

Material Safety Data Sheet (ANSI form)

Section1 : Chemical Product and Company Identification

Product Name : RSL Pro Print Cartridge Yellow C751
General Use : The Image Formation of Printing Machine or Copier
MSDS Number : 828186
Company Name : Ricoh Americas Corporation
Department :
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 | 50-90 | N.A | N.A | N.A | N.A | N.A |
| Confidential Wax | Confidential | 1-10 | 2(wax fume)mg/ m3 | N.A | N.A | N.A | N.A |
| Confidential Organic Pigment | Confidential | 1-10 | N.A | N.A | N.A | N.A | N.A |
| 13463-67-7 Titan Oxide | TiO2 | 0.1-1 | 10mg/m3 | N.A | N.A | 15mg/m3 | N.A |
| 7631-86-9 Silica | O2Si | 1-10 | 10mg/m3 | N.A | N.A | 15mg/m3 | N.A |
| 66402-68-4 Ferrite(Iron Oxide 50~ 90%、Manganese Oxide 14~45%) | Not Identified | 1-20 | N.A | N.A | N.A | N.A | 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 | Flammabilit : 1 | Reactivity : 0 | PPE:See section 8 |
| | | y | | |
| NFPA | Health : 1 | Flammabilit : 1 | Reactivity : 0 | |
| | | y | | |

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 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 : Yellow

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.1.6 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) : Slightly soluble

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)
 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 :
 Not available (Ingredients are not classified as dangerous according to Directive 67/548/EEC.)
Sensitization
 Acute Allergenic Effects :
 Non-skinsensitive (Marmot) (Based on other product test results of similar ingredients.)
Specific Effects
 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.
 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 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

Disclaimer(S) :

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Ricoh Americas Corporation.

It relates only to the specific material designated herein, and does not relate to use in combination with any other material or process.

Ricoh Americas Corporation assumes no legal responsibility for use or reliance upon this information.