Section 1. Product and Company Identification

Product name : Raney Nickel Catalyst
Product code : 820876
Synonym : None.
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM

In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Solid. (Powder (suspension) in water)
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : WARNING!
MAY CAUSE ALLERGIC SKIN REACTION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD.
CONTAINS MATERIAL WHICH MAY CAUSE CANCER.
Spontaneously flammable in air.
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.
Avoid contact with skin and clothing. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects

Eyes : No known significant effects or critical hazards.
Skin : May cause sensitization by skin contact.
Inhalation : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.
Carcinogenic effects : Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure : Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)
Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>49 - 51</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>44 - 46</td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>6 - 8</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

**Eye contact**: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

**Skin contact**: Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Inhalation**: Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

**Ingestion**: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

**Protection of first-aiders**: No action shall be taken involving any personal risk or without suitable training.

Section 5. Fire Fighting Measures

**Flammability of the product**: No specific hazard.

**Products of combustion**: Some metallic oxides.

**Extinguishing media**

- **Suitable**: Use an extinguishing agent suitable for the surrounding fire.
- **Not suitable**: None known.
- **Special exposure hazards**: Not available.
- **Special protective equipment for fire-fighters**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- **Special remarks on fire hazards**: Spontaneously flammable in air.
- **Special remarks on explosion hazards**: Fine powder forms flammable and explosive mixtures in air. (Nickel)

Continued on Next Page
Section 6. Accidental Release Measures

Personal precautions: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up: If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

Section 7. Handling and Storage

Handling: Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>Product name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>ACGIH (United States, 1998). TWA: 1.5 mg/m³ 8 hour/hours.</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (United States, 1994). TWA: 0.01 mg/m³ 10 hour/hours.</td>
</tr>
<tr>
<td>Nickel</td>
<td>ACGIH TLV (United States, 1/2006). Notes: as Al TWA: 5 mg/m³ 8 hour/hours. TWA: 5 mg/m³ 8 hour/hours. Form: Fume</td>
</tr>
<tr>
<td>Aluminum</td>
<td>OSHA PEL (United States, 8/1997). Notes: as Al TWA: 5 mg/m³ 8 hour/hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hour/hours. Form: Total dust</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL 1989 (United States, 3/1989). Notes: as Al TWA: 15 mg/m³ 8 hour/hours. Form: Dust TWA: 5 mg/m³ 8 hour/hours. Form: Pyrophoric TWA: 5 mg/m³ 8 hour/hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV (United States, 1/2006). TWA: 10 mg/m³ 8 hour/hours. Form: Dust</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (United States, 12/2001). TWA: 5 mg/m³ 10 hour/hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hour/hours. Form: Total</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL 1989 (United States, 3/1989). Notes: as Al As determined from breathing-zone air samples TWA: 5 mg/m³ 8 hour/hours. Form: Welding fume</td>
</tr>
</tbody>
</table>

Consult local authorities for acceptable exposure limits.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Body: Recommended: lab coat

Respiratory: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Continued on Next Page
Section 8. Exposure Controls/Personal Protection

**Hands**
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: nitrile rubber.

**Hygiene measures**
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

**Physical state**
Solid. (Powder (suspension) in water)

**Flash point**
The lowest known value is Closed cup: 644.85°C (1192.7°F). (Aluminum)

**Color**
Dark grey.

**Melting/freezing point**
1554.9°C (2830.8°F) based on data for: Nickel. Weighted average: 1434.43°C (2614°F)

**Relative density**
Weighted average: 6.8 (Water = 1)

Section 10. Stability and Reactivity

**Stability and reactivity**
The product is stable.

**Incompatibility with various substances**
Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture.

**Hazardous decomposition products**
Nickel fumes

**Hazardous polymerization**
Will not occur.

**Conditions of reactivity**
Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts and oxidizing materials. Spontaneously flammable in air. Highly explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts and oxidizing materials.

Section 11. Toxicological Information

**Toxicity data**

**United States**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>LDLo</td>
<td>5 mg/kg</td>
<td>Oral</td>
<td>Guinea pig</td>
</tr>
</tbody>
</table>

**Chronic effects on humans**
Contains material which causes damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.

**Other toxic effects on humans**
Very hazardous in case of ingestion, . Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).

**Specific effects**
**Carcinogenic effects**
Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenic effects**
No known significant effects or critical hazards.

**Teratogenicity / Reproductive toxicity**
No known significant effects or critical hazards.

Continued on Next Page
Section 11. Toxicological Information

**Sensitization**

**Ingestion**: No known significant effects or critical hazards.

**Inhalation**: No known significant effects or critical hazards.

**Eyes**: No known significant effects or critical hazards.

**Skin**: May cause sensitization by skin contact.

Section 12. Ecological Information

**Ecotoxicity data**

**United States**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Species</th>
<th>Period</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>Oncorhynchus mykiss (LC50)</td>
<td>96 hour/hours</td>
<td>0.12 mg/l</td>
</tr>
<tr>
<td></td>
<td>Oncorhynchus mykiss (LC50)</td>
<td>96 hour/hours</td>
<td>0.16 mg/l</td>
</tr>
<tr>
<td></td>
<td>Oncorhynchus mykiss (LC50)</td>
<td>96 hour/hours</td>
<td>0.31 mg/l</td>
</tr>
</tbody>
</table>

**Environmental precautions**: No known significant effects or critical hazards.

**Products of degradation**: Some metallic oxides.

**Toxicity of the products of biodegradation**: The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

**Waste disposal**: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>PG*</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>UN1378</td>
<td>METAL CATALYST, WETTED</td>
<td>4.2</td>
<td>II</td>
<td></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

PG* : Packing group
Section 15. Regulatory Information

United States

**HCS Classification**
- Sensitizing material
- Carcinogen
- Target organ effects

**U.S. Federal regulations**
- TSCA 8(b) inventory: Listed
  - SARA 302/304/311/312 extremely hazardous substances: No products were found.
  - SARA 302/304 emergency planning and notification: No products were found.
  - SARA 302/304/311/312 hazardous chemicals: Aluminum
  - SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Aluminum
    - Fire hazard, reactive
  - Clean Water Act (CWA) 307: Nickel
  - Clean Water Act (CWA) 311: No products were found.
  - Clean Air Act (CAA) 112 accidental release prevention: No products were found.
  - Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
  - Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

**SARA 313**

<table>
<thead>
<tr>
<th>Form R - Reporting requirements</th>
<th>Product name</th>
<th>CAS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier notification</td>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>6 - 8</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations**
- Pennsylvania RTK: Aluminum; nickel: (special hazard, environmental hazard, generic environmental hazard)
- Massachusetts RTK: Aluminum; Nickel
- New Jersey: Aluminum; Water; Nickel

**WARNING**: This product contains a chemical(s) known to the State of California to cause cancer.

**Ingredient name** | **Cancer** | **Reproductive** | **No significant risk level** | **Maximum acceptable dosage level**
---|---|---|---|---
Nickel | Yes. | No. | No. | No.

**Canada**

**WHMIS (Canada)**
- Class B-4: Flammable solid.
- Class D-2B: Material causing other toxic effects (Toxic).

**CEPA DSL/CEPA NDSL**
- CEPA DSL: Aluminum; Water; Nickel

**This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.**

**EU regulations**

**Risk phrases**
- This product is not classified according to EU legislation.

**International regulations**

**International lists**
- Australia (NICNAS): Aluminum; Water; Nickel
- China: Aluminum
- Germany water class: Aluminum
- Japan (METI): Water
- Korea (TCCL): Aluminum; Water; Nickel
- Philippines (RA6969): Aluminum; Water; Nickel

**Continued on Next Page**
Section 16. Other Information

Label requirements : WARNING!

- MAY CAUSE ALLERGIC SKIN REACTION.
- CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.
- SUSPECT CANCER HAZARD.
- CONTAINS MATERIAL WHICH MAY CAUSE CANCER.
- Spontaneously flammable in air.
- WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

National Fire Protection Association (U.S.A.) :

- Health 2
- Flammability 1
- Instability 0
- Special

Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.