

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

### 1 Identification of substance:

- **Product details:**
- **Trade name: Adefo-Mix-S Developer part 1**
- **Article number:** 05152, 60152
- **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:**



Xn Harmful

- **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 36/38 Irritating to eyes and skin.  
 R 40 Limited evidence of a carcinogenic effect.  
 R 43 May cause sensitisation by skin contact.  
 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)	5.0-10%
EINECS: 204-617-8	Xn, Xi, N; R 22-40-41-43-68-50	
CAS: 111-46-6	2,2'-oxybisethanol	5.0-10%
EINECS: 203-872-2	Xn; R 22	

(Contd. on page 2)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 1)

CAS: 584-08-7 EINECS: 209-529-3	potassium carbonate Xi; R 36/37/38	2.0-5.0%
CAS: 1310-58-3 EINECS: 215-181-3	potassium hydroxide C, Xn; R 22-35	0.5-2.0%

**Additional information**

Main component: water

For the wording of the listed risk phrases refer to section 16.

## 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.  
If skin irritation continues, consult a doctor.
- **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.  
Do not induce vomiting; instantly call for medical help.
- **Information for doctor**
- **The following symptoms may occur:** No known symptoms to date.

## 5 Fire fighting measures

- **Suitable extinguishing agents**  
CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.  
Use fire fighting measures that suit the environment.
- **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  
Sulphur oxides (SO<sub>x</sub>)  
Carbon monoxide (CO)
- **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:** Not required.
- **Measures for environmental protection:**  
Do not allow to enter drainage system, surface or ground water.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of contaminated material as waste according to item 13.

(Contd. on page 3)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 2)

- **Additional information:**  
See Section 8 for information on personal protection equipment.  
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:**  
Keep container tightly sealed.  
Store in a cool place.
- **Recommended storage temperature:** 5-30°C
- **Storage class** LGK 12 (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:**

**111-46-6 2,2'-oxybisethanol**WEL Long-term value: 101 mg/m<sup>3</sup>, 23 ppm**1310-58-3 potassium hydroxide**WEL Short-term value: 2 mg/m<sup>3</sup>**1330-43-4 boric acid, disodium salt**WEL Long-term value: 1 mg/m<sup>3</sup>

- **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  
Wash hands during breaks and at the end of the work.  
Do not eat, drink or smoke while working.  
Avoid contact with the eyes and skin.
- **Breathing equipment:** Not required.
- **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

(Contd. on page 4)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 3)

**Material of gloves**

	Thickness (mm)	Breakthrough time (min)
Nitril rubber	0,38	> 480
Neoprene	0,65	> 240
Butyl rubber	0,36	> 480

**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**

<b>Form:</b>	Fluid
<b>Colour:</b>	Colourless
<b>Odour:</b>	Not characteristic

**Change in condition****Melting point/Melting range:** < 5°C**Boiling point/Boiling range:** > 100°C

<b>Flash point:</b>	Not applicable
<b>Ignition temperature:</b>	345°C
<b>Self-inflammability:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product is not explosive.
<b>Critical values for explosion:</b>	
<b>Oxidizing properties</b>	None
<b>Vapour pressure at 20°C:</b>	23 hPa
<b>Density at 20°C</b>	1.291 g/cm <sup>3</sup>
<b>Solubility in / Miscibility with Water:</b>	miscible
<b>pH-value at 25°C:</b>	11.1
<b>Viscosity:</b>	
<b>dynamic:</b>	Not determined
<b>kinematic:</b>	Not determined
<b>Solvent content:</b>	
<b>Organic solvents:</b>	5.2 %
<b>Water:</b>	61.6 %
<b>Solids content:</b>	33.2 %

GB

(Contd. on page 5)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 4)

## 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **Dangerous reactions**  
Reacts with strong acids  
Reacts with acids releasing sulphur dioxide
- **Dangerous products of decomposition:** None

## 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)

**1310-58-3 potassium hydroxide**

Oral | LD50 | 365 mg/kg (rat)

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Irritant effect.
- **Sensitization:** Sensitization possible by skin contact.

- **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  
Irritant

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
- **Acquatic toxicity:** Not determined
- **Behaviour in sewage processing plants:** Not determined

(Contd. on page 6)



## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 5)

**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.  
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
----------	---

**Uncleaned packagings:****Recommendation:**

Non contaminated packagings can be used for recycling.

Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.

Packagings that cannot be cleaned are to be disposed of in the same manner as the product.  
EAK-No. 15 01 10

**Recommended cleaning agent:** Water, if necessary with cleaning agent.

### 14 Transport information

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

**ADR/RID-GGVS/E Class:** -

**Designation of goods:** -

**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)

(Contd. on page 7)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 5

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 1**

(Contd. of page 6)

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



Xn Harmful

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

1,4-dihydroxybenzene (hydroquinone)

· **Risk phrases:**

36/38 Irritating to eyes and skin.

40 Limited evidence of a carcinogenic effect.

43 May cause sensitisation by skin contact.

68 Possible risk of irreversible effects.

· **Safety phrases:**

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.

· **National regulations**

· **Information about limitation of use:**

Employment restrictions concerning pregnant and lactating women must be observed.

· **Technical instructions (air):**

Class	Share in %
I	7.7
NK	5.2

· **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.

35 Causes severe burns.

36/37/38 Irritating to eyes, respiratory system and skin.

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.

· **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.**



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

## 1 Identification of substance:

- **Product details:**
- **Trade name:** Adefo-Mix-S Developer part 2
- **Article number:** 05152, 60152
- **Application of the substance / the preparation**  
Photochemicals  
Developer for X-ray films  
Reserved for industrial and professional use.
- **Manufacturer/Supplier:**  
ADEF0-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:** void
- **Information pertaining to particular dangers for man and environment** void
- **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: 107-21-1 EINECS: 203-473-3	ethane-1,2-diol	Xn; R 22	5.0-10%
CAS: 68310-08-7	glutardialdehyde(potassiumbisulfite)		20-25%
	Main component: water		60-70%

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

## 4 First aid measures

- **General information** Instantly remove any clothing soiled by the product.
- **After inhalation** Supply fresh air.
- **After skin contact** The product is not skin irritating.

(Contd. on page 2)



## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 2**

(Contd. of page 1)

- **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**  
CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.  
Use fire fighting measures that suit the environment.
- **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 dioxide (SO<sub>2</sub>)
- **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:** Not required.
- **Measures for environmental protection:**  
Do not allow to enter drainage system, surface or ground water.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of contaminated material as waste according to item 13.
- **Additional information:**  
See Section 8 for information on personal protection equipment.  
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 a cool place.
- **Recommended storage temperature:** 5-30°C

(Contd. on page 3)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 2**· **Storage class** LGK 12 (VCI-Concept)

(Contd. of page 2)

## 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:****107-21-1 ethane-1,2-diol**

WEL	Short-term value: 104** mg/m <sup>3</sup> , 40** ppm Long-term value: 10* 52** mg/m <sup>3</sup> , 20** ppm Sk *particulate **vapour
-----	--

· **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.

· **Breathing equipment:** Not required.· **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** Synthetic gloves· **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

## 9 Physical and chemical properties:

· **General Information**

<b>Form:</b>	Fluid
<b>Colour:</b>	Colourless
<b>Odour:</b>	Odourless

· **Change in condition****Melting point/Melting range:** < 5°C**Boiling point/Boiling range:** > 100°C· **Flash point:** Not applicable· **Self-inflammability:** Product is not selfigniting.· **Danger of explosion:** Product is not explosive.· **Critical values for explosion:****Oxidizing properties** None

(Contd. on page 4)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 2**

(Contd. of page 3)

- |  |                         |
|--|-------------------------|
| · <b>Vapour pressure at 20°C:</b>                | 23 mbar                 |
| · <b>Density at 20°C</b>                         | 1.168 g/cm <sup>3</sup> |
| · <b>Solubility in / Miscibility with Water:</b> | miscible                |
| · <b>pH-value at 20°C:</b>                       | 4.1                     |
| · <b>Viscosity:</b>                              |                         |
| dynamic:   | Not determined          |
| kinematic:                                       | Not determined          |
| · <b>Solvent content:</b>                        |                         |
| Organic solvents:                                | 9.5 %                   |
| Water:   | 66.0 %                  |
| · <b>Solids content:</b>                         | 24.5 %                  |

## 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **Dangerous reactions** Reacts with acids releasing sulphur dioxide
- **Dangerous products of decomposition:** None

## 11 Toxicological information

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

### 107-21-1 ethane-1,2-diol

Oral	LD50	5840 mg/kg (rat)
Dermal	LD50	9530 mg/kg (rabbit)

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **on the eye:** No irritant effect.
- **Sensitization:** No sensitizing effect known.
- **Subacute to chronic toxicity:** No known symptoms to date.
- **Additional toxicological information:**  
This statement was deduced from the properties of the single components.  
The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:  
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

## 12 Ecological information:

- **Information about elimination (persistence and degradability):**
- **Other information:** Not determined
- **Behaviour in environmental systems:** Not determined

(Contd. on page 5)

GB



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 2**

(Contd. of page 4)

- **Mobility and bioaccumulation potential:** 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 2 (German Regulation) (Self-assessment): hazardous for water.  
 Do not allow product to reach ground water, water bodies or sewage system.  
 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.

· <b>European waste catalogue</b>	
09 01 01	water-based developer and activator solutions

- **Uncleaned packagings:**
- **Recommendation:**  
 Non contaminated packagings can be used for recycling.  
 Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.  
 Packagings that cannot be cleaned are to be disposed of in the same manner as the product.  
 EAK-No. 15 01 10
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

## 14 Transport information

· <b>Land transport ADR/RID (cross-border)</b>	
· <b>ADR/RID-GGVS/E Class:</b>	-
· <b>Designation of goods:</b>	-
· <b>Maritime transport IMDG:</b>	
· <b>IMDG Class:</b>	-
· <b>Air transport ICAO-TI and IATA-DGR:</b>	
· <b>ICAO/IATA Class:</b>	-

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

GB

(Contd. on page 6)



## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 7

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 2**

(Contd. of page 5)

### 15 Regulatory information

**· Designation according to EC guidelines:**

The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EC" as issued in the last version.

**· National regulations****· Technical instructions (air):**

Class	Share in %
NK	9.5

**· Water hazard class:** Water hazard class 2 (Self-assessment): 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.

**· 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

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

### 1 Identification of substance:

- **Product details:**
- **Trade name:** Adefo-Mix-S Developer part 3
- **Article number:** 05152, 60152
- **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](mailto:service@adefo-chemie.de)  
[www.adefo-chemie.de](http://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](mailto: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 36/38 Irritating to eyes and skin.  
 R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- **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: 872-50-4 EINECS: 212-828-1	N-methyl-2-pyrrolidone	Xi; R 36/38	20-25%
CAS: 92-43-3 EINECS: 202-155-1	1-phenyl-3-pyrazolidone	Xn, N; R 22-51/53	5.0-10%

(Contd. on page 2)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

(Contd. of page 1)

CAS: 25322-68-3

Polyethylenglycol

50-75%

EINECS: 203-473-3

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

## 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.  
If skin irritation continues, consult a doctor.
- **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**  
CO<sub>2</sub>, 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:**  
Formation of poisonous gases during heating or in fires.  
Nitrogen oxides (NO<sub>x</sub>)
- **Protective equipment:** Wear self-contained breathing apparatus.

## 6 Accidental release measures

- **Person-related safety precautions:** Ensure adequate ventilation
- **Measures for environmental protection:**  
Do not allow to enter drainage system, surface or ground water.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of contaminated material as waste according to item 13.
- **Additional information:** See Section 8 for information on personal protection equipment.

## 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.

(Contd. on page 3)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

(Contd. of page 2)

- **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:**
  - Keep container tightly sealed.
  - Store in a cool place.
- **Recommended storage temperature:** 5-30°C
- **Storage class** LGK 12 (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:**

### 872-50-4 N-methyl-2-pyrrolidone

WEL	Short-term value: 309 mg/m <sup>3</sup> , 75 ppm
	Long-term value: 103 mg/m <sup>3</sup> , 25 ppm
	Sk

- **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  
Wash hands during breaks and at the end of the work.  
Do not eat, drink or smoke while working.  
Avoid contact with the eyes and skin.
- **Breathing equipment:** Not required.
- **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)
Chloroprene rubber	0,5	> 480
Nitril rubber	0,35	> 480
Butyl rubber	0,5	> 480
Fluorocarbon rubber	0,4	> 480
PVC	0,5	> 480
- **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

(Contd. on page 4)



# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

(Contd. of page 3)

· **Eye protection:** Safety glasses

## 9 Physical and chemical properties:

### · General Information

<b>Form:</b>	Fluid
<b>Colour:</b>	Light brown
<b>Odour:</b>	Not characteristic

### · Change in condition

<b>Melting point/Melting range:</b>	< 5°C
<b>Boiling point/Boiling range:</b>	> 85°C

· **Flash point:** 106°C· **Ignition temperature:** 270°C· **Self-inflammability:** Product is not selfigniting.· **Danger of explosion:** Product is not explosive.

### · Critical values for explosion:

<b>Lower:</b>	1.3 Vol %
<b>Upper:</b>	9.5 Vol %

· **Vapour pressure at 20°C:** 1 hPa· **Density at 20°C** 1.11 g/cm<sup>3</sup>

### · Solubility in / Miscibility with

<b>Water:</b>	miscible
---------------	----------

· **pH-value at 20°C:** 8.4

### · Viscosity:

<b>dynamic:</b>	Not determined
<b>kinematic:</b>	Not determined

### · Solvent content:

<b>Organic solvents:</b>	23.8 %
<b>Water:</b>	0.7 %

· **Solids content:** 8.9 %

## 10 Stability and reactivity

### · Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

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

## 11 Toxicological information

### · Acute toxicity:

### · Primary irritant effect:

· **on the skin:** Irritant to skin and mucous membranes.

(Contd. on page 5)



## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

(Contd. of page 4)

- **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

### 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
- **Acquatic toxicity:** Not determined
- **Remark:** Harmful to fish
- **Behaviour in sewage processing plants:** Not determined
- **General notes:**  
At present there are no ecotoxicological assessments.  
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.  
Do not allow product to reach ground water, water bodies or sewage system.  
Harmful to aquatic organisms  
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.

· <b>European waste catalogue</b>
-----------------------------------

09 01 01	water-based developer and activator solutions
----------	---

- **Uncleaned packagings:**
- **Recommendation:**  
Non contaminated packagings can be used for recycling.  
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.  
Packagings that cannot be cleaned are to be disposed of in the same manner as the product.  
EAK-No. 15 01 10
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

GB

(Contd. on page 6)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

(Contd. of page 5)

### 14 Transport information

- Land transport ADR/RID (cross-border)
- ADR/RID-GGVS/E Class: -
- Designation of goods: -

- 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)

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



Xi Irritant

- **Risk phrases:**  
36/38 Irritating to eyes and skin.  
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **Safety phrases:**  
41 In case of fire and/or explosion do not breathe fumes.

- **National regulations**

- **Technical instructions (air):**

Class	Share in %
II	0.4
NK	23.4

- **Water hazard class:** Water hazard class 2 (Self-assessment): 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.  
36/38 Irritating to eyes and skin.  
51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **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)

(Contd. on page 7)



**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Printing date 21.10.2009

Version 6

Revision: 21.10.2009

**Trade name: Adefo-Mix-S Developer part 3**

Internal physical tests, MSDS of the ingredients

(Contd. of page 6)

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

GB