### SECTION I - Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Product Type</th>
<th>Date Revised:</th>
<th>Prepared By:</th>
</tr>
</thead>
<tbody>
<tr>
<td>iCue® 5001</td>
<td>Aluminum Oxide Aqueous Dispersion</td>
<td>October 28, 2003</td>
<td>Michael Trembley</td>
</tr>
</tbody>
</table>

**Manufacturer/Supplier**

- Cabot Microelectronics Corporation  
  870 Commons Drive  
  Aurora, IL 60504  
  United States

- Cabot Microelectronics Corporation  
  Barry Site, Sully Moors Rd.  
  Sully, South Glamorgan  
  CF64 Wales, UK

- Cabot Microelectronics Corporation  
  1287-19 Oaza-Kitakoyama  
  Geino-cho-Age-gun  
  Mie-Ken 514-2213 Japan

**Telephone No.**

- 630-375-5586 (U.S.) - MSDS Requests
- 630-375-5576 (U.S.) - Technical Information
- 011-44 (0) 1446 42200 (U.K.)
- 011-81-59-266-0120 (Japan)

**Facsimile No.**

- 630-585-9976 (U.S.)
- 011-44 (0) 1446 422001 (U.K.)
- 011-81-59-266-0121 (Japan)

**Emergency Telephone No.**

- Chemtrec (U.S.) 800-424-9300
- Chemtrec (Intl.) 703-527-3887
- Cabot Microelectronics (U.S.) 630-585-9471
- 011-44-1446736999 (U.K.)

### SECTION II - Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Substance Trivial Name</th>
<th>Formal Name</th>
<th>Chemical Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>iCue® 5001 Aqueous Dispersion</td>
<td>Aqueous Dispersion</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>EINECS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Oxide</td>
<td>1344-28-1</td>
<td>215-691-6</td>
<td>2-5</td>
</tr>
<tr>
<td>De-Ionized Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>93-96</td>
</tr>
<tr>
<td>Proprietary Ingredients</td>
<td>Proprietary</td>
<td>Proprietary</td>
<td>&lt;2</td>
</tr>
</tbody>
</table>

**Trade Names and Synonyms**

- iCue® 5001 Aqueous Dispersion

**Material Uses**

Used as a polishing slurry in the semi-conductor industry and other applications.
SECTION III - Hazards Identification

Emergency Overview:
Milky white slurry.

Caution: May cause skin and eye irritation. Do not breath dust from dried product.

Potential Environmental Effects: None expected.

Potential Health Effects

Routes of Exposure: Eye, Skin

Eye: May cause slight irritation.
Skin: May cause slight irritation.

Ingestion: May be harmful if swallowed.

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

Chronic Effects: Not listed as a carcinogen by IARC, NTP, Z List or OSHA.

Teratology: None identified

Reproduction Info.: None identified

Target Organs: None identified

Medical Conditions Aggravated: None Identified

SECTION IV - First Aid Measures

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

Ingestion: Do not induce vomiting. If conscious and alert, rinse mouth with water. If symptoms develop seek medical attention.

Eyes: Immediately flush lightly with plenty of water for at least 15 minutes. If symptoms develop seek medical attention.

Skin: Flush affected area with water. Remove contaminated clothing. If symptoms develop seek medical attention.

Advice to Physicians
Treat symptomatically if present.

SECTION V - Fire Fighting Measures

<table>
<thead>
<tr>
<th>Extinguishing Media</th>
<th>Unsuitable Media</th>
<th>Flash Point</th>
<th>Flash Point Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use extinguishing media for surrounding fire.</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower Explosive Limit</th>
<th>Upper Explosive Limit</th>
<th>Ignition in Air</th>
<th>Flame Propagation in Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Defined</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

Flammability Classification
Not Applicable

Fire Fighting Procedure
No special fire fighting procedures.

Combustion Hazards
Not Applicable

Protective Equipment
Standard personal protective equipment for structural fire fighting.

Unusual Fire Hazards
None expected.

Dust Explosion Potential
Not Applicable
### SECTION VI - Accidental Release Measures

#### Personal Precautions
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.

#### Spill Cleanup Measures
Absorb with inert material (e.g., dry sand or earth), then place in chemical waste container. Wear appropriate PPE. See Section 8.

#### Environmental Precautions
Do not allow material to surface waters.

### SECTION VII - Handling and Storage

#### Handling & Storage Precautions
**Handling:** Avoid skin and eye contact. Avoid generating aerosols or mists. Do not breath aerosols, mists or dust from dried product.
**Storage:** KEEP FROM FREEZING.

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

#### Special Precautions
None

### SECTION VIII - Exposure Controls/Personal Protection

#### Inhalation Standards
- **TLV (U.S.):** 10 mg/m$^3$ total dust for particles not otherwise classified.
- **PEL (U.S.):** 15 mg/m$^3$ for total dust. 5 mg/m$^3$ for alumina.
- **MAK (Germ.):** 4 mg/m$^3$ inhalable dust.
- **OES (U.K.):** 6 mg/m$^3$ total inhalable, 2.4 mg/m$^3$ respirable dust.
- **Australia (TLV):** 10 mg/m$^3$ total dust containing no asbestos.

#### Eye-Face Protection
Safety glasses with side shields or goggles recommended to prevent eye contact

#### Skin Protection
Impervious gloves.

#### Protective Clothing
Wear appropriate clothing to minimize skin contact.

#### 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 approval 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.
- **Germany:** DIN/EN 143 Respiratory Protective Devices for Dusty Materials.
- **UK:** BS 4275 Recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment.
  - HSE Guidance Note HS(G)53 Respiratory Protective Equipment.
### Engineering Controls
If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below exposure limits.

Other Protective Measures
None

### SECTION IX - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slurry</td>
<td>Milky White</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odor Threshold</th>
<th>pH</th>
<th>Boiling Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td>7.5-7.9</td>
<td>&gt;100°C/212°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaporation Rate</th>
<th>Melting/Freezing Point</th>
<th>% Volatile by Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as water</td>
<td>0°C/32°F</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility in Water</th>
<th>Specific Gravity</th>
<th>Vapor Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersible</td>
<td>1.024-1.032</td>
<td>Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vapor Pressure</th>
<th>Reid Vapor Pressure</th>
<th>Water/Oil Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Viscosity</th>
<th>Pour Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

### SECTION X - Stability and Reactivity

<table>
<thead>
<tr>
<th>Chemical Stability</th>
<th>Conditions to Avoid</th>
<th>Incompatible Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>Freezing conditions</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reactivity</th>
<th>Hazardous Decomposition</th>
<th>Hazardous polymerization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>Nitrogen oxides, CO, CO₂ gases</td>
<td>Will not occur</td>
</tr>
</tbody>
</table>

### SECTION XI - Toxicological Information

<table>
<thead>
<tr>
<th>Acute Toxicity</th>
<th>Oral (rat): Not tested</th>
<th>Dermal (rabbit): Not tested</th>
<th>Inhalation (rat): Not tested</th>
<th>Skin Irritation: Not tested</th>
<th>Eye Irritation: Not tested</th>
<th>Carcinogenicity: Not listed as a carcinogen by IARC, NTP, Z List or OSHA.</th>
<th>Mutagenicity: Not tested</th>
<th>Reproductive Toxicity: Not tested</th>
<th>Teratogenicity: Not tested</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chronic Ingestion Effect</th>
<th>Chronic Eye Effect</th>
<th>Chronic Skin Effect</th>
<th>Chronic Inhalation Effect</th>
<th>Sensitization to Material</th>
<th>Synergistic Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>None expected</td>
<td>None expected</td>
<td>None expected</td>
<td>None known</td>
<td>None expected</td>
<td>None expected</td>
</tr>
</tbody>
</table>

### SECTION XII - Ecological Information

<table>
<thead>
<tr>
<th>Mobility</th>
<th>Persistence/Degradability</th>
<th>Bio-Accumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxide component not mobile in soil.</td>
<td>The oxide component of this material will persist.</td>
<td>This material is not expected to bio-accumulate.</td>
</tr>
</tbody>
</table>
Ecotoxicity

Acute Fish Toxicity: Not tested.
Acute Daphnia Toxicity: Not tested.
WGK Water Hazard Class: Not determined.

SECTION XIII - Disposal Considerations

Legal Classification
Dispose of in accordance with all applicable National, State and Local regulations. Same considerations should be given to the disposal of empty containers.
As sold, not defined as hazardous waste under U.S. RCRA (Resource Conservation and Recovery Act) regulations.
Waste Key No. Not determined.

SECTION XIV - Transport Information

<table>
<thead>
<tr>
<th>UN Number</th>
<th>UN Proper Shipping Name</th>
<th>UN Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Non-hazardous/Non-regulated</td>
<td>Not applicable</td>
</tr>
<tr>
<td>UN Packing Group</td>
<td>GGVS/GGVE/RID/ADR/IMDG-Code/ICAO-TI Information</td>
<td>US Rail Regulations</td>
</tr>
<tr>
<td>Not applicable</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

SECTION XV - 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.
Japan: MITI, Ministry of International Trade and Industry List of Existing Chemical Substances.
Korea: ECL, Existing Chemical List.

Europe (EU): This material is not defined as a dangerous substance regarding EU Directive 67/548/EEC and its various amendments and adaptations.

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, as defined in the Clean Air Act of 1990.

U.S. Clean Water Act (40 CFR 116): No components are listed.

U.S. SARA Title III – Superfund Amendments and Reauthorization Act (SARA)
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 substance identified under Section 313 as toxic chemicals in excess of the de minimis concentrations necessary to be subject to this rule.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 40 CFR 302): This material is not a hazardous substance under the CERCLA. Notification of spills of this material is not required.

SECTION XVI - Other Information

Reference Sources Used
ACGIH, Documentation of TLVs and BEIs, 6th edition.
<table>
<thead>
<tr>
<th><strong>Revision Indicator</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revised sections of the MSDS will be indicated by an asterisk (*) in front of the section affected.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Disclaimer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The information set forth is based on information which Cabot Microelectronics Corporation believes to be accurate. No warranty, expressed or implied, is intended. The information is provided solely for your information and consideration and Cabot Microelectronics Corporation assumes no legal responsibility for use or reliance thereon. Form-0802</td>
</tr>
</tbody>
</table>