SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
  - Trade name: (Methylcyclopentadienyl)(1,5-cyclooctadiene)iridium (I), 99% (99.9%-Ir)
  - Item number: 77-5000
  - CAS Number: 132644-88-3

- 1.2 Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.

- 1.3 Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com

- 1.4 Emergency telephone number:
  - EMERGENCY: CHEMTREC: + 1 (800) 424-9300
  - During normal opening times: +1 (978) 499-1600

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
  - Classification according to Regulation (EC) No 1272/2008
    The substance is not classified according to the CLP regulation.

- 2.2 Label elements
  - Labelling according to Regulation (EC) No 1272/2008 Void
  - Hazard pictograms Void
  - Signal word Void
  - Hazard statements Void

- Precautionary statements
  - P262 Do not get in eyes, on skin, or on clothing.
  - P280 Wear protective gloves/protective clothing/eye protection/face protection.
  - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - 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.

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

(Contd. on page 2)
SECTION 3: Composition/information on ingredients

- 3.1 Chemical characterisation: Substances
- CAS No. Description
  132644-88-3 (Methylcyclopentadienyl)(1,5-cyclooctadiene)iridium(I), 99% (99.9%-Ir)

SECTION 4: First aid measures

- 4.1 Description of first aid measures
  - General information: No special measures required.
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Immediately rinse with water.
  - After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
  - After swallowing: If symptoms persist consult doctor.
- 4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
- 4.3 Indication of any immediate medical attention and special treatment needed
  No further relevant information available.

SECTION 5: Firefighting measures

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

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures Not required.
- 6.2 Environmental precautions: No special measures required.
- 6.3 Methods and material for containment and cleaning up:
  Dispose contaminated material as waste according to item 13.
- 6.4 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.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling No special measures required.
- Information about fire - and explosion protection: No special measures required.
- 7.2 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: None.
SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.

- 8.1 Control parameters
  - Ingredients with limit values that require monitoring at the workplace: Not required.
  - Additional information: The lists valid during the making were used as basis.

- 8.2 Exposure controls
  - Personal protective equipment:
    - General protective and hygienic measures:
      The usual precautionary measures are to be adhered to when handling chemicals.
  - Respiratory protection: Not required.
  - 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.
    - 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: Safety glasses

- 9.1 Information on basic physical and chemical properties
  - General Information
    - Appearance:
      Form: Powder
      Colour: Whitish
    - Odour: Odourless
    - Odour threshold: Not determined.

  - pH-value: Not applicable.

  - Change in condition
    Melting point/Melting range: 38-40 °C
    Boiling point/Boiling range: subl. 100/0.05m °C

  - Flash point: Not applicable.

  - Flammability (solid, gaseous): Product is not flammable.

  - Ignition temperature:
    Decomposition temperature: Not determined.
    Self-igniting: Not determined.

  - Danger of explosion: Product does not present an explosion hazard.
\begin{itemize}
  \item \textbf{Explosion limits:}
    \begin{itemize}
      \item \textbf{Lower:} Not determined.
      \item \textbf{Upper:} Not determined.
    \end{itemize}
  \item \textbf{Vapour pressure:} not applicable hPa
  \item \textbf{Density:} Not determined.
    \begin{itemize}
      \item \textbf{Relative density} Not determined.
      \item \textbf{Vapour density} Not applicable.
      \item \textbf{Evaporation rate} Not applicable.
    \end{itemize}
  \item \textbf{Solubility in / Miscibility with water:} Insoluble.
  \item \textbf{Partition coefficient (n-octanol/water):} Not determined.
  \item \textbf{Viscosity:}
    \begin{itemize}
      \item \textbf{Dynamic:} Not applicable.
      \item \textbf{Kinematic:} Not applicable.
    \end{itemize}
  \item \textbf{Solvent content:}
    \begin{itemize}
      \item \textbf{Organic solvents:} 0.00 \%
      \item \textbf{VOC (EC):} 0.00 \%
    \end{itemize}
  \item \textbf{Solids content:} 100.0 \%
  \item \textbf{9.2 Other information} No further relevant information available.
\end{itemize}

\section*{SECTION 10: Stability and reactivity}
\begin{itemize}
  \item \textbf{10.1 Reactivity} No further relevant information available.
  \item \textbf{10.2 Chemical stability}
  \item \textbf{Thermal decomposition / conditions to be avoided:} No decomposition if used according to specifications.
  \item \textbf{10.3 Possibility of hazardous reactions} No dangerous reactions known.
  \item \textbf{10.4 Conditions to avoid} No further relevant information available.
  \item \textbf{10.5 Incompatible materials:} No further relevant information available.
  \item \textbf{10.6 Hazardous decomposition products:} No dangerous decomposition products known.
\end{itemize}

\section*{SECTION 11: Toxicological information}
\begin{itemize}
  \item \textbf{11.1 Information on toxicological effects}
    \begin{itemize}
      \item \textbf{Acute toxicity} Based on available data, the classification criteria are not met.
      \item \textbf{Primary irritant effect:}
        \begin{itemize}
          \item \textbf{Skin corrosion/irritation} Based on available data, the classification criteria are not met.
          \item \textbf{Serious eye damage/irritation} Based on available data, the classification criteria are not met.
          \item \textbf{Respiratory or skin sensitisation} Based on available data, the classification criteria are not met.
          \item \textbf{CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)}
            \begin{itemize}
              \item \textbf{Germ cell mutagenicity} Based on available data, the classification criteria are not met.
              \item \textbf{Carcinogenicity} Based on available data, the classification criteria are not met.
              \item \textbf{Reproductive toxicity} Based on available data, the classification criteria are not met.
              \item \textbf{STOT-single exposure} Based on available data, the classification criteria are not met.
              \item \textbf{STOT-repeated exposure} Based on available data, the classification criteria are not met.
              \item \textbf{Aspiration hazard} Based on available data, the classification criteria are not met.
          \end{itemize}
    \end{itemize}
\end{itemize}
SECTION 12: Ecological information

- **12.1 Toxicity**
  - *Aquatic toxicity*: No further relevant information available.

- **12.2 Persistence and degradability** No further relevant information available.

- **12.3 Bioaccumulative potential** No further relevant information available.

- **12.4 Mobility in soil** No further relevant information available.

- **Additional ecological information:**
  - *General notes*: Not known to be hazardous to water.

- **12.5 Results of PBT and vPvB assessment**
  - *PBT*: Not applicable.
  - *vPvB*: Not applicable.

- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
  - *Recommendation*: Disposal must be made according to official regulations.

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

SECTION 14: Transport information

- **14.1 UN-Number**
  - ADR, ADN, IMDG, IATA: not regulated

- **14.2 UN proper shipping name**
  - ADR, ADN, IMDG, IATA: not regulated

- **14.3 Transport hazard class(es)**
  - ADR, ADN, IMDG, IATA: not regulated

- **14.4 Packing group**
  - ADR, IMDG, IATA: not regulated

- **14.5 Environmental hazards:**
  - *Marine pollutant*: No

- **14.6 Special precautions for user**
  - *Not applicable.*

- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
  - *Not applicable.*

- **UN "Model Regulation":** not regulated

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - *Directive 2012/18/EU*
  - *Named dangerous substances - ANNEX I Substance is not listed.*
Trade name: (Methylcyclopentadienyl)(1,5-cyclooctadiene)iridium (I), 99% (99.9%-Ir)

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

SECTION 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 MSDS: Technical Department.
- Contact: Technical Director
- 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
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - VOC: Volatile Organic Compounds (USA, EU)
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative