Section 1. Chemical Product and Company Identification

Product Name: Semi-Sperse® W2000 Aqueous Dispersion

Recommended Use of the Chemical and Restrictions on Use: Used as polishing slurry in the semiconductor industry and other applications.

Information on the Manufacturer/Supplier:

Cabot Microelectronics Corporation (CMC)- United States
870 N. Commons Dr. Aurora, IL 60504, United States
Telephone No.: (MSDS Requests) 630.585.9471, (Technical Information) 630.375.5576, Facsimile No.: 630.585.9976
Emergency Telephone No.: Chemtrec (U.S.) 800.424.9300, Chemtrec (Intl) 703.527.3887, CMC (U.S.) 630.585.9471

Cabot Microelectronics Corporation- Japan
1287-19 Oaza-Kitakoyama, Geino-cho-Tsu-Mie, 514-2213 Japan
Telephone No.: 81.59.266.0120, Facsimile No.: 81.59.266.0121
Emergency Telephone No.: Chemtrec (Intl) 703.527.3887

Cabot Microelectronics Corporation- Singapore
Blk 205, #01-53/54, Woodlands Avenue 9, Singapore 738957
Telephone No.: 65.6511.0550, Facsimile No.: 65.6511.0540
Emergency Telephone No.: Chemtrec (Intl) 703.527.3887

Cabot Microelectronics Corporation- Taiwan
3F-1,No. 22,Chu Pei,Hsin Chu Hsien Taiwan 302,R.O.C
Telephone No.: 886.3.5526666, Facsimile No.: 886.3.5526677
Emergency Telephone No.: Chemtrec (Intl) 703.527.3887

Cabot Microelectronics Corporation- Korea
Sungok bldg. 5F, 4-1, Sunae-dong ,Bundang-gu ,Seongnam-si, Gyeonggi-do
Information Service or Emergency Telephone No.: 031.719.7491, (Facsimile No.) 031.719.7494

Section 2. Hazards Identification

Emergency Overview:
Milky, white slurry.
Caution: May cause skin and eye irritation. Do not breathe dust from dried product.

Potential Environmental Effects: None known.

Routes of Exposure: Eye, Skin.
Eye: May cause irritation to eye.
Skin: May cause irritation to skin.

Ingestion: May be harmful if swallowed.

Inhalation: Due to this material's liquid dispersion state, it is not expected to be a significant inhalation hazard. Dried product may cause irritation to the respiratory tract.

Chronic Effects: No components listed as carcinogens by IARC, NTP, Z List or OSHA.
Teratology: None known.
Reproduction Info.: None known.
Target Organs: None known.
Medical Conditions Aggravated: None known.
## Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>EINECS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, Amorphous</td>
<td>112945-52-5</td>
<td>231-545-4</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Proprietary Ingredients</td>
<td>Proprietary</td>
<td>Proprietary</td>
<td>2%</td>
</tr>
<tr>
<td>De-Ionized Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>&gt;93%</td>
</tr>
</tbody>
</table>

## Section 4. First-Aid Measures

If the substance contacts eyes:
- Immediately flush lightly with plenty of water for at least 15 minutes.
- If symptoms develop seek medical attention.

If the substance contacts skin:
- Flush affected area with water.
- Remove contaminated clothing.
- If symptoms develop seek medical attention.

If the substance is inhaled:
- Remove to fresh air.
- If breathing is difficult, give oxygen.
- If not breathing, give artificial respiration.
- If symptoms develop, seek medical attention.

If the substance is ingested:
- Do not induce vomiting.
- If conscious and alert, rinse mouth with water.
- If symptoms develop seek medical attention.

Most Important Symptoms/Effects (Acute and Delayed): Not available.
First aid and Note to Physicians: Treat symptomatically if present.

## Section 5. Explosion and Fire-fighting Measures

Suitable Extinguishing Media:
- Use extinguishing media for surrounding fire.
- Unsuitable Media: Not Applicable

Specific Hazards Arising From the Chemical:
- Not Applicable

Specific Protective Equipment and Precautions for Fire Fighters:
- Standard personal protective equipment for structural fire fighting.

## Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures:
- Safety glasses or goggles, impervious gloves and protective clothing recommended when handling.
- If spilled material dries, creating airborne dust concentrations that exceed the applicable exposure limit, then an approved respirator for dust/fumes is recommended.

Environment Precautions:
- Do not allow material to surface waters.

Methods and Materials for Containment and Clean-Up:
- Absorb with inert material (e.g., dry sand or earth), then place in chemical waste container.
- Wear appropriate PPE. See Section 8.

## Section 7. Handling and Storage

Precautions for Safe Handling:
- Avoid skin and eye contact.
- Avoid generating aerosols or mists.
- Do not breathe aerosols, mists or dust from dried product.

Conditions for Safe Storage, Including Incompatibilities:
- Keep from freezing.

Hygienic Practices:
- Avoid contact with skin.
- Wash exposed skin frequently.
- Good practices should be followed in regard to work clothing.

## Section 8. Exposure Controls/Personal Protection

Exposure Limits, Biological Limit Values Etc.:
- TLV (U.S.) = 10 mg/m³ total dust for particles not otherwise classified
- PEL (U.S.) = 10 mg/m³ for nuisance dust. 15 mg/m³ for total dust.
- MAK (Germ.) = 4 mg/m³ inhalable dust.
- OES (U.K.) = 6 mg/m³ total inhalable, 2.4 mg/m³ respirable dust.
- Australia (TLV) = 10 mg/m³ total dust containing no asbestos and <1% crystalline silica.
Korea: 10 mg/m³ (total dust)

Appropriate Engineering Controls:
- If operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below exposure limits.

Personal Protective Equipment:
Respiratory Protection:
- None normally needed unless mists or dust are generated.
- An approved air-purifying respirator (APR) for dusts/mists may be appropriate to control exposure. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any circumstances where air-purifying respirators may not provide adequate protection. Use of respirators must include a complete respiratory protection program in accordance with national standards and current best practices.
- The following agencies/organizations approve respirators and/or criteria for respirator programs: U.S.: NIOSH approved under 42 CFR 84 required.
  OSHA (29 CFR 1910.134)
  ANSI Z88.2-1992
  EU: CR592 Guidelines for the Selection and Use of Respiratory Protection.
  UK: BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment.
  HSE Guidance Note HS(G)53 Respiratory Protective Equipment.
Eye protection: Safety glasses with side shields or goggles recommended to prevent eye contact.
Hand protection: Impervious gloves.
Body protection: Wear appropriate clothing to minimize skin contact.

Section 9. Physical and Chemical Properties

Appearance: Milky White Slurry.
Odor: None.
Odor Threshold: Not Applicable.
pH: 2.5.
Melting Point/Freezing Point: 0°C / 32°F.
Initial Boiling Point and Boiling Range: 100°C / 212°F.
Flash Point: Not Applicable.
Evaporation Rate: Same as Water.
Flammability (Solid, Gas): Not Applicable.
Upper/Lower Flammability or Explosive Limits: Not Applicable.
Vapor Pressure: Same as Water.
Solubility (Water): Dispersible.
Vapor Density: Same as Water.
Specific Density (Gravity): 1.027-1.033 @ 25°C
Partition Coefficient- N-Octanol/Water: Not Applicable.
Auto-Ignition Temperature: Not Applicable.
Decomposition Temperature: Not Available.
Viscosity: Not Determined.

Section 10. Stability and Reactivity

Chemical Stability: Stable.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Freezing conditions.
Incompatible Materials: None.
Hazardous Decomposition Products: Nitrogen oxides, CO, CO₂ gases.

Section 11. Toxicological Information

Information on the Likely Routes of Exposure:
- Acute Inhalation Toxicity: Due to this material’s liquid dispersion state, it is not expected to be a significant inhalation hazard. Dried product may cause irritation to the respiratory tract.
- Acute Oral Toxicity: LD₅₀ >5050 mg/kg (EPA Guideline No. 81-1). May be harmful if swallowed.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Not available

Delayed and Immediate Effects and Chronic Effects from Short and Long Term Exposure:

Immediate Effects
- Acute Toxicity: Not available.
- Skin Corrosion/Irritation: Skin irritation.
- Serious Eye Damage/Irritation: Eye irritation.
- Respiratory Sensitization: Not available.
- Skin Sensitization: Not available.
- Carcinogenicity: Not available. No components listed as carcinogens by IARC, NTP, Z List or OSHA.
- Germ Cell Mutagenicity: Not available.
- Reproductive Toxicity: Not available.
  - STOST (Single Exposure): Not available.
  - STOST (Repeated Exposure): Not available.
- Aquatic Toxicity: Not available.

**Chronic Effects**
- Chronic Ingestion Effect: None expected.
- Chronic Eye Effect: None expected.
- Chronic Skin Effect: None expected.
- Chronic Inhalation Effect: None known.

**Numerical Measures of Toxicity:** Not available.

**Synergistic Materials:** None expected.

### Section 12. Ecological Information

**Toxicity on Aquatic and Terrestrial Organisms:** Not available.

**Persistence and Degradability:** The oxide component of this material will persist.

**Bioaccumulation:** This material is not expected to bio-accumulate.

**Mobility in Soil:** Oxide component not mobile in soil.

**Other Adverse Effects:** WGK Water Hazard Class - NWG

### Section 13. Disposal Considerations

**Disposal Methods:**
- Dispose of in accordance with all applicable National, State and Local regulations. Same considerations should be given to the disposal of empty containers.

**Precautions for Disposal:** Not available

U.S.: As sold, not defined as hazardous waste under U.S. RCRA (Resource Conservation and Recovery Act) regulations.

### Section 14. Transport Information

**UN Number:** Not applicable

**UN Proper Shipping Name:** Non-hazardous/Non-Regulated.

**Transport Hazard Class:** Not applicable.

**Packing Group:** Not applicable.

**Marine Pollutant:** Not applicable.

**Information on Any Special Precautions:** Not applicable.

### Section 15. Regulatory Information

**National Registries:** All components are in compliance with the inventories below
- **Australia:** AICS Australian Inventory List
- **Canada:** CEPA, Canadian Environmental Protection Act, 6th Amendment, Domestic Substance List.
- **China:** Inventory of Existing Chemical Substances in China.
- **Europe:** EINECS, European Inventory of Existing Commercial Chemical Substances.
- **United States:** TSCA, Toxic Substance Control Act.
- **Japan:** METI, Ministry of Economy, Trade and Industry List of Existing and New Chemical Substances (ENCS).
- **Korea:** ECL, Existing Chemical List.

**U.S. Regulations**
- **U.S. Clean Air Act, 1990:** No components are listed as hazardous air pollutants. No components contain or are manufactured with Class I or Class II ozone depleting chemicals.
- **U.S. Clean Water Act (40 CFR 116):** No components are listed.
- **U.S. SARA Title III:**
  - Section 302: Does not contain any constituents that are identified as extremely hazardous.
  - Section 311/312: Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.
  - Section 311/312 – MSDS Requirements – Not regulated.
  - Section 313: Does not contain any of the substances identified under Section 313 as toxic chemicals in excess of the de minimis concentrations necessary to be subject to this rule.
- **CERCLA:** This material is not a hazardous substance under the CERCLA. Notification of spills of this material is not required.

**European Regulations**
- **Product is not a dangerous substance regarding EU Directive 67/548/EEC and its various amendments and adaptations.**

**Classification:** Skin Corrosion/Irritation Category 2; Eye Damage/Irritation Category 2B

**Warning**
- Causes skin irritation.
-Causes eye irritation.

**Precautionary Statements:**
- Wear protective gloves/clothing and eye/face protection.
- Wash hands thoroughly after handling.
- If on skin: Wash with plenty of soap and water.
- Take off contaminated clothing and wash before re-use.
- If skin irritation occurs, seek medical advice/attention.
- Seek emergency treatment in reference to supplemental first aid instructions.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists, get medical advice/attention.

### Section 16. Other Information

**Sources of Reference Materials:**
- MSDS has been prepared in accordance with the following:
  - Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.
  - EC Directive 91/155/EEC and 93/113/EEC.

**Abbreviations:**
- CAS: Chemical Abstract Service.
- PEL: Permissible Exposure Limit.
- PPE: Personal Protective Equipment.
- SARA: Superfund Amendments and Reauthorization Act.
- TLV: Threshold Limit Value

**Revision Indicator:** Revised sections of the MSDS will be indicated by an asterisk (*) in front of the section affected.
- The information set forth is based on information which Cabot Microelectronics Corporation believes to be accurate.
- No warranty, express or implied, is intended. The information is provided solely for your information and consideration.
- Cabot Microelectronics Corporation assumes no legal responsibility for use or reliance thereon.

**Date of Preparation:** April 7, 2000

**Number of Revision Times and Date of Latest Revision:** 1, June 23, 2008