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

1.1 Product identifier

- Trade name: EM Stain 336 (Uranyl Acetate Alternative)
- Article number: AGR1260D

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

Section staining for Electron Microscopy.

1.3 Details of the supplier of the safety data sheet

Supplier:
Agar Scientific Ltd
Parsonage Lane
Stansted CM24 8GF
United Kingdom
sales@agarscientific.com
Tel: +44 (0) 1279 813 519

Further information obtainable from: Technical Support

1.4 Emergency telephone number: 24 hours: +44 (0)1856 407333

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS07

Signal word Warning

Hazard-determining components of labelling:
- Gadolinium Triacetate
- Samarium Triacetate

Hazard statements
H312 Harmful in contact with skin.

Precautionary statements

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.
P280 Wear protective gloves / protective clothing.
P302+P352 IF ON SKIN: Wash with plenty of water.
P312 Call a POISON CENTER/doctor if you feel unwell.
P321 Specific treatment (see on this label).
P362+P364 Take off contaminated clothing and wash it before reuse.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
SECTION 3: Composition/information on ingredients

- **Description:** A mixture of lanthanum salts, samarium triacetate Sm(CH₃COO)₃ and gadolinium triacetate Gd(CH₃COO)₃ in water base.

- **Dangerous components:**

  | CAS: 10465-27-7 | Samarium Triacetate | 1.5% |
  | EINECS: 233-950-1 | | |
  | CAS: 10587-93-7 | Gadolinium Triacetate | 1.5% |
  | EINECS: 213-034-8 | Lanthanum Triacetate | 1.5% |

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

SECTION 4: First aid measures

- **4.1 Description of first aid measures**

  - **General information:** Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident. Irritant in case of skin contact, eye contact, ingestion or inhalation.

  - **After inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

  - **After skin contact:** Immediately rinse with water. After contact with skin wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing. In case of serious skin contact wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

  - **After eye contact:** Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

  - **After swallowing:** Do not induce vomiting. Loosen tight clothing such as collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

- **4.2 Most important symptoms and effects, both acute and delayed**
  No further relevant information available.

- **4.3 Indication of any immediate medical attention and special treatment needed**
  No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media** Non flammable.
Trade name: EM Stain 336 (Uranyl Acetate Alternative)

- Suitable extinguishing agents:
  Use fire extinguishing methods suitable to surrounding conditions.
  Use methods and extinguishing agents according to surrounding fire.
- 5.2 Special hazards arising from the substance or mixture
  Decomposition product carbon monoxide.
- 5.3 Advice for firefighters
  Protective equipment: No special measures required.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  It is not expected that the container sizes would result in a spill large enough to give concern.
- 6.2 Environmental precautions: Do not allow to enter sewers/surface or ground water.
- 6.3 Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Dispose contaminated material as waste according to item 13.
  Absorb with an inert material and put the spilled material in an appropriate waste disposal.
- 6.4 Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  Keep away from heat. Empty containers do not pose a fire risk; evaporate any residue under a fume hood. Do not breathe gas/fumes/vapour/spray.
  Wear suitable protective clothing. In case of insufficient ventilation wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.
- 7.2 Conditions for safe storage, including any incompatibilities
  Storage:
  Requirements to be met by storerooms and receptacles:
  Information about storage in one common storage facility: Not required.
  Further information about storage conditions: None.
  7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities:
  Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
- 8.1 Control parameters
  Ingredients 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 valid during the making were used as basis.
Trade name: EM Stain 336 (Uranyl Acetate Alternative)

8.2 Exposure controls

- Personal protective equipment:
- General protective and hygienic measures:
  Remove all soiled and contaminated clothing
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.
- Respiratory protection: Vapour respirator.
- Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- Material of gloves
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- Eye protection: Goggles recommended during refilling
- Body protection: Lab coat.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- General Information
- Appearance:
  Form: Liquid
  Colour: According to product specification
  Odour: Characteristic
  Odour threshold: Not determined.
- pH-value at 20 °C: 3.5

- Change in condition
  Melting point/freezing point: Undetermined.
  Initial boiling point and boiling range: Undetermined.

- Flash point: Not applicable.
- Flammability (solid, gas): Not applicable.
- Decomposition temperature: Not determined.
- Auto-ignition temperature: Product is not selfigniting.
- Explosive properties: Product does not present an explosion hazard.
- Explosion limits:
  Lower: Not determined.
  Upper: Not determined.
Trade name: EM Stain 336 (Uranyl Acetate Alternative)

- Vapour pressure: Not determined.
- Density: Not determined.
- Relative density: Not determined.
- Vapour density: Not determined.
- Evaporation rate: Not determined.
- Solubility in / Miscibility with water: soluble in cold water
- Partition coefficient: n-octanol/water: Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Solvent content:
  - Water: 95.5 %
  - VOC (EC): 0.00 %
- Solids content: 0.0 %
- 9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

- 10.1 Reactivity: No further relevant information available.
- 10.2 Chemical stability:
  - Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- 10.3 Possibility of hazardous reactions: No dangerous reactions known.
- 10.4 Conditions to avoid: No further relevant information available.
- 10.5 Incompatible materials: No further relevant information available.
- 10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects:
  - The product may be toxic to lungs, mucous membranes.
  - Acute toxicity: Harmful in contact with skin.
- LD/LC50 values relevant for classification:

  10465-27-7 Samarium Triacetate

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal LD50</td>
<td>50 mg/kg (cat) (intravenous)</td>
</tr>
<tr>
<td></td>
<td>10 mg/kg (mouse) (subcutaneous)</td>
</tr>
</tbody>
</table>

- Skin corrosion/irritation: Slightly hazardous in case of skin contact (permeator).
- Serious eye damage/irritation: Based on available data, the classification criteria are not met.
- Respiratory or skin sensitisation: No data available.
- CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction): Based on available data, the classification criteria are not met.
- Germ cell mutagenicity: Based on available data, the classification criteria are not met.
- Carcinogenicity: Based on available data, the classification criteria are not met.
- Reproductive toxicity: Based on available data, the classification criteria are not met.
- STOT-single exposure: Based on available data, the classification criteria are not met.
- STOT-repeated exposure: Based on available data, the classification criteria are not met.
- Aspiration hazard: Based on available data, the classification criteria are not met.
SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.

- 12.2 Persistence and degradability
  Possibly hazardous short term degradation products are not likely. Long term degradation products unknown.

- 12.3 Bioaccumulative potential
  No further relevant information available.

- 12.4 Mobility in soil
  No further relevant information available.

- Additional ecological information:
  - General notes:
    Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

- 12.6 Other adverse effects
  No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.
    - Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA: Void

- 14.2 UN proper shipping name
  - ADR, IMDG, IATA: Void

- 14.3 Transport hazard class(es)
  - ADR, IMDG, IATA
    - Class: Void

- 14.4 Packing group
  - ADR, IMDG, IATA: Void

- 14.5 Environmental hazards:
  - Marine pollutant: No

- 14.6 Special precautions for user
  - Not applicable.

- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
  - Not applicable.

- UN "Model Regulation": Void
SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I None of the ingredients is listed.
  - REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge and should assist the user with the safe handling of this material when properly applied. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Relevant phrases
  H301 Toxic if swallowed.
  H302 Harmful if swallowed.
  H304 May be fatal if swallowed and enters airways.
  H312 Harmful in contact with skin.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H331 Toxic if inhaled.
  H332 Harmful if inhaled.
  H335 May cause respiratory irritation.
  H371 May cause damage to organs.
  H400 Very toxic to aquatic life.
  H413 May cause long lasting harmful effects to aquatic life.

- Department issuing SDS: Sales department
- Contact:
  sales@agarscientific.com
  Tel: +44 (0) 1279 813 519

- Abbreviations and acronyms:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  IATA: International Air Transport Association
  GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  EINECS: European Inventory of Existing Commercial Chemical Substances
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  VOC: Volatile Organic Compounds (USA, EU)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  Acute Tox. 3: Acute toxicity – Category 3
  Acute Tox. 4: Acute toxicity – Category 4
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
  STOT SE 2: Specific target organ toxicity (single exposure) – Category 2
  STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
  Asp. Tox. 1: Aspiration hazard – Category 1
  Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
  Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4