Material Safety Data Sheet

Issuing Date no data available **Revision date** 2014-06-16 **Version** 1

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

1.1 Product identifier

Product Code: 5016316

Product Name: CARESTREAM DENTAL X-ray Developer

Pure substance/mixture Mixture

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Restricted to professional users. Photographic chemical.
Uses advised against No information available

1.3 Details of the supplier of the safety data sheet

Supplier Carestream Health UK Ltd., 1 Park Lane, Hemel Hempstead, Hertfordshire, HP2 4YG

For further information, please contact:

Product Information +44 (0)870 6000245
E-mail address For environment, health and safety information, email: EMEAEHS@carestream.com

1.4 Emergency telephone number

Emergency telephone CHEMTREC International 1-703-527-3887
CHEMTREC UK +(44)-870-8200418

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008

Serious eye damage/eye irritation	Category 1
Skin sensitisation	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 2
Acute aquatic toxicity	Category 1

Classification according to EU Directives 67/548/EEC or 1999/45/EC
For the full text of the R-phrases mentioned in this Section, see Section 16

Symbol(s)
Xn - Harmful
N - Dangerous for the environment

R-code(s)
Carc. cat. 3;R40 - Muta. cat. 3;R68 - R43 - N;R50

2.2 Label elements

Danger

Contains Hydroquinone

hazard statements
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 - EU (§28, 1272/2008)
P201 - Obtain special instructions before use
P280 - Wear protective gloves/ eye protection/ face protection
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

2.3 OTHER INFORMATION

Unknown acute toxicity 11.5664% of the mixture consists of ingredient(s) of unknown toxicity
Physical-Chemical Properties Contact with strong acids liberates sulphur dioxide.

Environmental properties Should not be released into the environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2. mixtures

Hazardous components

Chemical Name	EC-No	**CAS-No**	**Weight percent**	Classification (67/548)	**Classification according to Regulation (EC) No. 1272/2008 [CLP]**	REACH registration number
Potassium sulfite	Present	10117-38-1	10-15	-	no data available	no data available
Sodium sulfite	Present	7757-83-7	5-10	-	no data available	no data available

Hydroquinone	Present	123-31-9	1-5	Xn; R22 Carc.Cat.3; R40 Xi; R41 R43 N; R50 Muta.Cat.3; R68	Acute Tox. 4 (H302) Eye Dam. 1 (H318) Skin Sens. 1 (H317) Muta. 2 (H341) Carc. 2 (H351) Aquatic Acute 1 (H400)	no data available
Sodium borate	Present	1330-43-4	<2	Repr.Cat.2; R60-61	Repr. 1B (H360FD)	no data available
Potassium hydroxide	Present	1310-58-3	<0.01	Xn; R22 C; R35	Acute Tox. 4 (H302) Skin Corr. 1A (H314)	no data available
Tolutriazole	Present	136-85-6	<0.01	Xn; R22	no data available	no data available

Non-hazardous ingredients

Chemical Name	EC-No	**CAS-No**	**Weight percent**	Classification (67/548)	**Classification according to Regulation (EC) No. 1272/2008 [CLP]**	REACH registration number
Water	Present	7732-18-5	70-80	-	no data available	no data available
Potassium bromide	Present	7758-02-3	1-5	-	no data available	no data available

For the full text of the R-phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice Show this safety data sheet to doctor in attendance.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately if irritation persists.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In the case of skin irritation or allergic reactions see a doctor.

Ingestion If swallowed, do not induce vomiting - seek medical advice. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention immediately if symptoms occur.

Inhalation Move victim to fresh air. Apply artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.

Protection of first-aiders Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms Irritation. Rashes. Itching.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing media which shall not be used for safety reasons
None

5.2 Special hazards arising from the substance or mixture

Special Hazard
Thermal decomposition can lead to release of irritating gases and vapours.

5.3 Advice for fire-fighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes and clothing. Use personal protective equipment.

See Section 12 for additional information.

6.2 Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Dam up. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations (see Section 13). Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Wear personal protective equipment.
Prevention of fire and explosion	No special technical protective measures required.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions	Keep containers tightly closed in a cool, well-ventilated place. Keep at temperatures between 5°C and 30°C.
Materials to avoid	Contact with strong acids liberates sulphur dioxide.

7.3 Specific end uses

Exposure scenario No information available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Limits

Chemical Name	European Union	The United Kingdom	France	Spain	Germany
Hydroquinone 123-31-9		STEL 1.5 mg/m³ TWA 0.5 mg/m³	TWA 2 mg/m³ C3 M3	TWA 2 mg/m³ S+	
Sodium borate 1330-43-4		STEL 3 mg/m³ TWA 1 mg/m³	TWA 1 mg/m³ R2	TWA 2 mg/m³ STEL 6 mg/m³ R(TR1) R(TR2)	
Potassium hydroxide 1310-58-3		STEL 2 mg/m³	STEL 2 mg/m³	STEL 2 mg/m³	
Chemical Name	**Italy**	**Portugal**	**The Netherlands**	**Finland**	**Denmark**
Hydroquinone 123-31-9		TWA 2 mg/m³ C(A3)		TWA 0.5 mg/m³ STEL 2 mg/m³	Ceiling 2 mg/m³
Sodium borate 1330-43-4		TWA 2 mg/m³ STEL 6 mg/m³ C(A4)			TWA 1 mg/m³
Potassium hydroxide 1310-58-3		Ceiling 2 mg/m³		STEL 2 mg/m³ Ceiling 2 mg/m³	Ceiling 2 mg/m³
Chemical Name	**Austria**	**Switzerland**	**Poland**	**Norway**	**Ireland**
Hydroquinone 123-31-9	S** STEL 4 mg/m³ TWA 2 mg/m³ B	S+ H* TWA 2 mg/m³ C3 STEL 2 mg/m³ M3	TWA 1 mg/m³ STEL 2 mg/m³	TWA 0.5 mg/m³ K** A+ STEL 1.5 mg/m³	TWA 0.5 mg/m³
Sodium borate 1330-43-4		TWA 1 mg/m³		TWA 1 mg/m³ STEL 3 mg/m³	TWA 1 mg/m³
Potassium hydroxide 1310-58-3	TWA 2 mg/m³	TWA 2 mg/m³	TWA 0.5 mg/m³ STEL 1 mg/m³	Ceiling 2 mg/m³	STEL 2 mg/m³
Chemical Name	**Sweden**	**Greece**	**Belgium**	**Hungary**	**Czech Republic**
Hydroquinone 123-31-9	LLV 0.5 mg/m³ STV 1.5 mg/m³ S+	TWA 2 mg/m³ STEL 4 mg/m³	TWA 2 mg/m³		TWA 2 mg/m³ Ceiling 4 mg/m³ S* Senzibilizátory
Sodium borate 1330-43-4		TWA 10 mg/m³	TWA 2 mg/m³ STEL 6 mg/m³		
Potassium hydroxide 1310-58-3	LLV 1 mg/m³ CLV 2 mg/m³	TWA 2 mg/m³ STEL 2 mg/m³	Maximum Limit Value 2 mg/m³	STEL 2mg/m³ TWA 2mg/m³	TWA 1 mg/m³ Ceiling 2 mg/m³
Chemical Name	**Luxembourg**	**Russia**	**Estonia**	**Latvia**	**Slovenia**
Hydroquinone 123-31-9		S* MAC 1 mg/m³	Sensibilisaatorid STEL 1.5 mg/m³ TWA 0.5 mg/m³		STEL 2 mg/m³ TWA 2 mg/m³ M3 C3
Potassium bromide 7758-02-3		MAC 3 mg/m³			
Sodium borate 1330-43-4		MAC 2 mg/m³			
Potassium hydroxide 1310-58-3			TWA 2 mg/m³		

Tolutriazole 136-85-6		MAC 5 mg/m³			
Chemical Name	**Slovakia**	**Croatia**	**Turkey**	**Romania**	**Bulgaria**
Hydroquinone 123-31-9	S* TWA 2 mg/m³	TWA 0.5 mg/m³		STEL 2 mg/m³ TWA 1 mg/m³	TWA 2.0 mg/m³
Sodium borate 1330-43-4		TWA 1 mg/m³			TWA 5.0 mg/m³
Potassium hydroxide 1310-58-3		STEL 2 mg/m³		STEL 3 mg/m³ TWA 1 mg/m³	TWA 2.0 mg/m³
Chemical Name	**Lithuania**	**European Union**	**The United Kingdom**	**France**	**Spain**
Hydroquinone 123-31-9	Alergenas+ Mutagenas Kancerogenas TWA 0.5 mg/m³ STEL 1.5 mg/m³				
Tolutriazole 136-85-6	TWA 5 mg/m³				

Biological occupational exposure limits
No information available

Derived No Effect Level No information available
Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure controls

Engineering measures Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

General information These recommendations apply to the product as supplied.

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

Eye protection Tightly fitting safety goggles.

Skin and body protection Wear protective gloves/clothing.

Hand Protection Impervious gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. Avoid natural rubber gloves.

In case of full contact:			
Glove material	Glove thickness	Break through time	Remarks
Nitrile rubber	>= 0.38 mm	> 480 min	
Neoprene	>= 0.65 mm	> 240 min	
butyl-rubber	>= 0.36 mm	> 480 min	

Hygiene measures When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing.

Environmental exposure controls Do not allow material to contaminate ground water system.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State	Liquid	**Odour**	odourless
Colour	colourless	**Odour Threshold**	No information available

Property	**Values**	**Note - Method**
pH	10.6	No information available
Melting point/range:		No information available
Freezing point:		No information available
Boiling point/boiling range	> 100 °C	No information available
Flash point:	Does not flash	No information available
evaporation rate		No information available
Flammability (solid, gas)		No information available
Flammability Limits in Air		No information available
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapour Pressure	24 mbar @ 20 °C	No information available
vapour density	0.6	No information available
specific gravity	1.24	No information available
Relative density		No information available
Water solubility	completely soluble	No information available
Solubility in other solvents		No information available
Partition coefficient: n-octanol/water		No information available
Autoignition Temperature		No information available
Decomposition temperature		No information available
Viscosity:		No information available
Explosive properties	No information available	
Oxidising properties	No information available	

9.2 OTHER INFORMATION

Bulk density: No information available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerisation does not occur.

Contact with strong acids liberates sulphur dioxide.

10.4 Conditions to avoid

To avoid thermal decomposition, do not overheat.

10.5 incompatible materials

Contact with strong acids liberates sulphur dioxide.

10.6 Hazardous decomposition products

Sulphur oxides. Carbon oxides.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Inhalation No known effect based on information supplied.

Eye contact Severely irritating to eyes.

Skin contact May cause sensitisation by skin contact.

Ingestion May be harmful if swallowed.

Unknown acute toxicity 11.5664% of the mixture consists of ingredient(s) of unknown toxicity

Toxicity								
Form of exposure	**Method**	**Species**	**Property**	**Values**	**Units**	**Duration**	**Units**	**Remarks**
Oral		**Rat**	**LD50**	**>2000**	**mg/kg**			

Acute toxicity - Component Information

Chemical Name	Oral LD50	dermal LD50	Inhalation LC50
Sodium sulfite	820 mg/kg (Rat) Oral LD50 Rat 820 mg/kg (Source: IUCLID)		22 mg/L (Rat) 1 h Inhalation LC50 Rat >22 mg/L 1 h (Source: IUCLID)
Hydroquinone	320 mg/kg (Rat) Oral LD50 Rat 320 mg/kg (Source: IUCLID)	> 4800 mg/kg (Rat)	
Sodium borate	2660 mg/kg (Rat) Oral LD50 Rat 2660 mg/kg (Source: IUCLID)	2000 mg/kg (Rabbit) Dermal LD50 Rabbit >2000 mg/kg (Source: IUCLID)	
Potassium hydroxide	214 mg/kg (Rat) Oral LD50 Rat 214 mg/kg (Source: IUCLID)		

Chemical Name	Other applicable information
Potassium sulfite	Moderate skin irritation
Sodium sulfite	No skin irritation Mild eye irritation

Hydroquinone	Moderate eye irritation Causes sensitisation 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.
Potassium 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.
Potassium hydroxide	Severe skin irritation Causes eye burns

Chronic toxicity

Carcinogenicity The European Union classifies hydroquinone, CAS# 123-31-9, as a carcinogen of category hydroquinone, CAS# 123-31-9, . Limited evidence of carcinogenicity in animal studies. The significance of these findings for humans has not been determined.

Chemical Name	European Union	The United Kingdom
Hydroquinone	Carc. 2	

Sensitisation May cause sensitisation of susceptible persons.

Reproductive toxicity Contains a known or suspected reproductive toxin. However, based on available data the product should not be classified for reproductive effects.

Mutagenic effects No specific testing was done on this product. Mutagenic testing of the hazardous ingredient in this product has resulted in some positive mutagenic results.

Target Organ Effects Skin. eyes.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Ecotoxicity effects Very toxic to aquatic organisms.

Product Information
No information available.

Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Hydroquinone	0.335: 72 h Pseudokirchneriella subcapitata mg/L EC50	0.1 - 0.18: 96 h Pimephales promelas mg/L LC50 static 0.044: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.044: 96 h Pimephales promelas mg/L LC50 flow-through 0.17: 96 h Brachydanio rerio mg/L LC50	0.29: 48 h Daphnia magna mg/L EC50
Potassium bromide		30: 96 h Pimephales promelas mg/L LC50 static	
Sodium borate	2.6 - 21.8: 96 h Pseudokirchneriella subcapitata mg/L EC50 static 158: 96 h Desmodesmus subspicatus mg/L EC50	340: 96 h Limanda limanda mg/L LC50	1085 - 1402: 48 h Daphnia magna mg/L LC50

Chronic aquatic toxicity
Product Information
No information available.

Component Information
No information available.

12.2 Persistence and degradability

Readily biodegradable.

Degradation						
Type:	Method	compartment	Sampling time	Units	Result	Units
Chemical oxygen demand (COD)					373	g/l
Biochemical oxygen demand (BOD)					188	g/l

12.3 Bioaccumulative potential

Bioaccumulative potential No information available.

Partition coefficient: n-octanol/water No information available

Chemical Name	log Pow
Sodium sulfite	-4
Hydroquinone	0.5
Potassium hydroxide	0.65 0.83

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

This information is provided to assist users in the correct disposal of working solutions prepared and used to Carestream Health 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.
Waste from residues / unused products	Should not be released into the environment. Dispose of as hazardous waste in compliance with local and national regulations.
Empty 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.
Contaminated 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.
other information	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

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 have 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.

IMDG/IMO

14.1. UN/ID no	UN3082
14.2. Proper shipping name	Environmentally hazardous substance, liquid, n.o.s
Technical Name	Hydroquinone
14.3. Hazard Class	9
14.4. Packing group	III
14.5. Marine pollutant	Hydroquinone
14.6. Special Provisions	274, 335

EmS	F-A, S-F

ADR/RID

14.1. UN/ID no	UN3082
14.2. Proper shipping name	Environmentally hazardous substance, liquid, n.o.s
Technical Name	Hydroquinone
14.3. Hazard Class	9
Subsidiary class	9
14.4. Packing group	III
14.5. Classification code	M6
14.6. Special Provisions	274, 335, 601

ICAO/IATA

14.1. UN/ID no	UN3082
14.2. Proper shipping name	Environmentally hazardous substance, liquid, n.o.s
Technical Name	Hydroquinone
14.3. Hazard Class	9
14.4. Packing group	III
14.5. ERG Code	9L
14.6. Special Provisions	A97, A158

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

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

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

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

15.2 Chemical Safety Assessment

No information available

16. Other information

Full text of R-phrases referred to under sections 2 and 3

R22 - Harmful if swallowed
R40 - Limited evidence of a carcinogenic effect
R68 - Possible risk of irreversible effects
R50 - Very toxic to aquatic organisms
R43 - May cause sensitisation by skin contact
R41 - Risk of serious damage to eyes
R61 - May cause harm to the unborn child
R60 - May impair fertility
R35 - Causes severe burns

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed
H341 - Suspected of causing genetic defects if inhaled
H351 - Suspected of causing cancer if inhaled
H318 - Causes serious eye damage
H317 - May cause an allergic skin reaction
H400 - Very toxic to aquatic life
H314 - Causes severe skin burns and eye damage
H360FD - May damage fertility. May damage the unborn child

Revision date	2014-06-16
Revision Note	Initial Release

Disclaimer

The information provided on this SDS 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.