

**HMIS Index:**

0- Minimal  
1- Slight  
2- Moderate  
3- Serious  
4- Severe

**SAFETY DATA SHEET**  
**Epoch TSV-C1015 Series**  
TSV-C1015-00 thru 99  
Aqueous Dispersion

**HMIS Rating:**

1- Health  
0- Flammability  
0- Physical Hazard

**Date Prepared:** June 1, 2012    **Date Issued:** June 1, 2012    **Prepared By:** Michael Trembley/Product Stewardship Mgr.  
michael\_trembley@cabotcmp.com

## Section 1. Chemical Product and Company Identification

**Product Name:** Epoch TSV-C1015 Series (TSV-C1015-00 thru 99) 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  
1096, Yanggyo-ri, Oseong-myeon, Pyeongtaek-si, Gyeonggi-do, 451-872 Korea  
Information Service or Emergency Telephone No.: 031.8053.2210, (Facsimile No.) 031.684.2307

CMC/Epoch - Taiwan  
No. 2, Luke 8<sup>th</sup> Road, Kaohsiung Science Park.  
Lu-Chuh District, Kaohsiung City, 82151, Taiwan, R.O.C.  
Telephone No.: 886.7.6955100, Facsimile No.: 886.7.6955075  
Emergency Telephone No.: Chemtrec (Intl) 703.527.3887

CMC- Wales  
The Business Centre, Cardiff House, Cardiff Road  
Barry, Vale of Glamorgan, Wales  
CF63 2BG, United Kingdom  
Telephone No: 011.441.446.704407

## Section 2. Hazards Identification

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

Warning

**Hazard Statement:**

- Causes skin irritation.
- Causes serious 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.

**Other Hazards Which Do Not Result in Classification:**

Caution: Do not breathe dust from dried product.

Potential Environmental Effects: None known.

Routes of Exposure: Eye, 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

Component	CAS No.	INECS #	% by Weight
Silica, Amorphous	7631-86-9	231-545-4	<3%
Acetic Acid	64-19-7	200-580-7	<3%
Ammonium Hydroxide	1336-21-6	215-647-6	<0.5%
Ethylene Glycol	107-21-2	203-473-3	<6%
Formic Acid	64-18-6	200-579-1	<3%
Nitric Acid	7697-37-2	231-714-2	<3%
Phosphoric Acid	7664-38-2	231-633-2	<3%
Sulfuric Acid	7664-93-9	231-639-5	<3%
Proprietary Ingredients	Proprietary	Proprietary	<13%
De-ionized Water	7732-18-5	231-791-2	>62%

### 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/m<sup>3</sup> total dust for particles not otherwise classified
- PEL (U.S.) = 10 mg/m<sup>3</sup> for nuisance dust. 15 mg/m<sup>3</sup> for total dust.
- MAK (Germ.) = 4 mg/m<sup>3</sup> inhalable dust.
- OES (U.K.) = 6 mg/m<sup>3</sup> total inhalable, 2.4 mg/m<sup>3</sup> respirable dust.
- Australia (TLV) = 10 mg/m<sup>3</sup> total dust containing no asbestos and <1% crystalline silica.
- Korea: 10 mg/m<sup>3</sup> (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.
  - 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.

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 :** 2.5-4.0  
**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):** 1.1 @ 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, CO<sub>2</sub> 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: May be harmful if swallowed.
- Skin: Skin irritation.
- Eye: Eye irritation.

**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 – SDS 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.

## Section 16. Other Information

### Sources of Reference Materials:

- SDS has been prepared in accordance with the following:
  - Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.
  - American National Standards Institute (ANSI) Z400.1-2003.
  - EC Directive 91/155/EEC and 93/113/EEC.

### Abbreviations:

- CAS: Chemical Abstract Service.
- CERCLA: Comprehensive Environmental Response, Compensation and Liability Act.
- HMIS: Hazardous Materials Identification System.
- NIOSH: National Institute of Occupational Safety & Health.
- PEL: Permissible Exposure Limit.
- PPE: Personal Protective Equipment.
- SARA: Superfund Amendments and Reauthorization Act.
- TLV: Threshold Limit Value
- UN: United Nations.

**Revision Indicator:** Revised sections of the SDS 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:** June 1, 2012

**Number of Revision Times and Date of Latest Revision:** 0

Form- 0208