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|   | Version 2                 |
|---|---------------------------|
| 1 Identification  |                           |
| Product identifier<br>Broduct name: Bis(othylono)(2.4-pontanodionato)rhodium(I)   |                           |
| Product name: <u>Bis(ethylene)(2,4-pentanedionato)rhodium(I)</u><br>Stock number: 39288<br>CAS Number:<br>12082-47-2<br>EC number:  |                           |
| 235-147-1<br>Details of the supplier of the safety data sheet   |                           |
| Manufacturer/Supplier:<br>Alfa Aesar<br>Thermo Fisher Scientific Chemicals, Inc.<br>30 Bond Street<br>Ward Hill, MA 01835-8099<br>Tel: 800-343-0660   |                           |
| Fax: 800-322-4757<br>Email: tech@alfa.com<br>www.alfa.com<br>Information Department: Health. Safety and Environmental Department  |                           |
| Emergency telephone number:<br>During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0   | )789.                     |
| 2 Hazard(s) identification  |                           |
| Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)<br>The substance is not classified as hazardous according to 29 CFR 1910 (OSHA GHS).<br>Hazards not otherwise classified No information known.   |                           |
| Label elements<br>GHS label elements Not applicable<br>Hazard pictograms Not applicable<br>Signal word Not applicable<br>Hazard statements Not applicable<br>WHMIS classification Not controlled<br>Classification system   |                           |
| Classification system         HMIS ratings (scale 0-4)         (Hazardous Materials Identification System)         HEALTH       I         HRE       II         FRE       I  |                           |
| Present Planmability = 1<br>Resource Planmability = 1<br>Resource Planmability = 1<br>Other hazards<br>Results of PBT and vPvB assessment   |                           |
| PBT: Not applicable.<br>vPvB: Not applicable.   |                           |
| 3 Composition/information on ingredients<br>Chemical characterization: Substances<br>CAS# Description:<br>12082-47-2 Bis(ethylene)(2,4-pentanedionato)rhodium(I)<br>Concentration: <100%<br>Identification number(s):<br>EC number: 235-147-1   |                           |
| 4 First-aid measures  |                           |
| Description of first aid measures<br>After inhalation   |                           |
| Supply fresh air. If required, provide artificial respiration. Keep patient warm.<br>Seek immediate medical advice.   |                           |
| After skin contact<br>Immediately wash with water and soap and rinse thoroughly.<br>Seek immediate medical advice.  |                           |
| After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.  |                           |
| After swallowing Seek medical treatment.<br>Information for doctor<br>Most important symptoms and effects, both acute and delayed No further relevant information available.<br>Indication of any immediate medical attention and special treatment needed No further relevant information available.   |                           |
| 5 Fire-fighting measures  |                           |
| Extinguishing media<br>Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.<br>Special hazards arising from the substance or mixture<br>If this product is involved in a fire, the following can be released:<br>Carbon monoxide and carbon dioxide<br>Rhodium oxide |                           |
| Advice for firefighters<br>Protective equipment:<br>Wear self-contained respirator.<br>Wear fully protective impervious suit.   |                           |
| 6 Accidental release measures<br>Personal precautions, protective equipment and emergency procedures  |                           |
| Wear protective equipment. Keep unprotected persons away.<br>Ensure adequate ventilation<br><b>Environmental precautions:</b> Do not allow product to reach sewage system or any water course.<br><b>Methods and material for containment and cleaning up:</b> Pick up mechanically.  |                           |
| Methods and material for containment and cleaning up: Pick up mechanically.   | (Contd. on page 2)<br>USA |
|   |                           |

## Product name: Bis(ethylene)(2,4-pentanedionato)rhodium(I)

(Contd. of page 1)

**Prevention of secondary hazards:** No special measures required. **Reference to other sections** See Section 7 for information on safe handling See Section 8 for information on sale nanuling See Section 8 for information on personal protection equipment. See Section 13 for disposal information. Protective Action Criteria for Chemicals PAC-1: Substance is not listed. PAC-2: Substance is not listed. PAC-3: Substance is not listed.

7 Handling and storage Handling Precautions for safe handling Handle under dry protective gas. Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Information about protection against explosions and fires: No information known. 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: Store away from air. Store away from oxidizing agents. Further information about storage conditions: Store under dry inert gas. This product is air sensitive. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. 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: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Maintain an ergonomically appropriate working environment. Breathing equipment: Maintain an ergonomically appropriate working environment. **Breathing equipment:** Use suitable respirator when high concentrations are present. Use suitable respiratory protective device in case of insufficient ventilation. **Recommended filter device for short term use:** Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards. **Protection of hands:** Protection of nands: Impervious gloves Check protective gloves prior to each use for their proper condition. The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Crystalline Odor: Odor threshold: Not determined Not determined Not applicable. pH-value: Change in condition Melting point/Melting range: Boiling point/Boiling range: Sublimation temperature / start: Not determined Not determined Not determined Flammability (solid, gaseous) Ignition temperature: Decomposition temperature: Auto igniting: Not determined Not determined Not determined Not determined. Danger of explosion: Explosion limits: Lower: Upper: Vapor pressure: Not determined. Not determined Not determined Not applicable. Not determined Density: Relative density Not determined. Vapor density Evaporation rate

Not applicable. Not applicable.

Insoluble

Solubility in / Miscibility with

Partition coefficient (n-octanol/water): Not determined

Water

(Contd. on page 3)

# Product name: Bis(ethylene)(2,4-pentanedionato)rhodium(I)

| Viscosity: Met applicable. Met applicable. Met applicable. Met applicable. Met utilizes that are recommended storage conditions. Chemical stability Stable under the stability Stable under stability Stability Stable under stability Stable un   |  |
|--|--|
| More information         Not applicable<br>No full reference           Other information         No full reference           O Stability and reactivity         Reactivity No information known.<br>Chemical stability Stable under recommended storage conditions.<br>Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.<br>Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.<br>Conditions to avoid No further relevant information available.<br>The onpatible materials:<br>Avoid be and carbon doxide           Ordizing agents         Heater relevant for classification: No data<br>Skin infration or corrosion: May cause inflation<br>Event inflation or corrosion: State is nown.<br>Carcinogenicity: No elfests known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system   |  |
| O Stability and reactivity         Reactivity No information known.         Chemical stability Stable under recommended storage conditions.         Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.         Possibility O No further relevant information available.         Immention materials:         Variating agents         Hazardous Geocomposition products:         Catability and incomposition products:         Catability and materials:         Variating agents         Hazardous Geocomposition products:         Catability in monoide and cathon dioxide         Information on toxicological effects         Acute toxicity: No effects known.         Dull C50 valiation or corresion: May cause inflation         Germiell mutagenicity: No affects known.         Specific atrige organ system toxicity - single exposure: No effects known.         Aspecific atrige organ system toxicity - single exposure: No effects known.         Aspecific atrige organ system toxicity - single exposure: No effects known.         Aspecific atrige organ system toxicity - single exposure: No effects known.         Aspecific atrowant.         Carcingenic cat  |  |
| Reactivity No information known.       Chemical stability Stable under recommended storage conditions.         Chemical stability Stable under recommended storage conditions.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions Reade.         Pressibility of hazardous reactions Reade.       Pressibility of hazardous reactions reacting reactions reactions reactions reacting reactions reacti  |  |
| Chemical stability Stable under recommended storage conditions.<br>Possibility of hazardous reactions Reacts with storage conditions.<br>Possibility of hazardous reactions Reacts with storage outdang agents<br>Incompatible materials:<br>Air<br>Oxidizing agents<br>Hazardous decomposition roducts:<br>Rhodium oxide<br>Toxicological information<br>Information on toxicological effects<br>Acute toxicity: No effects known.<br>LDLC50 values that are relevant for classification: No data<br>Skin Irritation or corrosion: May cause inflation<br>Germ cell mutagenicity: No effects known.<br>Carcinogenic toxicity: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Subacute to chronic toxicity: No effects known.<br>Subacute to chronic toxicity: No effects known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>Ecological information:<br>Mobility in softward.<br>Mobility in softward ho effects in the head of unknowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>Ecological information:<br>Mobility in Softward No effects known.<br>Additional ecological information:<br>Mobility in Softward in Oregories<br>Mobility in Softward in the relevant information available.<br>Mobility in Softward No effects known.<br>Additional ecological information:<br>Mobility in Softward (Occupational Safety & Health Administration) Substance is not listed.<br>Ecological information:<br>Mobility in Softward (Occupational Safety & Health Administration) svaliable.<br>Mobility in Softward (Occupational Safety &           |  |
| Possibility of hazardous reactions Reacts with strong oxidizing agents<br>Conditions to avoid No Inther relevant information available.<br>In the avoid No Inther relevant information available.<br>Readow agents<br>Hazardous decomposition products:<br>Carbon monoposition products:<br>Carbon monoposition products:<br>Carbon monoposition on toxicological effects<br>Aduet toxicity: No effects known.<br>LDL C50 values that are relevant for classification: No data<br>Skin Irritation or corrosion: May cause irritation<br>Eye irritation or corrosion: May cause irritation<br>Eye irritation or corrosion: May cause irritation<br>Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive toxicity: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information: Toxicity<br>Additional ecological information available.<br>Persistence and degradability No further relevant information available.<br>Persistence and degradability to further relevant information available.<br>Persistence and degradability No further relevant |  |
| Possibility of hazardous reactions Reacts with stong oxidizing agents<br>Conditions to avoid No further relevant information available.<br>Information and avoid No further relevant information available.<br>Reaction control of and carbino dioxide<br>Reaction of the avoid No further relevant for classification: No data<br>Skin irritation or corrosion: May cause irritation<br>Eye Irritation or corrosion: May cause irritation<br>System to relevant for classification: No data<br>Skin irritation or corrosion: May cause irritation<br>Eye Irritation or corrosion: May cause irritation<br>System to relevant for classification: No data<br>Skin irritation or corrosion: May cause irritation<br>Eye Irritation or corrosion: May cause irritation<br>Eye Irritation or corrosion: May cause irritation<br>System toxicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive foxicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive foxicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive foxicity: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Subacule to chronic toxicity: No effects known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information<br>Toxicity<br>Aduitional toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Aduitional ecological information:<br>Aduitional ecological information:<br>Aduitional ecological information:<br>Aduitional ecological information:<br>Aduitional ecological information:<br>Aduitional ecological information:<br>Aduitional ecological information:                             |  |
| Incompatible materials:<br>Air<br>Oxidizing agents<br>Hearn dues decomposition products:<br>Hearn dues that are relevant for classification: No data<br>Skin Irritation or corrosion: May cause irritation<br>Sensitization: No corrosion: May cause irritation<br>Sensitization: No elevant for classification carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive foxicity: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information<br>Toxicity: No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Bioaccumulati                       |  |
| Air  |  |
| Carbon monouse and carbon diskide         Modulum oxide         11 Toxicological information         Information on toxicological effects         Acute toxicity: No effects known.         LDL C50 values that are relevant for consideration:         Sensitization: No sensitizing effects known.         Gerr cell mutagenicity: No effects known.         Gerr cell mutagenicity: No effects known.         Gerr cell mutagenicity: No offects known.         Carcinggenicity: No offects known.         Gerr cell mutagenicity: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Subacute to chronic toxicity: No effects known.         Additional Information: To the effects and unknowledge the acute and chronic toxicity of this substance is not fully known.         Carcinggenic categories         OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.         2         2         2       Ceological information         Taxicity         Additional Safety & Health Administration available.         Resource and degradability No further relevant information available.         Bioaccumulative potentis No further   |  |
| Carbon monoulee and carbon dioxide         Rhodium coxide         11 Toxicological information         Information on toxicological effects         Acute toxicity: No offects known.         LDL C50 values that are relevant for constitution         Sensitization: No sensitizing effects known.         Gerr call mutagenicity: No offects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Subacute to chronic toxicity: No futner steps of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories         OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.         Zecological information         Taxicity         Musity       No further relevant information available.         Resource ord degradabilit   |  |
| 1 Toxicological information         Information on toxicological effects         ADD CS0 volto: the face reference         ADD CS0 volto: the face reference         Skin intribution or corrosion: May cause irritation         Symmetric transmission: No sensitizing effects known.         Gerringenicity: No effects known.         Gerringenicity: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - single exposure: No effects known.         Specific target organ system toxicity - single exposure: No effects known.         Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories         OSHA-6a (Occupational Safety & Health Administration) Substance is not listed.         22 Ecological information         Toxicity         Additional ecological information available.         Persistence and degradability No further relevant information available.         Persistence and degradability No further relevant information available.         Resource S. Avoid transfer into the environment.         Results of PBT and vPVB assessment         PBT: Not applicable.         Other adverse effects No further relevant information available.         PBT: Not applicable.         Other adv  |  |
| Information on toxicological effects Acute toxicity: No effects known. LD/LCS0 values that are relevant for classification: No data Skin irritation or corrosion: May cause irritation See irritation or corrosion: May cause irritation Germ cell mutagenicity: No effects known. Specific larget organ system toxicity - single exposure: No effects known. Application to corrosion: May cause irritation Subacture toxicity: No effects known. Application to corrosion: No sensitization of the exposure: No effects known. Application toxicity: No effects known. Application toxicity: No effects known. Application toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Carrinogenic categories OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.  2 Ecological information Toxicity: No effects with relevant information available. Additional coxicity: No further relevant information available. Additional coxicity: No further relevant information available. Additional coxicity: No further relevant information available. Additional cological information: Gereral notes: Avoid transfer into the environment. Results of PBT and vPVB assessment PBT: Not applicable. VPVB: Not appl   |  |
| Acute toxicity: No effects known.<br>LDLCSO vulses that are relevant for classification: No data<br>Skin irritation or corrosion: May cause irritation<br>Sensitization: No sensitizing effects known.<br>Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.<br>Reproductive toxicity: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>22 Ecological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>22 Ecological information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Additional ecological information:<br>General nogen Advingtor the environment.<br>Persistence and degradability No further relevant information available.<br>Additional ecological information:<br>General nogen Advingtor the environment.<br>Persistence and degradability No further relevant information available.<br>Additional ecological information:<br>General nogen Advingtor and the environment.<br>Physe: Not applicable.<br>Other adverse effects No further relevant information available.<br>30 Disposal considerations<br>Waste treatment methods<br>Recommendation: Cinsult state, local or national regulations to ensure proper disposal.<br>Uncleaned packagings:<br>Recommendation: Subposal must be made according to official regulations.<br>41 Transport information<br>UN-Number<br>DOT, ADN, MIDG, IATA Not applicable<br>UN proper shipping name<br>DOT, ADN, MIDG, IATA Not applicable                        |  |
| Skin irritation or corrosion: May cause irritation         Serve irritation or corrosion: May cause irritation         Serve irritation or corrosion: May cause irritation         Serve irritation or corrosion: May cause irritation         Gerr cell mutagenicity: No effects known.         Carcinogenicity: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity: No effects known.         Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories         OSAL-Ca (Occupational Safety & Health Administration) Substance is not listed.         2 Ecological information         Toxicity         Aquistion and acability. No further relevant information available.         Persistence and degradability. No further relevant information available.         Additional ecological information:         General moders: Avoid information:         General moders: Avoid information:         General nores: Avoid information:         General notics: Avoid information:         Gaccumulative potential No further relevant information available.         Additional ecological information:         General notics: Avoid information: <td></td>   |  |
| Eye irritation or corrosion: May cause irritation         Gernitization: No sensitizing effects known.         Garcinogenicity: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - repeated exposure: No effects known.         Specific target organ system toxicity - single exposure: No effects known.         Aspiration hazard: No effects known.         Subacute to chronic toxicity: No effects known.         Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories         OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.         2 Ecological information         Toxicity         Aquatic toxicity: No further relevant information available.         Prisitence and degradability No further relevant information available.         Bioaccumulative potential No further relevant information available.         Mobility in soil No further relevant information available.         Mobility in soil No further relevant information available.         PHF: Not applicable.         VPVB: Not applicable.         Other adverse effects No further relevant information available.         Offer adverse effects No further relevant information available.         Other adverse effects No further relevant information a  |  |
| Sensitization: No sensitizing effects known.<br>Gerr cell mutagenicity: No effects known.<br>Specific target organ system toxicity - repeated exposure: No effects known.<br>Specific target organ system toxicity - single exposure: No effects known.<br>Aspiration hazard: No effects known.<br>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information<br>Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Mobility in soil No further relevant information available.<br>Additional store relevant information available.<br>Additional formation<br>General notes: Avoid transfer into the environment.<br>Results of P3T and VP4B assessment<br>P3T: Not applicable.<br>VP4B: Not applicable.<br>VP4B: Not applicable.<br>Other adverse effects No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Bioaccumulative po                             |  |
| Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH. Specific target organ system toxicity - repeated exposure: No effects known. Aspiration hazard: No effects known. Specific target organ system toxicity - single exposure: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Carcinogenic categories OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.  Ecological information Toxicity Adjustic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Mobility in soil No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General notes: Avoid transfer into the environment. Results of PBT and VPM assessment PBT: Not applicable. Other adverse effects No further relevant information available. Specific target organ systement of the environment. Results of papicable. Other adverse effects No further relevant information available. Specific target organ systement of the environment. Results of papicable. Other adverse effects No further relevant information available. Specific target organ systement to formation Consult state, local or national regulations to ensure proper disposal. Uncleaned packagings: Recommendation: Disposal must be made according to official regulations.  |  |
| Specific target organ system toxicity - repeated exposure: No effects known.<br>Aspiration hazard: No effects known.<br>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.<br>Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information<br>Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Additional ecological information:<br>Additional ecological information:<br>Results of PBT and vPvB assessment<br>PBT: Not applicable.<br>Other adverse effects No further relevant information available.<br>Bioaccumulative potential information:<br>Additional ecological information:<br>Bioaccumulative potential information:<br>Bioaccumulative potential information:<br>Bioaccumulative potential information:<br>Additional ecological information:<br>Bioaccumulative potential information available.<br>Bioaccumulative potential information:<br>Bioaccumulative potential information available.<br>Bioaccumulative potential information:<br>Bioaccumulative potential information:<br>Bioaccumulative potential information available.<br>Bioaccumulative potential information:<br>Bioaccumulative potential information:<br>Bioaccumulative potential information available.<br>Bioaccumulative potential information:<br>Bioaccumulative potential information:<br>Bioaccumulative potential information available.<br>Bioaccumulative po         |  |
| Specific target organ system toxicity - single exposure: No effects known.         Aspiration hazard: No effects known.         Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.         22 Ecological information<br>Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Mobility in soil No further relevant information available.<br>Additional ecological information:<br>General notes: Avoid transfer into the environment.<br>Results of PBT and VPW assessment<br>PBT: Not applicable.<br>Other adverse effects No further relevant information available.         3 Disposal considerations<br>Waste treatment methods<br>Recommendation Consult state, local or national regulations to ensure proper disposal.<br>Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regulations.         4 Transport information<br>DOT, ADN, IMDG, IATA<br>DOT, ADN, IMDG, IATA<br>Torsport hazard class(es)       Not applicable   |  |
| Subacute to chronic toxicity: No effects known.         Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         Carcinogenic categories<br>OSH4-Ca (Occupational Safety & Health Administration) Substance is not listed.         2 Ecological information<br>Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Mobility in soil No further relevant information available.<br>Additional ecological information:<br>General notes: Avoid transfer into the environment.<br>Results of PBT and vPVB assessment<br>PBT: Not applicable.<br>Other adverse effects No further relevant information available.         3 Disposal considerations<br>Waste treatment methods<br>Recommendation: Consult state, local or national regulations to ensure proper disposal.<br>Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regulations.         4 Transport information<br>DOT, ADN, IMDG, IATA       Not applicable         UN-Number<br>DOT, ADN, ADN, MDG, IATA       Not applicable         UN-Reprised       Not applicable         Transport hazard class(es)       Not applicable   |  |
| Carcinogenic categories<br>OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.<br>2 Ecological information<br>Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Persistence and degradability No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Mobility in soil No further relevant information available.<br>Additional ecological information:<br>General notes: Avoid transfer into the environment.<br>Results of PBT and vPvB assessment<br>PBT: Not applicable.<br>VPVB: Not applicable.<br>Other adverse effects No further relevant information available.<br>3 Disposal considerations<br>Waste treatment methods<br>Recommendation: Disposal must be made according to official regulations.<br>4 Transport information<br>UN-Number<br>DOT, ADN, IMDG, IATA Not applicable<br>UN proper shipping name<br>DOT, ADN, MDG, IATA Not applicable<br>Transport hazard class(es)   |  |
| OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed. 2 Ecological information Toxicity Aquatic toxicity: No further relevant information available. Bioaccumulative potential No further relevant information available. Bioaccumulative potential No further relevant information available. Additional ecological information: General notes: Avoid transfer into the environment. Results of PBT and vPvB assessment PBT: Not applicable. VPVB: Not applicable. Gther adverse effects No further relevant information available. 3 Disposal considerations Waste treatment methods Recommendation: Disposal must be made according to official regulations. 4 Transport information UN-Number DOT, ADN, IMDG, IATA Not applicable   |  |
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| Toxicity<br>Aquatic toxicity: No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Bioaccumulative potential No further relevant information available.<br>Additional ecological information:<br>General notes: Avoid transfer into the environment.<br>Results of PBT and VPVB assessment<br>PBT: Not applicable.<br>VPVB: Not applicable.<br>Other adverse effects No further relevant information available.         3 Disposal considerations<br>Waste treatment methods<br>Recommendation: Disposal must be made according to official regulations.<br>Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regulations.         4 Transport information<br>DOT, ADN, IMDG, IATA<br>DOT, ADN, IMDG, IATA<br>Transport hazard class(es)   |  |
| Aquatic toxicity: No further relevant information available.         Persistence and degradability No further relevant information available.         Bioaccumulative potential No further relevant information available.         Mobility in soil No further relevant information available.         Additional ecological information:         General notes: Avoid transfer into the environment.         Results of PBT and VPVB assessment         PBT: Not applicable.         VPVB: Not applicable.         Other adverse effects No further relevant information available.         3 Disposal considerations         Waste treatment methods         Recommendation: Disposal must be made according to official regulations.         4 Transport information         UN-Number<br>DOT, ADN, IMDG, IATA       Not applicable         UN proper shipping name<br>DOT, ADN, MDG, IATA       Not applicable         IN proper shipping name<br>DOT, ADR, ADN, IMDG, IATA       Not applicable         Transport hazard class(es)       Not applicable   |  |
| Mobility in Soil No further relevant information:         Additional ecological information:         General notes: Avoid transfer into the environment.         Results of PBT and vPvB assessment         PBT: Not applicable.         vPvB: Not applicable.         vPvB: Not applicable.         Other adverse effects No further relevant information available.         3 Disposal considerations         Waste treatment methods         Recommendation Consult state, local or national regulations to ensure proper disposal.         Uncleaned packagings:         Recommendation: Disposal must be made according to official regulations.         4 Transport information         UN-Number         DOT, ADN, IMDG, IATA       Not applicable         UN proper shipping name         DOT, ADR, ADN, IMDG, IATA       Not applicable         Transport hazard class(es)  |  |
| Mobility in Soil No further relevant information:         Additional ecological information:         General notes: Avoid transfer into the environment.         Results of PBT and vPvB assessment         PBT: Not applicable.         vPvB: Not applicable.         Other adverse effects No further relevant information available.         3 Disposal considerations         Waste treatment methods         Recommendation Consult state, local or national regulations to ensure proper disposal.         Uncleaned packagings:         Recommendation: Disposal must be made according to official regulations.         4 Transport information         UN-Number         DOT, ADN, IMDG, IATA       Not applicable         UN proper shipping name         DOT, ADN, MDG, IATA       Not applicable         Transport hazard class(es)  |  |
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| Results of PBT and vPvB assessment         PBT: Not applicable.         vPvB: Not applicable.         Other adverse effects No further relevant information available.         3 Disposal considerations         Waste treatment methods         Recommendation Consult state, local or national regulations to ensure proper disposal.         Uncleaned packagings:         Recommendation: Disposal must be made according to official regulations.         4 Transport information         UN-Number         DOT, ADN, IMDG, IATA         Not applicable         UN proper shipping name         DOT, ADR, ADN, IMDG, IATA         Transport hazard class(es)  |  |
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| Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regulations.  4 Transport information UN-Number DOT, ADN, IMDG, IATA Not applicable UN proper shipping name DOT, ADR, ADN, IMDG, IATA Not applicable Transport hazard class(es)   |  |
| Recommendation: Disposal must be made according to official regulations.         4 Transport information         UN-Number         DOT, ADN, IMDG, IATA         Not applicable         UN proper shipping name         DOT, ADR, ADN, IMDG, IATA         Not applicable         Transport hazard class(es)   |  |
| UN-Number     Not applicable       DOT, ADN, IMDG, IATA     Not applicable       UN proper shipping name     Not applicable       DOT, ADR, ADN, IMDG, IATA     Not applicable       Transport hazard class(es)     Not applicable   |  |
| DOT, ADN, IMDG, IATA     Not applicable       UN proper shipping name     Not applicable       DOT, ADR, ADN, IMDG, IATA     Not applicable       Transport hazard class(es)     Not applicable  |  |
| UN proper shipping name<br>DOT, ADR, ADN, IMDG, IATA Not applicable<br>Transport hazard class(es)  |  |
| Transport hazard class(es)   |  |
|  |  |
| DOT, ADR, ADN, IMDG, IATA  |  |
| Class Not applicable   |  |
| Packing group DOT, ADR, IMDG, IATA Not applicable  |  |
| Environmental hazards: Not applicable.   |  |
| Special precautions for user Not applicable.   |  |
| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.  |  |
| Transport/Additional information:  |  |
| DOT<br>Marine Pollutant (DOT): No  |  |
| UN "Model Regulation": Not applicable  |  |
|  |  |
| 5 Regulatory information   |  |
| Safety, health and environmental regulations/legislation specific for the substance or mixture<br>GHS label elements Not applicable  |  |
| Hazard pictograms Not applicable   |  |
| Hazard pictograms Not applicable<br>Signal word Not applicable<br>Hazard statements Not applicable   |  |
|  |  |

(Contd. on page 4)

(Contd. of page 3)

### Product name: Bis(ethylene)(2,4-pentanedionato)rhodium(I)

National regulations This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only. This product must be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes. This product is not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL). SARA Section 313 (specific toxic chemical listings) Substance is not listed. California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Information about limitations of use: For use only by technically qualified individuals. Other regulations, limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

The Conditions of restrictions according to Article of and Annex Avi of the Regulation (EQ) is market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

### 16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.
Department issuing SDS: Global Marketing Department
Date of preparation / last revision 03/15/2017 / 1
Abbreviations and acromys:
DR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMOG: International Maritime Code for Dangerous Goods
DOT: US Department of Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Substances
(CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SYHC: Substances of Very High Concern
vPVB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
HTP: National Toxicology Program (USA)
IAFC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)

USA