SAFETY DATA SHEET

Revision Date: 01/07/2017
Print Date: 7/17/2017
SDS Number: R0171288

Pliobond™ 20 ADHESIVE
™ Trademark, Ashland or its subsidiaries, registered in various countries
121809

Version: 2.5


SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Details of the supplier of the safety data sheet</th>
<th>Emergency telephone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland P.O. Box 2219 Columbus, OH 43216 United States of America (USA) 614-790-3333</td>
<td>1-800-ASHLAND (1-800-274-5263)</td>
</tr>
<tr>
<td><a href="mailto:EHSProductSafety@ashland.com">EHSProductSafety@ashland.com</a></td>
<td>Regulatory Information Number 1-800-325-3751</td>
</tr>
<tr>
<td>Product Information 614-790-3333</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>GHS Classification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Category 1</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Specific target organ systemic toxicity - single exposure</td>
<td>Category 3 (Central nervous system)</td>
</tr>
<tr>
<td>Specific target organ systemic toxicity - repeated exposure</td>
<td>Category 2 (Skin, Nervous system, Liver, Kidney)</td>
</tr>
</tbody>
</table>
GHS label elements

Hazard pictograms

Signal Word: Danger

Hazard Statements
Highly flammable liquid and vapor. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of causing genetic defects. May cause cancer. May cause damage to organs (Skin, Nervous system, Liver, Kidney) through prolonged or repeated exposure.

Precautionary Statements
Prevention:
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/ attention. If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**

**Disposal:**
Dispose of contents/container to an approved waste disposal plant.

**Other hazards**
None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Chemical nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture</td>
<td>Defatter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL ETHYL KETONE</td>
<td>78-93-3</td>
<td>Flam. Liq. 2; H225 Eye Irrit. 2A; H319 STOT SE 3; H336</td>
<td>76.792</td>
</tr>
<tr>
<td>CALCIUM CARBONATE</td>
<td>471-34-1</td>
<td>This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).</td>
<td>2.7452</td>
</tr>
<tr>
<td>PHENOL</td>
<td>108-95-2</td>
<td>Acute Tox. 3; H301 Acute Tox. 3; H331 Acute Tox. 3; H311 Skin Corr. 1; H314</td>
<td>1.088</td>
</tr>
</tbody>
</table>
SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Call a POISON CENTRE or doctor/physician if exposed or you feel unwell.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
Consult a physician after significant exposure.

In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.
If on skin, rinse well with water.
Wash contaminated clothing before re-use.
If on clothes, remove clothes.
<table>
<thead>
<tr>
<th>In case of eye contact</th>
<th>Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If swallowed</td>
<td>Obtain medical attention. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Do not induce vomiting. Phenol concentrations greater than 1.5% produce irritation and greater than 5% are corrosive; vomiting can cause further damage to the mouth and throat. Do not dilute the swallowed material, since this may enhance its absorption. Seek immediate medical attention. If possible, do not leave the individual unattended. Vomiting and diarrhea may occur spontaneously.</td>
</tr>
<tr>
<td>Most important symptoms and effects, both acute and delayed</td>
<td>Ingestion of large amounts or other significant exposure to this material (or a component) may cause alkalosis. Excessive calcium intake may cause gastrointestinal symptoms, hypertension, hypercalcemia, kidney stones, and may inhibit absorption of iron, zinc, and possibly other trace elements. Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias. Sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material. Pulmonary edema may be delayed. Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea) irritation (nose, throat, airways) Cough low body temperature irregular heartbeat cyanosis (causes blue coloring of the skin and nails from lack of oxygen) lung edema (fluid buildup in the lung tissue) Convulsions respiratory failure Difficulty in breathing Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of causing genetic defects.</td>
</tr>
</tbody>
</table>
May cause cancer.  
May cause damage to organs through prolonged or repeated exposure.

Notes to physician:  Phenol adsorbs to activated charcoal, and it maybe preferable to ipecac-induced emesis because seizures or coma may onset rapidly and because of the corrosive effects of phenol.  
A usual activated charcoal dose in adults is 30-100 g and in children is 15-30 g.  Activated charcoal should be administered with, or followed by, a cathartic.  If endoscopy is planned, charcoal may obscure visualization of affected areas.  Gastric lavage may be indicated if it is performed soon after ingestion or in patients who are comatose or at risk of seizures.  Monitor for seizures, metabolic acidosis and ventricular dysrhythmias.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media:  Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Water spray  
Foam  
Alcohol-resistant foam  
Carbon dioxide (CO2)  
Dry chemical

Unsuitable extinguishing media:  High volume water jet

Specific hazards during firefighting:  Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.  
Beware of vapours accumulating to form explosive concentrations.  Vapours can accumulate in low areas.  
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products:  carbon dioxide and carbon monoxide  
Hydrogen cyanide (hydrocyanic acid)  
Nitrogen oxides (NOx)  
Calcium oxide  
Acid vapors

Specific extinguishing methods:  

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Product is compatible with standard fire-fighting agents.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Use a water spray to cool fully closed containers.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas. Remove all sources of ignition. Use personal protective equipment. Ensure adequate ventilation. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Other information : Comply with all applicable federal, state, and local regulations. Suppress (knock down) gases/vapours/mists with a water spray jet.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Open drum carefully as content may be under pressure. Avoid formation of aerosol. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapours/dust. Do not smoke. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being
used.
Container hazardous when empty.
Take precautionary measures against static discharges.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage:
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
No smoking.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL ETHYL KETONE</td>
<td>78-93-3</td>
<td>TWA</td>
<td>200 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>300 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>300 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm 590 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm 590 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>300 ppm 885 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>200 ppm 590 mg/m3</td>
<td>CAL PEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>300 ppm 885 mg/m3</td>
<td>CAL PEL</td>
</tr>
<tr>
<td>CALCIUM CARBONATE</td>
<td>471-34-1</td>
<td>PEL</td>
<td>10 mg/m3</td>
<td>CAL PEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>5 mg/m3 resorbsable dust</td>
<td>CAL PEL</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL ETHYL KETONE</td>
<td>78-93-3</td>
<td>methyl ethyl ketone</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>2 mg/l</td>
<td>ZUS_A CGIHB</td>
</tr>
<tr>
<td>PHENOL</td>
<td>108-95-2</td>
<td>Phenol</td>
<td>Urine</td>
<td>End of shift (As soon as possible)</td>
<td>250 mg/g Creatinine</td>
<td>ZUS_A CGIHB</td>
</tr>
</tbody>
</table>

**Biological occupational exposure limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>PHENOL</strong></td>
<td>108-95-2</td>
<td>TWA</td>
<td>5 ppm</td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 ppm 19 mg/m3</td>
<td>NIOSH REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>15.6 ppm 60 mg/m3</td>
<td>NIOSH REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 ppm 19 mg/m3</td>
<td>OSHA Z-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 ppm 19 mg/m3</td>
<td>OSHA P0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>5 ppm 19 mg/m3</td>
<td>CAL PEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FORMALDEHYDE</strong></td>
<td>50-00-0</td>
<td>C</td>
<td>0.3 ppm</td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.016 ppm</td>
<td>NIOSH REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0.1 ppm</td>
<td>NIOSH REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>0.75 ppm</td>
<td>OSHA CARC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>2 ppm</td>
<td>OSHA CARC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>0.75 ppm</td>
<td>CAL PEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>2 ppm</td>
<td>CAL PEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.016 ppm</td>
<td>NIOSH REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0.1 ppm</td>
<td>(Formaldehyde)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TWA**: Time on Weight  
**STEL**: Short Term Exposure Limit  
**TWA**: Time Weighted Average

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**TWA**: Time Weighted Average

**Biological occupational exposure limits**

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</tr>
</thead>
<tbody>
<tr>
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<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
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<td>ZUS_A CGIHB</td>
</tr>
<tr>
<td>PHENOL</td>
<td>108-95-2</td>
<td>Phenol</td>
<td>Urine</td>
<td>End of shift (As soon as possible)</td>
<td>250 mg/g Creatinine</td>
<td>ZUS_A CGIHB</td>
</tr>
<tr>
<td><strong>Engineering measures</strong></td>
<td>Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Personal protective equipment** | **Respiratory protection** : A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. 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 other circumstances where an air-purifying respirator may not provide adequate protection.  
In the case of vapour formation use a respirator with an approved filter. |
| **Hand protection** | **Material** : natural rubber |
| **Remarks** | The suitability for a specific workplace should be discussed with the producers of the protective gloves. |
| **Eye protection** | Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist. |
| **Skin and body protection** | Wear resistant gloves (consult your safety equipment supplier).  
Wear as appropriate:  
Impervious clothing  
Safety shoes  
Flame-resistant clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.  
Discard gloves that show tears, pinholes, or signs of wear. |
| **Hygiene measures** | Wash hands before breaks and at the end of workday.  
When using do not eat or drink.  
When using do not smoke. |
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Colour : tan

Odour : No data available

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Boiling point/boiling range : 176 °F / 80 °C (1013 hPa)

Flash point : -5 °C
  Method: Tag open cup

Evaporation rate : 1
  Ethyl Ether

Flammability (solid, gas) : No data available

Upper explosion limit : 12.0 %(V)

Lower explosion limit : 2.0 %(V)

Vapour pressure : 71.0000 mmHg (68.00 °F)

Relative vapour density : 2.5AIR=1

Relative density : 0.8629 (25 °C)

Density : 0.8629 g/cm³ (25 °C)

Solubility(ies)
  Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available
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SECTION 10. STABILITY AND REACTIVITY

Reactivity
No decomposition if stored and applied as directed.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Vapours may form explosive mixture with air. Formaldehyde reacts with peroxides, phenol, strong acids, amines and strong oxidizing agents. Formaldehyde reacts violently with nitrogen dioxide, nitromethane, perchloric acid, perchloric acid-aniline mixtures, or peroxyformic acid to yield explosive compounds. It reacts with hydrochloric acid or to organic chlorides to form the carcinogen, bis(chloromethyl)ether.

Conditions to avoid
Excessive heat
Heat, flames and sparks.

Incompatible materials
1,3-butadiene
ammonium salts
aluminum
aluminum salts
Amines
Copper
Copper alloys
halogenated hydrocarbons
halogens
Iron
Lead
magnesium
strong alkalis
strong mineral acids
Strong oxidizing agents
Zinc

Hazardous decomposition
products: acid vapors, calcium oxide, carbon dioxide and carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
- Inhalation
- Skin contact
- Eye Contact
- Ingestion

**Acute toxicity**
Not classified based on available information.

**Components:**

**METHYL ETHYL KETONE:**
Acute oral toxicity: LD50 (Rat): 2,300 - 3,500 mg/kg
Acute dermal toxicity: LD50 (Rabbit): > 5 g/kg

**CALCIUM CARBONATE:**
Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: No adverse effect has been observed in acute oral toxicity tests.

Acute inhalation toxicity: LC50 (Rat): > 3 mg/l
Exposure time: 4 h
Method: OECD Test Guideline 403
Assessment: Not classified as acutely toxic by inhalation under GHS.

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: Not classified as acutely toxic by dermal absorption under GHS.

**PHENOL:**
Acute oral toxicity: LD50 (Rat): 317 mg/kg
LD50 (Mouse): 270 mg/kg
Assessment: The component/mixture is classified as acute oral toxicity, category 3.

Acute inhalation toxicity: Assessment: The component/mixture is classified as acute
inhalation toxicity, category 3.

**Acute dermal toxicity**: LD50 (Rabbit): 850 mg/kg
LD50 (Rat, females): 660 mg/kg
Method: OECD Test Guideline 402

**FORMALDEHYDE**: 
Acute oral toxicity: LD50 (Guinea pig): 260 mg/kg
LD50 (Rat): 100 mg/kg
LD50 (Rat, male): 800 mg/kg
Assessment: The component/mixture is classified as acute oral toxicity, category 3.

**Acute inhalation toxicity**: LC50 (Rat): 588 mg/m3
Exposure time: 4 h
Test atmosphere: gas
Assessment: The component/mixture is classified as acute inhalation toxicity, category 2.

**Acute dermal toxicity**: LD50 (Rabbit): 288 mg/kg

**Skin corrosion/irritation**
Causes skin irritation.

**Product:**
Result: Repeated exposure may cause skin dryness or cracking.

Remarks: May cause skin irritation and/or dermatitis.

**Components:**
**METHYL ETHYL KETONE:**
Result: No skin irritation

**CALCIUM CARBONATE:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

**PHENOL:**
Result: Corrosive to skin

**FORMALDEHYDE:**
Species: Rat
Exposure time: 40 min
Result: Corrosive after 3 minutes to 1 hour of exposure

**Serious eye damage/eye irritation**
Causes serious eye irritation.

**Product:**
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

**Components:**
METHYL ETHYL KETONE:
Result: Irritating to eyes.

CALCIUM CARBONATE:
Species: Rabbit
Result: Slight, transient irritation
Method: OECD Test Guideline 405

PHENOL:
Result: Corrosive

FORMALDEHYDE:
Result: Corrosive

**Respiratory or skin sensitisation**
Skin sensitisation: May cause an allergic skin reaction.
Respiratory sensitisation: Not classified based on available information.

**Components:**
CALCIUM CARBONATE:
Test Type: Local lymph node assay
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

FORMALDEHYDE:
Assessment: The product is a skin sensitiser, sub-category 1A.

Test Type: Maximisation Test
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Test Type: Buehler Test
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Test Type: Local lymph node assay
Species: Mouse  
Method: OECD Test Guideline 429  
Result: Causes sensitisation.

Germ cell mutagenicity  
Suspected of causing genetic defects.  

**Components:**  

**CALCIUM CARBONATE:**  
Genotoxicity in vitro:  
- Test Type: Chromosome aberration test in vitro  
- Test species: Human lymphocytes  
- Metabolic activation: with and without metabolic activation  
- Method: OECD Test Guideline 473  
- Result: negative

**PHENOL:**  
Genotoxicity in vitro:  
- Test Type: Chromosome aberration test in vitro  
- Test species: Chinese hamster ovary cells  
- Metabolic activation: with metabolic activation  
- Method: OECD Test Guideline 473  
- Result: positive

Genotoxicity in vivo:  
- Test Type: Micronucleus test  
- Test species: Chinese hamster ovary cells  
- Metabolic activation: with and without metabolic activation  
- Method: OECD Test Guideline 487  
- Result: positive

Germ cell mutagenicity- 
Assessment:  
- In vitro tests showed mutagenic effects

**FORMALDEHYDE:**  
Genotoxicity in vitro:  
- Test Type: Ames test  
- Test species: Salmonella typhimurium  
- Metabolic activation: without metabolic activation  
- Result: positive

Genotoxicity in vitro:  
- Test Type: Chromosome aberration test in vitro  
- Test species: mouse lymphoma cells  
- Metabolic activation: with and without metabolic activation  
- Result: positive

Genotoxicity in vitro:  
- Test Type: In vitro mammalian cell gene mutation test
Test species: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Result: negative

: Test Type: in vitro assay
Test species: Human lymphocytes
Metabolic activation: with and without metabolic activation
Result: Conflicting results have been seen in different studies.

Genotoxicity in vivo : Test Type: Micronucleus test
Test species: Mouse
Application Route: Oral
Result: negative

Test Type: Micronucleus test
Test species: Mouse
Application Route: inhalation (gas)
Result: negative

Test Type: in vivo assay
Test species: Rat
Application Route: inhalation (gas)
Result: negative

Test Type: Mouse specific locus test
Test species: Mouse
Application Route: inhalation (gas)
Result: negative

Test Type: Mammalian bone marrow sister chromatid exchange
Test species: Rat
Application Route: inhalation (gas)
Result: negative

Test Type: comet assay
Test species: Rat
Application Route: inhalation (gas)
Result: negative

Germ cell mutagenicity-Assessment : In vitro tests showed mutagenic effects which were not observed with in vivo test.

Carcinogenicity
May cause cancer.

Components:
FORMALDEHYDE:
Species: Rat
Application Route: Ingestion  
Result: negative  
Species: Mouse  
Application Route: Dermal  
Result: negative  
Species: Rat  
Application Route: Inhalation  
Result: positive  

Carcinogenicity -  
Assessment: Presumed to have carcinogenic potential for humans  

Reproductive toxicity  
Not classified based on available information.  

Components:  
FORMALDEHYDE:  
Effects on fertility: Remarks: No data available  
Effects on foetal development: Species: Rat  
Result: No teratogenic effects  

STOT - single exposure  
May cause drowsiness or dizziness.  

Components:  
METHYL ETHYL KETONE:  
Assessment: May cause drowsiness or dizziness.  

STOT - repeated exposure  
May cause damage to organs (Skin, Nervous system, Liver, Kidney) through prolonged or repeated exposure.  

Components:  
PHENOL:  
Target Organs: Skin  
Assessment: May cause damage to organs through prolonged or repeated exposure.  

Target Organs: Nervous system  
Assessment: May cause damage to organs through prolonged or repeated exposure.  

Target Organs: Liver  
Assessment: May cause damage to organs through prolonged or repeated exposure.  

Target Organs: Kidney  
Assessment: May cause damage to organs through prolonged or repeated exposure.  

Repeated dose toxicity  

Components:
<table>
<thead>
<tr>
<th><strong>SAFETY DATA SHEET</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Date</td>
<td>01/07/2017</td>
</tr>
<tr>
<td>Print Date</td>
<td>7/17/2017</td>
</tr>
<tr>
<td>SDS Number</td>
<td>R0171288</td>
</tr>
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<td></td>
<td>Version: 2.5</td>
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<tr>
<td>Pliobond™ 20 ADHESIVE™</td>
<td>Trademark, Ashland or its subsidiaries, registered in various countries 121809</td>
</tr>
</tbody>
</table>

**FORMALDEHYDE:**
Species: Rat
No observed adverse effect level: 82 mg/kg
Application Route: Ingestion

Species: Rat
No observed adverse effect level: 1.2 mg/m3
Application Route: inhalation (gas)
Target Organs: Nose, Upper respiratory tract

**Aspiration toxicity**
Not classified based on available information.
**Product:**
No aspiration toxicity classification

**Components:**
**METHYL ETHYL KETONE:**
May be harmful if swallowed and enters airways.

**Further information**
**Product:**
Remarks: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting., Concentrations substantially above the TLV value may cause narcotic effects., Solvents may degrease the skin.

**Components:**
**METHYL ETHYL KETONE:**
Remarks: Central nervous system

**PHENOL:**
Remarks: Central nervous system

Remarks: Blood

---

**SECTION 12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Product:**
Ecotoxicology Assessment
Acute aquatic toxicity : Not classified based on available information.

Chronic aquatic toxicity : Not classified based on available information.

**Components:**
**METHYL ETHYL KETONE:**
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 3,130 - 3,320 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Daphnia magna (Water flea)): 4,025 - 6,440 mg/l
Exposure time: 48 h
Test Type: static test
Remarks: Intoxication

CALCIUM CARBONATE:
Toxicity to fish:
LC50 (Gambusia affinis (Mosquito fish)): > 56,000 mg/l
Exposure time: 96 h
Test Type: static test

PHENOL:
Toxicity to fish:
LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 - 14 mg/l
Exposure time: 96 h
Test Type: static test
LC50 (Pimephales promelas (fathead minnow)): 67.5 mg/l
Exposure time: 96 h
Test Type: flow-through test
LC50 (Danio rerio (zebra fish)): 27.8 mg/l
Exposure time: 96 h
Method: Static
Remarks: Mortality

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Water flea (Ceriodaphnia dubia)): 3.1 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae:
EC50 (Pseudokirchneriella subcapitata (green algae)): 61.1 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to fish (Chronic toxicity):
NOEC (Fish): 0.077 mg/l
Exposure time: 60 d
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
NOEC (Daphnia magna (Water flea)): 0.16 mg/l
Exposure time: 16 d
Test Type: semi-static test

FORMALDEHYDE:
Toxicity to fish:
LC50 (Striped bass (Morone saxatilis)): 6.7 mg/l
Exposure time: 96 h
Method: Static
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 29 mg/l
Exposure time: 48 h
Method: Static
Remarks: Intoxication

EC50 (Daphnia pulex (Water flea)): 5.8 mg/l
Exposure time: 48 h

Toxicity to algae: ErC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 4.89 mg/l
Exposure time: 72 h

Toxicity to bacteria: EC50 (activated sludge): 19 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition

Persistence and degradability
Components:
PHENOL:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 62 %
Exposure time: 100 h
Method: OECD Test Guideline 301C

FORMALDEHYDE:
Biodegradability: aerobic
Result: Readily biodegradable.
Biodegradation: 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

aerobic
Result: Readily biodegradable.
Biodegradation: > 90 %
Exposure time: 2 Weeks
Method: OECD Test Guideline 301C

Photodegradation:

No data available

Bioaccumulative potential
Components:
METHYL ETHYL KETONE:
Partition coefficient: n-octanol/water: log Pow: 0.29

PHENOL:
Partition coefficient: n-octanol/water: log Pow: 1.46

FORMALDEHYDE:
Bioaccumulation: Remarks: No bioaccumulation is to be expected (log Pow <= 4).

Partition coefficient: n-octanol/water: log Pow: 0.35 (25 °C)

No data available

Mobility in soil
Components: No data available

Other adverse effects
Product: Additional ecological information: No data available

Components:
FORMALDEHYDE: Results of PBT and vPvB assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
General advice: Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.
SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>PROPER SHIPPING NAME</th>
<th>*HAZARD CLASS</th>
<th>SUBSIDIARY HAZARDS</th>
<th>PACKING GROUP</th>
<th>MARINE POLLUTANT / LTD. QTY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. DOT - ROAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN 1133 Adhesives</td>
<td>3</td>
<td>II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| CFR_RAIL_C |
| UN 1133 Adhesives | 3 | II |

| U.S. DOT - INLAND WATERWAYS |
| UN 1133 Adhesives | 3 | II |

| TDG ROAD_C |
| UN 1133 ADHESIVES | 3 | II |

| TDG_RAIL_C |
| UN 1133 ADHESIVES | 3 | II |

| TDG_INWT_C |
| UN 1133 ADHESIVES | 3 | II |

| INTERNATIONAL MARITIME DANGEROUS GOODS |
| UN 1133 ADHESIVES | 3 | II |

| INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO |
| UN 1133 Adhesives | 3 | II |

| INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER |
| UN 1133 Adhesives | 3 | II |

| MX_DG |
**SAFETY DATA SHEET**

**Revision Date:** 01/07/2017  
**Print Date:** 7/17/2017  
**SDS Number:** R0171288  
**Version:** 2.5

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121809

**UN 1133 ADHESIVES 3 II**

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID*

<table>
<thead>
<tr>
<th>Marine pollutant</th>
<th>no</th>
</tr>
</thead>
</table>

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

### SECTION 15. REGULATORY INFORMATION

**EPCRA - Emergency Planning and Community Right-to-Know Act**  
**CERCLA Reportable Quantity**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL ETHYL KETONE</td>
<td>78-93-3</td>
<td>5000</td>
<td>6511.094906</td>
</tr>
</tbody>
</table>

**SARA 311/312 Hazards**

- Acute Health Hazard
- Fire Hazard
- Chronic Health Hazard

**SARA 313**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>RQ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHENOL</td>
<td>108-95-2</td>
<td>1.08%</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>0.13%</td>
</tr>
</tbody>
</table>

**California Prop 65**

- WARNING! This product contains a chemical known to the State of California to cause cancer.
  - FORMALDEHYDE 50-00-0
- VINYLCYCLOHEXENE, 4- 100-40-3
- ACRYLONITRILE 107-13-1
- 1,3, BUTADIENE 106-99-0

- WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
  - VINYLCYCLOHEXENE, 4- 100-40-3
  - 1,3, BUTADIENE 106-99-0
The components of this product are reported in the following inventories:

- **TSCA**: On TSCA Inventory
- **DSL**: All components of this product are on the Canadian DSL
- **AICS**: On the inventory, or in compliance with the inventory
- **ENCS**: On the inventory, or in compliance with the inventory
- **KECI**: On the inventory, or in compliance with the inventory
- **PICCS**: On the inventory, or in compliance with the inventory
- **IECSC**: On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

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**SECTION 16. OTHER INFORMATION**

**Further information**
Revision Date: 01/07/2017

<table>
<thead>
<tr>
<th>NFPA:</th>
<th>HMIS III:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>Physical Hazard</td>
</tr>
<tr>
<td>Health</td>
<td>Health</td>
</tr>
<tr>
<td>2</td>
<td>FLAMMABILITY</td>
</tr>
<tr>
<td>3</td>
<td>PHYSICAL HAZARD</td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Special hazard.**

---

**NFPA Flammable and Combustible Liquids Classification**
Flammable Liquid Class IB

---

0 = not significant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme, * = Chronic
Full text of H-Statements

H225 Highly flammable liquid and vapor.
H227 Combustible liquid.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H331 Toxic if inhaled.
H336 May cause drowsiness or dizziness.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H373 May cause damage to organs through prolonged or repeated exposure.

Sources of key data used to compile the Safety Data Sheet
Ashland internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland’s Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet:
ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
FG: Food grade
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement: Hazard Statement
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulation by the “International Air Transport Association” (IATA).
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the “International Civil Aviation Organization”
IMDG: International Maritime Code for Dangerous Goods
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>logPow</td>
<td>octanol-water partition coefficient</td>
</tr>
<tr>
<td>LCxx</td>
<td>Lethal Concentration, for xx percent of test population</td>
</tr>
<tr>
<td>LDxx</td>
<td>Lethal Dose, for xx percent of test population</td>
</tr>
<tr>
<td>ICxx</td>
<td>Inhibitory Concentration for xx of a substance</td>
</tr>
<tr>
<td>Ecxx</td>
<td>Effective Concentration of xx</td>
</tr>
<tr>
<td>N.O.S.</td>
<td>Not Otherwise Specified</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OEL</td>
<td>Occupational Exposure Limit</td>
</tr>
<tr>
<td>P-Statement</td>
<td>Precautionary Statement</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term exposure limit</td>
</tr>
<tr>
<td>STOT</td>
<td>Specific Target Organ Toxicity</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time-weighted average</td>
</tr>
<tr>
<td>vPvB</td>
<td>Very Persistent and Very Bioaccumulative</td>
</tr>
<tr>
<td>WEL</td>
<td>Workplace Exposure Level</td>
</tr>
</tbody>
</table>

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
DOT: Department of Transportation
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC: Hazardous Materials Information Review Commission
HMIS: Hazardous Materials Identification System
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
PMRA: Health Canada Pest Management Regulatory Agency
RTK: Right to Know
WHMIS: Workplace Hazardous Materials Information System