg)

Vapor density (air = 1): 0.6

Volatile fraction by weight: 90 - 95 %

Boiling point/range: > 100.0 °C (212.0 °F)

Melting point/range: not applicable

Water solubility: complete

pH: 10.2 - 10.4

Flash point: none, noncombustible liquid

10. Stability and reactivity

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Stability: Stable

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

Hazardous decomposition products: sulphur oxides.

Hazardous Polymerization: Hazardous polymerization does not occur.

11. Toxicological information

Effects of Exposure

Inhalation: Expected to be a low hazard for recommended handling. 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 irritation.

Skin: Causes irritation. May cause allergic skin reaction based on human experience.

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

12. Ecological information

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

Potential Toxicity:

Fish LC50: 10 - 100 mg/l

Daphnid EC50: 10 - 100 mg/l

Algal IC50: > 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

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Discharge, treatment, or disposal may be subject to federal, state, commonwealth, provincial, or local laws. 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. 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), 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: none

16. Other information

US/Canadian Label Statements:

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

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LOW PHYSICAL HAZARD FOR USUAL INDUSTRIAL OR COMMERCIAL HANDLING

Avoid prolonged or repeated breathing of mist or vapour.

Avoid contact with eyes, skin, and clothing.

Ensure 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. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes.

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Keep out of reach of children.

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