ULTRACOLOR 1024 LAUNDRY INK-BLACK

Chemwatch Material Safety Data Sheet

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NC317TCP

CHEMWATCH 47157

Version No:2.0

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

ULTRACOLOR 1024 LAUNDRY INK BLACK

SYNONYMS

"coding ink"

Zeus 1024 Black Indelible Ink

PROPER SHIPPING NAME

FLAMMABLE LIQUID, N.O.S.
(contains ethanol)

PRODUCT USE

Coding ink.

SUPPLIER

Company: Zeus Chemical Products Pty Ltd
Address:
3 Anderson Place
South Windsor
NSW, 2756
AUS
Telephone: +61 2 4577 4866
Fax: +61 2 4577 6919

HAZARD RATINGS

Flammability	2
Toxicity	2
Body Contact	2
Reactivity	0
Chronic	0

SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE

None

RISK
Flammable.
Harmful in contact with skin and if swallowed.
Irritating to eyes.
Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.

Inhalation may produce health damage*.

Cumulative effects may result following exposure*.
May produce discomfort of the respiratory system and skin*.
Limited evidence of a carcinogenic effect*.

May affect fertility*.

May be harmful to the foetus/embryo*.

Vapours potentially cause drowsiness and dizziness*.

* (limited evidence).

SAFETY
Do not breathe gas/ fumes/ vapour/ spray.
Use only in well ventilated areas.
Keep container in a well ventilated place.

Avoid exposure - obtain special instructions before use.

To clean the floor and all objects contaminated by this material use water.
Keep container tightly closed.

Keep away from food drink and animal feeding stuffs.

Take off immediately all contaminated clothing.
In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.
If swallowed IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).
This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ethylene glycol	107-21-1	10-30
ethanol	64-17-5	10-30
glycerol	56-81-5	10-30
diethylene glycol monobutyl ether	112-34-5	1-10
C.I. Basic Red 1	989-38-8	1-10
C.I. Basic Yellow 2	2465-27-2	1-10
C.I. Basic Violet 1	8004-87-3	1-10
C.I. Basic Green 1	633-03-4	<1
water	7732-18-5	1-10

NOTE: Manufacturer has supplied full ingredient information to allow CHEMWATCH assessment.

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:
· Immediately remove all contaminated clothing, including footwear.
· Flush skin and hair with running water (and soap if available).
· Seek medical attention in event of irritation.

INHALED

· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to ethylene glycol:
· Early treatment of ingestion is important. Ensure emesis is satisfactory.
· Test and correct for metabolic acidosis and hypocalcaemia.
· Apply sustained diuresis when possible with hypertonic mannitol.
· Evaluate renal status and begin haemodialysis if indicated. [I.L.O]
· Rapid absorption is an indication that emesis or lavage is effective only in the first few hours. Cathartics and charcoal are generally not effective.
· Correct acidosis, fluid/electrolyte balance and respiratory depression in the usual manner. Systemic acidosis (below 7.2) can be treated with intravenous sodium bicarbonate solution.
· Ethanol therapy prolongs the half-life of ethylene glycol and reduces the formation of toxic metabolites.
· Pyridoxine and thiamine are cofactors for ethylene glycol metabolism and should be given (50 to 100 mg respectively) intramuscularly, four times per day for 2 days.
· Magnesium is also a cofactor and should be replenished. The status of 4-methylpyrazole, in the treatment regime, is still uncertain. For clearance of the material and its metabolites, haemodialysis is much superior to peritoneal dialysis.
[Ellenhorn and Barceloux: Medical Toxicology]
It has been suggested that there is a need for establishing a new biological exposure

limit before a workshift that is clearly below 100 mmol ethoxy-acetic acids per mole creatinine in morning urine of people occupationally exposed to ethylene glycol ethers. This arises from the finding that an increase in urinary stones may be associated with such exposures.
Laitinen J., et al: Occupational & Environmental Medicine 1996; 53, 595-600.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

· Water spray or fog.
· Foam.
· Dry chemical powder.
· BCF (where regulations permit).
· Carbon dioxide.

FIRE FIGHTING

· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water course.
· If safe, switch off electrical equipment until vapour fire hazard removed.
· Use water delivered as a fine spray to control fire and cool adjacent area.
· Avoid spraying water onto liquid pools.
· DO NOT approach containers suspected to be hot.
· Cool fire exposed containers with water spray from a protected location.
· If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD

· Liquid and vapour are flammable.
· Moderate fire hazard when exposed to heat or flame.
· Vapour forms an explosive mixture with air.
· Moderate explosion hazard when exposed to heat or flame.
· Vapour may travel a considerable distance to source of ignition.
· Heating may cause expansion or decomposition leading to violent rupture of containers.
· On combustion, may emit toxic fumes of carbon monoxide (CO).
Other combustion products include: carbon dioxide (CO_2) and nitrogen oxides (NOx).

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.

HAZCHEM: 3[Y]

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

· Remove all ignition sources.
· Clean up all spills immediately.
· Avoid breathing vapours and contact with skin and eyes.
· Control personal contact by using protective equipment.

· Contain and absorb small quantities with vermiculite or other absorbent material.
· Wipe up.
· Collect residues in a flammable waste container.

MAJOR SPILLS

· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· May be violently or explosively reactive.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water course.
· No smoking, naked lights or ignition sources.
· Increase ventilation.
· Stop leak if safe to do so.
· Water spray or fog may be used to disperse / absorb vapour.
· Contain spill with sand, earth or vermiculite.
· Use only spark-free shovels and explosion proof equipment.
· Collect recoverable product into labelled containers for recycling.
· Absorb remaining product with sand, earth or vermiculite.
· Collect solid residues and seal in labelled drums for disposal.
· Wash area and prevent runoff into drains.
· If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL

From IERG (Canada/Australia)
Isolation Distance 25 metres
Downwind Protection Distance 300 metres
IERG Number 14

FOOTNOTES
1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
5 Guide 128 is taken from the US DOT emergency response guide book.
6 IERG information is derived from CANUTEC - Transport Canada.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
ethylene glycol 300ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
ethylene glycol 200ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:
ethylene glycol 50ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of overexposure occurs.
· Use in a well-ventilated area.
· Prevent concentration in hollows and sumps.
· DO NOT enter confined spaces until atmosphere has been checked.
· Avoid smoking, naked lights or ignition sources.
· Avoid generation of static electricity.
· DO NOT use plastic buckets.
· Earth all lines and equipment.
· Use spark-free tools when handling.
· Avoid contact with incompatible materials.
· When handling, DO NOT eat, drink or smoke.
· Keep containers securely sealed when not in use.
· Avoid physical damage to containers.
· Always wash hands with soap and water after handling.
· Work clothes should be laundered separately.
· Use good occupational work practice.
· Observe manufacturer's storing and handling recommendations.
· Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

SUITABLE CONTAINER

· Metal can or drum
· Packaging as recommended by manufacturer.
· Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.

STORAGE REQUIREMENTS

· Store in original containers in approved flammable liquid storage area.
· DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
· No smoking, naked lights, heat or ignition sources.
· Keep containers securely sealed.
· Store away from incompatible materials in a cool, dry, well-ventilated area.
· Protect containers against physical damage and check regularly for leaks.
· Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³
Australia Exposure Standards	ethylene glycol (Ethylene glycol (vapour))	20	52	40	104
Australia Exposure Standards	ethylene glycol (Ethylene glycol (particulate))		10		
Australia Exposure Standards	ethanol (Ethyl alcohol)	1000	1880		
Australia Exposure Standards	glycerol (Glycerin mist (a))		10		
Australia Exposure Standards	C.I. Basic Red 1 (Inspirable dust (not otherwise classified))		10		
Australia Exposure Standards	C.I. Basic Yellow 2 (Inspirable dust (not otherwise classified))		10		
Australia Exposure Standards	C.I. Basic Violet 1 (Inspirable dust (not otherwise classified))		10		
Australia Exposure Standards	C.I. Basic Green 1 (Inspirable dust (not otherwise classified))		10		

ENDOELTABLE

The following materials had no OELs on our records

- diethylene glycol monobutyl ether: CAS:112-34-5
- water: CAS:7732-18-5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
ethanol		3,300 [LEL]

NOTES
Values marked LEL indicate that the IDLH was based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.

ODOUR SAFETY FACTOR (OSF)

OSF=6 (ETHANOL)
Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV-TWA for example) is being reached, even when distracted by working activities
B	26-550	As "A" for 50-90% of persons being distracted
C	1-26	As "A" for less than 50% of persons being distracted
D	0.18-1	10-50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As "D" for less than 10% of persons aware of being tested

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MATERIAL DATA

None assigned. Refer to individual constituents.

INGREDIENT DATA

C.I. BASIC GREEN 1:
C.I. BASIC RED 1:
C.I. BASIC YELLOW 2:
Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no -observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five -category system based on intensive odour, local irritation, and elimination half-life.

However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.
OSHA (USA) concluded that exposure to sensory irritants can:
· cause inflammation
· cause increased susceptibility to other irritants and infectious agents
· lead to permanent injury or dysfunction
· permit greater absorption of hazardous substances and
· acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

C.I. BASIC GREEN 1:
C.I. BASIC RED 1:
C.I. BASIC YELLOW 2:
It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.
At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.
NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

ETHANOL:
ETHYLENE GLYCOL:
These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time -weighted average unless specified otherwise.
CR = Cancer Risk/10000; UF = Uncertainty factor:
TLV believed to be adequate to protect reproductive health:
LOD: Limit of detection
Toxic endpoints have also been identified as:
D = Developmental; R = Reproductive; TC = Transplacental carcinogen
Jankovic J., Drake F.: A Screening Method for Occupational Reproductive American Industrial Hygiene Association Journal 57: 641-649 (1996).

ETHYLENE GLYCOL:
Odour Threshold: 25 ppm
NOTE: Detector tubes for ethylene glycol, measuring in excess of 10 mg/m3, are commercially available.
It appears impractical to establish separate TLVs for ethylene glycol vapour and mists. Atmospheric concentration that do not cause discomfort are unlikely to cause adverse effects. The TLV-C is thought to be protective against throat and respiratory irritation and headache reported in exposed humans. NIOSH has not established a limit for this substance due to the potential teratogenicity associated with exposure and because respiratory irritation reported at the TLV justified a lower value.

ETHANOL:
Odour Threshold Value: 49-716 ppm (detection), 101 ppm (recognition)
Eye and respiratory tract irritation do not appear to occur at exposure levels of less than 5000 ppm and the TLV-TWA is thought to provide an adequate margin of safety against such effects.
Experiments in man show that inhalation of 1000 ppm caused slight symptoms of poisoning and 5000 ppm caused strong stupor and morbid sleepiness.
Subjects exposed to 5000 ppm to 10000 ppm experienced smarting of the eyes and nose and coughing. Symptoms disappeared within minutes.
Inhalation also causes local irritating effects to the eyes and upper respiratory tract, headaches, sensation of heat intraocular tension, stupor, fatigue and a need to sleep.
At 15000 ppm there was continuous lachrymation and coughing.

GLYCEROL:
The mist is considered to be a nuisance particulate which appears to have little adverse effect on the lung and does not produce significant organic disease or toxic effects. OSHA concluded that this limit would protect the worker form kidney damage and perhaps, testicular effects.

DIETHYLENE GLYCOL MONOBUTYL ETHER:
CEL TWA: 15.5 ppm, 100 mg/m3
In studies involving the inhalation toxicity of diethylene glycol monobutyl ether, exposure for 6 hours daily at 100 mg/m3 had no effect.
This concentration is in the range of the saturated vapour concentration.
Local damage was produced following inhalation of concentrations higher than the saturated vapour concentrations, that is, during inhalation of the aerosol (350 mg/m3). Since the only potential effects of inhalation are restricted to local discomfort (in the aerosol concentration range) the substance is classified in category I for the limitation of exposure peaks.
Teratogenicity studies have not revealed prenatal toxic effects at high oral doses and this ether is classified in pregnancy risk group C.

C.I. BASIC YELLOW 2:

Long term animal feeding studies show a dose-dependent reduction in food consumption and delayed body-weight gain and an increase in relative liver weights. Histologically detectable chronic toxic organ damage such as hyperplasia, cirrhotic changes, bile duct proliferation and cholangiofibrosis are only found after administration of relatively high concentrations in the diet for 2-years or for the whole life-span of animals and are generally associated with the development of hepatomas, cholangiomas and hepatocellular carcinomas. Tests for the initiating and promoting activity of auramine yield positive results. The currently available data indicate that exposure to auramine and the working conditions prevailing to the production process involve a cancer risk to man.

C.I. BASIC VIOLET 1:
These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics:
· the architecture of the air spaces remain intact,
· scar tissue (collagen) is not synthesised to any degree,
· tissue reaction is potentially reversible.
Extensive concentrations of P.N.O.C.s may:
· seriously reduce visibility,
· cause unpleasant deposits in the eyes, ears and nasal passages,
· contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]
This limit does not apply:
· to brief exposures to higher concentrations
· nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined.
This exposure standard applies to particles which
· are insoluble or poorly soluble* in water or, preferably, in aqueous lung fluid (if data is available) and
· have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lung tissue, and do not emit ionizing radiation, cause immune sensitization , or cause toxic effects other than by inflammation or by a mechanism of lung overload).

WATER:
No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION

EYE

No special equipment for minor exposure i.e. when handling small quantities.
· OTHERWISE:
· Safety glasses with side shields.
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or

restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

No special equipment needed when handling small quantities.
OTHERWISE: Wear chemical protective gloves, eg. PVC.

OTHER

No special equipment needed when handling small quantities.
OTHERWISE:
· Overalls.
· Barrier cream.
· Eyewash unit.

RESPIRATOR

Respiratory protection is required when ANY "Worst Case" vapour-phase concentration is exceeded (see Computer Prediction in "Exposure Standards").

Protection Factor (Min)	Half-Face Respirator	Full-Face Respirator
10 x ES	A-P--AUS	-
	A-P--PAPR-AUS	-
50 x ES	-	A-P--AUS
	-	A-P--PAPR-AUS
100 x ES	-	A-P--2
	-	A-P--PAPR-2

^ - Full-face.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

None required when handling small quantities.
OTHERWISE: Use in a well-ventilated area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Black flammable liquid with a mild odour; mixes with water.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.

Molecular Weight: Not applicable
Melting Range (ºC): Not available
Solubility in water (g/L): Miscible
pH (1% solution): Not available
Volatile Component (%vol): >90
Relative Vapour Density (air=1): >1
Lower Explosive Limit (%): Not available
Autoignition Temp (ºC): Not available
State: Liquid

Boiling Range (ºC): Not available
Specific Gravity (water=1): 1.075
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not available
Evaporation Rate: Not available
Flash Point (ºC): <61
Upper Explosive Limit (%): Not available
Decomposition Temp (ºC): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.
· Product is considered stable.
· Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

The liquid is highly discomforting and harmful if swallowed and may cause dizziness, disorientation, mental confusion, slurred speech.
Ingestion may result in nausea, abdominal irritation, pain and vomiting.
Considered an unlikely route of entry in commercial/industrial environments.

EYE

The liquid is. discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/ or other transient eye damage/ ulceration.
The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The liquid is mildly discomforting to the skin and may cause drying of the skin, which

may lead to dermatitis.
Open cuts, abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

INHALED

The vapour is. discomforting to the upper respiratory tract.
Inhalation hazard is increased at higher temperatures.
Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination. with dizziness, disorientation, mental confusion, slurred speech.

CHRONIC HEALTH EFFECTS

No data for this material.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

ETHYLENE GLYCOL:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY
Oral (rat) LD50: 4700 mg/kg
Oral (human) LDLo: 398 mg/kg
Oral (child) TDLo: 5500 mg/kg
Inhalation (human) TCLo: 10000 mg/m³
Dermal (rabbit) LD50: 9530 mg/kg
Inhalation (rat) LC50: 50100 mg/m³/8 hr
[Estimated Lethal Dose (human) 100 ml; RTECS quoted by Orica]
Substance is reproductive effector in rats (birth defects).
Mutagenic to rat cells.

IRRITATION
Skin (rabbit): 555 mg(open)-Mild
Eye (rabbit): 100 mg/1h - Mild
Eye (rabbit): 1440mg/6h-Moderate
Eye (rabbit): 500 mg/24h - Mild
Eye (rabbit): 12 mg/m³/3D

ETHANOL:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY
Oral (rat) LD50: 7060 mg/kg
Oral (human) LDLo: 1400 mg/kg
Oral (man) TDLo: 50 mg/kg
Oral (man) TDLo: 1.40 mg/kg
Oral (woman) TDLo: 256 mg/kg/12 wks
Inhalation (rat) LC50: 20,000 ppm/10h
Inhalation (rat) LC50: 64000 ppm/4h

IRRITATION
Skin (rabbit):20 mg/24hr-Moderate
Skin (rabbit):400 mg (open)-Mild
Eye (rabbit):100mg/24hr-Moderate
Eye (rabbit): 500 mg SEVERE

GLYCEROL:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY
Oral (Rat) LD50: 12600 mg/kg

IRRITATION
The material may be irritating to the eye, with prolonged contact causing inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

DIETHYLENE GLYCOL MONOBUTYL ETHER:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 5660 mg/kg	Eye (rabbit) : 5 mg - SEVERE
Dermal (rabbit) LD50: 4120 mg/kg	Eye (rabbit) : 20 mg/24h Moderate

The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.

C.I. BASIC RED 1:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (Rat) LD50: 250 mg/kg *	Eye (rabbit) : irritating *
Dermal (Rat) LD50: >2500 mg/kg *	Skin (rabbit): non-irritating *

The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.
* BASF Canada

C.I. BASIC YELLOW 2:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Intraperitoneal (rat) LD50: 135 mg/kg	Nil Reported
Oral (mouse) LD50: 480 mg/kg	
Dermal (mouse) LD50: 300 mg/kg	
Oral (cat) LD50: 150 mg/kg	
Oral (Rat) LD: 1500 mg/kg	
Subcutaneous (Mouse) LD50: 300 mg/kg	

The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
Liver and kidney tumours, tumours at sites of application recorded.
Equivocal tumorigenic agent by RTECS criteria.

C.I. BASIC VIOLET 1:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 413 mg/kg	Eye (rabbit): irritating *
Oral (rat) LD50: 460-680 mg/kg *	Skin (rabbit): irritating *
Oral (mouse) LD50: 105 mg/kg	
Oral (rat) TDLo: 1663 mg/kg/17W-I	
Inhalation (rat) TCLo: 110 mg/m³/2h/44d-I	

* BASF Canada
* BASF Canada
* BASF Canada
* BASF Canada
* BASF Canada

C.I. BASIC GREEN 1:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LDLo: 1 mg/kg	Skin (human): 2 mg/2d - I- Mild

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and

thickening of the skin.
NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
Yeast cell mutagen.
Malachite green and its major metabolite, leuco-malachite green has been reported to have mutagenic and c arcinogenic effects. Rats fed malachite green experience â€œa dose-related increase in liver DNA adductsâ€ along with lung adenomas. Leuco-malachite green causes an â€œincrease in the number and severity of changesâ€. As leuco-malachite green is the primary metabolite of malachite green and is retained in fish muscle much longer, most intake of malachite green would be in the leuco form. During the experiment, rats were fed up to 543 ppm of leuco-malachite green, an extreme amount compared to the average 5 ppb discovered in fish. After a period of two years, an increase in lung adenomas in male rats was discovered but no incidences of liver tumors. This shows that although adducts are formed, they have â€œlittle mutagenic or carcinogenic consequence.â€ Therefore it could be concluded that malachite green caused carcinogenic symptoms but a direct link between malachite green and liver tumor could not be proved.

WATER:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

No significant acute toxicological data identified in literature search.

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
ethanol		ILOM		
C.I. Basic Red 1	IARC:3			

REPROTOXIN
ILOM: ILO Agents toxic to the male reproductive system: ethanol
CARCINOGEN
IARC: International Agency for Research on Cancer (IARC) Carcinogens: C.I. Basic Red 1
Category: The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Not Determined

No data for Zeus 1024 MTW Black Extra.
Refer to data for ingredients, which follows:

ETHYLENE GLYCOL:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	18500- 4100
Algae IC50 (72hr.) (mg/l):	180000
log Kow (Prager 1995):	- 1.36
log Kow (Sangster 1997):	- 1.36
log Pow (Verschueren 1983):	- 1.93
BOD5:	35%
COD:	94%
ThOD:	1.26
Half- life Soil - High (hours):	288
Half- life Soil - Low (hours):	48
Half- life Air - High (hours):	83
Half- life Air - Low (hours):	8.3
Half- life Surface water - High (hours):	288
Half- life Surface water - Low (hours):	48
Half- life Ground water - High (hours):	576
Half- life Ground water - Low (hours):	96
Aqueous biodegradation - Aerobic - High (hours):	288

Aqueous biodegradation - Aerobic - Low (hours): 48
Aqueous biodegradation - Anaerobic - High (hours): 1152
Aqueous biodegradation - Anaerobic - Low (hours): 192
Aqueous biodegradation - Removal secondary treatment - High (hours): 100%
Aqueous biodegradation - Removal secondary treatment - Low (hours): 80%
Photooxidation half- life water - High (hours): 566000
Photooxidation half- life water - Low (hours): 6400
Photooxidation half- life air - High (hours): 83
Photooxidation half- life air - Low (hours): 8.3

DO NOT discharge into sewer or waterways.
log Kow: -1.93- -1.36
Half-life (hr) air: 24
Henry's atm m³ /mol: 6.00E-08
BOD 5 if unstated: 0.15-0.81,12%
COD: 1.21-1.29
ThOD: 1.26
BCF: 10-190
Toxicity Fish: LC50(96)118-550mg/L
Toxicity invertebrate: cell mult. inhib.135-1127mg/L
Bioaccumulation: not sig
Nitrif. inhib.: inhib at 125mg/L
Anaerobic effects: no degrad
Effects on algae and plankton: cell mult. inhib. algae 105-710mg/L
Degradation Biological: little
processes Abiotic: photol&hydrol notsig,RxnOH*
In the atmosphere ethylene glycol exists mainly in the vapour phase. It is degraded in the atmosphere by reaction with photochemically produced hydroxy radicals (estimated half-life 24-50 hours).
Ethylene glycol does not concentrate in the food chain.

ETHANOL:
Fish LC50 (96hr.) (mg/l): 13480
Algae IC50 (72hr.) (mg/l): 1450
log Kow (Sangster 1997): - 0.3
BOD5: 63%
ThOD: 2.1
Half- life Soil - High (hours): 24
Half- life Soil - Low (hours): 2.6
Half- life Air - High (hours): 122
Half- life Air - Low (hours): 12.2
Half- life Surface water - High (hours): 26
Half- life Surface water - Low (hours): 6.5
Half- life Ground water - High (hours): 52
Half- life Ground water - Low (hours): 13
Aqueous biodegradation - Aerobic - High (hours): 26
Aqueous biodegradation - Aerobic - Low (hours): 6.5
Aqueous biodegradation - Anaerobic - High (hours): 104
Aqueous biodegradation - Anaerobic - Low (hours): 26
Aqueous biodegradation - Removal secondary treatment - High (hours): 67%
Photooxidation half- life water - High (hours): 3.20E+05
Photooxidation half- life water - Low (hours): 8020
Photooxidation half- life air - High (hours): 122
Photooxidation half- life air - Low (hours): 12.2

DO NOT discharge into sewer or waterways.
log Kow: -0.31- -0.32
Half-life (hr) air: 144
Half-life (hr) H2O surface water: 144
Henry's atm m³ /mol: 6.29E-06
BOD 5 if unstated: 0.93-1.67,63%
COD: 1.99-2.11,97%
ThOD: 2.1
When ethanol is released into the soil it readily and quickly biodegrades but may leach into ground water; most is lost by evaporation. When released into water the material readily evaporates and is biodegradable.
Ethanol does not bioaccumulate to an appreciable extent.
The material is readily degraded by reaction with photochemically produced

hydroxy radicals; release into air will result in photodegradation and wet deposition.

GLYCEROL:
Algae IC50 (72hr.) (mg/l): 2900- 10000
log Kow (Sangster 1997): - 1.76
log Pow (Verschueren 1983): 1.07692307
BOD5: 51%
COD: 95%
ThOD: 93%

DO NOT discharge into sewer or waterways.
log Kow: -2.66- -2.47
BOD 5 if unstated: 0.617-0.87,31-51%
COD: 1.16,82-95%
ThOD: 1.217-1.56
Completely biodegradable.
Fish LC50: >5000 mg/l
Algae IC50: >2900 mg/l
Bacteria EC50: .10000 mg/l (Pseudomonas putida)

DIETHYLENE GLYCOL MONOBUTYL ETHER:
DO NOT discharge into sewer or waterways.
log Kow 0.15-1.0
Koc: 75
Henry's atm m^3 /mol: 1.52E-09
BOD 5 if unstated: 0.25
COD: 2.08
log BCF: 0.46

C.I. BASIC RED 1:
DO NOT discharge into sewer or waterways.
Fish LC50 (96 h): Leuciscus idus 1-10 mg/l; LC0 (48 h) Leuciscus idus 1 mg/l
Daphnia EC50 (48 h) 0.16 mg/l
Inhibition of bacteria 50% inhibition: 1-10 mg/l

C.I. BASIC YELLOW 2:
DO NOT discharge into sewer or waterways.

C.I. BASIC VIOLET 1:
The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)
Appendix 8, Table 1
Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993
Commission of the European Communities.
Aquatic toxicity: Poecilia reticulata 1 mg/l
Inhibition of bacteria in effluent: Modified consumption test:
50% inhibition 10-100 mg/l

C.I. BASIC GREEN 1:
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
Cationic substances, and their polymers and those polymers that are reasonably anticipated to become cationic in the natural aquatic environment (pH range 4-9) may be environmental hazards.
Exempt from this concern are those polymers to be used only in solid phase, such as ion -exchange resins, and where the FGEW (Functional Group Equivalent Weight) of cationic groups is not 5000 and above.
Cationic groups such as alkylsulfoniums, alkylphosphoniums and quaternary ammonium polymers are highly toxic to fish and other aquatic organisms. Similarly potentially cationic groups such as amines and isocyanates are of concern. Some cationics, however, may fall into the category of PLCs (polymers of low concern) provided they possess low charge density, and/or are not water-soluble or are not self-dispersing polycarboxylates

or poly- (aromatic or aliphatic) sulfonate polymers.
The toxicity of quaternary ammonium compounds is known to be greatly reduced in the environment because of preferential binding to dissolved organics in surface water.
DO NOT discharge into sewer or waterways.

Section 13 - DISPOSAL CONSIDERATIONS

· Consult manufacturer for recycling options and recycle where possible .
· Consult State Land Waste Management Authority for disposal.
· Incinerate residue at an approved site.
· Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: FLAMMABLE LIQUID
HAZCHEM: 3[Y]

UNDG:

Dangerous Goods Class:	3	Subrisk:	None
UN Number:	1993	Packing Group:	III

Shipping Name:FLAMMABLE LIQUID, N.O.S.
(contains ethanol)

Air Transport IATA:

ICAO/IATA Class:	3	ICAO/IATA Subrisk:	None
UN/ID Number:	1993	Packing Group:	III
Special provisions:	A3		

Shipping Name: FLAMMABLE LIQUID N.O.S.

Maritime Transport IMDG:

IMDG Class:	3	IMDG Subrisk:	None
UN Number:	1993	Packing Group:	III
EMS Number:	F-E,S-E	Special provisions:	223 274 330 944 955
Limited Quantities:	5 L	Marine Pollutant:	Not Determined

Shipping Name: FLAMMABLE LIQUID, N.O.S.

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: None

REGULATIONS

Zeus 1024 MTW Black Extra (CAS: None):
No regulations applicable

ethylene glycol (CAS: 107-21-1) is found on the following regulatory lists;
Australia Exposure Standards
Australia Hazardous Substances
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia National Pollutant Inventory
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix E (Part 2)
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6
IMO IBC Code Chapter 17: Summary of minimum requirements
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

ethanol (CAS: 64-17-5) is found on the following regulatory lists;
Australia Exposure Standards
Australia Hazardous Substances
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia National Pollutant Inventory
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
IMO IBC Code Chapter 18: List of products to which the Code does not apply
IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
International Air Transport Association (IATA) Dangerous Goods Regulations
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

glycerol (CAS: 56-81-5) is found on the following regulatory lists;
Australia Exposure Standards
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP
IMO IBC Code Chapter 18: List of products to which the Code does not apply
IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

diethylene glycol monobutyl ether (CAS: 112-34-5) is found on the following regulatory lists;
Australia Hazardous Substances
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
OECD Representative List of High Production Volume (HPV) Chemicals

C.I. Basic Red 1 (CAS: 989-38-8) is found on the following regulatory lists;
Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)
International Agency for Research on Cancer (IARC) Carcinogens

C.I. Basic Yellow 2 (CAS: 2465-27-2) is found on the following regulatory lists;
Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)

C.I. Basic Violet 1 (CAS: 8004-87-3) is found on the following regulatory lists;
Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)

C.I. Basic Green 1 (CAS: 633-03-4) is found on the following regulatory lists;
Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)

water (CAS: 7732-18-5) is found on the following regulatory lists;
Australia Inventory of Chemical Substances (AICS)
IMO IBC Code Chapter 18: List of products to which the Code does not apply
OECD Representative List of High Production Volume (HPV) Chemicals
United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II

No data available for C.I. Basic Green 1 as CAS: 56730-57-5, CAS: 70165-37-6, CAS: 98712-72-2, CAS: 820975-89-1.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
C.I. Basic Green 1	633-03-4, 56730-57-5, 70165-37-6, 98712-72-2, 820975-89-1

REPRODUCTIVE HEALTH GUIDELINES

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
ethylene glycol	26 mg/m3	100	R	NA	-
ethanol	1880 mg/m3	NA	NA	NA	Yes

These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time -weighted average unless specified otherwise.
CR = Cancer Risk/10000; UF = Uncertainty factor:
TLV believed to be adequate to protect reproductive health:
LOD: Limit of detection
Toxic endpoints have also been identified as:
D = Developmental; R = Reproductive; TC = Transplacental carcinogen
Jankovic J., Drake F.: A Screening Method for Occupational Reproductive American Industrial Hygiene Association Journal 57: 641-649 (1996).

EXPOSURE STANDARD FOR MIXTURES

"Worst Case" computer-aided prediction of vapour components/concentrations:
Composite Exposure Standard for Mixture (TWA) (mg/m3): 100 mg/m³
If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.
Component Breathing Zone ppm Breathing Zone mg/m3 Mixture Conc: (%).

Component	Breathing zone (ppm)	Breathing Zone (mg/m³)	Mixture Conc (%)
diethylene glycol monobutyl ether	15.50	100.0000	10.0

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.
If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.
At the "Composite Exposure Standard for Mixture" (TWA) (mg/m3): 100 mg/m³

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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