

**BREWER SCIENCE INC.
SAFETY DATA SHEET**

This Safety Data Sheet has been prepared to comply with the EU Regulation, Canadian WHMIS and the OSHA Hazard Communication Standard.

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION
AND THE COMPANY/UNDERTAKING**

1.1 Product Identifier:

Trade Name: APX-K1

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:

Product Use: Adhesion Promoter

Uses Advised Against: None

1.3 Details of the Supplier of the Safety Data Sheet:

Manufacturer:	Brewer Science, Inc.	Sales Office:	Brewer Science, Limited
	2401 Brewer Drive		North Mill, 2nd Floor
	Rolla, MO 65401		Darley Abbey Mills
			Derby, England DE22 1DZ
Information Phone Number:	(573) 364-0300		+44 1332 545888
Fax Number:	(573) 368-3318		+44 1332.545878
E-mail:	msds@brewerscience.com		msds@brewerscience.com

1.4 Emergency Telephone Number:

Emergency Spill Information: Chemtrec Domestic North America: (800) 424-9300
Chemtrec International: (703) 527-3887
Chemtrec Taiwan: 00801-14-8954

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture:

GHS Classification:

Flammable Liquid Category 2 (H225)
Eye Irritant Category 2A (H319)
Specific Target Organ Toxicity Single Exposure Category 3 (H336)

EU Classification:

Highly Flammable (F), Irritant (Xi), R11, R36, R67

2.2 Label Elements:

Danger!



Contains: Isopropanol

Hazard Phrases

H225	Highly flammable liquid and vapor.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

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Precautionary Phrases

P210	Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
P233	Keep container tightly closed.
P240	Ground or bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, or lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing mist, vapor, or spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, eye protection, and face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical attention.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P312	Call a POISON CENTER or physician if you feel unwell.
P370 + P378	In case of fire: Use water fog or spray, alcohol foam, carbon dioxide or dry chemical for extinction.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents and container in accordance with local and national regulations.

2.3 Other Hazards: None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture:

Chemical Name	CAS#	EINECS#	ENCS/ ISHL	EU Classification (67/548/EEC)	CLP Annex VI Classification	%
Isopropanol (Propan-2-ol, IPA)	67-63-0	200-661-7	(2)-207/ (2)-207	F, Xi R11, R36, R67	Flam. Liq. Cat 2 (H225), Eye Irrit. Cat 2A (H319), STOT SE Cat 3 (H336)	90-<100
Water	7732-18-5	231-791-2		No EU Classification or R phrase	No GHS Classification	<10

See Section 16 for further information on EU and GHS Classification.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

Eye: Rinse thoroughly with water for at least 15 minutes, while holding the eye lids open to be sure the material is washed out. Get medical attention.

Skin: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention if irritation or symptoms of exposure develop. Launder clothing before re-use.

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get medical attention if symptoms of exposure persist.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Keep the victim calm and warm. Get medical attention if you feel unwell.

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4.2 Most Important symptoms and effects, both acute and delayed: May cause moderate to severe eye irritation. May cause skin and respiratory irritation. Inhalation of mists may cause headache, dizziness, nausea, and other symptoms of central nervous system depression.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical attention should not be required.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media: Use water fog or spray, alcohol foam, carbon dioxide or dry chemical.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: Highly flammable liquid and vapor. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixtures with air in confined areas.

Combustion Products: Oxides of carbon.

5.3 Advice for Fire-Fighters:

Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Wear appropriate protective clothing to prevent eye and skin contact including impervious gloves, safety goggles and respirator if needed. Ventilate area.

6.2 Environmental Precautions:

Report spills and releases as required to appropriate authorities.

6.3 Methods and Material for Containment and Cleaning Up:

Cover with an inert absorbent material and collect into an appropriate container for disposal.

6.4 Reference to Other Sections:

Refer to Section 8 for Personal Protective Equipment and Section 13 for Disposal information.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling: Avoid breathing vapors, aerosols and mists. Use with adequate ventilation. Avoid contact with the eyes, skin and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. Wash thoroughly after handling. Do not eat, drink or smoke in the work area. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use.

7.2 Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, dry, well ventilated location away from oxidizers and other incompatible materials. Keep containers closed when not in use.

7.3 Specific end use(s): Industrial use only

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	Exposure Limits
Isopropanol	200 ppm TWA, 400 ppm STEL ACGIH TLV 400 ppm TWA OSHA PEL 200 ppm TWA, 400 ppm STEL DFG MAK 400 ppm TWA, 500 ppm STEL UK WEL 400 ppm TWA Japan 200 ppm TWA, 400 ppm STEL South Korea

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Water	None Established
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8.2 Exposure Controls:

Ventilation: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits. Use explosion proof electrical equipment and wiring where required.

Personal Protective Equipment:

Respiratory Protection: If needed, an approved respirator with organic vapor cartridges may be used. For higher exposures, a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Skin Protection: Impervious gloves such as butyl rubber or Silver Shield gloves are recommended to prevent prolonged skin contact. Contact your glove supplier for selection assistance. In Europe follow EN 374.

Eye Protection: Chemical safety goggles are recommended. In Europe follow EN 166.

Other Protective Equipment: Impervious clothing is required to prevent skin contact and contamination of personal clothing. In Europe follow EN 13034. An eye wash facility and safety shower should be available in the work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: Clear liquid	Vapor Density: 2.1 (Isopropanol)
Odor: Rubbing alcohol odor	Specific Gravity: No data available
Odor Threshold: No data available	Solubility: Soluble in water
pH: No data available	Octanol/Water Partition Coefficient: No data available
Melting Point/Freezing Point: No data available.	Autoignition Temperature: No data available
Initial Boiling Point/Range: 82°C (180°F) (Isopropanol)	Decomposition Temperature: No data available
Flash Point: 12°C (53°F) (Isopropanol)	Viscosity: No data available
Evaporation Rate: No data available	Explosive Properties: Not explosive
Flammable Limits: LEL: 2.0 vol % (Isopropanol) UEL: 12.7 vol % (Isopropanol)	Oxidizing Properties: Not an oxidizer
Vapor Pressure: 96 mmHg @ 37.8°C (100°F) (Isopropanol)	Relative Density: No data available
Molecular Formula: Mixture	Flammability (solid, gas): Not applicable
Molecular Weight: Mixture	

9.2 Other Information: None available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Not reactive

10.2 Chemical Stability: Stable under normal conditions.

10.3 Possibility of Hazardous Reactions: Will not occur.

10.4 Conditions to Avoid: Keep away from heat, sparks, flames and other sources of ignition. Avoid exposure to light, moist air and water.

10.5 Incompatible Materials: Caustics, amines, alkanolamines, aldehydes, strong oxidizing agents, and chlorinated compounds.

10.6 Hazardous Decomposition Products: Combustion will produce oxides of carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

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Eye: May cause eye irritation with pain, tearing and swelling. Corneal injury is possible.

Skin: May cause irritation and dermatitis with prolonged or repeated exposure. Isopropanol may be absorbed through the skin causing effects similar to inhalation.

Inhalation: Inhalation of vapors, mists, or aerosols may cause nose and throat irritation with the possibility of central nervous system depression. Symptoms of central nervous system depression include headache, dizziness, drowsiness, nausea and unconsciousness.

Ingestion: Swallowing may cause gastrointestinal irritation, nausea, vomiting, and diarrhea and central nervous system depression with symptoms similar to those described under inhalation.

Chronic Hazards: Chronic exposure may cause dermatitis.

Acute Toxicity Values:

Isopropanol: Oral rat LD50- 5045 mg/kg; Skin rabbit LD50- 12800 mg/kg; inhalation rat LC50- 72.6 mg/L/4hr

Skin corrosion/irritation: Isopropanol: Non-irritating to rabbit skin.

Eye damage/irritation: Isopropanol: Irritating to rabbit eyes.

Respiratory Irritation: No data available.

Respiratory Sensitization: No data available.

Skin Sensitization: Isopropanol: Negative in the Buehler Test.

Germ Cell Mutagenicity: Isopropanol: Negative in a mammalian gene mutation assay and in vivo mammalian bone marrow cytogenetic test.

Carcinogenicity: None of the components of this product are listed as carcinogens by OSHA, IARC, NTP, ACGIH and the EU CLP.

Reproductive Toxicity: Isopropanol: In a one generation study with rats, NOEL was 2.5%. At 2.0% and 2.5% there was evidence of embryo toxicity. At 1.25%, 2.0% and 2.5%, all rat showed signs of liver and kidney effects, At 2.5% the rats showed signs of anemia.

Specific Target Organ Toxicity:

Single Exposure: No data available

Repeat Exposure: Isopropanol: 13 week inhalation study with rats found that effects of narcosis at 5000 ppm. These effects are reversible at the cessation of exposure. A 73 week chronic study in rats found male reproductive effects at 2500 and 5000 ppm and liver effects at 2500 ppm.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

Isopropanol: 96 hr LC50 Fathead minnow (flow through)-9640 mg/L; 48 hr EC50 Daphnia magna - 13299 mg/L

12.2 Persistence and Degradability: Isopropanol: Readily biodegradable – 95% after 21 days.

12.3 Bioaccumulative Potential: No data available

12.4 Mobility in Soil: No data available

12.5 Results of PBT and vPvB Assessment: No data available

12.6 Other Adverse Effects: Not applicable

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

Dispose in accordance with all local, state and federal regulations.

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SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT	UN1219	Isopropanol Solution	3	PG II	Not applicable
Canadian TDG	UN1219	Isopropanol Solution	3	PG II	Not applicable
EU ADR/RID	UN1219	Isopropanol Solution	3	PG II	Not applicable
IMDG	UN1219	Isopropanol Solution	3	PG II	Not applicable
IATA/ICAO	UN1219	Isopropanol Solution	3	PG II	Not applicable

14.6 Special Precautions for User: Not applicable

14.7 Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environment Regulations/Legislation Specific for the Substance or Mixture:

U.S. FEDERAL REGULATIONS:

CERCLA 103 Reportable Quantity: This product is not subject to reporting under CERCLA. Some states have more stringent reporting requirements. Report all spills in accordance with local, state, and federal regulations.

SARA TITLE III:

Hazard Category for Section 311/312: Acute Health, Fire Hazard

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on TSCA.

STATE REGULATIONS:

California Proposition 65: This product contains a chemical known in the state of California to cause cancer and/or reproductive effects.

INTERNATIONAL REGULATIONS:

EUROPEAN REGULATIONS

REACH: Brewer products comply with REACH regulation as applicable. For more information, contact the Brewer REACH coordinator.

SVHC: This product contains the following Substances of Very High Concern (SVHCs): None

JAPANESE REGULATIONS

Industrial Safety and Health Law:

Manufacture Prohibited	Manufacture Allowed	Notification Obligation	Labeling Obligation	MSDS Obligation	Dangerous Substance
Not applicable	Not applicable	Not applicable	≥1 Isopropyl alcohol	≥0.1 Propyl alcohol	Flammable Substance - Group 4

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Poisonous and Deleterious Substances Control Law (PDSCL): None of the chemicals are listed.

Pollutant Release and Transfer Register (PRTP): None of the chemicals are listed.

Law Concerning the Protection of the Ozone Layer: None of the chemicals are listed.

Fire Service Law: Group 4 - Flammable liquids (2nd Class petroleum)

Ship Safety Act: Flammable liquid (Hazard Regulation Article 3, hazardous substance notice appendix 1)

Aviation Law: Flammable liquid (regulation Article 194, hazardous substance notice appendix 1)

Air Pollution Control Law: None of the chemicals are listed.

Water Pollution Control Act: None of the chemicals are listed.

Soil Contamination Countermeasures Law: None of the chemicals are listed.

Offensive Odor Control Law: None of the chemicals are listed.

Act on Prevention of Marine Pollution and Maritime Disaster: None of the chemicals are listed.

15.2 Chemical Safety Assessment: No data available

SECTION 16: OTHER INFORMATION

HMIS Ratings: Health - 2 Flammability - 3 Physical Hazard - 0
NFPA Ratings: Health - 2 Flammability - 3 Instability - 0

SDS Revision History:

9/13/02: New document.
9/13/02: Changed to EU format.
10/23/06: Made GHS format.
1/11/08: Updated with REACH format.
12/15/09: Updated EU label in Section 15. Updated formulation in Section 3. Updated exposure limits in Section 8. Updated physical data in Section 9. Added ACGIH and Inc.
9/14/11: Complete review of SDS. Converted SDS to a Universal GHS format.
5/29/12: Updated Section 3: CLP Annex VI Classification, Section 15: California Proposition 65.
10/28/13: Updated format.
1/21/15: Updated header to say EU Regulation, updated address to include UK address, removed date of preparation, added EN codes to section 8, updated carcinogen statement to say EU CLP, updated footer to include date of latest revision.

GHS Classification for Reference (See Sections 2 and 3):

Eye Irrit. Cat 2 Eye Irritant Category 2
Flam. Liq. Cat 2 Flammable Liquid Category 2
STOT SE Cat 3 Specific Target Organ Toxicity Single Exposure Category 3
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

EU Classes and Risk Phrases for Reference (See Sections 2 and 3):

F Highly Flammable
Xi Irritant
R11 Highly Flammable.
R36 Irritating to eyes.
R67 Vapors may cause drowsiness and dizziness.

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This above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Brewer Science, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.

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