

## Safety Data Sheet (ISO form)

### 1. Product and Company Identification

Product Name : RICOH Garment Ink Cartridge Black Ri 1000 Type G1  
General Use : The image formation of printing machine or copier.  
SDS Number : 342552  
Company Name : Ricoh Company, Ltd.  
Department : Product Safety Engineering Department, Safety and Environmental Engineering Center, Quality Management 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(%)
Carbon Black	C	1333-86-4	1-10
Ethylene glycol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	107-21-1	1-10
Additive agents	Confidential	Confidential	<5
Humectant	Confidential	Confidential	30-40
Water	H <sub>2</sub> O	7732-18-5	45-65

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/m <sup>3</sup>	ACGIH-TLV	: 3.0mg/m <sup>3</sup>
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/m <sup>3</sup>
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

There are no significant hazards expected with intended use.

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#### Main Symptoms

##### Acute Inhalation Toxicity

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Acute Oral Toxicity

Low acute toxicity in animal experiment.

##### Acute Eye Irritation

May be non-irritant.

##### Acute Skin Irritation

May be non-irritant.

##### Sensitization

From test no apparent significant hazards are expected.

##### Chronic Effect

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Carcinogenicity

Carbon black contained in this product is classified to Group 2B of IARC as the result of inhalation test in use of rat.

This is due to the fact that rat alone showed lung tumor in the animal experiment under very high concentration.

During a normal use of this product, design of the cartridge proves it impossible to have powder carbon black released to the air.

Intake from the mouth and skin does not show carcinogenicity.

##### The Classification of The Chemical Product

This preparation is not classified as dangerous according to Regulation (EC) No 1272/2008.

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#### 4. First-Aid Measures

##### Inhalation

Remove from exposure into fresh air if symptoms are experienced. 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

If swallowed, rinse mouth, do not induce vomiting. / If necessary, seek medical advice.

##### Notes to a physician

Not applicable

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#### 5. Fire-Fighting Measures

##### Extinguishing Media

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

##### Extinguishing Media to Avoid

Not applicable.

##### Specific Hazards

Not applicable

##### 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.

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#### 6. Accidental Release Measures

##### Personal Precautions

Take off dirty clothes and wash them or have them dry-cleaned before wearing again.

##### Environment Precautions

Do not exposure to sewers and watercourses.

##### Methods for Cleaning Up

If spilled, wipe up with paper or cloth.

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## 7. Handling and Storage

### Handling

#### Technical Measures/Precautions

Not applicable

#### Safe Handling Advice

Keep away from heat, flame or spark. Do not dismantle cartridge.

### Storage

#### Technical Measures

Not applicable

#### Storage Conditions

Keep out of reach of children.

For the sake of quality, store in dry and well-ventilated area it should not exceed 35 degrees centigrade for a long time and avoid direct sunlight.

#### Packaging Material

Not applicable

### Specific Use(s)

The Image Formation of Printing Machine or Copier.

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## 8. Exposure Controls/Personal Protection

### Technical Measures

Use adequate ventilation. None required with intended use.

### Control Parameters

USA OSHA PEL (TWA) : Not applicable

ACGIH TLV (TWA) : Not applicable

DFG MAK : Not applicable

### Personal Protection

#### Respiratory Protections

None required in normal use.

#### 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.

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## 9. Physical and Chemical Properties

### Appearance

Physical State : Liquid

Form : Liquid

Colour : Black

Odour : acrylic-like

### Information

pH : 8-10 Measuring Temp (degrees centigrade) : 25

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

Boiling Point (degrees centigrade) : Not available

Melting Point (degrees centigrade) : Not available

Decomposition Temperature (degrees centigrade) : Not available

Flash Point (degrees centigrade)  
Explosion Properties (degrees centigrade)

: Not available  
: This product is considered a nonexplosive material under normal use.

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Vapor Pressure (Pa)	Not available	
Vapor	Not available	
Density(AIR=1)	:	
Density (g/cm <sup>3</sup> )	Approx.1.1	Measuring Temp (degrees centigrade) : 23
Solubility	:	
Water Solubility (g/L)	: dispersible	Measuring Temp (degrees centigrade) : 25
Octanol/Water Partition Coefficient	Not available	
Other Information		
Flammability	: Not flammable	
Viscosity (Pa·s)	: Approx.0.011	Measuring Temp (degrees centigrade) :25
Volatile (%)	: 45-65	

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## 10.Stability and Reactivity

### Stability

Stable

### Hazardous Reaction

There is no significant hazardous reaction expected with intended use.

### Conditions to Avoid

Not applicable in normal use.

### Materials to Avoid

Not applicable in normal use.

### Hazardous Decomposition Products

Decomposition products will not occur.

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## 11.Toxicological Information

### Acute Toxicity

Acute Oral Toxicity (LD50) :

5000 or over [mg/kg] (Rat) (OECD TG423)

Acute Dermal Toxicity :

Not available

Acute Inhalation Toxicity :

Not available

### Local effects

Acute Skin Irritation(PII) :

1.0 or below (Rabbit) (OECD TG404)

Acute Eye Irritation :

Non-irritant

### Sensitization

Acute Allergenic Effects :

0 % (Mouse) (OECD TG429)

### Specific Effects

Carcinogenicity :

Carbon black contained in this product is classified to Group 2B of IARC as the result of inhalation test in use of rat.

This is due to the fact that rat alone showed lung tumor in the animal experiment under very high concentration.

During a normal use of this product, design of the cartridge proves it impossible to have powder carbon black released to the air.

Intake from the mouth and skin does not show carcinogenicity.

Mutagenicity : Negative (Ames test)

Reproduction Toxicity : Does not contain substances listed as hazardous to reproductive health.

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## 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) : over100mg/l/96hr  
Acute Toxicity for Daphnia (EC50) : over 100mg/l/48hr  
Algae Inhibition Test (IC50) : over100mg/l/72hr

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## 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:  
Not available

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## 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. Do not keep this over 35 degrees centigrade.

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## 15. Regulatory Information

Regulations  
EU Information  
Information on the label (Regulation (EC) No 1272/2008)  
Symbols & Indications : Not required  
R-Phrase : Not required  
S-Phrase : Not required  
(EC) No 1907/2006 Annex XVII  
This product complies with applicable rules and regulations under (EC) No 1907/2006 Annex XVII  
(EC) No. 689/2008  
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 : 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) : Regulation (EC) No 1272/2008

91/155/ EEC : EU Directive 91/155/ EEC

(EC) No 1907/2006 : Regulation (EC) No 1907/2006 Annex XVII

Annex XVII

(EC) No. 689/2008 : Regulation (EC) No 689/2008

WHMIS Controlled : Canada Workplace Hazardous Information System

product

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 :

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of RICOH COMPANY, LTD.

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

RICOH COMPANY, LTD assumes no legal responsibility for use or reliance upon this information.

## Safety Data Sheet (ISO form)

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### 1. Product and Company Identification

Product Name :RICOH Garment Ink Cartridge Cyan Ri 1000 Type G1  
General Use :The Image Formation of Printing Machine  
SDS Number :342553  
Company Name : Ricoh Company,Ltd.  
Department :Product Safety Engineering Department, Safety and Environmental Engineering Center, Quality Management 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

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### 2. Composition/Information on Ingredients

Substance or Preparation

Preparation

Chemical Nature

Ingredients	Chemical Formula	CAS.No.	Contents(%)
Ethylene glycol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	107-21-1	1-10
Organic Pigment(Copper compound)	Confidential	Confidential	1-10
Additive agents	Confidential	Confidential	<5
Humectant	Confidential	Confidential	20-30
Water	H <sub>2</sub> O	7732-18-5	55-75

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.

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### 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

There are no significant hazards expected with intended use.

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#### Main Symptoms

##### Acute Inhalation Toxicity

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Acute Oral Toxicity

Low acute toxicity in animal experiment.

##### Acute Eye Irritation

May be non-irritant.

##### Acute Skin Irritation

May be non-irritant.

##### Sensitization

From test no apparent significant hazards are expected.

##### Chronic Effect

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Carcinogenicity

This product does not contain the substances classified as carcinogenic by NTP, IARC or OSHA.

##### The Classification of The Chemical Product

This preparation is not classified as dangerous according to Regulation (EC) No 1272/2008.

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#### 4. First-Aid Measures

##### Inhalation

Remove from exposure into fresh air if symptoms are experienced. 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

If swallowed, rinse mouth, do not induce vomiting. / If necessary, seek medical advice.

##### Notes to a physician

Not applicable

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#### 5. Fire-Fighting Measures

##### Extinguishing Media

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

##### Extinguishing Media to Avoid

Not applicable.

##### Specific Hazards

Not applicable

##### 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.

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#### 6. Accidental Release Measures

##### Personal Precautions

Take off dirty clothes and wash them or have them dry-cleaned before wearing again.

##### Environment Precautions

Do not exposure to sewers and watercourses.

##### Methods for Cleaning Up

If spilled, wipe up with paper or cloth.

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## 7. Handling and Storage

### Handling

#### Technical Measures/Precautions

Not applicable

#### Safe Handling Advice

Keep away from heat, flame or spark. Do not dismantle cartridge.

### Storage

#### Technical Measures

Not applicable

#### Storage Conditions

Keep out of reach of children.

For the sake of quality, store in dry and well-ventilated area it should not exceed 35 degrees centigrade for a long time and avoid direct sunlight.

#### Packaging Material

Not applicable

### Specific Use(s)

The Image Formation of Printing Machine or Copier.

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## 8. Exposure Controls/Personal Protection

### Technical Measures

Use adequate ventilation. None required with intended use.

### Control Parameters

USA OSHA PEL (TWA) : Not applicable

ACGIH TLV (TWA) : Not applicable

DFG MAK : Not applicable

### Personal Protection

#### Respiratory Protections

None required in normal use.

#### 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.

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## 9. Physical and Chemical Properties

### Appearance

Physical State : Liquid

Form : Liquid

Colour : Cyan

Odour : Acrylic-like

### Information

pH : 8-10 Measuring Temp (degrees centigrade) : 25

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

Boiling Point (degrees centigrade) : Not available

Melting Point (degrees centigrade) : Not available

Decomposition Temperature (degrees centigrade) : Not available

Flash Point (degrees centigrade)  
Explosion Properties (degrees centigrade)

: Not available  
: This product is considered a nonexplosive material under normal use.

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Vapor Pressure (Pa) : Not available  
Vapor : Not available  
Density(AIR=1) :  
Density (g/cm<sup>3</sup>) : Approx.1.1 Measuring Temp (degrees centigrade) : 23  
Solubility  
Water Solubility (g/L) : dispersible Measuring Temp (degrees centigrade) : 25  
Octanol/Water Partition Coefficient  
Not available  
Other Information  
Flammability : Not flammable  
Viscosity (Pa·s) : Approx.0.011 Measuring Temp (degrees centigrade) :25  
Volatile (%) : 45-75

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## 10.Stability and Reactivity

Stability  
Stable  
Hazardous Reaction  
There is no significant hazardous reaction expected with intended use.  
Conditions to Avoid  
Not applicable in normal use.  
Materials to Avoid  
Not applicable in normal use.  
Hazardous Decomposition Products  
Decomposition products will not occur.

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## 11.Toxicological Information

Acute Toxicity  
Acute Oral Toxicity (LD50) :  
5000 or over [mg/kg] (Rat) (OECD TG 423)  
Acute Dermal Toxicity :  
Not available  
Acute Inhalation Toxicity :  
Not available  
Local effects  
Acute Skin Irritation(PII) :  
1.0 or below (OECD TG 404)  
Acute Eye Irritation :  
Not available  
Sensitization  
Acute Allergenic Effects :  
Non-skinsensitive (Mouse) (OECD429)  
Specific Effects  
Carcinogenicity :  
This product does not contain the carcinogenic substances which are listed on NTP, IARC and OSHA.  
Mutagenicity : Negative (Ames test)  
Reproduction Toxicity : Does not contain substances listed as hazardous to reproductive health.

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## 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) : over100mg/lmg/l/96hr  
Acute Toxicity for Daphnia (EC50) : over 100mg/lmg/l/48hr  
Algae Inhibition Test (IC50) : over100mg/lmg/l/72hr

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## 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:  
Not available

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## 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.

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## 15. Regulatory Information

Regulations  
EU Information  
Information on the label (Regulation (EC) No 1272/2008)  
Symbols & Indications : Not required  
R-Phrase : Not required  
S-Phrase : Not required  
(EC) No 1907/2006 Annex XVII  
This product complies with applicable rules and regulations under (EC) No 1907/2006 Annex XVII  
(EC) No. 689/2008  
Not regulated  
US Information  
Information on the label : Required  
TSCA (Toxic Substances Control Act) :

This product complies with all applicable rules and regulations under TSCA.

SARA Title III

313 Reportable Ingredients : 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

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OSHA Z-Tables : US Department of Labor, 29CFR Part 1910 , Tables Z-1, Z-2, and Z-3

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DFG-MAK : DFG List of MAK and BAT Value

Symbol (EC) : Regulation (EC) No 1272/2008

91/155/ EEC : EU Directive 91/155/ EEC

(EC) No 1907/2006 : Regulation (EC) No 1907/2006 Annex XVII

Annex XVII

(EC) No. 689/2008 : Regulation (EC) No 689/2008

WHMIS Controlled : Canada Workplace Hazardous Information System

product

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 :

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RICOH COMPANY, LTD assumes no legal responsibility for use or reliance upon this information.

## Safety Data Sheet (ISO form)

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### 1. Product and Company Identification

Product Name :RICOH Garment Ink Cartridge Magenta Ri 1000 Type G1  
General Use :The Image Formation of Printing Machine  
SDS Number :342554  
Company Name : Ricoh Company,Ltd.  
Department :Product Safety Engineering Department, Safety and Environmental Engineering Center, Quality Management 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

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### 2. Composition/Information on Ingredients

Substance or Preparation

Preparation

Chemical Nature

Ingredients	Chemical Formula	CAS.No.	Contents(%)
Ethylene glycol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	107-21-1	1-10
Additive agents	Confidential	confidential	<5
Humectant	Confidential	Confidential	30-40
Water	H <sub>2</sub> O	7732-18-5	60-80

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.

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### 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

There are no significant hazards expected with intended use.

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#### Main Symptoms

##### Acute Inhalation Toxicity

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Acute Oral Toxicity

Low acute toxicity in animal experiment.

##### Acute Eye Irritation

May be non-irritant.

##### Acute Skin Irritation

May be non-irritant.

##### Sensitization

From test no apparent significant hazards are expected.

##### Chronic Effect

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Carcinogenicity

This product does not contain the substances classified as carcinogenic by NTP, IARC or OSHA.

##### The Classification of The Chemical Product

This preparation is not classified as dangerous according to Regulation (EC) No 1272/2008.

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#### 4. First-Aid Measures

##### Inhalation

Remove from exposure into fresh air if symptoms are experienced. 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

If swallowed, rinse mouth, do not induce vomiting. / If necessary, seek medical advice.

##### Notes to a physician

Not applicable

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#### 5. Fire-Fighting Measures

##### Extinguishing Media

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

##### Extinguishing Media to Avoid

Not applicable.

##### Specific Hazards

Not applicable

##### 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

Take off dirty clothes and wash them or have them dry-cleaned before wearing again.

##### Environment Precautions

Do not exposure to sewers and watercourses.

##### Methods for Cleaning Up

If spilled, wipe up with paper or cloth.

---

## 7. Handling and Storage

### Handling

#### Technical Measures/Precautions

Not applicable

#### Safe Handling Advice

Keep away from heat, flame or spark. Do not dismantle cartridge.

### Storage

#### Technical Measures

Not applicable

#### Storage Conditions

Keep out of reach of children.

For the sake of quality, store in dry and well-ventilated area it should not exceed 35 degrees centigrade for a long time and avoid direct sunlight.

#### Packaging Material

Not applicable

### Specific Use(s)

The Image Formation of Printing Machine or Copier.

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## 8. Exposure Controls/Personal Protection

### Technical Measures

Use adequate ventilation.

### Control Parameters

USA OSHA PEL (TWA) : Not applicable

ACGIH TLV (TWA) : Not applicable

DFG MAK : Not applicable

### Personal Protection

#### Respiratory Protections

None required in normal use.

#### 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 : Liquid

Form : Liquid

Colour : Magenta

Odour : acrylic-like

### Information

pH : 8-10 Measuring Temp (degrees centigrade) : 25

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

Boiling Point (degrees centigrade) : Not available

Melting Point (degrees centigrade) : Not available

Decomposition Temperature (degrees centigrade) : Not available

Flash Point (degrees centigrade)  
Explosion Properties (degrees centigrade)

: Not available  
: This product is considered a nonexplosive material under normal use.

---

Vapor Pressure (Pa) : Not available  
Vapor Density(AIR=1) : Not available  
Density (g/cm<sup>3</sup>) : Approx.1.1 Measuring Temp (degrees centigrade) : 23  
Solubility  
Water Solubility (g/L) : Dispersible Measuring Temp (degrees centigrade) : 25  
Octanol/Water Partition Coefficient : Not available  
Other Information  
Flammability : Not flammable  
Viscosity (Pa·s) : Approx.0.011 Measuring Temp (degrees centigrade) :25  
Volatile (%) : 60-80

---

## 10.Stability and Reactivity

Stability  
Stable  
Hazardous Reaction  
There is no significant hazardous reaction expected with intended use.  
Conditions to Avoid  
Not applicable in normal use.  
Materials to Avoid  
Not applicable in normal use.  
Hazardous Decomposition Products  
Decomposition products will not occur.

---

## 11.Toxicological Information

Acute Toxicity  
Acute Oral Toxicity (LD50) :  
5000 or over [mg/kg] (Rat) (OECD TG423)  
Acute Dermal Toxicity :  
Not available  
Acute Inhalation Toxicity :  
Not available  
Local effects  
Acute Skin Irritation(PII) :  
1.0 or below (Rabbit) (OECD TG404)  
Acute Eye Irritation :  
Not available  
Sensitization  
Acute Allergenic Effects :  
Non-skinsensitive (Mouse) (OECD TG429)  
Specific Effects  
Carcinogenicity :  
This product does not contain the carcinogenic substances which are listed on NTP, IARC and OSHA.  
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) : over100mg/l/96hrmg/l/96hr  
Acute Toxicity for Daphnia (EC50) : over 100mg/l/48hrmg/l/48hr  
Algae Inhibition Test (IC50) : over100mg/l/72hrmg/l/72hr

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## 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:

---

## 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.

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## 15. Regulatory Information

Regulations  
EU Information  
Information on the label (Regulation (EC) No 1272/2008)  
Symbols & Indications : Not required  
R-Phrase : Not required  
S-Phrase : Not required  
(EC) No 1907/2006 Annex XVII  
This product complies with applicable rules and regulations under (EC) No 1907/2006 Annex XVII  
(EC) No. 689/2008  
Not regulated  
US Information  
Information on the label : Required  
TSCA (Toxic Substances Control Act) :

This product complies with all applicable rules and regulations under TSCA.

SARA Title III

313 Reportable Ingredients : 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

(EC) No 1907/2006 : Regulation (EC) No 1907/2006 Annex XVII

Annex XVII

(EC) No. 689/2008 : Regulation (EC) No 689/2008

WHMIS Controlled : Canada Workplace Hazardous Information System

product

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 :

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of RICOH COMPANY, LTD.

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

RICOH COMPANY, LTD assumes no legal responsibility for use or reliance upon this information.

## Safety Data Sheet (ISO form)

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### 1. Product and Company Identification

Product Name :RICOH Garment Ink Cartridge Yellow Ri 1000 Type G1  
General Use :The image formation of printing machine  
SDS Number :342555  
Company Name : Ricoh Company,Ltd.  
Department :Product Safety Engineering Department, Safety and Environmental Engineering Center, Quality Management 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

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### 2. Composition/Information on Ingredients

Substance or Preparation

Chemical Nature

Ingredients	Chemical Formula	CAS.No.	Contents(%)
Ethylene glycol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	107-21-1	1-10
Additive agents	Confidential	Confidential	<5
Humectant	Confidential	Confidential	20-30
2-Pyrrolidone	C <sub>4</sub> H <sub>7</sub> NO	616-45-5	1-5
Water		7732-18-5	60-80

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.

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### 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

There are no significant hazards expected with intended use.

---

#### Main Symptoms

##### Acute Inhalation Toxicity

Under normal use conditions, there is no possibility to inhale the particle of ink.

##### Acute Oral Toxicity

Low acute toxicity in animal experiment.

##### Acute Eye Irritation

May be non-irritant.

##### Acute Skin Irritation

May be non-irritant.

##### Sensitization

From test no apparent significant hazards are expected .

##### Chronic Effect

normal use conditiona, there is no possibility to inhale the particle of ink.

##### Carcinogenicity

This product does not contain the substances classified as carcinogenic by NTP, IARC or OSHA.

##### The Classification of The Chemical Product

This preparation is not classified as dangerous according to Regulation (EC) No 1272/2008.

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#### 4.First-Aid Measures

##### Inhalation

Remove from exposure into fresh air if symptoms are experienced. 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

If swallowed, rinse mouth, do not induce vomiting. / If necessary, seek medical advice.

##### Notes to a physician

Not applicable

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#### 5.Fire-Fighting Measures

##### Extinguishing Media

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

##### Extinguishing Media to Avoid

Not applicable

##### Specific Hazards

Not applicable

##### Specific Method

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

##### Protection of Fire-fighters

Wear globves, glasses, s mask if nessessary.

---

#### 6.Accidental Release Measures

##### Personal Precautions

Take off contaminated clothing and launder or dry-clean before wear again.

##### Environment Precautions

Do not flush into sewers or watercourses.

##### Methods for Cleaning Up

When spilt, wipe off with paper or cloth.

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## 7. Handling and Storage

### Handling

#### Technical Measures/Precautions

Not applicable

#### Safe Handling Advice

Keep away from heat, flame or spark. Do not dismantle cartridge.

### Storage

#### Technical Measures

Not applicable

#### Storage Conditions

Keep out of reach of children.

For the sake of quality, store in dry and well-ventilated area it should not exceed 35 degrees centigrade for a long time and avoid direct sunlight.

#### Packaging Material

Not applicable

### Specific Use(s)

The Image Formation of Printing Machine or Copier.

---

## 8. Exposure Controls/Personal Protection

### Technical Measures

Use adequate ventilation. None required with intended use.

### Control Parameters

USA OSHA PEL (TWA) : Not applicable

ACGIH TLV (TWA) : Not applicable

DFG MAK : Not applicable

### Personal Protection

#### Respiratory Protections

None required in normal use.

#### 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 : Liquid

Form : Liquid

Colour : Yellow

Odour : acrylic-like

### Information

pH : 8-10 Measuring Temp (degrees centigrade) : 25

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

Boiling Point (degrees centigrade) : Not available

Melting Point (degrees centigrade) : Not available

Decomposition Temperature (degrees centigrade) : Not available

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

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Vapor Pressure (Pa) : Not available  
Vapor Density(AIR=1) : Not available  
Density (g/cm<sup>3</sup>) : 1.1 Measuring Temp (degrees centigrade) :  
Solubility  
Water Solubility (g/L) : dispersible Measuring Temp (degrees centigrade) :  
Octanol/Water Partition Coefficient : Not available  
Other Information  
Flammability : Not flammable  
Viscosity (Pa·s) : Approx.0.011 Measuring Temp (degrees centigrade) :25  
Volatile (%) : 60-80

---

## 10.Stability and Reactivity

Stability  
Stable  
Hazardous Reaction  
There is no significant hazardous reaction expected with intended use.  
Conditions to Avoid  
Not applicable in normal use.  
Materials to Avoid  
Not applicable in normal use.  
Hazardous Decomposition Products

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## 11.Toxicological Information

Acute Toxicity  
Acute Oral Toxicity (LD50) :  
5000 or over [mg/kg] (Rat) (OECD TG423)  
Acute Dermal Toxicity :  
Not available  
Acute Inhalation Toxicity :  
Not available  
Local effects  
Acute Skin Irritation(PII) :  
1.0 or below (Rabbit) (OECD TG404)  
Acute Eye Irritation :  
Not available  
Sensitization  
Acute Allergenic Effects :  
Non-skinsensitive (Mouse) (OECD TG429)  
Specific Effects  
Carcinogenicity :  
This product does not contain the carcinogenic substances which are listed in IARC.  
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) : over100mg/lmg/l/96hr  
Acute Toxicity for Daphnia (EC50) : over 100mg/lmg/l/48hr  
Algae Inhibition Test (IC50) : over100mg/lmg/l/72hr

---

## 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:  
Not available

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## 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 (Regulation (EC) No 1272/2008)  
Symbols & Indications : Not required  
R-Phrase : Not required  
S-Phrase : Not required  
(EC) No 1907/2006 Annex XVII  
This product complies with applicable rules and regulations under (EC) No 1907/2006 Annex XVII  
(EC) No. 689/2008  
Not regulated  
US Information  
Information on the label : Required  
TSCA (Toxic Substances Control Act) :

This product complies with all applicable rules and regulations under TSCA.

SARA Title III

313 Reportable Ingredients : 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

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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

(EC) No 1907/2006 : Regulation (EC) No 1907/2006 Annex XVII

Annex XVII

(EC) No. 689/2008 : Regulation (EC) No 689/2008

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product

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### Abbreviations :

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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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