Product Name : RICOH Print Cartridge Black MP C2551E (Black toner) MSDS Number : 841587
Date Prepared : 01/12/2011 Date Modified : 05/07/2012 Date : 05/06/2014

Safety Data Sheet (ISO form)

1.Product and Company Identification

Product Name	:RICOH Print Cartridge Black MP C2551E (Black toner)
General Use	:The Image Formation of Printing Machine or Copier
MSDS Number	:841587
Company Name	:Ricoh Company,Ltd.
Department	:Environment Safety Center, Corporate Environment Division
Address	:146-1 Nishisawada, Numazu-shi, Shizuoka-ken, 410-0007 Japan
Telephone Number	:055-920-1470, Japan
Telefax Number	:055-920-1479, Japan
E-mail	:msdsinfo@nts.ricoh.co.jp

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
Carbon Black	C	1333-86-4	1-20
Titan Oxide	TiO2	13463-67-7	0.1-1
Silica	SiO2	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 : Carbon Black

CAS Number	: 1333-86-4	EEC Number	: 215-609-9
OSHA Z-Tables (USA)	: 3.5mg/m3	ACGIH-TLV	: 3.5mg/m3
NTP (USA)	: Not listed	IARC Monographs	: Group 2B
Symbol (EU)	: Not listed	R-Phrase (EU)	: Not listed
DFG-MAK	: 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		

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/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

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.

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_2, 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 reminder 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℃ 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/m3 (Total dust)	5.0mg/m3 (Respirable fraction)
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

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	:	Black

Odour : Sligthly 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/cm3) : 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 available
Local effects
Acute Skin Irritation(PII) :
1.0 or below (Rabbit)
Acute Eye Irritation :
Non-irritant
Sensitization
Acute Allergenic Effects :
Non-skinsensitive (Mouse) (None skin sensitization.)
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.

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 & Indications : 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
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. 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, 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)	: 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	nternational 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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