

**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:

BrewerBOND® 305 Series

This SDS covers the following products:

| | |
|-----------------|--------------------|
| BrewerBOND® 305 | BrewerBOND® 305-30 |
| | |
| | |

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

Product Use: Temporary Adhesive
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
China Chemical Accident Emergency Rescue Hotline 0532-83889090

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture:

GHS Classification:

Flammable Liquid Category 3 (H226)
Aspiration Toxicity Category 1 (H304)
Skin Irritation Category 2 (H315)
Skin Sensitization Category 1(H317)
Aquatic Acute Toxicity Category 1 (H400)
Aquatic Chronic Toxicity Category 1 (H410)

EU Classification:

Flammable, Harmful (Xn), Dangerous for the Environment (N) R10, R38, R43, R65, R50/53

2.2 Label Elements:

Danger!



Contains: D-Limonene

| | |
|-----------------------|------------------------------|
| Prepared By: | Safety & Environmental Units |
| Approved By: | Safety & Environmental Units |
| Issue/Revision Date | F.7.6.4700.D / 7/8/15 |
| Date of Latest Review | 7/8/15 |

Hazard Phrases

| | |
|------|---|
| H226 | Flammable liquid and vapor. |
| H304 | May be fatal if swallowed and enters airways. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H410 | Very toxic to aquatic life with long lasting effects. |

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, vapors, or spray. |
| P264 | Wash thoroughly after handling. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves, protective clothing, eye protection, and face protection. |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. |
| P333 + P313 | If skin irritation or rash occurs: Get medical attention. |
| P363 | Wash contaminated clothing before reuse. |
| P301 + P310 | IF SWALLOWED: Immediately call a POISON CENTER or physician. |
| P331 | Do NOT induce vomiting. |
| P370 + P378 | In case of fire: Use water fog or spray, universal foam, carbon dioxide or dry chemical for extinction. |
| P391 | Collect spillage. |
| 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 | % |
|----------------|-------------|-------------|---------------------------------------|--|--|-------|
| D-Limonene | 5989-27-5 | 227-813-5 | (3)-2245 / 3-(4)-222, 3-(4)-202 | N, Xi, Xn R10, R38, R43, R65, R50/53 | Flam. Liq. Cat 3 (H226), Skin Irrit. Cat 2 (H315), Skin Sens. Cat 1 (H317), Asp. Tox. Cat 1 (H304), Aquatic Acute Cat 1 (H400), Aquatic Chronic Cat 1 (H410) | 65-75 |
| Polymer Solids | Proprietary | Proprietary | | No EU Classification or R phrase | No GHS Classification | 25-35 |
| Additive | Proprietary | Proprietary | | No EU Classification or R phrase | Aquatic Chronic Cat 4 (H413) | ≤3 |

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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, while holding the eye lids open to be sure the material is washed out. Get medical attention if irritation occurs and persists.

Skin: Remove contaminated clothing. Wash contact area thoroughly with soap and water for several minutes. Get medical attention if irritation or rash occurs. 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: Aspiration hazard: do NOT induce vomiting. Keep the victim calm and warm. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. Get immediate medical attention.

4.2 Most Important symptoms and effects, both acute and delayed: May cause eye, skin and respiratory tract irritation. May cause skin sensitization. Inhalation of vapors or mists may cause headache, dizziness, nausea and other symptoms of central nervous system depression. Aspiration hazard: material may enter the lungs if swallowed and cause lung injury. May cause blood abnormalities and central nervous system effects.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical attention is required for ingestion.

SECTION 5: FIRE-FIGHTING MEASURES

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

5.2 Special Hazards Arising from the Substance or Mixture:

Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

Combustion Products: Oxides of carbon, citrus terpenes, and unknown materials.

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. Contain water used in firefighting from entering sewers or natural waterways.

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:

Avoid releases to the environment. 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.

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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 |
|----------------|---------------------------------------|
| D-Limonene | 5 ppm TWA, 20 ppm STEL DFG MAK (Skin) |
| Polymer Solids | None Established |
| Additive | None Established |

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, 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 are recommended. Contact your glove supplier for selection assistance. In Europe follow EN 374.

Eye Protection: Chemical safety goggles 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, colorless liquid | Vapor Density: 4.7 (D-Limonene) |
| Odor: Citrus aroma | Specific Gravity: No data available |
| Odor Threshold: No data available | Solubility: Partially 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: 176-177°C (348.8-350.6°F) (D-Limonene) | Decomposition Temperature: No data available |
| Flash Point: 43.33-55.56°C (110-132°F) (D-Limonene) | Viscosity: No data available |
| Evaporation Rate: No data available | Explosive Properties: Not explosive |
| Flammable Limits: LEL: 0.7% (d-Limonene) UEL: 6.1% (d-Limonene) | Oxidizing Properties: Not an oxidizer |
| Vapor Pressure: 1 mmHg @ 20°C (68°F) (D-Limonene) | 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 storage and handling 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.

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10.5 Incompatible Materials: Strong oxidizers, bases, and acids.

10.6 Hazardous Decomposition Products: Combustion will produce oxides of carbon, citrus terpenes, and unknown materials.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye: May cause slight eye irritation. Corneal injury is unlikely.

Skin: May cause moderate irritation. Prolonged or repeated exposure may cause dermatitis. May cause allergic skin reaction (sensitization).

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. Aspiration hazard. May cause lung damage during swallowing or vomiting.

Chronic Hazards: Prolonged or repeated skin contact may cause dermatitis and allergic skin reaction (sensitization). Prolonged or repeated contact may cause blood abnormalities and central nervous system effects.

Acute Toxicity Values:

D-Limonene: Oral rat LD50- 4,400 mg/kg; Skin rabbit LD50 - >5,000 mg/kg

Polymer Solids: No toxicity data available

Additive: No toxicity data available

Skin corrosion/irritation: D-Limonene: Irritating to the skin.

Eye damage/irritation: D-Limonene: Irritating to the eye.

Respiratory Irritation: No data available.

Respiratory Sensitization: No data available.

Skin Sensitization: D-Limonene: Air oxidized d-limonene is sensitizing in guinea pigs.

Germ Cell Mutagenicity: D-Limonene: Negative in Ames and chromosome aberration assays.

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

Reproductive Toxicity: D-Limonene: No effects on reproduction or development was seen at a dose of 250 mg/kg in rabbits.

Specific Target Organ Toxicity:

Single Exposure: No data available

Repeat Exposure: D-Limonene: In a 13 week oral study with rats, kidney effects were observed at 150 mg/kg/day.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

D-Limonene: 48 hr LC50 Daphnia magna- 0.577 mg/L

Additive: 96 hr LC50 Brachydanio rerio - >100 mg/L; 24 hr EC50 Daphnia magna- >100 mg/L; 72 hr EC50 Green algae - >100 mg/L; 3 hr EC50 Activated sludge- >100 mg/L

This product is classified as very toxic to the aquatic environment with long-term adverse effects. Releases to the environment should be avoided.

12.2 Persistence and Degradability: D-Limonene: Readily biodegradable – 100% after 28 days. Additive: Not readily biodegradable.

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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.

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 | UN1866 | Resin Solution, Flammable | 3 | PG III | Marine Pollutant (dipentene) |
| Canadian TDG | UN1866 | Resin Solution, Flammable | 3 | PG III | Marine Pollutant (d-limonene) |
| EU ADR/RID | UN1866 | Resin Solution, Flammable | 3 | PG III | Marine Pollutant (d-limonene) |
| IMDG | UN1866 | Resin Solution, Flammable | 3 | PG III | Marine Pollutant (d-limonene) |
| IATA/ICAO | UN1866 | Resin Solution, Flammable | 3 | PG III | Marine Pollutant (d-limonene) |

Note: d-Limonene (Dipentene) is a Marine Pollutant

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 the TSCA inventory.

Department of Homeland Security 6 CFR Part 27 Proposed Appendix A Chemicals of Interest: None

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STATE REGULATIONS:

California Proposition 65: This product contains the following substances known to the State of California to cause cancer and/or reproductive harm: None.

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 | Not applicable | Not applicable | Flammable Substance-Group 4 |

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: Class 4 Group 2 oils (Non-water soluble) Hazard rank III

Ship Safety Act: Flammable liquid materials

Aviation Law: Flammable liquid materials

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: Dipentene Category: Y

15.2 Chemical Safety Assessment: No data available

SECTION 16: OTHER INFORMATION

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

SDS Revision History:

7/22/14: New SDS
9/10/14: Updated all sections.
4/3/15: Updated header, section 1 and 8.
7/8/15: Added -30 dilution and made a series SDS.

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

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Aquatic Acute Cat 1 Aquatic Acute Toxicity Category 1
 Aquatic Chronic Cat 1 Aquatic Chronic Toxicity Category 1
 Asp. Tox. Cat 1 Aspiration Toxicity Category 1
 Flam. Liq. Cat 3 Flammable Liquid Category 3
 Skin Irrit. Cat 2 Skin Irritant Category 2
 Skin Sens. Cat 1 Skin Sensitization Category 1
 H226 Flammable liquid and vapour.
 H304 May be fatal if swallowed and enters airways.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.

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

N Dangerous for the environment.
 Xi Irritant
 Xn Harmful
 R10 Flammable
 R38 Irritating to skin.
 R43 May cause sensitization by skin contact.
 R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in an aquatic environment.
 R65 Harmful: May cause lung damage if swallowed.

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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