SECTION 1: IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

I.1 Product identifiers

Product Name : ACS Material Silver Nanoparticles
Brand        : ACS Material LLC
CAS-No.      : 7440-22-4

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

Identified uses : Laboratory chemicals, Manufacturing of substances

1.3 Details of the supplier of the safety data sheet

Company       : ACS MATERIAL LLC
               959 E Walnut St. Suite 100
               Pasadena, CA 91106
               USA
Telephone     : +1 (866)-227-0656
Fax           : +1 (781)-518-0284

1.4 Emergency telephone number

Emergency Phone #: +1 (866)-227-0656

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not Classification according to Regulation (EC) No 1272/2008

2.2 Label elements

Not Classification according to Regulation (EC) No 1272/2008

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Substance name : ACS Material Silver Nanoparticles
CAS-No         : 7440-22-4
EC-No          : 231-131-3
Formula        : Ag
Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Components</th>
<th>Concentration</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>&gt;99.9% (Purified)</td>
<td>7440-22-4</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture
Silver/silver oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.
6.2 Environmental precautions
   Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
   Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
   For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
   **Suitable extinguishing media**
   Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
   For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
   Keep container tightly closed in a dry and well-ventilated place.

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
   **Components with workplace control parameters**
   Contains no substances with occupational exposure limit values

8.2 Exposure controls
   **Appropriate engineering controls**
   General industrial hygiene practice

8.3 Personal protective equipment
   **Eye/face protection**
   Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
   **Skin protection**
   Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
   **Body Protection**
   Impervious clothing recommended. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

1) Appearance
   Form: Powder

2) Odour
   No data available

3) Odour Threshold
   No data available

4) pH
   No data available

5) Melting point/freezing point
   Melting point/range: 960 °C - lit.

6) Initial boiling point and boiling range
   No data available

7) Flash point
   No data available

8) Evaporation rate
   No data available

9) Flammability (solid, gas)
   No data available

10) Upper/lower flammability or explosive limits
    No data available

11) Vapour pressure
    No data available

12) Vapour density
    No data available

13) Relative density
    10,49 g/cm³

14) Water solubility
    No data available

15) Partition coefficient: n- octanol/water
    No data available

16) Auto-ignition temperature
    No data available

17) Decomposition temperature
    No data available

18) Viscosity
    No data available

19) Explosive properties
    No data available

20) Oxidizing properties
    No data available

9.2 Other safety information
    No data available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
    No data available
10.2 Chemical stability
   Stable under recommended storage conditions

10.3 Possibility of hazardous reactions
   No data available

10.4 Conditions to avoid
   No data available

10.5 Incompatible materials
   Strong acids, Strong bases and Oxygen

10.6 Hazardous decomposition products
   Other decomposition products - No data available

   In the event of fire: see section 5.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

   Acute toxicity
   LD50 Oral - Rat - male - > 5.000 mg/kg

   Skin corrosion/irritation
   No data available

   Serious eye damage/eye irritation
   No data available

   Respiratory or skin sensitisation
   No data available

   Germ cell mutagenicity
   No data available

   Carcinogenicity
   Carcinogenicity - Rat - Unreported
   Tumorigenic: Tumors at site or application.
   Carcinogenicity classification not possible from current data.

   IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

   Reproductive toxicity
   No data available

   Specific target organ toxicity - single exposure
   No data available

   Specific target organ toxicity - repeated exposure
   No data available

   Aspiration hazard
   No data available
Additional Information
RTECS: No data available
May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver).

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Bioaccumulative potential
No data available

12.3 Mobility in soil
No data available

12.4 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.5 Other adverse effects
No data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 DOT (US)
Not dangerous goods

14.2 IMDG
Not dangerous goods

14.3 IATA
Not dangerous goods

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION

Disclaimer: ACS Material, LLC believes that the information in this Safety Data Sheet is accurate and represents the best and most current information available to us. ACS Material makes no representations or warranties either express or implied, regarding the suitability of the material for any purpose or the accuracy of the information contained within this document. Accordingly, ACS Material will not be responsible for damages resulting from use of or reliance upon this information.