

## Material Safety Data Sheet (ANSI form)

### Section1 : Chemical Product and Company Identification

Product Name : PRINT CARTRIDGE BLACK MP C3502 (Black toner)  
 General Use : The Image Formation of Printing Machine or Copier  
 MSDS Number : 841735  
 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  
 Number : 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	60-90	N.A	N.A	N.A	N.A	N.A
Confidential Wax	Confidential	1-20	10mg/m3	N.A	N.A	N.A	N.A
1333-86-4 Carbon Black	C	1-20	3.0mg/m3	N.A	N.A	3.5mg/m3	N.A
13463-67-7 Titan Oxide	TiO <sub>2</sub>	0.1-1	10mg/m3	N.A	N.A	15mg/m3	N.A
7631-86-9 Silica	O <sub>2</sub> Si	<10	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 diphenylethers (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 : Carbon Black			
CAS Number	: 1333-86-4	EEC Number	: 215-609-9
OSHA Z-Tables (USA)	: 3.5mg/m3	ACGIH-TLV	: 3.0mg/m3
NTP (USA)	: Not listed	IARC Monographs	: Group 2B
Symbol (EU)	: Not listed	R-Phrase (EU)	: Not listed
DFG-MAK (GER)	: III 3B	OELs-TWA (Australia)	: 3.0mg/m3
California Proposition 65 (USA)	: Listed		
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 ☆☆☆☆☆

<b>HMIS</b>	Health : 1	Flammabilit : 1 y	Reactivity : 0	PPE:See section 8
<b>NFPA</b>	Health : 1	Flammabilit : 1 y	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/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**

Carbon black and 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.

The toner containing carbon black did not show carcinogenicity in chronic inhalation exposure test in use of rat.

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 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.

#### 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 :**

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.

#### 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 35°C 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 : Black

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

## 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 condition.

### 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)

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 :

Carbon black and 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.

The toner containing carbon black did not show carcinogenicity in chronic inhalation exposure test in use of rat.

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.

## Section12 : Ecological Information

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

Persistence/Degradability : Not available

y

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. The 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 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

## 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 required [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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