

# Safety Data Sheet

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

**Product name:** KODAK RA 2000 Developer and Replenisher

**Product code:** 3568870

**Supplier:** KODAK LIMITED, Hemel One, Boundary Way, Hemel Hempstead, HP2 7YU, Great Britain

IN EMERGENCY, telephone: 0870-2430270. Available during office hours only.

For further information about this product, telephone 0870-2430270 or email kes@kodak.com.

**Synonyms:** F1577

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

## 2. Hazards identification

This Safety Data Sheet conforms to REACH Regulation (EC) 1907/2006.

**Product: Harmful, Dangerous for the environment.** Limited evidence of a carcinogenic effect. Possible risk of irreversible effects. Irritating to eyes. May cause sensitization by skin contact. Very toxic to aquatic organisms.

## 3. Composition/information on ingredients

Weight %	Component	CAS-No.	EINECS-No./ ELINCS No.	Classification
10 - 15	potassium sulphite	10117-38-1	233-321-1	**
5 - 10	2,2' -oxybisethanol	111-46-6	203-872-2	Xn; R22*
5 - 10	Hydroquinone	123-31-9	204-617-8	Xn, N; Carc.Cat.3; Mut.Cat.3; R22, R40, R41, R43, R50, R68*
1 - 5	sodium sulphite	7757-83-7	231-821-4	**
1 - 5	potassium carbonate	584-08-7	209-529-3	Xi; R36/38**
0.1 - 1	4-(hydroxymethyl)-4-methyl-1-phenylpyrazolidin-3-one	13047-13-7	235-920-3	N, Xn; R22, R43, R51/53**
0.1 - < 1	pentasodium (carboxylatomethyl)iminobis(ethylenenitrilo)tetraacetate	140-01-2	205-391-3	Xi, N; R36, R51/53**
0.1 - < 1	sodium bromide	7647-15-6	231-599-9	**

\* Symbol and R Phrase according to EC Annex I

\*\* Substance not listed in EC Annex I

## 4. First aid measures

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**Inhalation:** If inhaled, remove to fresh air. 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 re-use. Destroy or thoroughly clean contaminated shoes.

**Ingestion:** 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 centre immediately.

## 5. Fire-fighting measures

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

**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, Sulphur oxides, (see also Hazardous Decomposition Products sections.)

**Unusual Fire and Explosion Hazards:** None.

## 6. Accidental release measures

**Personal precautions:** See Section 8 for recommendations on the use of personal protective equipment.

**Environmental precautions:** Prevent spillage from entering drains. Absorb spill with vermiculite or other inert absorbant material such as sand or earth, then place in a suitable container for proper disposal. Clean surface thoroughly with water to remove residual contamination.

**Waste disposal:** Contaminated absorbent should be disposed of in accordance with local regulations.

## 7. Handling and storage

**Personal precautions:** Avoid breathing mist or vapour. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

**Prevention of Fire and Explosion:** Keep from contact with oxidizing materials.

**Storage:** Cool conditions (5 - 30°C). Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section.)

**Ventilation:** Match ventilation rates to conditions of use so as not to exceed any applicable exposure limits (see Section 8). Good general ventilation of 10 or more room volumes per hour in the work area is recommended.

## 8. Exposure controls/personal protection

### Occupational exposure controls

Chemical Name	Regulatory List	Value Type	Value
Diethylene glycol	EH40	time weighted average	23 ppm 101 mg/m3
		Short term exposure limit	69 ppm 303 mg/m3

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Hydroquinone		time weighted average	0.5 mg/m <sup>3</sup>
		Short term exposure limit	1.5 mg/m <sup>3</sup>
Diethylene glycol	HSA	time weighted average	23 ppm 100 mg/m <sup>3</sup>
Hydroquinone		time weighted average	0.5 mg/m <sup>3</sup>
Sulphur dioxide		time weighted average	2 ppm 5 mg/m <sup>3</sup>
		Short term exposure limit	5 ppm 13 mg/m <sup>3</sup>

**Ventilation:** Avoid exposure to mists and vapours by mixing solutions in closed vessels and/or under local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions.

**Respiratory protection:** In case of insufficient ventilation wear suitable respiratory equipment.

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

**Skin and body protection:** Using the information provided in Section 2, seek the advice of the glove supplier as to the most suitable glove material. Avoid skin contact when mixing or handling the substance/preparation or a mixture by wearing impervious gloves and protective clothing appropriate to the risk of exposure.

Use chemical resistant gloves. In case of prolonged immersion or frequently repeated contact:

Material	Thickness	Breakthrough time
Nitrile rubber	>= 0.38 mm	> 480 min
Neoprene	>= 0.65 mm	> 240 min
butyl-rubber	>= 0.36 mm	> 480 min

Avoid natural rubber gloves.

The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374. This recommendation applies only to the product stated in the Safety Data Sheet and supplied by us as well as to the purpose specified by us.

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

### 9. Physical and chemical properties

**Physical form:** liquid

**Colour:** clear yellow

**Odour:** odourless

**Specific gravity:** 1.27

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

**Vapour density:** 0.6

**Volatile fraction by weight:** 60 - 65 %

**Boiling point/boiling range:** > 100 °C (212.0 °F)

**Melting point/range:** < 0 °C (32.0 °F)

**Water solubility:** complete

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**pH:** 10.7

**Flash point:** does not flash

## 10. Stability and reactivity

**Stability:** Stable under normal conditions.

**Incompatibility:** Acids, Strong oxidizing agents. Contact with strong acids may liberate sulphur dioxide.

**Hazardous decomposition products:** Sulphur oxides

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

## 11. Toxicological information

### Effects of Exposure

#### General advice:

Contains: Hydroquinone. Hydroquinone has been classified as a Category 3 mutagen and carcinogen by the European Union based on testing of rats and mice given hydroquinone by stomach tube or at high dietary levels. The International Agency for Research on Cancer (IARC) under ranking for cancer potential has classified hydroquinone in Group 3, i.e. "not classifiable" as a carcinogen. In the European Union a Category 3 mutagen attracts the risk phrase R68 "Possible risk of irreversible effects" at concentrations above 1%, and a Category 3 carcinogen attracts the risk phrase R40 "Limited evidence of a carcinogenic effect" at concentrations above 1%. Exposure to products containing such substances should be controlled to below established control limits and special care should be taken with pregnant or breast-feeding women to ensure appropriate controls are in place to control the risk.

**Inhalation:** Expected to be a low hazard for recommended handling. Some asthmatics or hypersensitive individuals may experience difficulty breathing if exposed to aerosols or decomposition products that are not anticipated during normal use.

**Eyes:** Irritating to eyes. Airborne dust/mist/vapor irritating.

**Skin:** May cause sensitization by skin contact. May cause skin depigmentation.

**Ingestion:** May be 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 (CAS 123-31-9):

#### Acute Toxicity Data:

Oral LD50 (rat): 400 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

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### **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)

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:**

- 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 2,2' -oxybisethanol (CAS 111-46-6):**

#### **Acute Toxicity Data:**

Oral LD50 (rat): > 3,200 mg/kg

- Dermal LD50 (rabbit): > 10,000 mg/kg
- Skin irritation: slight to moderate
- Eye irritation: mild

#### **Mutagenicity/Genotoxicity Data:**

Ames test: negative (in presence and absence of activation)

### **Data for potassium sulphite (CAS 10117-38-1):**

#### **Acute Toxicity Data:**

Oral LD50 (rat): > 3,200 mg/kg

- Dermal LD50 (guinea pig): > 20,000 mg/kg
- Skin irritation: slight to moderate

### **Data for sodium sulphite (CAS 7757-83-7):**

#### **Acute Toxicity Data:**

Oral LD50 (rat): > 1,600 mg/kg

- Inhalation LC50 (rat): > 5.5 mg/l / 4 hr
- Skin irritation: none
- Eye irritation: slight; washing palliative

### **Data for 4-(hydroxymethyl)-4-methyl-1-phenylpyrazolidin-3-one (CAS 13047-13-7):**

#### **Acute Toxicity Data:**

Oral LD50 (rat): 566 mg/kg

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

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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)

### Data for potassium carbonate (CAS 584-08-7):

#### Acute Toxicity Data:

Oral LD50 (rat): 1,870 mg/kg

### Data for pentasodium (carboxylatomethyl)iminobis(ethylenitrilo)tetracetate (CAS 140-01-2):

#### Acute Toxicity Data:

Oral LD50 (male rat): 3,200 mg/kg

- Oral LD50 (female rat): 2,263 mg/kg
- Skin Sensitization: none

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 (11 days, male rat): NOEL; 100 mg/kg/day

### Data for sodium bromide (CAS 7647-15-6):

#### Acute Toxicity Data:

Oral LD50 (rat): 3,400 mg/kg

- Dermal LD50 (rabbit): > 2,000 mg/kg
- Skin irritation: none
- Skin Sensitization: none
- Eye irritation: slight

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

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**Persistence and degradability:** Readily biodegradable.

**Chemical Oxygen Demand (COD):** 350 g/l

**Biochemical Oxygen Demand (BOD):** 127 g/l

### 13. Disposal considerations

This information is provided to assist users in the correct disposal of working solutions prepared and used to Kodak specifications.

**Working solution:** Waste material is currently classified as hazardous under Council Directive 91/689/EEC. The European Waste Catalogue Code is 09 01 01 Water based developer and activator. Dispose according to the local regulations or guidelines that apply to the category of waste. Ensure the use of properly authorised waste management companies.

**Product containers:** If thoroughly cleaned, preferably by rinsing at least three times with small quantities of water, waste product packaging may be consigned for recovery or disposal as non hazardous waste. Whenever possible, minimize waste by using the rinsing water to make up the working solution. The European Waste Catalogue Code is 15 01 02 plastic packaging.

Waste product packaging contaminated by residues of hazardous contents should be consigned for disposal as hazardous waste. In this case, the European Waste Catalogue Code is 15 01 10 packaging containing residues of or contaminated by dangerous substances.

### 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
TSCA	Not all listed
DSL	Not all listed
NDSL	None listed
EINECS	Not all listed
ELINCS	None listed
NLP	None listed
AICS	Not all listed
IECS	Not all listed
ENCS	Not all listed
ECI	Not all listed
NZIoC	Not all listed
PICCS	Not all listed

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"Not all listed" 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.

### Labelling:

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.

**pH:** 9 - 12



**Symbol/Indication of Danger:** Xn: Harmful  
N: Dangerous for the environment

**Risk Phrases:** R40: Limited evidence of a carcinogenic effect.  
R68: Possible risk of irreversible effects.  
R36: Irritating to eyes.  
R43: May cause sensitization by skin contact.  
R50: Very toxic to aquatic organisms.

**Safety Phrases:** S24: Avoid contact with skin.  
S36/37: Wear suitable protective clothing and gloves.  
S57: Use appropriate container to avoid environmental contamination.

### 16. Other information

The following is an explanation of the meaning of the Symbol letters and Risk Phrases for the pure substance(s) referred to in Section 2 of this Safety Data Sheet.

Xn: Harmful  
Xi: Irritant  
N: Dangerous for the environment

R22: Harmful if swallowed.  
R36/38: Irritating to eyes and skin.  
R40: Limited evidence of a carcinogenic effect.  
R41: Risk of serious damage to eyes.  
R43: May cause sensitization by skin contact.  
R50: Very toxic to aquatic organisms.  
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
R68: Possible risk of irreversible effects.

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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

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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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