SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Revision Date 02.02.2015 Version 14.0

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

1.1 Product identifier
Catalogue No. 101301
Product name Auramine O (C.I. 41000) for microscopy
REACH Registration Number A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No. 2465-27-2

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses In vitro diagnostic reagent, Reagent for analysis
For additional information on uses please refer to the Merck Chemicals portal (www.merckgroup.com).

1.3 Details of the supplier of the safety data sheet
Company Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72
Responsible Department LS-QHC * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number Please contact the regional company representation in your country.

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture
Classification (REGULATION (EC) No 1272/2008)
Acute toxicity, Category 4, Oral, H302
Eye irritation, Category 2, H319
Carcinogenicity, Category 2, H351
Chronic aquatic toxicity, Category 2, H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)
Xn Harmful R22
Xi Irritant R36
Carc.Cat.3 Carcinogenic Category 3 R40
N Dangerous for the environment R51/53

For the full text of the R-phrases mentioned in this Section, see Section 16.
2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word
Warning

Hazard statements
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements
Prevention
P273 Avoid release to the environment.
Response
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.

Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as "... compounds" or "... salts". In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4.

Reduced labelling (≤ 125 ml)

Hazard pictograms

Signal word
Warning

Hazard statements
H351 Suspected of causing cancer.

Precautionary statements
P281 Use personal protective equipment as required.
P308 + P313 IF exposed or concerned: Get medical advice/attention.

Index-No. 612-097-00-2

2.3 Other hazards

None known.

SECTION 3. Composition/Information on ingredients

3.1 Substance

<table>
<thead>
<tr>
<th>Formula</th>
<th>C₁₇H₂₂N₂Cl</th>
<th>C₁₇H₂₂ClN₂ (Hill)</th>
</tr>
</thead>
</table>

The Safety Data Sheets for catalogue items are available at www.merckgroup.com
SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 101301  
Product name Auramine O (C.I. 41000) for microscopy

Index-No. 612-097-00-2  
EC-No. 219-567-2  
Molar mass 303.84 g/mol

Hazardous components (REGULATION (EC) No 1272/2008)

<table>
<thead>
<tr>
<th>Chemical Name (Concentration)</th>
<th>CAS-No.</th>
<th>Registration number</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auramine (&lt;= 100 % )</td>
<td>2465-27-2</td>
<td>*)</td>
<td>Acute toxicity, Category 4, H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye irritation, Category 2, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carcinogenicity, Category 2, H351</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chronic aquatic toxicity, Category 2, H411</td>
</tr>
</tbody>
</table>

*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-statements mentioned in this Section, see Section 16.

Hazardous components (1999/45/EC)

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<thead>
<tr>
<th>Chemical Name (Concentration)</th>
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<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2465-27-2</td>
<td>Carc. Cat.3; R40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Xn, Harmful; R22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Xi, Irritant; R36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N, Dangerous for the environment; R51/53</td>
</tr>
</tbody>
</table>

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

3.2 Mixture
Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures
After inhalation: fresh air. Call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
irritant effects, Cough, Shortness of breath
Methaemoglobinemia with headache, cardiac arrhythmia, drop in blood pressure, dyspnoea, and spasms, key symptom: cyanosis (blue colouration of the blood).

4.3 Indication of any immediate medical attention and special treatment needed
No information available.
SECTION 5. Firefighting measures

5.1 Extinguishing media
   Suitable extinguishing media
   Water, Carbon dioxide (CO2), Foam, Dry powder

   Unsuitable extinguishing media
   For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
   Combustible material
   Development of hazardous combustion gases or vapours possible in the event of fire.
   Fire may cause evolution of:
   nitrogen oxides, Hydrogen chloride gas

5.3 Advice for firefighters
   Special protective equipment for firefighters
   Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by
   keeping a safe distance or by wearing suitable protective clothing.

   Further information
   Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing
   water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
   Advice for non-emergency personnel: Avoid substance contact. Avoid inhalation of dusts. Ensure
   adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an
   expert.

   Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions
   Do not empty into drains.

6.3 Methods and materials for containment and cleaning up
   Cover drains. Collect, bind, and pump off spills.
   Observe possible material restrictions (see sections 7 and 10).
   Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
   Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling
   Advice on safe handling
   Work under hood. Do not inhale substance/mixture.

   Observe label precautions.

   Hygiene measures
   Immediately change contaminated clothing. Apply preventative skin protection. Wash hands and
   face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Tightly closed. Dry.
Recommended storage temperature see product label.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8. Exposure controls/personal protection
8.1 Control parameters

8.2 Exposure controls

Engineering measures
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures
Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection
Safety glasses

Hand protection
full contact:
  Glove material: Nitrile rubber
  Glove thickness: 0.11 mm
  Break through time: > 480 min

splash contact:
  Glove material: Nitrile rubber
  Glove thickness: 0.11 mm
  Break through time: > 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet (full contact) supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment
protective clothing

Respiratory protection
required when dusts are generated.
Recommended Filter type: Filter A-(P3)
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
Environmental exposure controls
Do not empty into drains.

SECTION 9. Physical and chemical properties
9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>solid</td>
</tr>
<tr>
<td>Colour</td>
<td>yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>weak characteristic odour</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>6 - 7</td>
</tr>
<tr>
<td></td>
<td>at 10 g/l</td>
</tr>
<tr>
<td></td>
<td>20 °C</td>
</tr>
<tr>
<td>Melting point</td>
<td>ca. 265 °C</td>
</tr>
<tr>
<td></td>
<td>(decomposition)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flash point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available.</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No information available.</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No information available.</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Water solubility</td>
<td>10 g/l</td>
</tr>
<tr>
<td></td>
<td>at 20 °C</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: 2,98</td>
</tr>
<tr>
<td></td>
<td>(calculated)</td>
</tr>
<tr>
<td></td>
<td>(Lit.) Bioaccumulation is not expected.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No information available.</td>
</tr>
</tbody>
</table>
Explosive properties  Not classified as explosive.
Oxidizing properties  none

**9.2 Other data**
Bulk density  430 kg/m³

**SECTION 10. Stability and reactivity**

**10.1 Reactivity**
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

**10.2 Chemical stability**
The product is chemically stable under standard ambient conditions (room temperature).

**10.3 Possibility of hazardous reactions**
- Violent reactions possible with:
  - Strong oxidizing agents
- Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitrosamines!

**10.4 Conditions to avoid**
Strong heating (decomposition).

**10.5 Incompatible materials**
no information available

**10.6 Hazardous decomposition products**
in the event of fire: See section 5.

**SECTION 11. Toxicological information**

**11.1 Information on toxicological effects**

*Acute oral toxicity*
LD50 Rat: 1.000 mg/kg (External MSDS)

absorption

*Acute inhalation toxicity*

Symptoms: mucosal irritations, Cough, Shortness of breath

*Acute dermal toxicity*
This information is not available.

*Skin irritation*
Rabbit
Result: No irritation
OECD Test Guideline 404

*Eye irritation*
Rabbit
Result: Eye irritation
OECD Test Guideline 405
Causes serious eye irritation.

Sensitisation
This information is not available.

Germ cell mutagenicity
Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: positive
(National Toxicology Program)

Carcinogenicity
This information is not available.

Reproductive toxicity
This information is not available.

Teratogenicity
This information is not available.

CMR effects
Carcinogenicity:
Suspected of causing cancer.

Specific target organ toxicity - single exposure
This information is not available.

Specific target organ toxicity - repeated exposure
This information is not available.

Aspiration hazard
This information is not available.

11.2 Further information
After absorption:
Systemic effects:
Methaemoglobinaemia with headache, cardiac arrhythmia, drop in blood pressure, dyspnoea, and spasms, key symptom: cyanosis (blue colouration of the blood).

Other information
Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.

Further data:
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity
No information available.

12.2 Persistence and degradability
No information available.

12.3 Bioaccumulative potential
Partition coefficient: n-octanol/water
log Pow: 2.98
(calculated)
(Lit.) Bioaccumulation is not expected.

12.4 Mobility in soil
No information available.

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**12.6 Other adverse effects**

**Additional ecological information**

Discharge into the environment must be avoided.

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**SECTION 13. Disposal considerations**

**Waste treatment methods**

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>UN 3077</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 Proper shipping name</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (4,4’-BIS-(DIMETHYLAMINO)-BENZOPHENONIMIDE HYDROCHLORIDE)</td>
</tr>
<tr>
<td>14.3 Class</td>
<td>9</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>III</td>
</tr>
<tr>
<td>14.5 Environmentally hazardous</td>
<td>yes</td>
</tr>
<tr>
<td>14.6 Special precautions for user</td>
<td>yes</td>
</tr>
<tr>
<td>Tunnel restriction code</td>
<td>E</td>
</tr>
<tr>
<td>Packages smaller than or equal to 5 kg / L, not dangerous goods of Class 9</td>
<td></td>
</tr>
</tbody>
</table>

**Inland waterway transport (ADN)**

Not relevant

**Air transport (IATA)**

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>UN 3077</th>
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<td>14.5 Environmentally hazardous</td>
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<tr>
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<tr>
<td>Packages smaller than or equal to 5 kg / L, not dangerous goods of Class 9</td>
<td></td>
</tr>
</tbody>
</table>

**Sea transport (IMDG)**

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>UN 3077</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 Proper shipping name</td>
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</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 101301
Product name Auramine O (C.I. 41000) for microscopy

14.6 Special precautions for user

yes
EmS F-A S-F

Packages smaller than or equal to 5 kg / L, not dangerous goods of Class 9

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard 96/82/EC
Legislation Dangerous for the environment
9b
Quantity 1: 200 t
Quantity 2: 500 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated


Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).

National legislation
Storage class 10 - 13

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.
SECTION 16. Other information

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

H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H411 Toxic to aquatic life with long lasting effects.

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

R22 Harmful if swallowed.
R36 Irritating to eyes.
R40 Limited evidence of a carcinogenic effect.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Training advice
Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms

Signal word
Warning

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P308 + P313 IF exposed or concerned: Get medical advice/attention.

Labelling (67/548/EEC or 1999/45/EC)

Symbol(s)  Xn N Harmful
            Xn Dangerous for the environment
R-phrase(s)  22-36-40-51/53 Harmful if swallowed. Irritating to eyes. Limited evidence of a carcinogenic effect. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s)  36/37-61 Wear suitable protective clothing and gloves. Avoid release to the environment. Refer to special instructions/Safety data sheets.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 101301
Product name Auramine O (C.I. 41000) for microscopy

<table>
<thead>
<tr>
<th>EC-No.</th>
<th>219-567-2</th>
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<tbody>
<tr>
<td>Reduced labeling (≤125 ml)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbol(s)</td>
<td>Xn</td>
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<tr>
<td>R-phrase(s)</td>
<td>22-40</td>
<td></td>
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<tr>
<td>S-phrase(s)</td>
<td>36/37</td>
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<tr>
<td></td>
<td>Harmful</td>
<td>Harmful if swallowed. Limited evidence of a carcinogenic effect.</td>
</tr>
<tr>
<td></td>
<td>Dangerous for the environment</td>
<td>Wear suitable protective clothing and gloves.</td>
</tr>
</tbody>
</table>

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation
This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.