

## Burdick & Jackson

# Material Safety Data Sheet

### Capping B1 (60% Acetonitrile/40% Acetic Anhydride, v/v)

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Capping B1

**OTHER/GENERIC NAMES:** Mixture of Acetic Anhydride and Acetonitrile.

**PRODUCT NUMBER:** 643

**PRODUCT USE:** Laboratory & Research Chemical

**MANUFACTURER:** Honeywell, Burdick & Jackson  
1953 South Harvey Street  
Muskegon, MI 49442

**FOR MORE INFORMATION CALL:**  
(Monday-Friday, 8:00am-5:00pm Eastern Time)  
1-800-368-0050

**IN CASE OF EMERGENCY CALL:**  
(24 Hours/Day, 7 Days/Week)  
1-800-498-5701 (medical emergency)  
602-365-4980 (Honeywell - International)  
**For Transportation Emergencies:**  
1-800-424-9300 (CHEMTREC - Domestic)  
001-703-527-3887 (CHEMTREC - International)

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Acetonitrile	75-05-8	60
Acetic Anhydride	108-24-7	40

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

#### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** Danger. Flammable liquid and vapor. Causes skin, eye and respiratory tract burns. Product may cause severe injury if inhaled or fatal if swallowed. Reacts with water evolving heat.

#### POTENTIAL HEALTH HAZARDS

**SKIN:** Causes irritation. Prolonged contact may cause dermatitis. May be absorbed through the skin producing effects similar to those described for inhalation.

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**EYES:** Causes severe irritation and may cause burns leading to permanent eye damage.

**INHALATION:** Causes severe respiratory tract injury. Depending on concentration and length of exposure, high concentrations can cause headache, nausea, vomiting, respiratory depression, weakness, irregular heart beat, abdominal pain, convulsions, shock, unconsciousness and death.

**INGESTION:** Not a likely route of exposure. Causes severe irritation and burns to the entire digestive tract and may be fatal if swallowed.

**DELAYED EFFECTS:** Prolonged and repeated exposure may cause liver and kidney damage and central nervous system effects.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section.			

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#### 4. FIRST AID MEASURES

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**SKIN:** Immediately rinse affected area with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Properly discard contaminated clothing and shoes.

**EYES:** Immediately flush with copious amounts of water continuing for at least 15 minutes or until effects subside. Concurrently get medical attention immediately

**INHALATION:** Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available. Get immediate medical attention.

**INGESTION:** If conscious, rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention.

**ADVICE TO PHYSICIAN:** Acetonitrile is metabolized to cyanide. Patients with significant exposures should be observed for signs of cyanide poisoning and treated accordingly.

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#### 5. FIRE FIGHTING MEASURES

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##### FLAMMABLE PROPERTIES

**FLASH POINT:** 73.4°F - 86°F (23°C - 30°C) (based on similar material)

**FLASH POINT METHOD:** Closed Cup

**AUTOIGNITION TEMPERATURE:** Not determined for mixture

**UPPER FLAMMABLE LIMIT (volume % in air):** Not determined for mixture

**LOWER FLAMMABLE LIMIT (volume % in air):** Not determined for mixture

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**FLAME PROPAGATION RATE (solids):** Not Applicable

**OSHA FLAMMABILITY CLASS:** Flammable Liquid

#### **EXTINGUISHING MEDIA:**

Use carbon dioxide, dry chemical, alcohol resistant foam or water spray fog. Use water spray to cool fire exposed containers with caution because acetic anhydride reacts with water.

#### **UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Dangerous fire hazard when exposed to heat or flame. Emits toxic fumes under fire conditions. Sealed containers may rupture when heated. Vapor is heavier than air and danger of flashback exists. Acetic anhydride reacts with water to produce heat.

#### **SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

Wear full protective clothing and NIOSH approved self-contained breathing apparatus with full facepiece. Fire may produce toxic and flammable cyanide fumes. Acetic Anhydride reacts with water. Do not release runoff from fire fighting efforts to sewers or waterways.

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### **6. ACCIDENTAL RELEASE MEASURES**

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**IN CASE OF SPILL OR OTHER RELEASE:** (Always wear recommended personal protective equipment.)

Eliminate sources of ignition. Isolate the spill area. Use non-sparking tools and equipment. Stop leak in a safe and practical manner. Dike and contain and spilled liquid when possible. Absorb small spills with inert, non-combustible material and place in an approved chemical waste container. Do not allow to enter into sewers or waterways. Water spray may reduce vapor evolution.

**Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.**

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### **7. HANDLING AND STORAGE**

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**NORMAL HANDLING:** (Always wear recommended personal protective equipment.)

Use with adequate explosion proof ventilation. Use non-sparking tools and ground containers during transfers to avoid static sparks. Keep away from heat, sparks and flame. Do not breathe vapors. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke in the work area. Wash thoroughly after handling.

#### **STORAGE RECOMMENDATIONS:**

Store in a cool and dry, well ventilated area suitable for flammable liquids. (OSHA 29 CFR 1910.106) Protect from temperature extremes and sunlight, and store away from incompatible substances and in accordance with 29 CFR 1910.106. Avoid acids, bases, oxidizers, explosives, nitrogen-fluorine compounds, sulfites, perchlorates, reducing agents and plastics. Protect containers from physical damage. Empty containers may contain product residue and/or vapors. Label warnings apply to empty containers that have not been cleaned.

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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

##### **ENGINEERING CONTROLS:**

Provide appropriately rated general or local exhaust ventilation systems. Local exhaust ventilation or closed systems are preferred methods of controlling contaminant dispersion into the work area.

##### **PERSONAL PROTECTIVE EQUIPMENT**

##### **SKIN PROTECTION:**

Wear chemically protective gloves, boots and apron, as appropriate to prevent skin contact. Inspect for signs of degradation before each use. Replace as needed. Showering after work is recommended.

##### **EYE PROTECTION:**

Wear chemical safety glasses or chemical safety goggles. Use a full-face shield if liquid contact is possible. Refer to OSHA eye and face-protection regulations (29 CFR 1910.133).

##### **RESPIRATORY PROTECTION:**

Not required for properly ventilated areas. If there is potential for inhalation of vapor or mist, use an appropriate NIOSH approved respirator.

The respirator must be selected based on contamination levels and use conditions found in the workplace. Use conditions must not exceed the working limits of the respirator. The respirator must be approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134.

##### **ADDITIONAL RECOMMENDATIONS:**

Provide safety showers and eyewash stations convenient to the work area. Protective clothing, boots, faceshield and hat should be cleaned daily, if exposed to liquid. Keep contaminated work clothes separate from street clothes. Launder contaminated clothing before reuse.

##### **EXPOSURE GUIDELINES**

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA Z-1 PEL</u>	<u>NIOSH</u>
Acetonitrile	20 ppm TWA (skin)	40 ppm	REL: 20 ppm 10 hr day/40 hr week. IDLH: 500 ppm
Acetic Anhydride	5 ppm	5 ppm	NIOSH Ceiling: 5 ppm NIOSH IDLH: 200 ppm.

\* Skin designation: Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

##### **OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:**

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<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA Z-1 PEL</u>	<u>NIOSH</u>
Hydrogen Cyanide	4.7 ppm ceiling (skin)*	10 ppm (skin) 11 mg/m <sup>3</sup>	REL: 4.7 ppm STEL (skin). REL: 5 mg/m <sup>3</sup> . IDLH: 50 ppm

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>APPEARANCE:</b>	Clear, Colorless
<b>PHYSICAL STATE:</b>	Liquid
<b>MOLECULAR WEIGHT:</b>	Mixture
<b>CHEMICAL FORMULA:</b>	Mixture
<b>ODOR:</b>	Not available
<b>SPECIFIC GRAVITY (water = 1.0):</b>	Not determined
<b>SOLUBILITY IN WATER (weight %):</b>	Soluble
<b>pH:</b>	Not determined
<b>BOILING POINT:</b>	Not determined
<b>MELTING POINT:</b>	Not determined
<b>VAPOR PRESSURE:</b>	73 mm Hg at 68°F (20°C) for 100% Acetonitrile.
<b>VAPOR DENSITY (air = 1.0):</b>	1.42 for 100% Acetonitrile.
<b>EVAPORATION RATE:</b>	5 for 100% Acetonitrile. <b>COMPARED TO:</b> Butyl Acetate = 1
<b>% VOLATILES:</b>	≅ 60
<b>FLASH POINT:</b>	Not determined

(Flash point method and additional flammability data are found in Section 5.)

### 10. STABILITY AND REACTIVITY

#### STABILITY (CONDITIONS TO AVOID):

Expected to be stable at ambient conditions of 70°F (21°C) and 760 mmHg. Avoid heat, ignition sources, water, moisture and incompatible materials.

#### INCOMPATIBILITIES:

Acids, bases, water, alcohols, glycols, strong oxidizers, amines, nitrating agents, reducing agents and plastics.

#### CONDITIONS TO AVOID:

Avoid conditions such as heat, flames, ignition sources, water, sunlight and incompatible material.

#### HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition can produce irritating, corrosive and/or toxic fumes and vapors.

#### HAZARDOUS POLYMERIZATION:

Not expected to occur.

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### 11. TOXICOLOGICAL INFORMATION

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#### IMMEDIATE (ACUTE) EFFECTS:

##### Acetonitrile:

Oral LD<sub>50</sub> (rat): 2,460 mg/kg

Oral TDLo (human): 571 mg/kg

Inhalation LC<sub>50</sub> (rat): 7551 ppm/8H

Inhalation TCLo (human): 160 ppm/4H, symptoms included slight flushing of face at 2 h & slight feeling of bronchial tightness at 5 h after exposure.

Eye Irritation (rabbit): 100  $\mu$ L undiluted/24H - Severe, permanent damage to the cornea.

Skin Irritation (rabbit): 500 mg - Mild irritation

Skin LD<sub>50</sub> (rabbit): >2,000 mg/kg, male & female.

Skin Sensitization (guinea pig): Not sensitizing, method of Ritz and Buehler

##### Acetic Anhydride:

Oral LD<sub>50</sub> (rat): 1780 mg/kg.

Inhalation LC<sub>0</sub> (rat): 1000 ppm/4 hr, all animals survived.

Inhalation LC<sub>100</sub> (rat): 2000 ppm/4 hr, all animals died.

Skin LD<sub>50</sub> (rabbit): 4 ml/kg.

Eye Irritation (rabbit): Caused severe burns.

#### DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

##### Acetonitrile:

Blood, liver and kidney effects, and pulmonary edema have been observed in animal subchronic and chronic exposure studies. Acetonitrile is metabolized to cyanide in the body, and many toxic consequences (e.g., blood effects) are related to the formation of this metabolite.

2-Year Inhalation Carcinogenesis Studies (rat and mouse): In rats, there was no evidence of carcinogenic activity in females exposed to 100, 200, or 400 ppm; there was equivocal evidence of carcinogenic activity in males exposed to 400 ppm based on marginally increased incidences of liver adenoma and carcinoma. In mice, there was no evidence of carcinogenic activity in males or females exposed to 50, 100, or 200 ppm.

#### OTHER DATA:

##### Acetonitrile:

Developmental Toxicity Studies: Acetonitrile is not considered teratogenic, but is embryotoxic and fetotoxic to several animal species by the inhalation, oral and intraperitoneal routes of exposure at high maternally toxic doses.

Ames Test (Salmonella typhimurium): Negative in presence and absence of exogenous metabolic activation.

*In Vitro* Cytogenetics Assay with Chinese Hamster Ovary (CHO) Cells: Weak or equivocal activity using both sister chromatid exchange and chromosome aberration as end points.

Rat Hepatocyte Unscheduled DNA Synthesis Assay: Inactive *in vitro* and *in vivo*.

Micronucleus Assay (mouse): Not clastogenic or aneugenic in the bone marrow of the mouse at the maximum tolerated dose (intraperitoneal injection of 100 and 125 mg/kg for males and females, respectively).

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#### **Acetic Anhydride:**

In Vitro - No evidence of mutagenicity in Ames test (bacteria), with and without activation.

In Vivo - Not mutagenic. Rats exposed via inhalation for 13 weeks at doses up to 20 ppm were without effects on bone marrow (micronucleus assay).

### **12. ECOLOGICAL INFORMATION**

Avoid release to surface waters and streams.

### **13. DISPOSAL CONSIDERATIONS**

#### **RCRA**

**Is the unused product a RCRA hazardous waste if discarded?** Yes  
**If yes, the RCRA ID number (USEPA Hazardous Waste Code) is:** Acetonitrile: D001, U003

#### **OTHER DISPOSAL CONSIDERATIONS:**

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an approved RCRA waste facility. Dispose of container and unused contents in accordance with all applicable local, state, and federal regulations.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

### **14. TRANSPORT INFORMATION**

**Proper DOT Shipping Description:** Flammable liquids, corrosive, n.o.s. (Acetonitrile, Acetic Anhydride), 3, UN 2924, II, (8).

**Reportable Quantity (RQ):** Acetonitrile = 5000 lbs (2270 kg).

**Label(s) Required:** Class 3, Flammable Liquid & subsidiary hazard Class 8, Corrosive Liquid

**Emergency Response Guidebook (2004 Edition):** Guide No. 132

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

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#### 15. REGULATORY INFORMATION

##### TOXIC SUBSTANCES CONTROL ACT (TSCA)

**TSCA INVENTORY STATUS:** All components are listed on the TSCA inventory.

**OTHER TSCA ISSUES:** Acetonitrile

TSCA Section 4(a) Final Test Rules & Testing Consent Orders

TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR) (40 CFR 712, Subpt. B)

TSCA Section 8(a) Inventory Update Rule (IUR): Subject to a Special Regulatory Action under TSCA (2002 EPA Instructions, App. B)

TSCA Section 8(d) Health & Safety Data Reporting (40 CFR 716, Subpt. B)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

TSCA High Production Volume (HPV) Chemicals: 1990, 1994 & Post-1994 Additions (01/20/06)

Acetic Anhydride

TSCA High Production Volume (HPV) Chemicals: 1990, 1994 & Post-1994 Additions (01/20/06)

##### SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
Acetonitrile	5000	None
Acetic Anhydride	5000	None

**Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.**

**SECTION 311 HAZARD CLASS:** Immediate. Delayed. Fire.

##### **SARA 313 TOXIC CHEMICALS:**

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Acetonitrile	de minimis concentration is 1.0%.

##### STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
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Acrylonitrile

Trace

See following CA Proposition 65  
Statement:

#### California Proposition 65 Label Statement

*Acetonitrile contains trace amounts of Acrylonitrile, which is listed on one of the California Proposition 65 lists; therefore, the following statement has been placed on the product label:*

*"Warning: This product contains a chemical known to the State of California to cause cancer."*

#### **ADDITIONAL REGULATORY INFORMATION:**

##### Acetic Anhydride

Drug Enforcement Administration (DEA) Listed Precursor and Essential Chemical [List 2].

21 CFR 1310.04(f). Reporting threshold is 250 gallons (1,023 kilograms) for imports and exports, 250 gallons for domestic sales.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

#### **WHMIS CLASSIFICATION (CANADA):**

This product has not been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations

#### **FOREIGN INVENTORY STATUS:**

Capping B1 components are listed on the following foreign inventories:

Australia (AICS)

Canada (DSL)

China (IECSC)

European Union (EINECS)

Japan (ENCS).

Korea (KECI)

New Zealand

Philippines (PICCS).

Switzerland

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### **16. OTHER INFORMATION**

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**CURRENT ISSUE DATE:** April 18, 2006

**PREVIOUS ISSUE DATE:** None

**CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:**

New MSDS

**OTHER INFORMATION:**