

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product : Champion CSS solvent based Noritsu* inks.

This MSDS covers the following four 500ml Colour Cartridges;

Black - Catalogue No: 29-PB-P1
Cyan - Catalogue No: 29-CY-P2
Magenta - Catalogue No: 29-MG-P3
Yellow - Catalogue No: 29-YE-P4

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NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, Canadian WHMIS [Controlled Products Regulations], European Union [(EC) 1272/2008 and subsequent amendments to the regulation and 67/548/EEC and subsequent amendments to the directive], Global Harmonization Standard, Australian [NOHSC:2011 (2003)], and Japanese (JIS Z 7250: 2005) required information is included in appropriate sections based on the U.S. ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the countries listed above.

2. HAZARD IDENTIFICATION


GLOBAL HARMONIZATION, EU CLP, AND JAPANESE LABELING AND CLASSIFICATION:

This product has been classified per European Union CLP Regulation (EC) 1272/2008 and Japanese Industrial Standard Z7251:2006.

Cyan ink

Classification: Acute Tox. Cat. 4, Aquatic Chronic Cat. 3 Signal Word: Warning Hazard Statement Codes: H302, H412
Precautionary Statement Codes: P264, P270, P273, P301 + P312, P330, P391, P501 Hazard Symbol/Pictogram:

Magenta:

Classification: Acute Tox. Cat. 4  Signal Word: Warning Hazard Statement Codes: H302
Precautionary Statement Codes: P264, P270, P301 + P312, P330, P501
Hazard Symbol/Pictogram:

Yellow and Black:

Classification: Not applicable. Signal Word: Not applicable. Hazard Statement Codes: Not applicable.
Precautionary Statement Codes: Not applicable. Hazard Symbol/Pictogram: Not applicable.

EU/AUSTRALIAN LABELING AND CLASSIFICATION:

This product has been classified per European Union Council Directive 67/548/EEC and subsequent Directives and Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

Cyan:

Classification: Harmful
Safety Phrases: S(2-), S46

Risk Phrases: R22, R52/53
Annex II Hazard Symbol:



Magenta:

Classification: Harmful
Safety Phrases: S(2-), S46

Risk Phrases: R22

Annex II Hazard Symbol:  Symbol:

Yellow and Black:

Classification: Not applicable
Safety Phrases: Not applicable

Risk Phrases: Not applicable
Annex II Hazard Symbol: Not applicable

See Section 16 for full text of all Hazard and Precautionary Statements and Risk and Safety Phrases

2. HAZARD IDENTIFICATION (Continued)

EMERGENCY OVERVIEW:

This product is an odorless liquid that comes in four colors (black, magenta, cyan, yellow). **Health Hazards:** The primary health hazard associated with this product is the potential for mild to moderate irritation of contaminated tissue. Ingestion of Cyan and Magenta can be harmful. The ink may stain skin, eyes, other contaminated tissue, and objects.

Flammability Hazards:

This product is not flammable. The products of thermal decomposition include irritating fumes and toxic gases (e.g., carbon oxides, nitrogen oxides, sulfur oxides, copper oxides).

Reactivity Hazards:

This product is not reactive.

Environmental Hazards:

Cyan is harmful to aquatic organisms, and may cause long-term adverse effects in the aquatic environment. Other Colors may have adverse effects when released into the environment.

Emergency Recommendations:

Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

There are multiple formulations of this product. The table below indicates when an ingredient is only in certain formulations. No notation indicates the components are in all formulations.

Hazardous Ingredients:	CAS #	European EINECS #	Japanese ENCS #	Australian AICS Status	Korean ECL	WT %	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC) Risk Phrases/Hazard Statements/ Symbol
Proprietary Polyether Modified Polydimethylsiloxan	e		Status Not Determined	Status Not Determined	Status Not Determined	0.5–1.5	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Aliphatic Triol	Proprietary	Proprietary	Proprietary	Listed	Proprietary	1.0–5.0	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Blue Colorant (present in cyan and black formulations)	Proprietary	Proprietary	Proprietary	Listed	Proprietary	0.1–0.9 or 1.0–5.0	EU 67/548 HAZARD CLASSIFICATION: <u>Classification:</u> Harmful, Dangerous to the Environment <u>Risk Phrases:</u> R22, R48/22, R51/53 <u>Symbol Letter:</u> Xn, N GHS & EU 1272/2008 CLASSIFICATION: <u>Classification:</u> Acute Tox. Cat. 4, STOT RE Cat.2, Aquatic Chronic Cat. 2 <u>Hazard Statement Codes:</u> H302, H373, H411
Monoethanolamine (present in yellow formulation)	141-43-5	205-483-3	2-301	Listed	KE-20493	1.0–5.0	EU 67/548 HAZARD CLASSIFICATION: <u>Classification:</u> Harmful, Corrosive <u>Risk Phrases:</u> R20/21/22; R34 <u>Symbol Letter:</u> C GHS & EU 1272/2008 CLASSIFICATION: <u>Classification:</u> Acute Tox. Cat. 4, Skin Corr. Cat 1B <u>Hazard Statement Codes:</u> H302, H312, H314, H332
Yellow Colorant (present only in yellow formulation)	Proprietary	Proprietary	Proprietary	Listed	Proprietary	5.0–10.0	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Dipropylene Glycol (present in yellow, cyan, and magenta formulations)	25265-71-8	246-770-3	2-413	Listed	KE-12226	5.0–10.0	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Ethylene Glycol	107-21-1	203-473-3	2-230	Listed	KE-13169	10.0–30.0	EU 67/548 HAZARD CLASSIFICATION: <u>Classification:</u> Harmful <u>Risk Phrases:</u> R22 <u>Symbol Letter:</u> Xn GHS & EU 1272/2008 CLASSIFICATION: <u>Classification:</u> Acute Tox. Cat. 4 <u>Hazard Statement Codes:</u> H302
Proprietary Red Colorant (present in magenta formulation)			Listed or exempt	Listed or exempt	Listed or exempt	10.0–30.0	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Proprietary Black Colorant (present in black formulations)			Listed	Listed	Status Not Determined	30.0–45.0	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.
Water and other ingredients.						Balance	EU 67/548 HAZARD CLASSIFICATION: Not applicable. GHS & EU 1272/2008 CLASSIFICATION: Not applicable.

See Section 16 for full text of all Hazard Statements and Risk Phrases

4. FIRST-AID MEASURES

PROTECTION OF FIRST AID RESPONDERS:

Rescuers should be taken for medical attention if necessary. Remove or cover gross contamination to avoid exposure to rescuers.

DESCRIPTION OF FIRST AID MEASURES:

Contaminated individuals must seek medical attention if any adverse effect occurs. Take a copy of label and MSDS to physician or health professional with the contaminated individual.

Skin Exposure:

If this product contaminates the skin, immediately begin decontamination with running water and soap. The minimum recommended flushing time is 20 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek medical attention if any adverse effect occurs.

Eye Exposure:

If vapors, sprays, or mists of this product enter the eyes, open the contaminated individual's eyes while under gently running water. Use sufficient force to open eyelids. Have the contaminated individual "roll" eyes. Minimum flushing is for 20 minutes. The contaminated individual must seek medical attention if any adverse effect occurs.

Inhalation:

If vapors, sprays, or mists of this product are inhaled, remove the contaminated individual to fresh air. If necessary, remove or cover gross contamination to avoid exposure to rescuers. Seek medical attention if adverse effect occurs.

Ingestion:

If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position if possible) to maintain an open airway and prevent aspiration.

IMPORTANT SYMPTOMS AND EFFECTS:

See Sections 3 (Hazard Identification) and 11 (Toxicological Information).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Skin, nervous system, or kidney disorders may be aggravated by overexposures to this product.

IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treat symptoms and eliminate overexposure. The Ethylene Glycol component of this product is toxic if ingested. Kidney damage, nervous system injury and deaths have been described in case reports. The American Academy of Clinical Toxicology has published treatment guidelines for ethylene glycol poisoning. Fomepizole and alcohol are antidotal to ethylene glycol toxicity

5. FIRE-FIGHTING MEASURES



Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

FLASH POINT: Not flammable.

AUTO-IGNITION TEMPERATURE:

Not established.

FLAMMABLE LIMITS (in air by volume, %):

Not established.

FIRE EXTINGUISHING MEDIA:

Fire extinguishing materials that can be used against fires of this product include carbon dioxide, dry chemical powder, halon, 'ABC' Class, or appropriate foam. Consideration for surrounding materials must be taken into account.

UNSUITABLE EXTINGUISHING MEDIA:

None known.

SPECIAL FIRE AND EXPLOSION HAZARDS:

When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (e.g., carbon oxides, nitrogen oxides, sulfur oxides, copper oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

ADVICE FOR FIREFIGHTERS:

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Due to the presence of colorants, the runoff water from these products can discolor contaminated objects. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse fire-response equipment with soapy water before returning to service.

HAZCHEM CODE (AUSTRALIA): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Trained personnel following pre-planned procedures should handle non-incident releases. In the event of a spill, clear the area and protect people. The atmosphere must have levels of components lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment) if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA). Monitor area and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, before nonresponse personnel are allowed into the spill area.

PROTECTIVE EQUIPMENT:

Small Spills: Wear rubber gloves, splash goggles, and appropriate body protection.

Large Spills: Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and SelfContained Breathing Apparatus.**

METHODS FOR CLEANUP AND CONTAINMENT:

Small Spills: Wipe up spilled liquid with polypads or other suitable absorbent materials.

Large Spills: Absorb spilled liquid with polypads or other suitable absorbent materials. Dike or otherwise contain spill and remove with vacuum truck or pump to storage/salvage vessels.

All Spills: Decontaminate the area of the spill thoroughly using detergent and water. Place all spill residue in an appropriate container and seal. Do not mix with wastes from other materials. If necessary, discard contaminated response equipment or rinse with soapy water before returning such equipment to service. Dispose of in accordance with applicable international, national, state, and local procedures (see Section 13, Disposal Considerations). Dispose of recovered material and report spill per regulatory requirements.

ENVIRONMENTAL PRECAUTIONS:

Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Do not flush to sewer. For spills on water, contain, minimize dispersion and collect.

7. HANDLING and STORAGE

PRECAUTIONS FOR SAFE HANDLING:

All employees who handle this material should be trained to handle it safely.

As with all chemicals, avoid getting this product ON YOU or IN YOU. Use in a well ventilated location. Open containers slowly on a stable surface. Do not expose containers to extreme temperatures. Avoid breathing airborne mists, sprays or vapors generated by this product. Wash thoroughly after using this product. Do not eat or drink while using this product. Remove contaminated clothing immediately.

CONDITIONS FOR SAFE STORAGE:

Store in a dry location at room temperature, 20–25 C (68–77 F). Keep container tightly closed when not in use. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers, as appropriate. Storage areas should be made of fire resistant materials. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged.

SPECIFIC END USE(S):

This product is for use as a printing ink. Follow all industry standards for use of this product.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:

Follow practices indicated in Section 6 (Accidental Release Measures). If necessary, ensure that application equipment is locked and tagged-out safely. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELS		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Yellow Colorant	Proprietary	NE	NE	NE	NE	NE	NE	NE	NE
Dipropylene Glycol	25265-71-8	NE	NE	NE	NE	NE	NE	NE	DFG MAK: TWA = 200 (Inhalable fraction) PEAK = 2•MAK 15 min, average value Pregnancy Risk Group C
Blue Colorant	Proprietary	NE	NE	NE	NE	NE	NE	NE	NE
Ethylene Glycol	107-21-1	NE	100 ceiling	NE	NE	NE	NE	NE	DFG MAK: TWA = 26 PEAK = 2•MAK 15 min, average value Danger of cutaneous absorption Pregnancy Risk Group C
Aliphatic Triol	Proprietary	10 mist	NE	15 (Total dust) 5 (Respirable fraction) 10 (Total) 5 (Respirable fraction) (vacated 1989 PEL)	NE	NE	NE	NE	DFG MAK: TWA = 50 (Inhalable fraction) Pregnancy Risk Group C
Monoethanolamine	141-43-5	7.5	15	6 8 (Vacated 1989 PEL)	15 (Vacat ed 1989 PEL)	8	15	75	DFG MAK: TWA = 5.1 PEAK = 2•MAK 15 min, average value Danger of skin sensitization Pregnancy Risk Group C
Proprietary Black Colorant		NE	NE	NE	NE	NE	NE	NE	NE
Proprietary Polyether Modified Polydimethylsiloxane		NE	NE	NE	NE	NE	NE	NE	NE
Proprietary Red Colorant		NE	NE	NE	NE	NE	NE	NE	NE

NE = Not Established. DSEN = MayCause Dermal Sensitization See Section 16 for Definitions of Other Terms Used

INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS:

In addition to the exposure limit values cited in this section, other exposure limits have been established by various countries for the components of this mixture.

DIPROPYLENE GLYCOL:

Switzerland: MAK-W = 200 mg/m³, KZG-W = 400 mg/m³, DECAustralia: TWA = 3 ppm (7.5 mg/m³), STEL = 6 ppm (15 mg/m³), JAN 2002

ALIPHATIC TRIOL:

Belgium: TWA = 10 mg/m³, MAR 2002
Finland: TWA = 20 mg/m³, SEP 2009
France: VME = 10 mg/m³, FEB 2006
Korea: TWA = 10 mg/m³ (mist), 2006
Mexico: TWA = 10 mg/m³ (inhalable), 2004
The Netherlands: MAC-TGG = 10 mg/m³, 2003
New Zealand: TWA = 10 mg/m³ (mist), JAN 2002
Switzerland: MAK-W = 50 mg/m³, KZG-W = 100 mg/m³, DEC 2006
United Kingdom: TWA = 10 mg/m³, 2005

MONOETHANOLAMINE:

Belgium: STEL = 3 ppm (7.6 mg/m³), Skin, MAR 2002
Denmark: TWA = 1 ppm (2.5 mg/m³), OCT 2002
EC: TWA = 2.5 mg/m³ (1 ppm); STEL = 7.6 mg/m³ (3 Poland: TWA = 3 mg/m³, STEL = 10 mg/m³, JAN 1999 ppm), FEB 2006
Russia: STEL = 0.5 mg/m³, Skin, JUN 2003
Finland: TWA = 1 ppm (2.5 mg/m³), STEL = 3 ppm (7.6 Sweden: TWA = 3 ppm (8 mg/m³); STEL = 6 ppm (15 mg/m³), Skin, SEP 2009 mg/m³), Skin, JUN 2005
France: VME = 3 ppm (8 mg/m³), FEB 2006
Germany: MAK = 5.1 mg/m³ (2 mL/m³) (skin, sen), 2005
Japan: OEL = 3 ppm (7.5 mg/m³), APR 2007
Korea: TWA = 3 ppm (8 mg/m³), STEL = 6 ppm (15 mg/m³), 2006

MONOETHANOLAMINE (continued):

Norway: TWA = 3 ppm (8 mg/m³), JAN 1999
The Philippines: TWA = 3 ppm (6 mg/m³), JAN 1993
Switzerland: MAK-W = 2 ppm (5 mg/m³); KZG-W = 4 ppm (10 mg/m³), DEC 2006
United Kingdom: TWA = 3 ppm (7.6 mg/m³); STEL = 6 ppm (15 mg/m³), 2005
In Argentina, Bulgaria, Colombia, Jordan, Singapore, The

In Argentina, Bulgaria, Colombia, Jordan, Singapore, Mexico: TWA = 3 ppm (8 mg/m³), 2004 Vietnam check ACGIH TLV Vietnam check ACGIH TLV
Netherlands: MAC-TGG = 2.5 mg/m³, Skin, 2003

The following information is given as a guide only to assist in complying with the local and National guidelines in the country of use. If indoubt, Health & Safety officers should be consulted for advice on compliance.

EXPOSURE CONTROLS:

Ventilation and Engineering:

Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this Section. Use local exhaust ventilation. Persons using this product should consult a qualified Ventilation Engineer and/or Industrial Hygienist if concerns about exposures arise. If necessary consult local / National Codes of Practice for the Control of Workplace Hazardous Substances. As with all products that contain chemicals, ensure proper decontamination equipment (e.g., eyewash/safety shower stations) are available near areas where this product is used as necessary.

Respiratory Protection:

None needed under normal circumstances of use.

Eye Protection:

None needed under normal circumstances of use.

Body Protection:

None need under normal circumstances of use.

9. PHYSICAL and CHEMICAL PROPERTIES

MOLECULAR WEIGHT (single entity only): Not applicable.

PHYSICAL STATE: Liquid.

ODOR: Odorless.

RELATIVE VAPOR DENSITY (air = 1): Not established.

FLASH POINT: Not established

UPPER EXPLOSIVE LIMIT: Not established.

AUTOIGNITION TEMPERATURE: Not established.

EXPLOSIVE PROPERTIES: Not explosive.

BOILING POINT: Not established.

MELTING/FREEZING POINT: Not established.

DENSITY/SPECIFIC GRAVITY: Not established.

PARTITION COEFFICIENT (*n*-octanol/water): Not established.

HOW TO DETECT THIS SUBSTANCE (identification properties):

The appearance / colour of this product can be a distinguishing characteristic to identify it in event of accidental release.

pH: Not established.

COLOR: Black, magenta, cyan, yellow

SOLUBILITY: Soluble in water.

VAPOR PRESSURE: Not established.

FLAMMABILITY: Not flammable.

LOWER EXPLOSIVE LIMIT: Not established.

DECOMPOSITION TEMPERATURE: Not established.

OXIDIZING PROPERTIES: Not oxidizers.

EVAPORATION RATE (*n*-BuAc = 1): Not established.

% VOLATILITY: Not established.

ODOR THRESHOLD: Not established.

VISCOSITY: Not established.

10. STABILITY and REACTIVITY

REACTIVITY/CHEMICAL STABILITY:

Stable under conditions of normal temperature and pressure.

POSSIBILITY OF HAZARDOUS REACTIONS OR POLYMERIZATION:

No data available.

CONDITIONS TO AVOID:

Exposure to or contact with extremely high temperatures, incompatible chemicals.

INCOMPATIBLE MATERIALS:

Strong oxidizers, strong bases, strong acids, and materials that are incompatible with water.

HAZARDOUS DECOMPOSITION PRODUCTS:



Combustion: Carbon oxides, nitrogen oxides, sulfur oxides, copper oxides.



Hydrolysis: None known.

11. TOXICOLOGICAL INFORMATION

For Cyan and Magenta

For Yellow and Black

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD		(BLUE)	2
FLAMMABILITY HAZARD		(RED)	0
PHYSICAL HAZARD		(YELLOW)	0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For Routine Industrial Use and Handling Applications			

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD		(BLUE)	1
FLAMMABILITY HAZARD		(RED)	0
PHYSICAL HAZARD		(YELLOW)	0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:

The most significant routes of occupational overexposure are inhalation and contact with skin and eyes, symptoms of overexposure to this product, are as follows:

INHALATION:

This product does not normally present a significant inhalation hazard under anticipated circumstances of use. Inhalation of vapors, mists, or sprays of this product may irritate the nose, throat, and other tissues of the respiratory system and cause coughing and sneezing.

SKIN CONTACT:

Due to the colorants, skin contact may discolor contaminated areas. Skin contact may cause redness and mild irritation. Repeated or prolonged skin overexposure may cause dermatitis (dry, red skin).

EYE CONTACT:

Eye contact with this product can moderately irritate the eyes, causing discomfort, tearing, and redness. Because the eye tissue may be stained, vision may be temporarily blurred.

SKIN ABSORPTION:

The Ethylene Glycol component of this product is absorbed through the skin, but significant harmful effects are not expected by this route of exposure.

INGESTION:

Though not anticipated to be a significant route of occupational exposure, this product may cause the following symptoms 30 minutes to 12 hours after ingestion: digestive tract upset and central nervous system toxicity including slurred speech, poor muscular coordination, drowsiness, seizures, and convulsions. If large quantities are ingested, additional symptoms 12 to 72 hours after ingestion may include rapid heartbeat, rapid breathing, bluish discoloration, pulmonary edema and heart failure. Symptoms 24 to 72 hours after ingestions of large quantities may include pain, excess urine production followed by diminished urine production, tissue death in the kidney, and oxalate crystal deposition. In rare cases, symptoms 6 days or more after ingestion may include facial paralysis, hearing loss, difficulty swallowing, blurred vision and poor muscular coordination. Chronic ingestion exposure may have adverse effects on the kidneys.

INJECTION:

Accidental injection of this liquid (as may occur by a puncture with a contaminated object) will cause local pain, irritation, and redness.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Overview.

Acute:

The ink may stain hair, skin, and other contaminated tissue. Acute exposure to low concentrations of this product via skin contact, eye contact, and inhalation may irritate contaminated tissue. Ingestion of small amounts may cause digestive tract upset, slurred speech, poor muscular coordination, drowsiness, seizures, and convulsions. Ingestion of large amounts may cause rapid heartbeat, rapid breathing, bluish discoloration, pulmonary edema, heart failure, pain, excess urine production followed by diminished urine production, tissue death in the kidney, and oxalate crystal deposition.

Chronic: Chronic skin exposure to this product may cause dermatitis. Chronic ingestion exposure may have adverse effects on the kidneys.

TARGET ORGANS: Acute: Skin, central nervous system, eyes, kidneys. Chronic: Skin, kidneys.

TOXICITY DATA:

The following toxicological data are available for components of this product in 1% or greater concentration. Only an overview of data for components is presented due to great amount available.

YELLOW COLORANT:

TDLo (Oral-Human) 14 g/kg; Peripheral Nerve and Musculoskeletal: changes in Standard Draize Test (Eye-Rabbit) 100 mg/1 hr: Mild
Draize Test (Eye-Rabbit) 0.012 ppm/3 days LD₅₀ (Skin-Rabbit) 9530 L/kg
LD₅₀ (Oral-Rat) >10 g/kg
LD₅₀ (Oral-Mouse) 12750 mg/kg
LD₅₀ (Oral-Mouse) > 6 g/kg
Cytogenetic Analysis (Human Lymphocyte) 100 mg/L
DIPROPYLENE GLYCOL:
LD₅₀ (oral, rat) = 14,850 mg/kg
LD₅₀ (skin, rabbit) > 20 mL/kg
ALIPHATIC TRIOL:
Skin Irritancy (rabbit) = 500 mg/24 hours; mild
Eye Irritancy (rabbit) = 126 mg; mild
Eye Irritancy (rabbit) = 500 mg/24 hours; mild
LD₅₀ (oral, rat) = 12600 mg/kg; general anesthetic, muscle TDLo (Oral-Man) 1195 mg/kg; Peripheral Nerve and spasticity; Lungs: dyspnea weakness, Liver: other changes
Sensation: sensory change involving peripheral nerve; LD₅₀ (skin, rabbit) = 1 mL/kg
LD₅₀ (oral, mouse) = 4090 mg/kg
LD₅₀ (skin, rabbit) > 10 g/kg TDLo (Oral-Man) 24 gm/kg; Brain and Coverings: Standard Draize Test (skin, rabbit) = 250 Dg; severe LC₅₀ (inhalation, rat) > 570 mg/m³/1 hour recordings from specific areas of CNS, other
DNA Inhibition (human, lymphocyte) = 200 mmol/L
Cytogenetic Analysis (oral, rat) = 1 g/kg

ETHYLENE GLYCOL (continued)

Standard Draize Test (Eye-Rabbit) 500 mg/24 hr: Mild
Standard Draize Test (Eye-Rabbit) 100 mg/1 hr: Mild
LD₅₀ (Oral-Mouse) 5500 mg/kg teeth and supporting structures
LD₅₀ (Skin-Rabbit) 9530 L/kg
Standard Draize Test (Eye-Rabbit) 1440 mg/6 hr: Moderate
Open Irritation Test (Skin-Rabbit) 555 mg: Mild
TDLo (Oral-Man) 24 gm/kg; Brain and Coverings: recordings from specific areas of CNS; Eye: mydriasis (pupillary dilation); Lungs, Thorax, or Respiration: other changes
TDLo (Oral-Man) 15 gm/kg; Peripheral Nerve and Sensation: sensory change involving peripheral nerve; Gastrointestinal: ulceration or bleeding from small intestine; Kidney/Ureter/Bladder: renal function tests depressed
LDLo (Oral-Man) 1195 mg/kg; Peripheral Nerve and spasticity; Lungs: dyspnea weakness, Liver: other changes
Kidney/Ureter/Bladder: renal function tests depressed
degenerative changes

ETHYLENE GLYCOL (continued)

Standard
DNA Inhibition (Human Lymphocyte) 320 mmol/L
Cytogenetic analysis (Oral- rat) = 1200 mg/kg
Mutation in mammalian somatic cells (Lymphocyte- mouse) = 100 mmol/L
MONOETHANOLAMINE:
Cytogenetic Analysis (lymphocyte, human) = 100 Dmol/L
Sister Chromatid Exchange (lymphocyte, human) = 1 mmol/L
LD₅₀ (oral, rat) = 1720 mg/kg
LD₅₀ (oral, mouse) = 700 mg/kg; Behavioral: somnolence (general depressed activity), muscle contraction or
Open Irritation Test (skin, rabbit) = 505 mg; moderate

CARCINOGENIC POTENTIAL OF COMPONENTS:

Components of this product are listed by agencies tracking the carcinogenic potential of chemical compounds, as follows:
ETHYLENE GLYCOL: ACGIH-TLV-A4 (Not Classifiable as a Human Carcinogen)

The remaining components of this product listed by CAS number in Section 3 (Composition and Information on Ingredients) are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, or ACGIH and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT:

This product can moderately irritate the eyes and can mildly to moderately irritate other contaminated tissues.

SENSITISATION TO THE PRODUCT:

The Monoethanolamine component of this product is considered to be a skin sensitizer by the DFG (German Research Foundation).

REPRODUCTIVE TOXICITY INFORMATION:

Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: The components of this product are not reported to produce mutagenic effects in humans.

Embryotoxicity: The components of this product are not reported to produce embryotoxic effects in humans.

Teratogenicity: The components of this product are not reported to cause teratogenic effects in humans.

Reproductive Toxicity: The components of this product are not reported to cause reproductive effects in humans.

ACGIH BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) established for the components of this product.

12. ECOLOGICAL INFORMATION

All necessary precautions must be taken to prevent release into the environment.

MOBILITY IN SOIL:

This product has not been tested for mobility in soil, limited information is available at this time.

PERSISTENCE AND BIODEGRADABILITY:

This product has not been tested for persistence or biodegradability. It is expected that the metal components of this product will persist in the environment indefinitely. It is expected that the other components will slowly degrade in the environment and form a variety of organic and inorganic materials; however, no specific information is known.

Release is highly unlikely given the quantity and construction of the enclosure the inks are encased in.

BIOACCUMULATION POTENTIAL:

This product has not been tested for bio-accumulation potential.

ECOTOXICITY:

The Cyan Ink is harmful to aquatic organisms, and may cause long-term adverse effects in the aquatic environment.

Other Colored Inks may have adverse effects when released into the environment.

Any release to terrestrial, atmospheric and aquatic environments should be avoided. Additional aquatic toxicity data are

available as follows:

YELLOW COLORANT:

EC₅₀ (Oeriodaphnia dubia Water flea; intoxication, immobilization) 48 hours = 5,706.55 mg/L
(95% confidence interval: 4,932-6,602 mg/L)/Conditions of bioassay not specified in source examined

DIPROPYLENE GLYCOL:

LC₅₀ (*Carassius auratus* Goldfish) 24 hours = > 5 g/L; static
LC₅₀ (*Pseudomonas putida*) 96 hours = > 10 g/L /Conditions of bioassay not specified in source examined

ETHYLENE GLYCOL:

LD₅₀ (*Carassius auratus* goldfish) 24 hours = > 5,000 mg/L modified ASTM D 1345
LC₅₀ (*Poecilia reticulata* Guppies) 7 days = 49,300 ppm/Conditions of bioassay not specified
LC₅₀ (Rainbow trout) 96 hours = 18,500 mg/L/Conditions of bioassay not specified
LC₅₀ (Rainbow trout) 96 hours = 41,000 mg/L at 20 C/Conditions of bioassay not specified
LC₅₀ (*Crangon crangon* Brown shrimp) 48 hours = >100 mg/L aerated salt water
LC₅₀ (Goldfish) 24 hours = 5000 mg/L at 20 C static conditions
Toxicity Threshold-Cell Multiplication Inhibition Test (*Pseudomonas putida* Bacteria): 10,000 mg/L
Toxicity Threshold-Cell Multiplication Inhibition Test (*Entosiphon sulcatum* Protozoa) and (*Uronema parduczi* Chatton-Lwoff) > 10,000 mg/L

RESULTS OF PBT AND vPvB ASSESSMENT:

No data available.

OTHER ADVERSE EFFECTS:

ETHYLENE GLYCOL (continued):

Toxicity Threshold-Cell Multiplication Inhibition Test (*Microcystis aeruginosa* Algae) 2,000 mg/L
Toxicity Threshold-Cell Multiplication Inhibition Test (*Scenedesmus quadricauda* Green algae) > 10,000 mg/L **ALIPHATIC TRIOL:**

EC₀ (*Pseudomonas putida* bacteria) 16 hours = >10,000 mg/L
EC₀ (*Microcystis aeruginosa* algae) 8 days = 2,900 mg/L
EC₀ (*Scenedesmus quadricauda* green algae) 7 days = > 10,000 mg/L
EC₀ (*Entosiphon sulcatum* protozoa) 72 hours = 3,200 mg/L
EC₀ (*Uronema parduczi* Chatton-Lwoff protozoa) = > 10,000 mg/L
LC₅₀ (goldfish) 24 hours = > 5,000 mg/

MONOETHANOLAMINE:

EC₅₀ (*Pseudomonas putida* bacteria) 16 hours = 6,300 mg/L
EC₅₀ (*Microcystis aeruginosa* algae) 8 days = 1.6 mg/L
EC₅₀ (*Scenedesmus quadricauda* green algae) 7 days = 0.75 mg/L
EC₅₀ (*Entosiphon sulcatum* protozoa) 72 hours = 300 mg/L
EC₅₀ (*Uronema parduczi* Chatton-Lwoff protozoa) = 2,945 mg/L
LD₅₀ (goldfish) 24 hours = 190 mg/L at pH 10.1
LD₅₀ (goldfish) 96 hours = 170 mg/L at pH 10.1
LD₅₀ (goldfish) 24 hours = >5,000 mg/L at pH 7

This product does not contain any component with known ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS:

Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT/DISPOSAL METHODS:

It is the responsibility of the user to dispose of these cartridges in a safe and environmentally friendly manner. Use of recycling schemes is recommended. Disposal must be in accordance with appropriate National or local regulations of the country. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

DISPOSAL CONTAINERS:

Not normally required as the cartridge is a self contained sealed unit.

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING:

Wear proper protective equipment when handling waste materials, not normally required with this product.

U.S. EPA WASTE NUMBER: Not applicable.

EWC WASTE CODE: Waste ink containing dangerous substances 08-03-12

14. TRANSPORTATION INFORMATION

This product is not regulated as hazardous goods.

IATA: Not applicable
Proper shipping name: Not applicable
Hazard class: Not applicable
UN number: None
Packing group: Not applicable Packaging exceptions: None

15. REGULATORY INFORMATION

International regulations: All chemical substances in this product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU(EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. OTHER INFORMATION

GLOBAL HARMONIZATION, EU CLP REGULATION (EC) 1272/2008.

Classification is per CLP Regulation (EC) 1272/2008 and JIS Z7250: 2005.

Cyan Ink:

Classification: Acute Toxicity Category 4, Aquatic Chronic Category 3

Hazard Statements: H302: Harmful if swallowed. H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements:

Prevention: P264: Wash thoroughly after handling. P270: Do not eat, drink, or smoke when using this product. P273: Avoid release to the environment.

Response: P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth. P391: Collect spillage.

Disposal: P501: Dispose of contents/container to a properly permitted hazardous waste facility using a licensed waste carrier and according to all local, national, and international regulations.

Magenta Ink:

Classification: Acute Toxicity Category 4 Hazard

Statements: H302: Harmful if swallowed.

Precautionary Statements:

Prevention: P264: Wash thoroughly after handling. P270: Do not eat, drink, or smoke when using this product.

Response: P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth.

Disposal: P501: Dispose of contents/container to a properly permitted hazardous waste facility using a licensed waste carrier and according to all local, national, and international regulations.

EU 67/548/EEC AND AUSTRALIA NATIONAL OCCUPATION HEALTH AND SAFETY COMMISSION LABELING AND

CLASSIFICATION FULL TEXT: Classification is per Council Directive 67/548/EEC and subsequent Directives and NOHSC(1008:2004).

Cyan Ink:

Classification: Harmful

Risk Phrases: R22: Harmful if swallowed. R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases: S46: If swallowed, seek medical advice immediately and show this container or label.

Magenta Ink:

Classification: Harmful

Risk Phrases: R22: Harmful if swallowed.

Safety Phrases: S46: If swallowed, seek medical advice immediately and show this container or label.

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Disclaimer

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