

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**1 Identification**

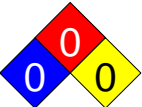
- **Product name**
- **Trade name:** Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)
- **Item number:** 79-7020
- **CAS Number:** 7440-57-5
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Strem Chemicals, Inc.  
7 Mulliken Way  
NEWBURYPORT, MA 01950  
USA  
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**  
The product is not classified according to the Globally Harmonized System (GHS).

---

- **Label elements**
- **GHS label elements** not applicable
- **Hazard pictograms** not applicable
- **Signal word** not applicable
- **Hazard statements** not applicable
- **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.
  - P410 Protect from sunlight.
  - P411+P235 Store at temperatures not exceeding 4°C. Keep cool.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**

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

|  |                |   |      |   |            |   |            |
|--|----------------|---|------|---|------------|---|------------|
| <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="background-color: #0000FF; color: white; padding: 2px;">HEALTH</td><td style="width: 20px; text-align: center;">0</td></tr><tr><td style="background-color: #FF0000; color: white; padding: 2px;">FIRE</td><td style="width: 20px; text-align: center;">0</td></tr><tr><td style="background-color: #FFFF00; padding: 2px;">REACTIVITY</td><td style="width: 20px; text-align: center;">0</td></tr></table> | HEALTH         | 0 | FIRE | 0 | REACTIVITY | 0 | Health = 0 |
| HEALTH   | 0              |   |      |   |            |   |            |
| FIRE   | 0              |   |      |   |            |   |            |
| REACTIVITY   | 0              |   |      |   |            |   |            |
|  | Fire = 0       |   |      |   |            |   |            |
|  | Reactivity = 0 |   |      |   |            |   |            |
- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

US

(Contd. on page 2)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 1)

**3 Composition/information on ingredients**

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

· **Dangerous components:**

|           |      |      |
|-----------|------|------|
| 7440-57-5 | Gold | 1.0% |
|-----------|------|------|

**4 First-aid measures**

- **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:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then 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** Not required.
- **Environmental precautions:** No special measures required.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.
- **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** No special measures required.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**  
Keep cool.

(Contd. on page 3)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 2)

- *Protect from sunlight.*
- **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.*
- **Recommended storage temperature:** *Store at temperatures not exceeding 4 °C.*
- **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:**  
*The usual precautionary measures for handling chemicals should be followed.*
- **Breathing equipment:** *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. 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:** *Goggles recommended during refilling.*

**9 Physical and chemical properties**

- **Information on basic physical and chemical properties**
  - **General Information**
  - **Appearance:**

|               |        |
|---------------|--------|
| <b>Form:</b>  | Liquid |
| <b>Color:</b> | Red    |
  - **Odor:** *Characteristic*
  - **Odor threshold:** *Not determined.*
- |                    |                 |
|--------------------|-----------------|
| · <b>pH-value:</b> | Not determined. |
|--------------------|-----------------|

(Contd. on page 4)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 3)

|   |   |
|---|---|
| · <b>Change in condition</b><br><b>Melting point/Melting range:</b> | Undetermined.                                 |
| <b>Boiling point/Boiling range:</b>                                 | Undetermined.                                 |
| · <b>Flash point:</b>   | Not applicable.                               |
| · <b>Flammability (solid, gaseous):</b>                             | Not determined.                               |
| · <b>Ignition temperature:</b>                                      |   |
| <b>Decomposition temperature:</b>                                   | Not determined.                               |
| · <b>Auto igniting:</b>   | Product is not selfigniting.                  |
| · <b>Danger of explosion:</b>                                       | Product does not present an explosion hazard. |
| · <b>Explosion limits:</b>  |   |
| <b>Lower:</b>   | Not determined.                               |
| <b>Upper:</b>   | Not determined.                               |
| · <b>Vapor pressure at 20 °C (68 °F):</b>                           | 23 hPa (17 mm Hg)                             |
| · <b>Density:</b>   | Not determined.                               |
| · <b>Relative density</b>   | Not determined.                               |
| · <b>Vapor density</b>  | Not determined.                               |
| · <b>Evaporation rate</b>   | Not determined.                               |
| · <b>Solubility in / Miscibility with</b><br><b>Water:</b>          | Not miscible or difficult to mix.             |
| · <b>Partition coefficient (n-octanol/water):</b>                   | Not determined.                               |
| · <b>Viscosity:</b>   |   |
| <b>Dynamic:</b>   | Not determined.                               |
| <b>Kinematic:</b>   | Not determined.                               |
| · <b>Solvent content:</b>   |   |
| <b>Organic solvents:</b>  | 0.0 %   |
| <b>Water:</b>   | 95.0 %  |
| <b>VOC content:</b>   | 0.0 g/l / 0.00 lb/gl                          |
| <b>Solids content:</b>  | 5.0 %   |
| · <b>Other information</b>  | No further relevant information available.    |

**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.

US

(Contd. on page 5)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 4)

**11 Toxicological information**

· **Information on toxicological effects**

· **Acute toxicity:**

· **Primary irritant effect:**

· **on the skin:** No irritant effect.

· **on the eye:** No irritating effect.

· **Sensitization:** No sensitizing effects known.

· **Additional toxicological information:**

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **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.

· **Behavior in environmental systems:**

· **Bioaccumulative potential:** No further relevant information available.

· **Mobility in soil:** No further relevant information available.

· **Additional ecological information:**

· **General notes:** Generally not hazardous for water

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects:** No further relevant information available.

**13 Disposal considerations**

· **Waste treatment methods**

· **Recommendation:** Disposal must be made according to official regulations.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

· **UN-Number**

· **DOT, ADN, IMDG, IATA** not regulated

(Contd. on page 6)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 5)

· **UN proper shipping name**  
· **DOT, ADN, IMDG, IATA** not regulated

· **Transport hazard class(es)**  
· **DOT, ADN, IMDG, IATA**  
· **Class** not regulated

· **Packing group**  
· **DOT, IMDG, IATA** not regulated

· **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.

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

**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.

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

· **GHS label elements not applicable**  
· **Hazard pictograms not applicable**  
· **Signal word not applicable**

(Contd. on page 7)

**Safety Data Sheet**  
according to OSHA HCS

Printing date 07/31/2016

Reviewed on 07/31/2016

**Trade name: Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)**

(Contd. of page 6)

· **Hazard statements** not applicable

· **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.
- P410 Protect from sunlight.
- P411+P235 Store at temperatures not exceeding 4°C. Keep cool.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**

- **Water hazard class:** Generally not hazardous for water.
- **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** 07/31/2016 / -

· **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