Section 1: Product and Company Identification

Product Name: PELCO® Conductive Carbon Glue
Synonym: None

Company Name
Ted Pella, Inc., P.O. Box 492477, Redding, CA 96049-2477
   Inside USA and Canada 1-800-237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
   Outside USA and Canada 1-530-243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
   CHEMTREC USA and Canada Emergency Contact Number 1-800-424-9300 24 hours a day
   CHEMTREC Outside USA and Canada Emergency Contact Number +1-703-741-5970 24 hours a day

Section 2: Hazard Identification

2.1 Classification of the substance or mixture

GHS Pictograms

GHS Categories
GHS02 – Flammable
   Flamm. Liq. 2  H225: Highly flammable liquid and vapor
GHS08 – Health Hazard
   Carcinogen 2  H351: Suspected of causing cancer
   STOT – SE (Narcotic effects) 3  H336: May cause drowsiness or dizziness
   Aspiration Hazard 1  H304: May be fatal if swallowed and enters airways
   Reproductive Tox. 2  H361: Suspected of damaging fertility or the unborn child

GHS07 – Irritant
   STOT – RE 2  H373: May cause damage to organs through repeated or prolonged exposure
   Eye Irrit. 2A  H319: Cause serious eye irritation
   Skin Corr./Irrit. 2  H315: Causes serious skin irritation

2.2 Label elements

Hazard Pictograms
Signal word: DANGER

Hazard statements:
H225  Highly flammable liquid and vapor.
H304  May be fatal if swallowed and enters airways.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H336  May cause drowsiness or dizziness.
H351  Suspected of causing cancer.
H361  Suspected of damaging fertility or the unborn child.
H373  May cause damage to organs through prolonged or repeated exposure.
H402  Harmful to aquatic life.

Precautionary statements:
P201  Obtain special instructions before use.
P210  Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233  Keep container tightly closed.
P240  Ground/bond container and receiving equipment.
P241  Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.
P242  Use only non-sparking tools.
P243  Take precautionary measures against static discharge.
P260  Do not breathe dust/fume/gas/mist/vapors/spray.
P271  Use only outdoors or in a well-ventilated area.
P273  Avoid release to the environment.
P280  Wear protective gloves/protective clothing/eye protection/face protection.
P281  Use personal protective equipment as required.
P301+P310  IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P303+P361+P353+352  IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water and soap. Rinse skin with water/shower.
P304+P340  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P310  IF exposed or concerned: Get medical advice/attention.
P312  Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P331  Do NOT induce vomiting.
P332+P313  If skin irritation occurs: Get medical advice/attention.
P337+P313  If eye irritation persists: Get medical advice/attention.
P370+P378  In case of fire: Use alcohol resistant foam or normal protein foam for extinction.
P403+P235  Store in a well-ventilated place. Keep cool.
P405  Store locked up.
P501  Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other Hazards

HMIS Hazard Rating: Health: 2; Flammability: 3 Physical Hazard: 0
Emergency overview
Appearance: Dark grey liquid
Immediate effects:
  - If inhaled: Dizziness, drowsiness, headaches, nausea, cough, blurred vision, fatigue.
  - Eye contact: Irritation, redness, pain, blurred vision.
  - Skin contact: Irritation, pain, redness.
  - If swallowed: Nausea, vomiting, abdominal cramps, irritation, burning sensation, or dizziness.

Potential health effects
Primary Routes of entry: Eyes, ingestion, inhalation, and skin.
Signs and Symptoms of Overexposure: ND
Eyes: Liquid in contact with eyes may cause permanent eye damage.
Skin: May cause skin irritation and possible pain and stinging if the skin is abraded.
Ingestion: Harmful if swallowed. May cause respiratory and digestive tract irritation.
Inhalation: Solvents may cause respiratory tract irritation, headache, and possible dizziness.
Chronic Exposure: Prolonged and repeated exposure may cause dermatitis, defatting of the skin, liver and kidney damage, and adverse central nervous system effects.
Chemical Listed As Carcinogen Or Potential Carcinogen: Carbon black
See Toxicological Information (Section11)

Potential environmental effects
See Ecological Information (Section 12)

Section 3: Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Principle Hazardous Component(s) (chemical and common name(s)) (Cas. No)</th>
<th>%</th>
<th>OSHA PEL</th>
<th>ACGIH TWA</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene (108-88-3)</td>
<td>10-30</td>
<td>200ppm</td>
<td>20ppm</td>
<td>No</td>
<td>Group 3</td>
<td>No</td>
</tr>
<tr>
<td>Graphite, natural (7782-42-5)</td>
<td>10-30</td>
<td>15 mppcf</td>
<td>2 mg/m³</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Acetone (67-64-1)</td>
<td>5-10</td>
<td>2400 mg/m³ 1000ppm</td>
<td>500ppm</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Isobutyl acetate (110-19-0)</td>
<td>5-10</td>
<td>700 mg/m³ 150 ppm</td>
<td>150 ppm</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Amyl methyl ketone (110-43-0)</td>
<td>5-10</td>
<td>465 mg/m³ 100 ppm</td>
<td>50 ppm</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ethanol (64-17-5)</td>
<td>5-10</td>
<td>1900 mg/m³ 1000ppm</td>
<td>NA</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ethyl acetate (141-78-6)</td>
<td>1-5</td>
<td>1400</td>
<td>400ppm</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>mg/m³ 400 ppm</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>--------------------------</td>
<td>---------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>----------</td>
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<td></td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>1-5</td>
<td>NE</td>
<td>NE</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>monomethyl ether acetate,</td>
<td>0.5-1.5</td>
<td>3.5 mg/m³</td>
<td>30 mg/m³</td>
<td>No</td>
<td>2B</td>
<td></td>
</tr>
<tr>
<td>alpha-isomer (108-65-6)</td>
<td>30 mg/m³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section 4: First Aid Measures**

If accidental overexposure is suspected

**Eye(s) Contact:** Wash out immediately with water. If irritation develops, seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**Skin Contact:** Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

**Inhalation:** If fumes, aerosols, or combustion products are inhaled remove from contaminated area.

**Ingestion:** If spontaneous vomiting appears imminent or occurs, lean patient forward or place on left side and hold patient’s head down, lower than their hips to avoid aspiration of vomitus. Do not induce vomiting. Observe patient carefully. Rinse mouth with water; slowly provide as much water as possible to drink. Avoid giving alcohol, milk or oils. Never give liquids to an unconscious person.

**Note to physician**

Treatment: Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

Treat symptomatically.

Medical Conditions generally Aggravated by Exposure: ND

**Section 5: Fire Fighting Measures**

**Flash Point:** -18°C (-0.4 °F). Lower bound FP estimate is based on the closed cup value for the acetone component.

**Flammable Limits:** LFL 1.6% UFL 9.9% (in volume %)

**Auto-ignition point:** ≥315°C (599 °F). Values based on 1-methoxy-2-propanol acetate, which is the component with the lowest auto-ignition value

**Fire Extinguishing Media:** Sand, dry powder extinguishers or other inerts should be used to smother dust fires. At temperatures above 1500°C, carbon, graphite or graphene reacts with substances containing oxygen, including water and carbon dioxide. In case of intensely hot fires sand should be used to cover and isolate these materials.

**Special Fire Fighting Procedures:** Wear self-contained breathing apparatus and protective gloves for firefighting.

**Unusual Fire and Explosion Hazards:** Liquid and vapor are highly flammable. Severe fire hazard when exposed to heat, flame or other oxidizers. Vapors are heavier than air, and may travel to sources of ignition near the ground. May be violently or explosively reactive.

**Hazardous combustion products:** Produces CO, CO₂, hydrogen fluoride, silicon dioxide (SiO₂) nitrous oxides, and smoke.

**DOT Class:** Flammable
Section 6: Accidental Release Measures
Steps to be Taken in Case Material is Released or Spilled: Remove all sources of ignition. Provide adequate ventilation. Wear appropriate personal protection.
Cleaning: Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe up further residue with paper towel and place in container. Wash spill area with soap and water to remove the last traces of residue.
Dispose of spill waste according to Section 13
Waste Disposal Methods: Dispose of waste according to Federal, State and Local Regulations.

Section 7: Handling and Storage
Precautions to be taken in Handling and Storage:
Storage: Contains low boiling substance: Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately. Check for bulging containers and vent periodically. Avoid smoking, naked lights, heat or ignition sources. DO NOT use plastic buckets. Keep containers securely sealed.
Handling: Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Wear protective gloves/clothing/eye protection. When handling, DO NOT eat, drink or smoke. Always wash hands with soap and water after handling. Earth and secure metal containers when dispensing or pouring product. Use spark-free tools when handling. Take precautionary measures against static discharge. Use in a well-ventilated area. In cases of inadequate ventilation wear respiratory protection.
Other Information: Carbon and charcoal may be stabilized for storage and transport, without moistening, by treatment with hot air at 50°C. Use of oxygen-impermeable bags to limit oxygen and moisture uptake has been proposed. Surface contamination with oxygenated volatiles may generate a heat of reaction (spontaneous heating). Should product reach 110°C, stacked bags should be pulled apart with each bag separated by an air space to permit cooling away from other combustible materials.

Storage temperature: Keep cool.
Storage Pressure: NA

Section 8: Exposure Controls / Personal Protection
Engineering Controls: Ventilation required: Keep airborne concentrations below exposure limits given in Section 3.
Recommendation: Respect the time weighted average of 20 ppm for toluene.
Personal Protection Equipment:
Respiratory protection: If exposed to mist, wear respirator such as a half-mask respirator. Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this SDS, and that the respirator is fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.
Protective gloves: Wear protective gloves in butyl rubber, latex, neoprene, or other chemically resistant gloves.
Skin protection: Wear appropriate protective clothing to prevent skin contact.
Eye protection: Wear chemical safety goggles with side shields.
General hygiene: Wash hands thoroughly with water and soap after handling.
Additional clothing and/or equipment: Eye wash station.
Exposure Guidelines: See Composition/Information on Ingredients (Section 3)

Section 9 Physical and Chemical Properties
Appearance and Physical State: Steel grey liquid.
Odor (threshold): ND (ND)
Specific Gravity (H₂O=1): 0.996
Vapor Pressure (mm Hg): ND
Vapor Density (air=1): ND
Percent Volatile by volume: ND
VOC (Volatile Organic Content): ND
Evaporation Rate (butyl acetate=1): ND
Boiling Point: >56 °C
Freezing point / melting point: ND
Viscosity: >34 mm²/s
pH: ND
Solubility in Water: Partial
Molecular Weight: NA

Section 10: Stability and Reactivity
Stability: Stable at normal temperatures and pressures, except in the presence of incompatible materials.
Conditions to Avoid: Ignition sources and incompatible substances
Materials to Avoid (Incompatibility): Strong oxidizing agents, strong acids, strong bases, ammonium nitrate, perchlorates, phosphorus, selenium, and sulfur.
Hazardous Decomposition Products: Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.
Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information
Results of component toxicity test performed:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD₅₀ oral</th>
<th>LD₅₀ dermal</th>
<th>LC₅₀ inhalation</th>
<th>TCLo inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>636 mg/kg Rat</td>
<td>12,124 mg/kg Rabbit</td>
<td>49 g/m³ 4h Rat</td>
<td>200 ppm Human</td>
</tr>
<tr>
<td>graphite</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>2-propanone</td>
<td>5,800 mg/kg Rat</td>
<td>5,340 mg/kg Rabbit</td>
<td>&gt;9 400 L/kg Guinea pig</td>
<td>44 g/m³ 4 h Rat</td>
</tr>
<tr>
<td>isobutyl acetate</td>
<td>13,400 mg/kg Rat</td>
<td>&gt;17 400 mg/kg Rabbit</td>
<td>NE</td>
<td>8 000 ppm 4h Rat LCLo a)</td>
</tr>
<tr>
<td>Amyl methyl ketone</td>
<td>1,670 mg/kg Rat</td>
<td>730 mg/kg Mouse</td>
<td>12,600 L/kg Rabbit</td>
<td>NE</td>
</tr>
<tr>
<td>ethanol</td>
<td>7,060 mg/kg Rat</td>
<td>3,450 mg/kg Mouse</td>
<td>NE</td>
<td>20,000 ppm 10 h Rat</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>5,620 mg/kg Rat</td>
<td>4,100 mg/kg Mouse</td>
<td>&gt;20,000 L/kg Rabbit</td>
<td>45 g/m³ 2 h Mouse</td>
</tr>
<tr>
<td>Propylene glycol monomethyl ether acetate, alpha-isomer</td>
<td>8,532 mg/kg Rat</td>
<td>&gt;5,000 mg/kg Mouse</td>
<td>&gt;5 g/kg Rabbit</td>
<td>NE</td>
</tr>
<tr>
<td>carbon black</td>
<td>&gt;15 g/kg Rat</td>
<td>&gt;3g/kg Rabbit</td>
<td>NE</td>
<td>1.6mg/m³ 7h Rat</td>
</tr>
</tbody>
</table>

a) Lowest published lethal concentration

Human experience
Skin corrosion/irritation: Skin irritant. Prolonged or repeated skin contact may cause dermatitis.
Serious eye damage/irritation: Causes serious to moderate eye irritation. Contains mechanically abrasive particles.
Sensitization (allergic reactions): None listed
Carcinogenicity (risk of cancer): Carbon Black (1333-86-4).
   IARC Group 2B: Possibly carcinogenic to humans
   ACGIH A4: Not classified as human carcinogen
   CA Prop 65: Listed as a carcinogen
   NTP: Not listed
Mutagenicity (risk of heritable genetic effects): Not known
Reproductive Toxicity (risk to sex functions): Toluene, ethanol, and acetone present reproductive and
developmental hazards at high doses (>13 000 µg/day)
Teratogenicity (risk of fetus malformation): Harmful to unborn fetus in large doses
STOT-single exposure: Inhalation of toluene may affect the central nervous system
STOT-repeated exposure: Toluene may cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: Viscosity at 40 °C is >20.5 mm2/s, thus not classified as aspiration hazard.
This product does contain compounds listed by NTP or IARC or regulated by OSHA as a carcinogen.

Section 12: Ecological Information
Acute Ecotoxicity: Harmful to aquatic life. Avoid release to the environment.
Chronic Ecotoxicity: Unknown
Biodegradability: Microbial and photodegradable.
Chemical Fate Information: ND

Section 13 Disposal Considerations
RCRA 40 CFR 261 Classification: ND
Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with
proper authorities before disposal.

Section 14: Transportation Information
Classified as Consumer Commodity. Ground USA: - 4L size and smaller
US DOT Information: Proper shipping name: Paint
Hazard Class: 3
Packaging group: II
UN Number: UN1263
IATA: Proper shipping name: Paint
Hazard Class: 3
Packaging group: II
UN Number: UN1263
Marine Pollutant: No
Canadian TDG: Ground Canada: 4L size and smaller: Classified as Consumer Commodity.

Section 15: Regulatory Information
United States Federal Regulations
CAA (Clean Air Act, USA)
This product does not contain any class 1 ozone depleting substances.
This product does not contain any class 2 ozone depleting substances.
This product contains toluene (CAS# 108-88-3), which is listed as hazardous air pollutants.
SARA: (Superfund Amendments and Reauthorization Act of 1986, USA, 40 CFR 372.4)
This product contains Toluene (CAS# 108-88-3, 13%) toxic chemicals subject to the reporting requirements of
RCRA: ND
EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45
This product contains toluene (CAS# 108-88-3) subject to the reporting requirements of section 313 Title III of
the SARA of 1986 and 40 CFR part 372.
TSCA: (Toxic Substances Control Act of 1976, USA) All substances are TSCA listed.
State Regulations
California Proposition 65: Warning! This product contains chemical(s) known to the state of
California to cause cancer or reproductive harm.
International Regulations
Canada WHMIS: Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)
All hazardous ingredients are listed on the DSL/NDSL.

Europe EINECS Numbers: ND
Europe:
RoHS: This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB’s, or PBDE’s, and complies with European RoHS regulations.

Section 16: Other Information
Ingredients with multiple CAS No.: Propylene glycol monomethyl ether acetate, alpha-isomer: 108-65-6, 142300-82-1, 84540-57-8

Abbreviations used in this document
NE= Not established
NA= Not applicable
NIF= No Information Found
ND= No Data

Disclaimer
Ted Pella, Inc. makes no warranty of any kind regarding the information furnished herein. Users should independently determine the suitability and completeness of information from all sources. While this data is presented in good faith and believed to be accurate, it should be considered only as a supplement to other information gathered by the user. It is the User's responsibility to assure the proper use and disposal of these materials as well as the safety and health of all personnel who may work with or otherwise come in contact with these materials.

SDS Form 0013F1 V3