

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2009

Version 7

Revision: 04.03.2009

1 Identification of substance:

- **Product details:**
- **Trade name: Dental Film Developer part 1**
- **Article number:** 00046, 07046
- **Application of the substance / the preparation**
 Photochemicals
 Developer for X-ray films
 Reserved for industrial and professional use.
- **Manufacturer/Supplier:**
 ADEFO-CHEMIE GmbH
 Justus-von-Liebig-Str. 24-26
 D-63128 Dietzenbach
 Tel.: +49 6074 84239-0
 Fax: +49 6074 84239-63
 E-Mail: service@adefo-chemie.de
 www.adefo-chemie.de
- **Informing department:**
 Tel.: +49 6074 84239-0
 Fax: +49 6074 84239-63
 Competent person according to 1907/2006/EC, Annex II:
 E-Mail: kr@calbe-chemie.de
- **Emergency information:** Tel.: 0700-24112112 (CAL)

2 Hazards identification

- **Hazard designation:**



Xi Irritant

- **Information pertaining to particular dangers for man and environment**
 The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
 R 36 Irritating to eyes.
- **Classification system**
 The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

3 Composition/information on ingredients

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with harmless additions.

- **Dangerous components:**

CAS: 497-19-8	sodium carbonate	Xi; R 36	25-50%
EINECS: 207-838-8			

- **Additional information** For the wording of the listed risk phrases refer to section 16.



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4 First aid measures

- **General information** Instantly remove any clothing soiled by the product.
- **After inhalation** Supply fresh air.
- **After skin contact** Instantly wash with water and soap and rinse thoroughly.
- **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.
- **After swallowing** In case of persistent symptoms consult doctor.
- **Information for doctor** None
- **The following symptoms may occur:** No known symptoms to date.

5 Fire fighting measures

- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents** None
- **Special hazards caused by the material, its products of combustion or resulting gases:**
Can be released in case of fire
Carbon monoxide (CO)
sulphur dioxide (SO₂)
- **Protective equipment:** Do not inhale explosion gases or combustion gases.
- **Additional information** The product is not flammable

6 Accidental release measures

- **Person-related safety precautions:** Wear protective clothing.
- **Measures for environmental protection:**
Do not allow to enter drainage system, surface or ground water.
- **Measures for cleaning/collecting:** Collect mechanically.
- **Additional information:** See Section 13 for information on disposal.

7 Handling and storage

- **Handling**
- **Information for safe handling:** No special precautions necessary if used correctly.
- **Information about protection against explosions and fires:**
No special measures required.
The product is not flammable
- **Storage**
- **Requirements to be met by storerooms and containers:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Store in cool, dry conditions in well sealed containers.
- **Recommended storage temperature:** 5-30°C

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8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the compilation were used as basis.
- **Personal protective equipment**
- **General protective and hygienic measures**
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Take off immediately all contaminated clothing
Do not eat, drink or smoke while working.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes.
- **Breathing equipment:** Not necessary if room is well-ventilated.
- **Protection of hands:**
Protective 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.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**

	Thickness (mm)	Breakthrough time (min)
Nitril rubber	0,38	> 480
Neoprene	0,65	> 240
Butyl rubber	0,36	> 480
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Synthetic gloves
Value for permeation: Level:
≥ 3 (60 min)
- **As protection from splashes gloves made of the following materials are suitable:**
Synthetic gloves
Value for permeation: Level:
≥ 3 (60 min)
- **Not suitable are gloves made of the following materials:** Natural rubber, NR
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

· General Information

Form: Solid.
Colour: Whitish

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Odour:	Not characteristic
· Change in condition Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
· Flash point:	Not applicable
· Self-inflammability:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive.
· Critical values for explosion: Oxidizing properties	None
· Vapour pressure:	Not applicable
· Density	Not applicable
· Solubility in / Miscibility with Water at 20°C:	200 g/l
· pH-value (100 g/l) at 25°C:	12.0
· Viscosity: dynamic:	Not applicable
kinematic:	Not applicable
· Solvent content: Organic solvents:	0.0 %
Water:	0.0 %
· Solids content:	100.0 %

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **Dangerous reactions** Reacts with strong acids
- **Dangerous products of decomposition:** No dangerous decomposition products known

11 Toxicological information

- **Acute toxicity:**
- **Primary irritant effect:**
 - **on the skin:** No irritant effect.
 - **on the eye:** Irritant effect.
- **Sensitization:** No sensitizing effect known.
- **Additional toxicological information:**
This statement was deduced from the properties of the single components.
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
Irritant

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12 Ecological information:

- **Information about elimination (persistence and degradability):** Not determined
- **Behaviour in environmental systems:** Not determined
- **Ecotoxicological effects:** Not determined
- **Acquatic toxicity:** Not determined
- **Behaviour in sewage processing plants:** Not determined

· **General notes:**

At present there are no ecotoxicological assessments.

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

According to the criteria of the EU-classification and labelling "dangerous for environment"(1999/45/EG) the substance/ the product has to be classified as non-hazardous for the environment.

The product does not contain organically bounded halogens (AOX-free).

13 Disposal considerations

- **Product:**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Must be specially treated under adherence to official regulations.

- **European waste catalogue**

09 01 01	water-based developer and activator solutions
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- **Uncleaned packagings:**
- **Recommendation:**
Non contaminated packagings can be used for recycling.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.

14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID-GGVS/E Class:** -

- **Maritime transport IMDG:**
- **IMDG Class:** -

- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** -

- **Transport/Additional information:** Not dangerous according to the above specifications.

15 Regulatory information

- **Designation according to EC guidelines:**
The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

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· **Code letter and hazard designation of product:**



Xi Irritant

· **Risk phrases:**

36 Irritating to eyes.

· **Safety phrases:**

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

· **National regulations**

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information:

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant R-phrases**

36 Irritating to eyes.

· **Recommended restriction of use** No public product, only for commercial use

· **Sources**

applicable EEC directives:

- 1999/45/EC last change 2006/8/EC

- 67/548/EC last change 2004/73/EC (29. ATP)

Internal physical tests, MSDS of the ingredients

· * **Data compared to the previous version altered.**

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1 Identification of substance:

- **Product details:**
- **Trade name:** Dental Film Developer part 2
- **Article number:** 00046, 07046
- **Application of the substance / the preparation**
 Photochemicals
 Photographic developer
 Reserved for industrial and professional use.
- **Manufacturer/Supplier:**
 ADEFO-CHEMIE GmbH
 Justus-von-Liebig-Str. 24-26
 D-63128 Dietzenbach
 Tel.: +49 6074 84239-0
 Fax: +49 6074 84239-63
 E-Mail: service@adefo-chemie.de
www.adefo-chemie.de
- **Informing department:**
 Tel.: +49 6074 84239-0
 Fax: +49 6074 84239-63
 Competent person according to 1907/2006/EC, Annex II:
 E-Mail: kr@calbe-chemie.de
- **Emergency information:** Tel.: 0700-24112112 (CAL)

2 Hazards identification

- **Hazard designation:**
- | | | |
|---|---|---------------------------------|
|  |  | Xn Harmful |
| | | N Dangerous for the environment |

- **Information pertaining to particular dangers for man and environment**
 The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
 R 22 Harmful if swallowed.
 R 40 Limited evidence of a carcinogenic effect.
 R 41 Risk of serious damage to eyes.
 R 43 May cause sensitisation by skin contact.
 R 50 Very toxic to aquatic organisms.
 R 68 Possible risk of irreversible effects.

- **Classification system**
 The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

3 Composition/information on ingredients

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with harmless additions.

- **Dangerous components:**

CAS: 123-31-9	1,4-dihydroxybenzene (hydroquinone)	75-100%
EINECS: 204-617-8	Xn, Xi, N; R 22-40-41-43-68-50	

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CAS: 92-43-3 EINECS: 202-155-1	1-phenyl-3-pyrazolidone Xn, N; R 22-51/53	5.0-10%
CAS: 7681-57-4 EINECS: 231-673-0	disodium disulphite Xn, Xi; R 22-31-41	2.0-5.0%

- **Additional information** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

- **General information**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Instantly remove any clothing soiled by the product.

- **After inhalation** Supply fresh air; consult doctor in case of symptoms.

- **After skin contact** Clean with water and soap. If possible, also wash with polyethylene glycol 400.

- **After eye contact**

Rinse opened eye for several minutes under running water (> 15 min). Then consult doctor.

- **After swallowing**

Rinse out mouth and then drink plenty of water.

Induce vomiting and call for medical help.

- **Information for doctor**

- **The following symptoms may occur:** No known symptoms to date.

5 Fire fighting measures

- **Suitable extinguishing agents**

CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

- **For safety reasons unsuitable extinguishing agents** Water with a full water jet.

- **Special hazards caused by the material, its products of combustion or resulting gases:**

Can be released in case of fire

Carbon monoxide (CO)

Sulphur oxides (SO_x)

- **Protective equipment:**

Do not inhale explosion gases or combustion gases.

Put on breathing apparatus.

6 Accidental release measures

- **Person-related safety precautions:** Wear protective clothing.

- **Measures for environmental protection:**

Do not allow to enter drainage system, surface or ground water.

- **Measures for cleaning/collecting:**

Dispose of contaminated material as waste according to item 13.

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7 Handling and storage

- **Handling**
- **Information for safe handling:** Open and handle container with care.
- **Information about protection against explosions and fires:** No special measures required.
- **Storage**
- **Requirements to be met by storerooms and containers:** Store only in the original container.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Store in cool, dry conditions in well sealed containers.
- **Recommended storage temperature:** 5-30°C
- **Storage class** LGK 13 (VCI-Concept)

8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Components with limit values that require monitoring at the workplace:**

123-31-9 1,4-dihydroxybenzene (hydroquinone)WEL Long-term value: 0.5 mg/m³**7681-57-4 disodium disulphite**WEL Long-term value: 5 mg/m³

- **Additional information:** The lists that were valid during the compilation were used as basis.
- **Personal protective equipment**
- **General protective and hygienic measures**
Keep away from foodstuffs, beverages and food.
Do not eat, drink or smoke while working.
Clean skin thoroughly immediately after handling the product.
Take off immediately all contaminated clothing
Use skin protection cream for preventive skin protection.
Avoid contact with the eyes.
- **Breathing equipment:** Not necessary if room is well-ventilated.
- **Protection of hands:**
Protective 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.
Only use chemical-protective gloves with CE-labelling of category III.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**

	Thickness (mm)	Breakthrough time (min)
Nitril rubber	0,38	> 480
Neoprene	0,65	> 240
Butyl rubber	0,36	> 480
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Synthetic gloves
Value for permeation: Level:
≥ 3 (60 min)

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- **Not suitable are gloves made of the following materials:** Natural rubber, NR
- **Eye protection:** Tightly sealed safety glasses.
- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

· General Information

Form:	Solid.
Colour:	Whitish
Odour:	Not characteristic

· Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined

· **Flash point:** Not applicable

· **Self-inflammability:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive.

· Critical values for explosion:

Oxidizing properties None

· **Density** Not determined

· **Solubility in / Miscibility with Water at 20°C:** 50 g/l

· Viscosity:

dynamic:	Not determined
kinematic:	Not determined

· **Solvent content:**

· **Solids content:** 100 %

10 Stability and reactivity

· Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

· Dangerous reactions

Reacts with strong acids and alkali
Reacts with oxidizing agents

· **Dangerous products of decomposition:** No dangerous decomposition products known

11 Toxicological information

· Acute toxicity:

· LD/LC50 values that are relevant for classification:

123-31-9 1,4-dihydroxybenzene (hydroquinone)

Oral	LD50	320 mg/kg (rat)
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Dermal | LD50 | >900 mg/kg (rat)

- **Primary irritant effect:**
 - **on the skin:** No irritant effect.
 - **on the eye:** Strong irritant with the danger of severe eye injury.
- **Additional toxicological information:**

This statement was deduced from the properties of the single components.
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
Harmful

Hydroquinone has been included in the German "TRGS 905" (Technical Rules for Dangerous Substances/Index of carcinogen and mutagen substances or substances dangerous to reproductive systems), and has been classified as "Category 3" of carcinogen and mutagen substances (3 = category of lowest dangerousness). The according EU committees have not yet evaluated this classification.
- **Sensitisation** May cause sensitisation by skin contact.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

Limited evidence of a carcinogenic effect.
Possible risk of irreversible effects.

12 Ecological information:

- **Information about elimination (persistence and degradability):** Not determined
- **Behaviour in environmental systems:** Not determined
- **Mobility and bioaccumulation potential:** Not determined
- **Ecotoxicological effects:** Not determined
- **Aquatic toxicity:** Not determined
- **Behaviour in sewage processing plants:** Not determined
- **General notes:**

At present there are no ecotoxicological assessments.
Water danger class 3 (German Regulation) (Self-assessment): extremely hazardous for water.
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.
Danger to drinking water if even small quantities leak into soil.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
The product does not contain organically bounded halogens (AOX-free).

13 Disposal considerations

- **Product:**
- **Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Must be specially treated under adherence to official regulations.

- **European waste catalogue**

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- **Uncleaned packagings:**
- **Recommendation:**
Non contaminated packagings can be used for recycling.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

14 Transport information

· **Land transport ADR/RID (cross-border)**



- **ADR/RID-GGVS/E Class:** 9 Miscellaneous dangerous substances and articles.
- **Kemler Number:** 90
- **UN-Number:** UN 3077
- **Packaging group:** III
- **Label** 9
- **Designation of goods:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1,4-dihydroxybenzene (hydroquinone), 1-phenyl-3-pyrazolidone)
- **Remarks:** "Limited quantity" according to chapter 3.4 ADR

· **Maritime transport IMDG:**



- **IMDG Class:** 9
- **UN Number:** UN 3077
- **Label** 9
- **Packaging group:** III
- **EMS Number:** F-A,S-F
- **Marine pollutant:** No
- **Correct technical name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hydroquinone, 1-Phenyl-3-pyrazolidinone)
- **Remarks:** "Limited quantity" according to chapter 3.4 IMDG

· **Air transport ICAO-TI and IATA-DGR:**



- **ICAO/IATA Class:** 9
- **UN/ID Number:** UN 3077
- **Label** 9
- **Packaging group:** III
- **Correct technical name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hydroquinone, 1-Phenyl-3-pyrazolidinone)
- **Remarks:** PAX/CAO 911

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15 Regulatory information

- **Designation according to EC guidelines:**

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

- **Code letter and hazard designation of product:**



Xn Harmful
N Dangerous for the environment

- **Hazard-determining components of labelling:**

1,4-dihydroxybenzene (hydroquinone)

- **Risk phrases:**

22 Harmful if swallowed.
40 Limited evidence of a carcinogenic effect.
41 Risk of serious damage to eyes.
43 May cause sensitisation by skin contact.
50 Very toxic to aquatic organisms.
68 Possible risk of irreversible effects.

- **Safety phrases:**

24 Avoid contact with skin.
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
61 Avoid release to the environment. Refer to special instructions/safety data sheets.

- **National regulations**

- **Information about limitation of use:**

Employment restrictions concerning pregnant and lactating women must be observed.

- **Technical instructions (air):**

Class	Share in %
I	90.4

- **Water hazard class:** Water danger class 3 (Self-assessment): extremely hazardous for water.

16 Other information:

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant R-phrases**

22 Harmful if swallowed.
31 Contact with acids liberates toxic gas.
40 Limited evidence of a carcinogenic effect.
41 Risk of serious damage to eyes.
43 May cause sensitisation by skin contact.
50 Very toxic to aquatic organisms.
51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
68 Possible risk of irreversible effects.

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· **Sources**

applicable EEC directives:

- 1999/45/EC last change 2006/8/EC
 - 67/548/EC last change 2004/73/EC (29. ATP)
- Internal physical tests, MSDS of the ingredients

- * **Data compared to the previous version altered.**

GB