Material Safety Data Sheet (ANSI form)

Section1 : Chemical Product and Company Identification

Product Name : Print Cartridge Cyan Type MP C5501/C9155/LD655C/ MP C5000/C5050/LD550C
General Use : The Image Formation of Printing Machine or Copier
MSDS Number : 841455
Company Name : Ricoh Americas Corporation
Department :
Address : 5 Dedrick Place, West Caldwell, NJ 07006
Telephone Number : 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

Section2 : Composition, Information on Ingredients

Ingredients CAS No./Common Name	Chemical Formula	Contents (%)	ACGIH (TLV)			OSHA (PEL)	
			TWA	STEL	C	TWA	C
Confidential Polyester Resin	Confidential	50-90	N.A	N.A	N.A	N.A	N.A
Confidential Wax	Confidential	<10	2mg/m3	N.A	N.A	N.A	N.A
147-14-8 Organic Pigment	C32H16CuN8	<10	N.A	N.A	N.A	N.A	N.A
7631-86-9 Silica	O2Si	<10	10mg/m3	N.A	N.A	15mg/m3	N.A
13463-67-7 Titan Oxide	TiO2	0.1-1	10mg/m3	N.A	N.A	15mg/m3	N.A

This product does not contain any of the following substances as ingredients.
Cadmium, Hexavalent Chromium, Mercury, Lead, Polybrominated biphenyls (PBB), Polybrominated diphenyleters (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
Chemical Name : Titan Oxide

CAS Number	: 13463-67-7	EEC Number	: 236-675-5
OSHA Z-Tables (USA)	: 15mg/m3	ACGIH-TLV	: 10mg/m3
NTP (USA)	: Not listed	IARC Monographs	: Group 2B
Symbol (EU)	: Not listed	R-Phrase (EU)	: Not listed
DFG-MAK (GER)	: Not listed	OELs-TWA (Australia)	: 10mg/m3
California Proposition 65 (USA)	: Not listed		

Section3 : Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

HMIS	Health : 1	Flammability : 1	Reactivity : 0	PPE:See section 8
NFPA	Health : 1	Flammability : 1	Reactivity : 0	

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 is 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.

Section4 : First Aid Measures

Inhalation :
Remove from exposure into 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 particles are 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.

Section5 : 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.

Section6 : Accidental Release Measures

Personal Precautions :
Do not breathe in dust.
Environment Precautions :
Do not flush into sewers or watercourses.
Methods for Cleaning Up :
Confirm there is no source of fire and if there is a source, remove it. Sweep up spilled powder slowly and clean remainder with wet cloth.

Section7 : 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 35degrees centigrade for a long time. Avoid direct sunlight.
Packaging material
Not applicable
Specific Use(s) :
Image formation in printing machines or copiers.

Section8 : Exposure Controls/Personal Protection

Technical measures :
Use adequate ventilation. None required with intended use.
Control Parameters
Exposure Limit Value (I)
USA OSHA PEL: 15mg/m3 (Total dust) 5.0mg/m3 (Respirable fraction) (TWA)
ACGIH TLV (TWA) : 10mg/m3 (Inhalable fraction) 3.0mg/m3 (Respirable fraction)
DFG MAK : 4.0mg/m3 (Total dust) 1.5mg/m3 (Respirable fraction)
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.

Section9 : Physical and Chemical Properties

Appearance
Physical state : Solid
Form : Powder
Colour : Cyan
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.110
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

Section10 : 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.
Hazardous Polymerization :
None
Hazardous Decomposition or Byproducts :
Decomposition products will not occur.

Section11 : Toxicological Information

Acute Toxicity
Acute Oral Toxicity (LD50) :
5000 or over [mg/kg] (Rat) (Based on other product test results of similar ingredients.)
Acute Dermal Toxicity :
Not available
Acute Inhalation Toxicity :
Not available
Local effects
Acute Skin Irritation(PII) :
1.0 or below (Rabbit) (Based on other product test results of similar ingredients.)
Acute Eye Irritation :
Non-irritant (Based on other product test results of similar ingredients.)
Sensitization
Acute Allergenic Effects :
Non-skinsensitive (Marmot) (Based on other product test results of similar ingredients.)
Specific Effects
Carcinogenicity :
In 2008 IARC the re-evaluated Titanium dioxide as a Group 2B carcinogen for which there is inadequate human evidence, but sufficient animal evidence.
The latter is based upon the development of lung tumors in rats receiving chronic inhalation exposures to Titanium dioxide at levels that induce particle overload of the lung.
Use of this product, as intended, dose not result in inhalation of excessive dust.
Epidemiological study to date have not revealed any evidence of the relationbetween exposure to titanium dioxide and diseases of the respiratory tract beyond general effects of dust.
Mutagenicity : Negative (Ames test)
Reproduction Toxicity : Does not contain substances listed as hazardous to reproductive health.
Teratogenic : Not available

Section12 : Ecological Information

Mobility : No data are available on any adverse effects on the 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

Section13 : 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. Hot toner may scatter and cause burns or other damage.

Section14 : 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.

Section15 : Regulatory Information

Regulations
US Information
Information on the label : Not required
TSCA (Toxic Substances Control Act) :
This toner 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

Section16 : Other Information

Explanation of Hazardous Materials Identification System [HMIS]& National Fire Protection Association [NFPA] Hazard Rating Systems:
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=Slight Hazard 2=Moderate Hazard 3=Serious Hazard 4=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
Commission Directive 91/155/EEC
IARC (1996) "IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.65, Printing Process and Printing Inks, Carbon Black and Some Nitro Compounds", Lyon, pp149-261
H.Muhle, B.Bellman, O.Creutzenberg, C.Dasenbrock, H.Emst, R.Kilpper, J.C.MacKenzie, P.Morrow, U.Mohr, S.Takenaka and R.Mermelstein(1991) "Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats" Fundamental and Applied Toxicology 17,pp280-299
IARC (2008) "IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.93"
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
OSHA Z-Tables	:	US Department of Labor, 29CFR Part 1910 , Tables Z-1, Z-2, and Z-3
NTP (USA)	:	US Department of Health and Human Services National Toxicology Program Annual Report on Carcinogens DFG-MAK(GER): DFG List of MAK and BAT Value
Symbol (EC)	:	EU Directive 67/548/EEC
91/155/ EEC	:	EU Directive 91/155/ EEC
1999/45/EC Annex V	:	EU Directive 1999/45/EC
76/769/EEC	:	EU Directive 76/769/EEC
EC 304/2003	:	Regulation (EC) No 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals
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
REACH	EC)No.1907/2006:Council Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
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
NOHSC	National Occupational Health and Safety Commission Act 1985

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