1 Identification

- **Product name**
  - Trade name: Palladium, 10% on activated carbon, reduced, dry powder
- **Item number**: 46-1900
- **Details of the supplier of the safety data sheet**
  - Manufacturer/Supplier:
    Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
- **Information department**: Technical Department
- **Emergency telephone number**:
  - EMERGENCY: CHEMTREC: +1 (800) 424-9300
  - During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS02 Flame
  - Flam. Sol. 1 H228 Flammable solid.
  - GHS07
    - Skin Irrit. 2 H315 Causes skin irritation.
    - Eye Irrit. 2A H319 Causes serious eye irritation.
  - **Label elements**
    - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
    - **Hazard pictograms**
      - GHS02
      - GHS07
  - **Signal word** Danger
  - **Hazard statements**
    - H228 Flammable solid.
    - H315 Causes skin irritation.
    - H319 Causes serious eye irritation.
  - **Precautionary statements**
    - P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
    - P280 Wear protective gloves/protective clothing/eye protection/face protection.
    - P261 Avoid breathing dust/fume/gas/mist/vapors/spray
    - P240 Ground/bond container and receiving equipment.
    - P403+P233 Store in a well-ventilated place. Keep container tightly closed.
    - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
Trade name: Palladium, 10% on activated carbon, reduced, dry powder

- Classification system:
  - NFPA ratings (scale 0 - 4)
    - Health = 1
    - Fire = 2
    - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - Health = 1
  - Fire = 0
  - Reactivity = 0

- Other hazards
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.

3 Composition/Information on ingredients

- Chemical characterization: Mixtures
  - Description: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-44-0 Activated charcoal, European pharmacopia</td>
<td>90.0%</td>
</tr>
<tr>
<td>7440-05-3 Palladium, 10% on activated carbon, reduced, dry powder</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
  - After inhalation: In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact: Immediately wash with water and soap and rinse thoroughly.
  - After eye contact:
    - Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
    - After swallowing: If symptoms persist consult doctor.
  - Information for doctor:
    - Most important symptoms and effects, both acute and delayed: No further relevant information available.
    - Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents:
  - CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
- Protective equipment: No special measures required.
6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- Handling:
  - Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
  Components with limit values that require monitoring at the workplace:
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at
  the workplace.
- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
  - Personal protective equipment:
  General protective and hygienic measures:
    Keep away from foodstuffs, beverages and feed.
    Immediately remove all soiled and contaminated clothing.
    Wash hands before breaks and at the end of work.
    Avoid contact with the eyes and skin.
  - Breathing equipment:
    In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use
    respiratory protective device that is independent of circulating air.
  - Protection of hands:

Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:
  - Form: Powder
  - Color: Black
  - Odor: Odorless
  - Odor threshold: Not determined.

· pH-value: Not applicable.

· Change in condition

  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.

· Flash point: Not applicable.

· Flammability (solid, gaseous): Flammable.

· Ignition temperature:

  - Decomposition temperature: Not determined.

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Not determined.

· Explosion limits:

  - Lower: Not determined.
  - Upper: Not determined.

· Vapor pressure: Not applicable.

· Density: Not determined.

· Relative density: Not determined.

· Vapor density: Not applicable.

· Evaporation rate: Not applicable.
### 10 Stability and reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**
  - **Thermal decomposition / conditions to be avoided**: No decomposition if used according to specifications.
  - **Possibility of hazardous reactions**: No dangerous reactions known.
  - **Conditions to avoid**: No further relevant information available.
  - **Incompatible materials**: No further relevant information available.
  - **Hazardous decomposition products**: No dangerous decomposition products known.

### 11 Toxicological information

- **Information on toxicological effects**
  - **Acute toxicity**:
  - **Primary irritant effect**:
    - **on the skin**: Irritant to skin and mucous membranes.
    - **on the eye**: Irritating effect.
  - **Sensitization**: No sensitizing effects known.
  - **Additional toxicological information**:
    The product shows the following dangers according to internally approved calculation methods for preparations: Irritant
  - **Carcinogenic categories**
    - **IARC (International Agency for Research on Cancer)**
      None of the ingredients is listed.
    - **NTP (National Toxicology Program)**
      None of the ingredients is listed.
    - **OSHA-Ca (Occupational Safety & Health Administration)**
      None of the ingredients is listed.

### 12 Ecological information

- **Toxicity**
  - **Aquatic toxicity**: No further relevant information available.
  - **Persistence and degradability**: No further relevant information available.
13 Disposal considerations

- **Waste treatment methods**
  - **Recommendation:** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings:**
  - **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
  - DOT NA3178
  - IMDG, IATA UN3178

- **UN proper shipping name**
  - DOT, IATA Flammable solid, inorganic, n.o.s.
  - IMDG FLAMMABLE SOLID, INORGANIC, N.O.S.

- **Transport hazard class(es)**
  - **DOT**
    - **Class** 4.1 Flammable solids, self-reactive substances and solid desensitised explosives
    - **Label** 4.1
  
  - **IMDG, IATA**
    - **Class** 4.1 Flammable solids, self-reactive substances and solid desensitised explosives
    - **Label** 4.1

- **Packing group**
  - DOT, IMDG, IATA II
### Trade name: Palladium, 10% on activated carbon, reduced, dry powder

- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user: Not applicable.
- EMS Number: F-A,S-G
- Stowage Category: B
- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

### Transport/Additional information:
- DOT
  - Quantity limitations
    - On passenger aircraft/rail: 15 kg
    - On cargo aircraft only: 50 kg
- IMDG
  - Limited quantities (LQ) 1 kg
  - Excepted quantities (EQ) Code: E2
    - Maximum net quantity per inner packaging: 30 g
    - Maximum net quantity per outer packaging: 500 g
- UN "Model Regulation": UN 3178 FLAMMABLE SOLID, INORGANIC, N.O.S., 4.1, II

### 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
    - Section 355 (extremely hazardous substances):
      None of the ingredients is listed.
    - Section 313 (Specific toxic chemical listings):
      None of the ingredients is listed.
  - TSCA (Toxic Substances Control Act):
    All ingredients are listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for females:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for males:
      None of the ingredients is listed.
    - Chemicals known to cause developmental toxicity:
      None of the ingredients is listed.
  - Carcinogenic categories
    - EPA (Environmental Protection Agency)
      None of the ingredients is listed.
    - TLV (Threshold Limit Value established by ACGIH)
      None of the ingredients is listed.
Trade name: Palladium, 10% on activated carbon, reduced, dry powder

· NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

· GHS label elements
  The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms
  GHS02  GHS07

· Signal word
  Danger

· Hazard statements
  H228 Flammable solid.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.

· Precautionary statements
  P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P261 Avoid breathing dust/fume/gas/mist/vapors/spray
  P240 Ground/bond container and receiving equipment.
  P403+P233 Store in a well-ventilated place. Keep container tightly closed.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Technical Department.
· Contact: Technical Director
· Date of preparation / last revision 07/30/2016 / -

· Abbreviations and acronyms:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Flam. Sol. 1: Flammable solids, Hazard Category 1
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A