TED PELLA, INC.
Microscopy Products for Science and Industry

Material Safety Data Sheet
Product No. 891-50, 891-51 Santovac® 5 Polyphenyl Ether
Issue Date (06-17-09)
Review Date (04-12-12)

Section 1: Product and Company Identification

Product Name: Santovac® 5 Polyphenyl Ether Lubricant
Synonym: Santovac® 5, Polyphenyl ether

Company Name
Ted Pella, Inc., P.O. Box 492477, Redding, CA 96049-2477
Domestic Phone (800) 247-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.

Section 2: Composition / Information on Ingredients

Principle Component(s) (chemical and common name(s)) (Cas. No)	%	OSHA PEL mg/m3	ACGIH TLV mg/m3	NTP	IARC	OSHA regulated
Santovac® 5 Polyphenyl Ether Lubricant (2455-71-2)	ND	NE	NE	ND	ND	ND

Santovac® 5 Polyphenyl ether is a five ring polyphenyl ether. It is not a hazardous chemical(s) under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Santovac® 5 is a trademark of Santovac® Fluids LLC.

Section 3: Hazard Identification

Emergency overview
Appearance: Light yellow essentially clear liquid.
Immediate effects: Occupational exposure to this material has not been reported to cause significant adverse health effects. On the basis of available information, exposure to Santovac® 5 Polyphenyl Ether Lubricant is not expected to produce significant adverse human health effects when recommended safety precautions are followed.

Potential health effects
Primary Routes of entry: Skin contact.
Signs and Symptoms of Overexposure: ND
Eyes: ND
Skin: ND
Ingestion: ND
Inhalation: ND
Chronic Exposure: ND
Chemical Listed As Carcinogen or Potential Carcinogen: No

See Toxicological Information (Section11)
Potential environmental effects
See Ecological Information (Section 12)

Section 4: First Aid Measures
If accidental overexposure is suspected
Eye(s) Contact: Immediate first aid is not likely to be required. However, this material can be removed with water. Wash heavily contaminated clothing before reuse.
Skin Contact: Immediate first aid is not likely to be required. However, this material can be removed with water. Wash heavily contaminated clothing before reuse.
Inhalation: Immediate first aid is not likely to be required. However, if symptoms occur, remove to fresh air. Remove material from eyes, skin and clothing.
Ingestion: If swallowed, immediate first aid is not likely to be required. A physician or Poison Control Center can be contacted for advice.
Note to physician
Treatment: NIF
Medical Conditions generally Aggravated by Exposure: NIF

Section 5: Fire Fighting Measures
Flash Point: 550^{O}C (287^{O}F) Method: Cleveland Open Cup
Flammable Limits: NIF
Fire point: 660^{o}F (348^{o}C)
Auto-ignition point: 1135^{o}C (612^{o}F)
Fire Extinguishing Media: In case of fire, use water spray (fog), foam, dry chemical, or CO_2
Special Fire Fighting Procedures: Fire fighter and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.
Unusual Fire and Explosion Hazards: None known.
Hazardous combustion products: Continued use at temperatures above 425^{o}C may result in the formation of benzene and phenol. If the product is burned, complete combustion produces carbon dioxide and water and partial combustion produces carbon monoxide, smoke, soot and low molecular weight hydrocarbons.
DOT Class: Not regulated.

Section 6: Accidental Release Measures
Steps to be Taken in Case Material is Released or Spilled: Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Flush residual spill area with water.
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: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary

exposure and removal of material from eyes, skin and clothing. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.
Storage temperature: Room Temperature.
Storage Pressure: NIF

Section 8: Exposure Controls / Personal Protection
Engineering Controls
Ventilation required: Provide natural or mechanical ventilation to minimize exposure. If practical, use local mechanical exhaust ventilation at source of air contamination such as open process equipment.
Personal Protection Equipment
Respiratory protection: Avoid breathing mist. Use NIOSH/MSHA approved respiratory protection equipment when airborne exposure is excessive. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacture. Respiratory protection programs must comply with 29CFR 1910.134.
Protective gloves: Wearing protective gloves is recommended.
Skin protection: Although it does not present a significant skin concern, minimize skin contamination by practicing good industrial practices.
Eye protection: This product does not cause significant eye irritation or eye toxicity requiring special protection. Use good industrial practice to avoid eye contact.
Additional clothing and/or equipment: NIF
Exposure Guidelines
See Composition/Information on Ingredients (Section2)

Section 9 Physical and Chemical Properties
Appearance and Physical State: Light yellow essentially clear liquid.
Odor (threshold): Odorless to slight phenolic.
Specific Gravity (H_2O=1): 1.195 – 1.201 @ 25/25^{o}C
Vapor Pressure (mm Hg): ND
Vapor Density (air=1): 15.5
Percent Volatile by volume: ND

Evaporation Rate (butyl acetate=1): ND
Boiling Point: 889°F @ 760 mm Hg
Freezing point / melting point: ND
pH: Neutral
Solubility in Water: Insoluble.
Solubility: Soluble in acetone and light aromatic solvents.
Molecular Weight: ND

Section 10: Stability and Reactivity
Stability: Stable under normal conditions.
Conditions to Avoid: Exposure to materials which are highly oxidizing.

Materials to Avoid (Incompatibility): strong oxidizers
Hazardous Decomposition Products: Continued use at temperatures above 425^{o}C may result in the formation of benzene and phenol. If the product is burned, complete combustion produces carbon dioxide and water and partial combustion produces carbon monoxide, smoke, soot and low molecular weight hydrocarbons.
Hazardous Polymerization: Does not occur.

Section 11: Toxicological Information
Results of component toxicity test performed: Data laboratory studies with Santovac® 5 Polyphenyl ether lubricant are summarized below. Single exposure (acute) studies indicate:
Oral- Practically Nontoxic (Rat LD_{50} > 34,600 mg/kg)
Oral- Practically Nontoxic (Rabbit LD_{50} > 34,600 mg/kg)
Dermal- Practically Nontoxic (Rabbit LD_{50} > 34,600 mg/kg)
Inhalation- Practically Nontoxic (Rat LC_{50} > 47 mg/liter. No deaths and no signs of toxicity were observed in animals exposed to 47 mg/l, the highest atmospheric concentration achievable by heating the material to 329° C in this study.)
Eye Irritation - Nonirritating (Rabbit, 0.0/110.0)
Skin Irritation - Nonirritating (Rabbit, 24-hr exposure, 0.0/8.0)
Laboratory studies have been conducted on similar polyphenyl ether formulations and these data are considered representative of Santovac® 5 Lubricant.
Human experience: In controlled skin contact study, no skin irritation (primary or cumulative) or skin allergy was observed in humans following repeated exposures to a polyphenyl ether formulation similar to Santovac® 5 Lubricant.
Increases in liver weights and liver/body weight ratios with accompanying increase in liver cell size, considered to be related in increase liver metabolic activity and increases in adrenal weight were noted in rats following repeated skin exposure (4 weeks) to a second polyphenyl ether formulation. This same formulation produced no genetic changes in standard tests using animal or bacterial cells.
This product **does not** contain any compounds listed by NTP or IARC or regulated by OSHA as a carcinogen.

Section 12: Ecological Information
Ecological Information: Santovac® Fluids, Inc has not conducted environmental studies with this product.
Chemical Fate Information: NIF

Section 13 Disposal Considerations
RCRA 40 CFR 261 Classification: This material when discarded is not a hazardous waste as defined by the Resource, Conservation and recovery Act (RCRA), 40 CFR 261.
Dispose of in accordance with all federal, state and local environmental regulations.
Recommended method of disposal is by high temperature incineration at a RCRA approved TSDF.
Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

Section 14: Transportation Information

US DOT Information: Proper shipping name: Not regulated

The data provided in this section is for information only, Please apply the appropriate regulations to properly classify your shipment for transportation.

This product is not hazardous under the applicable DOT, ICAO/IATA, or IMDG regulations

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Section 15: Regulatory Information

United States Federal Regulations

MSDS complies with OSHA's Hazard Communication Rule 29, CFR 1910.1200.

SARA: NA

SARA Title III: NA

RCRA: NA

TSCA: All components are listed

CERCLA: NA

State Regulations

California Proposition 65: None

International Regulations

Canada WHMIS: ND

Europe EINECS Numbers: ND

Section 16: Other Information

Label Information: ND

European Risk and Safety Phrases: ND

European symbols needed: ND

Canadian WHMIS Symbols: ND

HMIS® Hazard Rating: Health: **0**; Fire: **1**; Reactivity: **0**; Protective Equipment: **B.**

NFPA Hazard Rating: Health: **0**; Fire: **1**; Reactivity: **0**

(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)

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.