

# Material Safety Data Sheet

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

**Product name:** KODAK T-MAX Developer

**Product code:** 1599844

**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.

**Product Use:** photographic processing chemical (developer/activator), For industrial use only.

## 2. Hazards identification

**CONTAINS:** Diethanolamine-sulphur dioxide complex (63149-47-3), Hydroquinone (123-31-9), Sodium metabisulphite (7681-57-4), 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (13047-13-7)

### WARNING!

**HEAT SENSITIVE - CAN DECOMPOSE IF HEATED**

**HARMFUL IF SWALLOWED**

**CAUSES EYE IRRITATION**

**MAY CAUSE ALLERGIC SKIN REACTION**

**CAN CAUSE LIVER AND KIDNEY DAMAGE**

**NFPA Hazard Ratings:** Health - 3, Flammability - 1, Instability - 0

NOTE: NFPA 704 (2007) hazard indexes involves data review and interpretation that may vary among companies. It is intended only for rapid, general identification of the magnitude of the potential hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

## 3. Composition/information on ingredients

Weight %	Components - (CAS-No.)
50 - 60	Water (7732-18-5)
35 - 45	Diethanolamine-sulphur dioxide complex (63149-47-3)
1 - 5	Sodium metabisulphite (7681-57-4)
1 - 5	Hydroquinone (123-31-9)
0.1 - 1	4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (13047-13-7)

## 4. First aid measures

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

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**Eyes:** Hold eyelids apart and 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:** If swallowed, do NOT induce vomiting. Give victim a glass of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

## 5. Fire-fighting measures

**Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers.

**Special Fire-Fighting Procedures:** Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

**Hazardous Combustion Products:** Carbon oxides, nitrogen oxides (NOx), Sulphur oxides, (see also Hazardous Decomposition Products section).

**Unusual Fire and Explosion Hazards:** Elevated temperature can cause decomposition.

## 6. Accidental release measures

Absorb spill with vermiculite or other inert material. 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. Use only with adequate ventilation. Wash thoroughly after handling.

**Prevention of Fire and Explosion:** Keep away from heat and sources of ignition. Keep from contact with oxidizing materials.

**Storage:** Store in cool place. 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 metabisulphite	ACGIH	time weighted average	5 mg/m3
Hydroquinone	ACGIH	time weighted average	2 mg/m3
	OSHA Z1	Permissible exposure limit	2 mg/m3
4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone	EK HPG	Time Weighted Average (TWA):	0.2 mg/m3

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Sulphur dioxide	ACGIH	time weighted average	2 ppm
	ACGIH	Short term exposure limit	5 ppm
	OSHA Z1	Permissible exposure limit	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:** None should be needed. If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. A respirator should be worn if hazardous decomposition products are likely to be or have been released. Respirator type: Acid gas. If respirators are used, a program should be instituted to assure compliance with applicable federal, state, commonwealth, provincial, or local laws and regulations.

**Eye protection:** Wear safety glasses with side shields (or goggles).

**Hand protection:** Wear impervious gloves and protective clothing appropriate for the risk of exposure.

## 9. Physical and chemical properties

**Physical form:** liquid

**Colour:** colourless

**Odour:** amine

**Specific gravity:** > 1

**Vapour pressure:** 24 mbar (18.0 mm Hg)

**Vapour density:** 0.6

**Volatile fraction by weight:** 50 - 60 %

**Boiling point/boilingrange:** > 100.0 °C (> 212.0 °F) (estimated)

**Water solubility:** complete

**pH:** 8.3

**Flash point:** does not flash

## 10. Stability and reactivity

**Stability:** Stable under normal conditions. Safe handling temperatures are dependent on specific conditions of use and are typically substantially below the onset temperature. Consult your technical safety experts.

**Incompatibility:** Strong oxidizing agents, Strong acids.

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**Hazardous decomposition products:** Sulphur oxides, nitrogen oxides (NO<sub>x</sub>).

**Hazardous Polymerization:** Hazardous polymerisation does not occur.

## 11. Toxicological information

### Effects of Exposure

#### General advice:

Contains: Diethanolamine-sulphur dioxide complex. May cause liver damage based on animal data. May cause kidney damage based on animal data.

Contains: Sodium metabisulphite. 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.

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: 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone. May cause adverse reproductive effects such as infertility based on animal data. Based on repeated-dose ingestion studies in animals, this chemical may cause blood, testicular, and adverse reproductive effects.

**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 eye irritation. Airborne dust/mist/vapor irritating.

**Skin:** May cause allergic skin reaction based on human experience. May cause skin depigmentation. Prolonged or repeated contact may cause drying, cracking, or irritation.

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

### Data for Diethanolamine-sulphur dioxide complex (CAS 63149-47-3):

#### Acute Toxicity Data:

- Oral LD50 (male rat): 1,903 mg/kg
- Oral LD50 (female rat): 1,131 mg/kg
- Dermal LD50: >20 ml/kg

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- Dermal LD50 (guinea pig): >20 ml/kg
- Skin irritation: slight
- Skin irritation: no exacerbation (repeated skin application)
- Skin Sensitization: none
- Skin Sensitization (guinea pig): none
- Skin Sensitization (guinea pig): negative
- Eye irritation: slight
- Eye irritation (washed eyes): slight
- Eye irritation (unwashed eyes): slight

### Data for Sodium metabisulphite (CAS 7681-57-4):

#### Acute Toxicity Data:

- Oral LD50 (male rat): 1,900 mg/kg
- Oral LD50 (female rat): 1,130 mg/kg
- Dermal LD50: > 1,000 mg/kg
- Skin irritation: slight
- Skin irritation: moderate (repeated skin application)
- Skin Sensitization: none
- Eye irritation: moderate to strong

Definitions for the following section(s): LOEL =lowest-observed-effect level, LOAEL = lowest-observed-adverse-effect, NOAEL = no observed-adverse-effect level, NOEL =no-observed-effect level.

#### Repeated dose toxicity:

- Oral (14-day, rat): NOEL; > 1105 mg/kg/day

### Data for Hydroquinone (CAS 123-31-9):

#### Acute Toxicity Data:

- Oral LD50 (rat): 400 mg/kg
- Oral LD50 (male rat): 400 mg/kg
- Oral LD50 (male mouse): 100 - 200 mg/kg
- Dermal LD50 (guinea pig): > 1,000 mg/kg
- Dermal absorption rate: 1.1 micrograms (s) / cm<sup>2</sup> / hour
- Skin irritation: slight
- Skin Sensitization (guinea pig): positive
- Eye irritation: moderate

#### Mutagenicity/Genotoxicity Data:

- Salmonella typhimurium assay (Ames test): negative (in presence and absence of activation)
- Chromosomal aberration assay: negative (in absence of activation)
- Chromosomal aberration assay: positive (in presence of activation)
- Sister chromatid exchange (SCE) assay: positive (in presence and absence of activation)

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### Repeated dose toxicity:

- Dermal (17-day, rat): NOEL; 3800 mg/kg/day
- Dermal (17-day): LOEL (Lowest observable effect level); 4800 mg/kg/day

### Developmental Toxicity Data:

- Oral (female rabbit): NOEL for developmental toxicity; 25mg/kg/day

## Data for 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (CAS 13047-13-7):

### Acute Toxicity Data:

- Oral LD50 (rat): 566 mg/kg
- Oral LD50: 283 mg/kg
- Dermal LD50: > 1,000 mg/kg
- Skin irritation: slight
- Skin irritation: slight exacerbation (repeated skin application)
- Skin Sensitization: slight
- Eye irritation: strong irritation
- Eye irritation (unwashed eyes): strong
- Eye irritation (washed eyes): slight to moderate

Definitions for the following section(s): LOEL =lowest-observed-effect level, LOAEL = lowest-observed-adverse-effect, NOAEL = no observed-adverse-effect level, NOEL =no-observed-effect level.

### Repeated dose toxicity:

- Oral (12-day, rat): NOEL; 88 mg/kg/day
- Oral (12-day, rat): LOEL (Lowest observable effect level); 440 mg/kg/day (target organ effects: blood, target organ effects: testes)
- Oral (28-day, rat): NOEL; 10 mg/kg/day
- Oral (28-day, rat): LOEL (Lowest observable effect level); 40 mg/kg/day (target organ effects: blood, target organ effects: testes)

## 12. Ecological information

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

### Potential Toxicity:

Toxicity to fish (LC50):	1 - 10 mg/l
Toxicity to daphnia (EC50):	1 - 10 mg/l
Toxicity to algae (IC50):	10 - 100 mg/l

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Toxicity to other organisms (EC50): > 100 mg/l (sludge)

**Persistence and degradability:** Readily biodegradable.

**Chemical Oxygen Demand (COD):** ca. 712 g/l

**Biochemical Oxygen Demand (BOD):** ca. 612 g/l

### 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.

For more transportation information, go to: [www.kodak.com/go/ship](http://www.kodak.com/go/ship).

### 15. Regulatory information

#### Notification status

Regulatory List	Notification status
INV (CN)	y (positive listing)
PICCS (PH)	y (positive listing)
EINECS	n (Negative listing)
ENCS (JP)	n (Negative listing)
KECI (KR)	n (Negative listing)
AICS	n (Negative listing)
TSCA	n (Negative listing)
DSL	y (positive listing)

A N (Negative listing) indicates one or more component is either not on the public Inventory or is subject to exemption requirements. If additional information is needed contact Kodak.

#### Other regulations

American Conference of Governmental Industrial Hygienists (ACGIH):	none
International Agency for Research on Cancer (IARC):	none
U.S. National Toxicology Program (NTP):	none
U.S. Occupational Safety and Health Administration (OSHA):	none
California Prop. 65:	none
US. Pennsylvania Worker and Community Right-to-Know Law (34	Water, Diethanolamine-sulphur dioxide

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Pa. Code Chap. 301-323):	complex, Sodium metabisulphite, Hydroquinone
US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000):	Nitrilotriacetic acid, trisodium salt
US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5):	Water, Diethanolamine-sulphur dioxide complex, Sodium metabisulphite, Hydroquinone
US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:	Hydroquinone

## 16. Other information

The data below reflects current legislative requirements whereas the product in your possession may carry a different version of the label depending on the date of manufacture.

### US/Canadian Label Statements:

**CONTAINS: Diethanolamine-sulphur dioxide complex (63149-47-3), Hydroquinone (123-31-9), Sodium metabisulphite (7681-57-4), 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone (13047-13-7)**

### WARNING!

**HEAT SENSITIVE - CAN DECOMPOSE IF HEATED  
HARMFUL IF SWALLOWED  
CAUSES EYE IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION  
CAN CAUSE LIVER AND KIDNEY DAMAGE**

Store in a cool place.

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

Avoid contact with eyes, skin, and clothing.

Use only with adequate ventilation.

Wash thoroughly after handling.

**FOR R&D USE ONLY - CONTAINS A COMPONENT NOT ON TSCA INVENTORY**

**FIRST AID:** If symptomatic, move to fresh air. Get medical attention if symptoms occur. Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention. 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. If swallowed, do NOT induce vomiting. Give victim a glass of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

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.



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

**IN CASE OF FIRE:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers.

**IN CASE OF SPILL:** Absorb spill with vermiculite or other inert material. Clean surface thoroughly to remove residual contamination.

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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.

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