Product Name: RICOH Print Cartridge Magenta SP C830DNA (Magenta toner)
General Use: The Image Formation of Printing Machine or Copier
MSDS Number: 821119
Company Name: Ricoh Americas Corporation
Department: Safety Engineering Center, Quality Assurance Center, Quality Management Division
Address: 5 Dedrick Place, West Caldwell, NJ 07006
Telephone: 1-973-882-2000 or 1-973-882-5218 (For product information) or 1-800-336-6737 (For emergencies)
Telefax Number: 1-973-882-3959
E-mail: environmentinfo@ricoh-usa.com

Section 1: Chemical Product and Company Identification

Section 2: Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Chemical Formula</th>
<th>Contents (%)</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester Resin</td>
<td>Confidential</td>
<td>60-90</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>Wax</td>
<td>Confidential</td>
<td>1-20</td>
<td>10mg/m³</td>
<td>N.A</td>
</tr>
<tr>
<td>Organic Pigment</td>
<td>Confidential</td>
<td>1-20</td>
<td>3.0mg/m³</td>
<td>N.A</td>
</tr>
<tr>
<td>Titan Oxide</td>
<td>TiO2</td>
<td>0.1-1</td>
<td>10mg/m³</td>
<td>N.A</td>
</tr>
<tr>
<td>Silica</td>
<td>SiO2</td>
<td>&lt;10</td>
<td>10mg/m³</td>
<td>N.A</td>
</tr>
</tbody>
</table>

This product does not contain any of the following substances as ingredients: Cadmium, Hexavalent Chromium, Mercury, Lead, Polybrominated diphenyl ethers (PBDE), SVHC (substances of very high concern: published by ECHA). And if it contains any impurities, it does not exceed any of the thresholds of RoHS.

Hazardous Ingredients Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>EEC Number</th>
<th>NTP (USA)</th>
<th>Symbol (EU)</th>
<th>DFG-MAK (GER)</th>
<th>California Proposition 65 (USA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titan Oxide</td>
<td>13463-67-7</td>
<td>236-675-5</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>OSHA Z-Tables</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
<td>IARC Monographs</td>
<td>R-Phrase (EU)</td>
<td>OELs-TWA (Australia)</td>
<td></td>
</tr>
</tbody>
</table>
Section 3: Hazards Identification

Emergency Overview

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>PPE: See section 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA</td>
<td>Health</td>
<td>Flammability</td>
<td>Reactivity</td>
<td></td>
</tr>
</tbody>
</table>

The Most Important Hazards

- **Adverse Human Health Effects:**
  - There are no significant hazards expected with intended use.

- **Potential Health Effects**
  - **Primary Entry Routes:**
    - Inhalation: Yes
    - Skin: Yes
    - Ingestion: Yes
  - **Environmental Effects:**
    - There are no significant hazards expected with intended use.

- **Physical and Chemical Hazards:**
  - There are no significant hazards expected with intended use.

- **Specific Hazards:**
  - Dust explosion (like most finely grained organic powders)

- **Main Symptoms:**
  - **Acute Inhalation Toxicity**
    - Exposure to excessive amount of dust may cause physical irritation to respiratory tract.
  - **Acute Oral Toxicity**
    - Low acute toxicity in animal experiment.
  - **Acute Eye Irritation**
    - May cause slight transient irritation.
  - **Acute Skin Irritation**
    - May be non-irritant.
  - **Sensitization**
    - From test no apparent significant hazards are expected. (Only few cases reported on incidental allergy-related conjunctivitis or dermatitis.)
  - **Chronic Effect**
    - Slight pulmonary fibrosis has been reported in rats upon chronic inhalation exposure to a toner at 4mg/m³ every day for 2 years. No pulmonary change was found at 1mg/m³. These findings show that exposure to excessive amounts of powder may cause damage to lungs. However, normal use and handling of this product as intended, does not result in inhalation of excessive amounts of powder.
  - **Carcinogenicity**
    - Titanium dioxide contained in this product are classified to Group 2B of IARC as the result of inhalation test in use of rat. But oral/skin test does not show carcinogenicity.
    - In the animal experiment with very high concentration of titanium dioxide (excessive burden of rat's lungs clearance mechanism (overload phenomenon)), the rat alone showed lung tumor. Under a normal use practice, the concentration should be far lower than the above; and it is assumed that there is no such use.
    - Also, relation between respiratory disease and work exposure of titanium dioxide is not observed with epidemiological survey.

- **Medical Conditions Aggravated by Exposure**
  - Not applicable

- **Classification of the Chemical Product**
  - This mixture is not classified as dangerous.
Section 4 : First Aid Measures

Inhalation :
   - Remove from exposure to fresh air and rinse mouth with water. Seek medical advice.

Skin Contact :
   - Wash thoroughly with soapy water.

Eye Contact :
   - Flush with a large amount of water until particle is removed. Seek medical advice.

Ingestion :
   - Drink several glasses of water to dilute ingested toner. Seek medical advice.

Immediate Medical Attention :
   - Immediate medical attention is not required.

Section 5 : Fire Fighting Measures

Flash Point (degrees centigrade) : Not applicable
Burning Rate (mm/sec) : 0.223 or below
Autoignition Temperature (degrees centigrade) : Not available

Flammable Limits (%) :
   - LEL Not available
   - UEL Not available

Extinguishing Media to Avoid :
   - Not applicable

Specific Hazards :
   - Can form explosive dust-air mixtures when finely dispersed in air.

Fire-Fighting Instructions / Specific Method :
   - No special fire protecting method is required. Sprinkling or fire extinguishers can be used.

Protection of Firefighters :
   - Wear gloves, glasses, a mask if necessary.

Section 6 : Accidental Release Measures

Personal Precautions :
   - Do not breathe in dust.

Environment Precautions :
   - Do not flush into sewers or watercourses.

Methods for Cleaning Up :
   - Fine powder may form explosive dust-air mixture. Confirm there is no source of fire and if there is a source, remove it. Sweep up spilled powder slowly and clean reminder with wet cloth. If a vacuum cleaner is used, a dust explosion-proof type must be chosen.

Section 7 : Handling and Storage

Handling :
   - Technical Measures/Precautions
     - Not applicable
   - Safe Handling Advice
     - Do not handle in areas where there is wind or draught, this may cause dust to get into eyes.
     - Avoid breathing in dust.

Storage :
   - Technical Measures
     - Not applicable
   - Storage Conditions
     - Keep out of reach of children.
     - Store in dry, well-ventilated area, to maintain quality the temperature should not exceed 35°C for a long time. Avoid direct sunlight.
   - Packaging material
     - Not applicable
   - Specific Use(s) :
     - Image formation in printing machines or copiers.
Section 8: Exposure Controls/Personal Protection

Technical measures:
Use adequate ventilation. None required with intended use.

Control Parameters

<table>
<thead>
<tr>
<th>Control Parameter</th>
<th>USA OSHA PEL (TWA)</th>
<th>ACGIH TLV (TWA)</th>
<th>DFG MAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Limit Value (1)</td>
<td>15mg/m³ (Total dust)</td>
<td>10mg/m³ (Inhalable fraction)</td>
<td>4.0mg/m³ (Total dust)</td>
</tr>
<tr>
<td>(TWA)</td>
<td>5.0mg/m³ (Respirable fraction)</td>
<td>3.0mg/m³ (Respirable fraction)</td>
<td>1.5mg/m³ (Respirable fraction)</td>
</tr>
</tbody>
</table>

Personal Protection

Respiratory Protections (Specify Type)
None required in normal use. If the limit of exposure concentration is exceeded, use authorised respirator.

Eye Protection
Put on goggles if necessary.

Protective Gloves
Use vinyl or rubber gloves if necessary.

Protective Clothing or Equipment
Wear chemical-resistant apron or other impervious clothing if necessary.

Hygiene Measures
Wash hands after handling

Section 9: Physical and Chemical Properties

Appearance
Physical state: Solid
Form: Powder
Colour: Magenta
Odor: Slightly plastic odor
pH: Not applicable

Boiling Point (degrees centigrade): Not applicable
Vapor Pressure (Pa): Not applicable
Vapor Density (AIR=1): Not applicable
Density (g/cm³): Approx. 1.2
Measuring Temp (degrees centigrade): 25
Formula Weight: Not applicable
Melting Point (degrees centigrade): (Softening point) Approx. 90

Decomposition temperature (degrees centigrade): Not available
Viscosity (Pa・s): Not applicable
Volatile (%): 0.2 or below
Evaporation Rate (Butyl Acetate = 1): Not applicable
Water Solubility (g/L): Insoluble
Chloroform Solubility (g/L): Slightly soluble

Section 10: Stability and Reactivity

Stability:
Stable

Hazardous Reaction:
Dust explosion, like most finely grained organic powders.

Condition to Avoid:
Not applicable in normal use.

Materials to Avoid:
Not applicable in normal use condition.

Hazardous Polymerization:
None

Hazardous Decomposition or Byproducts:
Decomposition products will not occur.
**Section 11: Toxicological Information**

**Acute Toxicity**
- Acute Oral Toxicity (LD50): 5000 or over (mg/kg) (Rat)
- Acute Dermal Toxicity: Not available
- Acute Inhalation Toxicity: Not applicable (Based on other Ricoh products test results of similar ingredients.)

**Local effects**
- Acute Skin Irritation (PII): 1.0 or below (Rabbit) (Based on other Ricoh products test results of similar ingredients.)
- Acute Eye Irritation: Non-irritant (Based on other Ricoh products test results of similar ingredients.)

**Sensitization**
- Acute Allergenic Effects: Non-skinsensitive (Mouse) (Based on other Ricoh products test results of similar ingredients.)

**Specific Effects**
- Carcinogenicity: Titanium dioxide contained in this product are classified to Group 2B of IARC as the result of inhalation test in use of rat. But oral/skin test does not show carcinogenicity.
- In the animal experiment with very high concentration of titanium dioxide (excessive burden of rat’s lungs clearance mechanism (overload phenomenon)), the rat alone showed lung tumor. Under a normal use practice, the concentration should be far lower than the above; and it is assumed that there is no such use.
- Also, relation between respiratory disease and work exposure of titanium dioxide is not observed with epidemiological survey.

**Mutagenicity**: Negative (Ames test)

**Reproduction Toxicity**: Does not contain substances listed as hazardous to reproductive health.

**Teratogenic**: Not available.

**Section 12: Ecological Information**

**Mobility**: No data are available on the adverse effect one environment.

**Persistence/Degradability**: Not available

**Bioaccumulation**: Not available

**Ecotoxicity**
- Acute Toxicity for Fish (LC50): Not classified as toxic (EU Directive 1999/45/EC)mg/l/96hr
- Acute Toxicity for Daphnia (EC50): Not classified as toxic (EU Directive 1999/45/EC)mg/l/48hr
- Algae Inhibition Test (IC50): Not classified as toxic (EU Directive 1999/45/EC)mg/l/72hr
Section 13: Disposal Consideration

General information:
Dispose of waste and residues in accordance with local authority requirements

Disposal methods:
Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. Confirm disposal procedures with local regulations.

Precautions
Do not throw the toner cartridge or toner into an open flame. The hot toner may scatter and cause burns or other damage.

Section 14: Transport Information

International Regulations
Land Transport
RID/ADR : Not applicable
DOT 49 CFR : Not applicable
ADNR : Not applicable
Sea Transport
IMDG Code : Not applicable
Air Transport
ICAO-TI/IATA-DGR : Not applicable
UN Number : Not applicable
Class : Not applicable

Specific Precautionary Transport Measures and Conditions
Avoid direct sunlight in quality.

Section 15: Regulatory Information

Regulations
US Information
Information on the label : Not required
TSCA (Toxic Substances Control Act) :
This product complies with all applicable rules and regulations under TSCA.
SARA (Superfund Amendments and Reauthorization Act) Title III
313 Reportable Ingredients : Not regulated
California Proposition 65 : Not regulated
Canada Information
WHMIS Controlled product : Not a controlled product
EU Information
Information on the label (1999/45/EC and 67/548/EEC)
Symbol & Indication : Not required
R-Phrase : Not required
S-Phrase : Not required
Special Precautions under 1999/45/EC Annex V : Not required
76/769/EEC
This product complies with applicable rules and regulations under 76/769/EEC
Section 16 : Other Information

Both the HMIS and NFPA systems use number from “0” to “4” to show the degree of hazard in an uncontrolled situation:
0=Minimum Hazard 1=Moderate Hazard 2=Serious Hazard 3=Severe Hazard
Colors may also be used in both systems:
Blue=Health Hazard Red=Fire Hazard Yellow=Reactivity Hazard White=Indicate a special hazard
HMIS will specify any Personal Protective Equipment reqired [PPE], NFPA will specify OX(oxidizer), Acid(acid), ALK(Alkali), COR(Corrosive), W(use no water), xx(Radioactive).

Literature References :
ANSI Z400.1-1993
ISO 11014-1

NIOSH CURRENT INTELLIGENCE BULLETIN "Evaluation of Health Hazard and Recommendation for Occupational Exposure to Titanium Dioxide DRAFT"

ACGIH-TLV : Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices
NTP (USA) : US Department of Health and Human Services National Toxicology Program Annual Report on Carcinogens
76/769/EEC : EU Directive 76/769/EEC
WHMIS Controlled product : Canada Workplace Hazardous Information System
OELs-TWA (Australia) : Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC: 3008 (1995)]

Abbreviations :
OSHA PEL : PEL (Permissible Exposure Limit) under Occupational Safety and Health Act
ACGIH-TLV : TLV (Threshold Limit Values) under American Conference of Governmental Industrial Hygienists
SVHC : Substances of Very High Concern
ECHA : The European Chemicals Agency
DFG-MAK : MAK (Maximale Arbeitsplatz Konzentrationen) by Deutsche Forschungs Gemeinschaft
RoHS : Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment
TWA : Time Weighted Average
IARC : International Agency for Research on Cancer
NTP : National Toxicology Program
WHMIS : Workplace Hazardous Information System

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