Carestream DENTAL

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Identification of the substance or mixture

Product name: GBX Developer and Replenisher
KODAK GBX Developer and Replenisher
Product code: 4037206
Synonyms PCD 4861

Use of the Substance/Mixture

Product Use: Photographic chemical. Restricted to professional users.

Company/Undertaking Identification

Supplier: Carestream Health Taiwan Limited, 4F-1, No. 129, Sec.2, Zhongshan N. Rd., Zhongshan Dist., Taipei, 10448,Taiwan R.O.C.

For further information, please contact:
E-mail Address - For environment, health and safety information, email: WW-EHS@carestreamhealth.com

Emergency telephone

00801-14-8954

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Acute oral toxicity	Category 4
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 2
Acute aquatic toxicity	Category 1

GHS Label elements, including precautionary statements

DANGER

Hazard statements
H302 - Harmful if swallowed
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H341 - Suspected of causing genetic defects
H351 - Suspected of causing cancer
H400 - Very toxic to aquatic life

Precautionary Statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P363 - Wash contaminated clothing before reuse
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell
P330 - Rinse mouth
P405 - Store locked up
P501 - Dispose of contents/ container to an approved incineration plant

Other hazards which do not result in classification

Contact with strong acids liberates sulfur dioxide.
May cause irritation of respiratory tract
May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination
May cause adverse liver effects
May cause adverse kidney effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Weight %
Water	60-70
Potassium sulfite	5-10
Diethylene glycol	5-10
Hydroquinone	5-10
Sodium sulfite	5-10
Potassium carbonate	1-5
Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]-, pentasodium salt	1-5
Sodium borate	0.1-1

4. FIRST AID MEASURES

Description of necessary first-aid measures

General advice — IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.

Main Symptoms — Coughing and/ or wheezing
Irritation
rash

Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately if symptoms occur.
Skin contact	Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Get medical attention immediately if symptoms occur.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.
Ingestion	If swallowed, call a poison control center or doctor immediately. Do not induce vomiting without medical advice. Clean mouth with water and afterwards drink plenty of water. Never give anything by mouth to an unconscious person.
Protection of First-aiders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Most important symptoms/effects, acute and delayed

Skin contact	May cause skin irritation and/or dermatitis. Prolonged or repeated contact may dry skin and cause irritation.
Eye contact	Irritating to eyes.
Inhalation	No hazard from product as supplied. May cause irritation of respiratory tract. Contact with strong acids liberates sulfur dioxide. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.
Ingestion	Harmful if swallowed. May cause adverse kidney effects. May cause central nervous system effects. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media	Dry chemical, CO_2, water spray or regular foam.
Extinguishing media which shall not be used for safety reasons	Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Special Hazard	Thermal decomposition can lead to release of toxic and corrosive gases/vapors.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters	Wear self-contained breathing apparatus and protective suit.

Other information

Other information

Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. For personal protection see section 8.

Advice for emergency responders
For personal protection see section 8

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Prevent further leakage or spillage if safe to do so.
Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
Clean contaminated surface thoroughly.

Other information

See Section 12 for additional Ecological information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Ensure adequate ventilation. Wash thoroughly after handling.

Prevention of fire and explosion

Keep from contact with oxidizing materials.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Incompatible with oxidizing agents.

Materials to Avoid

Strong oxidizing agents. Acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits

Chemical Name	Taiwan	China	ACGIH TLV	European Union
Hydroquinone	STEL 4 mg/m³	TWA 1 mg/m³ STEL 2 mg/m³	TWA: 1 mg/m³	

Sodium borate			STEL 6 mg/m³ TWA: 2 mg/m³	

Appropriate engineering controls

Engineering Measures Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Individual protection measures, such as personal protective equipment (PPE)

Personal Protective Equipment

General Information If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

Respiratory protection None under normal use conditions. In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit. Wear a positive-pressure supplied-air respirator with full facepiece.

Eye Protection If splashes are likely to occur, wear: Safety glasses with side-shields

Skin and body protection Wear suitable protective clothing.

Hand Protection Impervious gloves

Hygiene measures When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs. Remove and wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state liquid
ph 10.2
Flash point: > 93 °C
Boiling point/boiling range > 100 °C

Odor Odorless
Color light yellow
Autoignition temperature: No information available

Vapor Pressure 24 mbar @ 20 °C
Vapor density 0.6
Density No information available
Water Solubility completely soluble
Melting point/range: No information available
Specific Gravity 1.230
Bulk Density: No information available

10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Contact with strong acids liberates sulfur dioxide.

Conditions to Avoid

Heat, flames and sparks.

Materials to Avoid

Strong oxidizing agents. Acids.

Hazardous Decomposition Products

Carbon oxides, Sulfur oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity Product Information.

Skin contact May cause skin irritation and/or dermatitis. Prolonged or repeated contact may dry skin and cause irritation.

Eye contact Irritating to eyes.

Inhalation No hazard from product as supplied. May cause irritation of respiratory tract. Contact with strong acids liberates sulfur dioxide. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Ingestion Harmful if swallowed. May cause adverse kidney effects. May cause central nervous system effects. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Acute toxicity 10.51% of the mixture consists of ingredient(s) of unknown toxicity

Oral 1,696.28 mg/kg

Dermal 29,760.87 mg/kg

Inhalation

Gas No information available

Mist No information available

Vapor No information available

Acute toxicity - Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	90,000 mg/kg (Rat)		
Diethylene glycol	12565 mg/kg (Rat)	11890 mg/kg (Rabbit)	
Hydroquinone	320 mg/kg (Rat)	> 4800 mg/kg (Rat)	
Sodium sulfite	820 mg/kg (Rat)		22 mg/L (Rat) 1 h 5.5 mg/L (Rat) 4 h
Potassium carbonate	1870 mg/kg (Rat)	>2000 mg/kg (Rabbit)	
Sodium borate	2403 mg/kg (Rat)	2000 mg/kg (Rabbit)	

Chemical Name	Other applicable information
Potassium sulfite	Moderate skin irritation
Diethylene glycol	Mild skin irritation Mild eye irritation Can cause kidney damage and CNS effects following ingestion. Repeated oral exposure to high doses can cause liver damage.
Hydroquinone	Moderate eye irritation Causes sensitization on guinea-pigs. Mild skin irritation Can be absorbed through skin. (1.1 ug/cm2/hr) Negative in bacterial mutagenicity assays. Evidence for mutagenicity (chromosome breakage, sister-chromatid exchanges) in in vivo and in vitro animal studies. 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.
Sodium sulfite	No skin irritation Mild eye irritation
Sodium bromide	Ingestion of bromide salts can cause nausea, vomiting, headache, irritability, delirium, memory loss, decreased appetite, joint pain, hallucinations, stupor, coma, and acne like rash on face, legs, and trunk.
Sodium borate	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.
3-Pyrazolidinone, 4-(hydroxymethyl)-4-methyl-1-phenyl-	Mild skin irritation Skin Sensitization Slight Eye Irritation Strong Based on repeated-dose ingestion studies in animals, this chemical may cause blood, testicular, and adverse reproductive effects.

Aggravated Medical Conditions Central nervous system, Preexisting eye disorders, Skin disorders, Use of alcoholic beverages may enhance toxic effects, Kidney disorders, Respiratory disorders.

Subchronic toxicity

no data available

Chronic toxicity

Chronic toxicity Effects expected to be similar to those seen acutely.
Sensitization May cause sensitization by skin contact.
Neurological effects No information available.
Target Organ Effects Skin, Eyes, Respiratory system, Central nervous system, Kidney, Liver.

CMR Effects

Carcinogenicity Contains a known or suspected carcinogen.

Contains a known or suspected mutagen.

Chemical Name	GHS-Germ cell Mutagenicity	Japan

Hydroquinone	2	

Reproductive toxicity Contains ingredients that are suspected reproductive hazards. However, based on available data the product should not be classified for reproductive effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic organisms

Acute aquatic toxicity Product Information
No information available

Acute aquatic toxicity Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Potassium sulfite		LC50 220 - 460 mg/L Leuciscus idus 96 h	
Diethylene glycol		LC50= 75200 mg/L Pimephales promelas 96 h	EC50 = 84000 mg/L 48 h (Daphnia magna)
Hydroquinone	13.5 mg/L EC50 120 h (Desmodesmus subspicatus) 0.335 mg/L EC50 72 h (Pseudokirchneriella subcapitata)	LC50= 0.044 mg/L Oncorhynchus mykiss 96 h LC50= 0.044 mg/L Pimephales promelas 96 h LC50 0.1 - 0.18 mg/L Pimephales promelas 96 h LC50= 0.17 mg/L Brachydanio rerio 96 h	EC50 = 0.29 mg/L 48 h (Daphnia magna)
Sodium sulfite		LC50 220 - 460 mg/L Leuciscus idus 96 h	LC50 = 330 mg/L 24 h (Psammechinus miliaris)
Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]-, pentasodium salt	2.6 mg/L EC50 72 h (Desmodesmus subspicatus)	LC50> 300 mg/L Pimephales promelas 96 h LC50 1005 - 1250 mg/L Lepomis macrochirus 96 h	EC50 > 500 mg/L 48 h (Daphnia magna)
Sodium borate	158 mg/L EC50 96 h (Desmodesmus subspicatus) 2.6 - 21.8 mg/L EC50 96 h (Pseudokirchneriella subcapitata)	LC50= 340 mg/L Limanda limanda 96 h	LC50 1085 - 1402 mg/L 48 h (Daphnia magna)

Persistence and degradability
No data is available on the product itself. Expected to be readily biodegradable.

Bioaccumulative potential
No information available

Chemical Name	log Pow
Diethylene glycol	-1.98
Hydroquinone	0.5
Sodium sulfite	-4
Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]-, pentasodium salt	-3.05

Mobility in soil
No information available

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste from Residues / Unused Products	Should not be released into the environment. Dispose of in accordance with local regulations.
Contaminated packaging	Do not re-use empty containers. Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

The information given below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions. Please consult the product packaging for further details.

ADR/RID

UN/ID No	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Technical Name	Hydroquinone
Hazard class	9
Packing Group	III
Classification Code	M6
ADR/RID-Labels	9
Special Provisions	274, 335, 601
ADR Hazard Id (Kemmler Number)	90
Limited Quantity	LQ7

IMDG/IMO

UN/ID No	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Technical Name	Hydroquinone
Hazard class	9
Packing Group	III
Marine Pollutant	P
EmS No.	F-A, S-F
Special Provisions	179, 274, 335, 909
Limited quantity DFDA	5 L

ICAO/IATA

UN/ID No	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Technical Name	Hydroquinone
Hazard class	9
Packing Group	III
ERG Code	9L
Special Provisions	A97, A158
Limited quantity DFDA	30 kg G

ADN

UN/ID No	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Technical Name	Hydroquinone
Hazard class	9
Packing Group	III
Classification Code	M6
Special Provisions	274, 335, 601
Limited quantity DFDA	LQ7

TDG

UN/ID No	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Technical Name	Hydroquinone

Hazard class	9
Packing Group	III

For transportation information, go to: http://ship.carestreamhealth.com.

15. REGULATORY INFORMATION

International Inventories

EINECS/ELINCS	Complies
TSCA	Complies
DSL/NDSL	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
NZIoC	Complies

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

16. OTHER INFORMATION

Revision Date	2013-09-03
Revision Note	(M)SDS sections updated

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

End of Material Safety Data Sheet