Material Safety Datasheet for DAB Substrate Kit

1 – Identification of the substance / preparation and of the company / undertaking

<table>
<thead>
<tr>
<th>Product Name</th>
<th>DAB Substrate Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Identification</td>
<td>Abcam plc</td>
</tr>
<tr>
<td></td>
<td>330 Cambridge Science Park</td>
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<tr>
<td></td>
<td>Cambridge</td>
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<td></td>
<td>CB4 0FL</td>
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<tr>
<td></td>
<td>UK</td>
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<tr>
<td></td>
<td>Tel: +44 (0)1223 696000</td>
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<tr>
<td></td>
<td>Fax: +44 (0)1223 215 215</td>
</tr>
<tr>
<td>Supplier Identification</td>
<td>Abcam Inc</td>
</tr>
<tr>
<td></td>
<td>1 Kendall Square, Ste 341</td>
</tr>
<tr>
<td></td>
<td>Cambridge, MA 02139-1517</td>
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<tr>
<td></td>
<td>USA</td>
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<tr>
<td></td>
<td>Tel: (617)225-2272 or 888-77-ABCAM (22226)</td>
</tr>
<tr>
<td></td>
<td>(US toll free)</td>
</tr>
<tr>
<td></td>
<td>Fax: (866) 739-9884 or (866) 457-9616 (both US toll free)</td>
</tr>
</tbody>
</table>

2 – Composition / information on hazardous ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Chemical Name</th>
<th>% Conc.</th>
<th>CAS#</th>
<th>EC#</th>
<th>Classification (pure ingredient)</th>
<th>Classification (kit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAB chromogen</td>
<td>DAB</td>
<td>&lt;20% (w/v)</td>
<td>91-95-2</td>
<td>202-110-6</td>
<td>T, Carc. Cat. 2, Mut. Cat. 3, R45-R68</td>
<td>T, Carc. Cat. 2, Mut. Cat. 3, R45-R68</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td></td>
<td>60-100%</td>
<td>57-55-6</td>
<td>200-338-0</td>
<td>Not hazardous</td>
<td>N/A</td>
</tr>
<tr>
<td>DAB substrate hydrogen peroxide solution</td>
<td></td>
<td>&lt;5% (w/v)</td>
<td>7722-84-1</td>
<td>231-765-0</td>
<td>O,C,R5-R8-R20/22-R35</td>
<td>Xi: R41</td>
</tr>
<tr>
<td>Substrate Buffer</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Not hazardous</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Material safety datasheet for DAB (Pure Ingredient)

Synonyms: 3,3’,4,4’-Biphenyltetramine, 3,3’,4-4’-Tetraaminobiphenyl

3 – Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT:

Toxic. May cause cancer. Possible risk of irreversible effects.

4 – First aid measures

General advice Consult a physician. Show this safety data sheet to the doctor in attendance.

Eye Contact Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin contact Flush skin with plenty of soap and water for at least 15 minutes removing contaminated clothing and shoes. Get medical aid.

Inhalation Remove person from exposure and into fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. Get medical aid.

Ingestion Rinse mouth with water and seek medical aid.

5 – Fire fighting measures

Suitable extinguishing media Use water spray, alcohol resistant foam, dry chemical or carbon dioxide

Special protective equipment If necessary wear self-contained breathing apparatus for fire fighting.

for fire-fighters

6 – Accidental release measures

Personal precautions Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe area.
Environmental precautions
Methods and materials for containment and clean up
Prevent further leakage or spillage if safe to do so. Do not allow to enter drains. Pick and arrange disposal without creating dust. Keep in suitable closed containers for disposal.

7 – Handling and Storage
Precautions for safe handling
Avoid formation of dust and aerosols. Avoid exposure – obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for fire prevention.

Conditions for safe storage
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8 – Exposure controls/ Personal Protection
Respiratory Protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P34 (EN 143) respirator cartridges as a back up to engineering controls. If the respirator is the sole means of protection use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Eye Protection
Safety glasses with side-shields conforming to EN166

Skin and body protection
Choose body protection according to the amount and concentration used.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9 – Physical and chemical properties.
Form
Solid

Colour
Grey – purple - brown

10- Stability and Reactivity
Chemical Stability
Stable under recommended storage conditions

Conditions/Materials to avoid
Light/Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions – Carbon oxides, nitrogen oxides (NOx)

11 – Toxicological Information
Acute toxicity
LD50 Oral – mouse – 1,834 mg/kg

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
In vitro tests showed mutagenic effects
Genotoxicity in vitro – rat – Liver
Unscheduled DNA synthesis
Genotoxicity in vivo – mouse – intraperitoneal
Cytogenetic analysis

Carcinogenicity
Rat Tumorigenic agent by RTECS criteria. Skin and Appendages:
- Other: Tumors
Oral

Reproductive Toxicity
No data available

Specific target organ toxicity – single
No data available

exposure
Specific target organ toxicity – repeated exposure
No data available

Aspiration hazard
No data available

Potential health effects

Inhalation
May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion
May be harmful if swallowed.

Skin
May be harmful if absorbed through skin. May cause skin irritation.

Eyes
May cause eye irritation

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

12 – Ecological Information

Toxicity
No data available

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

PBT and vPvB assessment
No data available

Other adverse effects
No data available

13 – Disposal Considerations

Product
Observe all federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14 – Transport information

ADR/RID
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15 – Regulatory Information

Classification and labelling according to EU Directives

Symbol
Toxic, Carc.Cat.2,Mut.Cat.3, R45-R68

R-phrases
45
May cause cancer
68
Possible risk of irreversible effects

16 – Other Information

Key/Legend
ADR/RID = European Agreement of Dangerous Goods by Road/Rail; CAS# = Chemical Abstract Service number; EC# = EC number (EINECS or ELINCS); EEC = European Economic Community; EU= European Union; IATA= International Air Transport Association.

MSDS revised
11/05/10

Disclaimer: The information contained in the Material Safety Datasheet is believed to be accurate but it is the responsibility of the user or supplier to determine the applicability of these data to the formulation of necessary safety precautions.

Abcam shall not be held responsible for any damage resulting from the use of the above product or the information contained in this material safety datasheet.