**Palladium, bis[tris(1,1-dimethylethyl)phosphine]- (cas 53199-31-8) MSDS**

<table>
<thead>
<tr>
<th>MSDS</th>
<th>Bis(tri-t-butylphosphine)palladium(0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>53199-31-8</td>
</tr>
<tr>
<td>SYNONYMS</td>
<td></td>
</tr>
</tbody>
</table>

Catalog of Chemical Suppliers, Buyers, Custom Synthesis Companies And Equipment Manufacturers
[Bis(tri-t-butylphosphine)palladium(0) 53199-31-8]

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>53199-31-8</td>
<td>Bis(tri-t-butylphosphine)palladium(0)</td>
<td></td>
<td>unlisted</td>
</tr>
</tbody>
</table>

Hazard Symbols: None Listed.  
Risk Phrases: None Listed.

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW
Air sensitive.

Potential Health Effects
Eye:
May cause eye irritation.

Skin:
May cause skin irritation. May be harmful if absorbed through the skin.

Ingestion:
May cause irritation of the digestive tract. May be harmful if swallowed.

Inhalation:
May cause respiratory tract irritation. May be harmful if inhaled.

Chronic:
Not available.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:
Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:
Get medical aid. Wash mouth out with water.

Inhalation:
Remove from exposure and move to fresh air immediately.

Notes to Physician:
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

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

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****
General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Vacuum or sweep up material and place into a suitable disposal container.

***** SECTION 7 - HANDLING and STORAGE *****

Handling:
Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.
Storage:
Store in a cool, dry place. Store in a tightly closed container. Store under an inert atmosphere.

***** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION *****

Engineering Controls:
Use adequate ventilation to keep airborne concentrations low.

Exposure Limits
CAS# 53199-31-8:

Personal Protective Equipment

Eyes:
Not available.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

***** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES *****

Physical State: Crystals
Color: off-white
Odor: Not available.
pH: Not available.
Vapor Pressure: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Autoignition Temperature: Not available.
Flash Point: Not available.
Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.
Decomposition Temperature:
Solubility in water: Insoluble.
Specific Gravity/Density:
Molecular Formula: C24H54P2Pd
Molecular Weight: 511.05

***** SECTION 10 - STABILITY AND REACTIVITY *****

Chemical Stability:
Not available.
Conditions to Avoid:
Incompatible materials, exposure to air.
Incompatibilities with Other Materials:
Nitric acid, chlorine, perchloric acid.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.
**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:  
CAS# 53199-31-8 unlisted.  
LD50/LC50: Not available.  
Carcinogenicity: Bis(tri-t-butylphosphine)palladium(0) - Not listed by ACGIH, IARC, or NTP.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

**** SECTION 14 - TRANSPORT INFORMATION ****

IATA  
Not regulated as a hazardous material.  
IMO  
Not regulated as a hazardous material.  
RID/AD No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

European/International Regulations  
European Labeling in Accordance with EC Directives  
Hazard Symbols: Not available.  
Risk Phrases:  
Safety Phrases:  
S 24/25 Avoid contact with skin and eyes.  
WGK (Water Danger/Protection)  
CAS# 53199-31-8: No information available.  
Canada  
None of the chemicals in this product are listed on the DSL/NDSL list.  
CAS# 53199-31-8 is not listed on Canada's Ingredient Disclosure List.  
US FEDERAL  
TSCA  
CAS# 53199-31-8 is not listed on the TSCA inventory.  
It is for research and development use only.

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 1/16/2002 Revision #1 Date: 10/05/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.