SAFETY DATA SHEET

NICKEL CARBONATE 46%

SECTION 1. IDENTIFICATION

Product name : NICKEL CARBONATE 46%

Product code : 2200984

Manufacturer or supplier’s details

Company name of supplier : Atotech Deutschland GmbH
Address : Erasmusstrasse 20
           Berlin 10553
           Germany
Telephone : +4930349850

Company name of supplier : Atotech USA
Address : 1750 OVERVIEW DRIVE
          ROCK HILL 29730
          USA
Telephone : +18038173500

Prepared by
Product Safety Department (PSD): product-safety@atotech.com

Inquiries
Questions about content of Safety Data Sheets: product-safety@atotech.com

Emergency telephone : CHEMTREC +18004249300

Transport Medical : Rocky Mountain Poison Control Center: 303-623-5716

Recommended use of the chemical and restrictions on use

Recommended use : Plating agents and metal surface treating agents
Surface treatment

Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
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Skin irritation: Category 2
Respiratory sensitization: Category 1
Skin sensitization: Category 1
Germ cell mutagenicity: Category 2
Carcinogenicity (Inhalation): Category 1A
Reproductive toxicity: Category 1A
Specific target organ systemic toxicity - repeated exposure: Category 1

GHS Label element
Hazard pictograms:

Signal Word: Danger

Hazard Statements:
H302 + H332 Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H350i May cause cancer by inhalation.
H360 May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements:
Prevention:
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ eye protection/ face protection.
P285 In case of inadequate ventilation wear respiratory protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P309 + P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.

Storage:
P405 Store locked up.

Disposal:
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P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
Chemical nature : Solid
Substance name : Nickel Carbonate
CAS-No. : 3333-67-3

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel Carbonate</td>
<td>3333-67-3</td>
<td>&gt;= 80 - &lt;= 100</td>
</tr>
</tbody>
</table>

This product may contain component(s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above deminimus disclosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS regulations and or guidelines. Please refer to other sections of the MSDS for information on safety, health and environmental guidelines and precautions.

SECTION 4. FIRST AID MEASURES

General advice : Get medical attention.
If inhaled : Call a physician or poison control center immediately.
Move to fresh air.
In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before re-use.
Get medical attention if irritation develops and persists.
In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes.
If eye irritation persists, consult a specialist.
If swallowed : If swallowed, call a poison control center or doctor immediately.
Never give anything by mouth to an unconscious person.
Do not induce vomiting without medical advice.
Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.
Causes skin irritation.
May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of causing genetic defects.
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SDS_US_GHS SDS Number: 2200984 Revision Date: 01.05.2015

May cause cancer by inhalation.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.

Protection of first-aiders:
First Aid responders should pay attention to self-protection and use the recommended protective clothing.

Notes to physician:
No information available.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media:
No information available.

Hazardous combustion products:
Nickel compounds
Carbon oxides

Specific extinguishing methods:
Use a water spray to cool fully closed containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters:
Exposure to decomposition products may be a hazard to health.
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
Use personal protective equipment.
Evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust).

Environmental precautions:
Should not be released into the environment.
Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up:
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Shovel or sweep up.
Keep in suitable, closed containers for disposal.
Clean contaminated floors and objects thoroughly while observing environmental regulations.
SECTION 7. HANDLING AND STORAGE

Advice on safe handling: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Handle in accordance with good industrial hygiene and safety practice. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid breathing dust.

Conditions for safe storage: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Materials to avoid: Do not store near acids.

Recommended storage temperature: -5 - 40 ºC

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel Carbonate</td>
<td>3333-67-3</td>
<td>TWA</td>
<td>1 mg/m3 (Nickel)</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Inhalable fraction)</td>
<td>0.2 mg/m3 (Nickel)</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1 mg/m3 (Nickel)</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.015 mg/m3 (Nickel)</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection: In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection

Remarks: Wear protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Follow the instructions for use issued by the producer.

Eye protection: Tightly fitting safety goggles Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and body protection: Impervious clothing
Boots

Protective measures / Engineering measures: Ensure adequate ventilation, especially in confined areas.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using do not eat, drink or smoke. Avoid breathing dust.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: solid
Color: light green
Odor: No information available.
Odor Threshold: No data available
pH: not determined
Melting point/freezing point: not determined
Initial boiling point and boiling range: not determined
Flash point: Not applicable
Evaporation rate: Not applicable
Flammability (solid, gas): Not classified as a flammability hazard
Upper explosion limit: No data available
Lower explosion limit: No data available
Vapor pressure: not determined
Relative vapor density: Not applicable
Density: 2.55 - 2.65 g/cm³
Solubility(ies)
Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available
Autoignition temperature: No data available
Thermal decomposition: > 120 °C

Viscosity
- Viscosity, dynamic: No data available
- Viscosity, kinematic: No data available

Oxidizing properties: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity: None under normal processing.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions: Risk of violent reaction

Conditions to avoid:
- Avoid dust formation.
- To avoid thermal decomposition, do not overheat.

Incompatible materials: Acids

Hazardous decomposition products: Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
- Inhalation
- Skin Absorption

Acute toxicity
Harmful if swallowed or if inhaled.

Ingredients:
- Nickel Carbonate:
  - Acute oral toxicity: Acute toxicity estimate: 500 mg/kg
  - Acute inhalation toxicity:
    - LC50: 1.5 mg/l
    - Exposure time: 4 h
    - Test atmosphere: dust/mist

Remark: The acute toxicity estimate (ATE) of the ingredients are derived using the LD50/LC50 values where available.

Skin corrosion/irritation
Causes skin irritation.

Product:
Remarks: May cause skin irritation and/or dermatitis.

**Serious eye damage/eye irritation**
Not classified based on available information.

**Respiratory or skin sensitization**
Skin sensitization: May cause an allergic skin reaction.
Respiratory sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Product:**
Remarks: Causes sensitization.

**Germ cell mutagenicity**
Suspected of causing genetic defects.

**Carcinogenicity**
May cause cancer by inhalation.

- **IARC**
  Group 1: Carcinogenic to humans
  Nickel Carbonate 3333-67-3

- **ACGIH**
  Confirmed human carcinogen
  Nickel Carbonate 3333-67-3

- **OSHA specified**
  No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

- **NTP**
  Known to be human carcinogen
  Nickel Carbonate 3333-67-3

**Reproductive toxicity**
May damage fertility or the unborn child.

**STOT-single exposure**
Not classified based on available information.

**STOT-repeated exposure**
Causes damage to organs through prolonged or repeated exposure.

**Product:**
Target Organs: No specific target organs noted

**Aspiration toxicity**
Not classified based on available information.

**Further information**

**Product:**
Remarks: No data available
SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
No data available

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

Product:
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Dispose of in accordance with local regulations. Dispose of wastes in an approved waste disposal facility.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

UNRTDG
UN number: UN 3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name(s): Nickel Carbonate

Class: 9
Packing group: III
Labels: 9

IATA-DGR
UN/ID No.: UN 3077
Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Technical name(s): Nickel Carbonate

Class: 9
Packing group: III
Labels: Miscellaneous
Packing instruction (cargo): 956
aircraft)
Packing instruction (passen-ger aircraft)

IMDG-Code
UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name(s) : Nickel Carbonate
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

DOT / 49 CFR
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

TSCA 5a : Not relevant
TSCA_12b : Not relevant
DEA : Not applicable

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Chronic Health Hazard
Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting re-
quirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels es-
established by SARA Title III, Section 313:
Nickel Carbonate 3333-67-3

Massachusetts Right To Know
Nickel Carbonate 3333-67-3 80 - 100 %

Pennsylvania Right To Know
Nickel Carbonate 3333-67-3 80 - 100 %
Nickel Carbonate

New Jersey Right To Know
Nickel Carbonate 3333-67-3 80 - 100 %

California Prop 65
WARNING! This product contains a chemical known in the State of California to cause cancer.
Nickel Carbonate 3333-67-3

Remarks: Components which are only displayed in Section 15 are being reported for local regulatory purposes. These components are not displayed in Section 3 due to one or more of the following conditions being met: being present in the product at concentration(s) below threshold limit values for reporting, not considered hazardous materials, health hazards or because they do not contribute to the overall GHS Classification of the final product as required by OSHA HazCom 2012 final rule (29 CFR 1910.1200).


<table>
<thead>
<tr>
<th>Substance</th>
<th>PBDE</th>
<th>PBB</th>
<th>CrVI</th>
<th>Hg</th>
<th>Pb</th>
<th>Cd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
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<td>-</td>
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</tr>
</tbody>
</table>

Please note: Current legislation restricting the use of certain substances applies to „homogeneous material” in finished articles being supplied to the market. Substances deposited during surface finishing may have a composition (weight percent) higher than the weight percent of the substance in the operating solution from which the deposit is made. Atotech encourages its customers to implement systems to ensure their finished products comply with the regulations in force.

SECTION 16. OTHER INFORMATION

Further information

NFPA:

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Health</th>
<th>Special hazard.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

HMIS III:

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FLAMMABILITY</th>
<th>PHYSICAL HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2*</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

0 = not significant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme, * = Chronic

Revision Date : 01.05.2015

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, dispos-
al and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.