

## Safety Data Sheet (ISO form)

### 1. Product and Company Identification

Product Name : RICOH/Nashuatec/Rex-Rotary/Gestetner Print Cartridge Cyan MP C3503 (Cyan toner)  
General Use : The Image Formation of Printing Machine or Copier  
MSDS Number : 841820  
Company Name : Ricoh Company, Ltd.  
Department : Safety Engineering Department, Quality Management Division  
Address : 146-1 Nishisawada, Numazu-shi, Shizuoka-ken, 410-0007 Japan  
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### 2. Composition/Information on Ingredients

Substance or Preparation

Preparation

Chemical Nature

Ingredients	Chemical Formula	CAS.No.	Contents(%)
Polyester Resin	Confidential	Confidential	60-90
Wax	Confidential	Confidential	1-20
Organic Pigment	C32H16CuN8	147-14-8	1-20
Titan Oxide	TiO2	13463-67-7	0.1-1
Silica	O2Si	7631-86-9	<10

This product does not contain any of the following substances as ingredients.

Cadmium, Hexavalent Chromium, Mercury, Lead, Polybrominated biphenyls (PBB), 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

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)	: Listed		

### 3. Hazards Identification

The Most Important Hazards

Adverse Human Health Effects

There are no significant hazards expected with intended use.

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/m<sup>3</sup> every day for 2 years. No pulmonary change was found at 1mg/m<sup>3</sup>. 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.
- The Classification of The Chemical Product  
This preparation is not classified as dangerous according to Directive 1999/45/EC.

## 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.

### Notes to a physician

Not applicable

## 5. Fire-Fighting Measures

### Extinguishing Media

CO<sub>2</sub>, dry chemicals, foam or water.

### Extinguishing Media to Avoid

Not applicable

### Specific Hazards

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

### Specific Method

No special fire protecting method is required. Sprinkling or fire extinguishers can be used.

### Protection of Fire-fighters

Wear gloves, glasses, a mask if necessary.

## 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 remainder with wet cloth. If a vacuum cleaner is used, a dust explosion-proof type must be chosen.

## 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.

## 8. Exposure Controls/Personal Protection

### Technical Measures

Use adequate ventilation. None required with intended use.

### Control Parameters

USA OSHA PEL (TWA)	: 15mg/m <sup>3</sup> (Total dust)	5.0mg/m <sup>3</sup> (Respirable fraction)
ACGIH TLV (TWA)	: 10mg/m <sup>3</sup> (Inhalable fraction)	3.0mg/m <sup>3</sup> (Respirable fraction)
DFG MAK	: 4.0mg/m <sup>3</sup> (Total dust)	1.5mg/m <sup>3</sup> (Respirable fraction)

### Personal Protection

#### Respiratory Protections

None required in normal use. If the limit of exposure concentration is exceeded, use authorised respirator.

#### Hand Protection

Use vinyl or rubber gloves if necessary.

#### Eye Protection

Put on goggles if necessary.

#### Skin and Body Protection

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

#### Hygiene Measures

Wash hands after handling

## 9. Physical and Chemical Properties

### Appearance

Physical State : Solid  
Form : Powder  
Colour : Cyan  
Odour : Slightly plastic odour

### Information

pH : Not applicable

Specific Temperatures/Temperature Ranges at Which Changes in Physical State Occur

Boiling Point (degrees centigrade) : Not applicable

Melting Point (degrees centigrade) : (Softening point) Approx.90

Decomposition Temperature (degrees centigrade) : Not available  
Flash Point (degrees centigrade) : Not applicable  
Explosion Properties (degrees centigrade) : This product is considered a nonexplosive material under normal use.

Vapor Pressure (Pa) : Not applicable  
Vapor Density(AIR=1) : Not applicable  
Density (g/cm<sup>3</sup>) : Approx.1.2      Measuring Temp (degrees centigrade) : 25

#### Solubility

Water Solubility (g/L) : Insoluble  
Chloroform Solubility (g/L) : Slightly soluble  
Octanol/Water Partition Coefficient  
Not available

#### Other Information

Flammability : Not flammable  
Viscosity (Pa·s) : Not applicable  
Volatile (%) : 0.2 or below

## 10.Stability and Reactivity

#### Stability

Stable

#### Hazardous Reaction

Dust explosion, like most finely grained organic powders.

#### Conditions to Avoid

Not applicable in normal use.

#### Materials to Avoid

Not applicable in normal use condition.

#### Hazardous Decomposition Products

Decomposition products will not occur.

## 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 (Rabbit) (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.](#)

## 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 \(EU Directive 1999/45/EC\)](#)  
Acute Toxicity for Daphnia (EC50) : [Not classified as toxic \(EU Directive 1999/45/EC\)](#)  
Algae Inhibition Test (IC50) : [Not classified as toxic \(EU Directive 1999/45/EC\)](#)

## 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.](#)

## 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](#)

The UN Classification Number : [Not applicable](#)

Class : [Not applicable](#)

Specific Precautionary Transport Measures and conditions

[Avoid direct sunlight in quality.](#)

## 15. Regulatory Information

Regulations

EU Information

Information on the label (1999/45/EC and 67/548/EEC)

Symbols & : [Not required](#)

Indications

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](#)

304/2003/EC

[Not regulated](#)

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 Title III

313 Reportable Ingredients : [Not regulated](#)

California Proposition 65 : [Not regulated](#)

Canada Information

WHMIS Controlled product : [Not a controlled product](#)

## 16. Other Information

NFPA Hazard Rating: National Fire Protection Agency (USA)

Health ; 1, Flammability ; 1, Reactivity ; 0

HMIS Rating : The National Paint and Coating Association (USA)

Health ; 1, Flammability ; 1, Reactivity ; 0

### Literature References :

ANSI Z400.1-1993

ISO 11014-1

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. Ernst, 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, pp 280-299

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	DFG List of MAK and BAT Value
Symbol (EC)	: Regulation (EC)No.1272/2008
91/155/ EEC	: EU Directive 91/155/ EEC
1999/45/EC	: EU Directive 1999/45/EC
CLP (EC)No.1272/2008	: Regulation (EC)No.1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures,amending and repealing Directive 67/548/EEC and 1999/45/EC, and amending Regulation (EC)No. 1907/2006
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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