

ULTRACOLOR 5018/Z358 YELLOW BALL MARKER INK

Chemwatch Material Safety Data Sheet

Issue Date: 2-Dec-2007

NC317TCP

CHEMWATCH 47305

Version No:2.0

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

ULTRACOLOR 5018 Z358 YELLOW B.P. MARKER / D O

SYNONYMS

"Z-358 ball point marker ink", "Z-358 ball point marker ink"

PROPER SHIPPING NAME

FLAMMABLE LIQUID, TOXIC, N.O.S.
(contains ethanol and ethylene glycol monobutyl ether)

PRODUCT USE

Ball point marker 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	3

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

S6

RISK

Flammable.

Harmful by inhalation in contact with skin and if swallowed.

Danger of cumulative effects.

Irritating to eyes and skin.

Limited evidence of a carcinogenic effect.

Harmful: danger of serious damage to health by prolonged exposure through inhalation in contact with skin and if swallowed.

Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.

May cause harm to the unborn child.

Possible risk of impaired fertility.

May produce discomfort of the respiratory system*.

Vapours potentially cause drowsiness and dizziness*.

* (limited evidence).

SAFETY

Keep locked up.

Do not breathe gas/ fumes/ vapour/ spray.

In case of insufficient ventilation wear suitable respiratory equipment.

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.

This material and its container must be disposed of in a safe way.

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.

Use appropriate container to avoid environment contamination.

Avoid release to the environment. Refer to special instructions/ safety data sheets.

This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ethylene glycol monobutyl ether	111-76-2	30-60
lead chromate	7758-97-6	10-30
kaolin	1332-58-7	10-30
nitrocellulose with >25% alcohol, <12.6% nitrogen	Not avail.	1-10
ethanol	64-17-5	1-10
ethylcellulose	9004-57-3	1-10
dibutyl phthalate	84-74-2	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

Followed acute or short term repeated exposures to ethylene glycol monoalkyl ethers and their acetates:

- Hepatic metabolism produces ethylene glycol as a metabolite.
- Clinical presentation, following severe intoxication, resembles that of ethylene glycol exposures.
- Monitoring the urinary excretion of the alkoxyacetic acid metabolites may be a useful indication of exposure.

[Ellenhorn and Barceloux: Medical Toxicology].

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.

- Gastric acids solubilise lead and its salts and lead absorption occurs in the small bowel.
- Particles of less than 1 µm diameter are substantially absorbed by the alveoli following inhalation.
- Lead is distributed to the red blood cells and has a half-life of 35 days. It is subsequently redistributed to soft tissue & bone-stores or eliminated. The kidney accounts for 75% of daily lead loss; integumentary and alimentary losses account for the remainder.
- Neurasthenic symptoms are the most common symptoms of intoxication. Lead toxicity produces a classic motor neuropathy. Acute encephalopathy appears infrequently in adults. Diazepam is the best drug for seizures.
- Whole-blood lead is the best measure of recent exposure; free erythrocyte protoporphyrin (FEP) provides the best screening for chronic exposure. Obvious clinical symptoms occur in adults when whole-blood lead exceeds 80 µg/dL.
- British Anti-Lewisite is an effective antidote and enhances faecal and urinary excretion of lead. The onset of action of BAL is about 30 minutes and most of the chelated metal complex is excreted in 4-6 hours, primarily in the bile. Adverse reaction appears in up to 50% of patients given BAL in doses exceeding 5 mg/kg. CaNa₂EDTA has also been used alone or in concert with BAL as an antidote. D-penicillamine is the usual oral agent for mobilisation of bone lead; its use in the treatment of lead poisoning remains investigational. 2,3-dimercapto-1-propanesulfonic acid (DMPS) and dimercaptosuccinic acid (DMSA) are water soluble analogues of BAL and their effectiveness is undergoing review. As a rule, stop BAL if lead decreases below 50 µg/dL; stop CaNa₂EDTA if blood lead decreases below 40 µg/dL or urinary lead drops below 2 mg/24hrs.

[Ellenhorn & Barceloux: Medical Toxicology]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker who has been exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Lead in blood	30 µg/100 ml	Not Critical	
2. Lead in urine	150 µg/gm creatinine	Not Critical	B
3. Zinc protoporphyrin in blood	250 µg/100 ml erythrocytes OR 100 µg/100 ml blood	After 1 month exposure	B

B: Background levels occur in specimens collected from subjects NOT exposed.

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.
- Wear full body protective clothing with breathing apparatus.
- 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 (CO₂) and nitrogen oxides (NO_x).

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.

HAZCHEM: 3W

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.
- Wear full body protective clothing with breathing apparatus.
- 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 or absorb spill with sand, earth or vermiculite.
- Use only spark-free shovels and explosion proof equipment.
- Collect recoverable product into labelled containers for recycling.
- Collect solid residues and seal in labelled drums for disposal.

- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL

From IERG (Canada/Australia)

Isolation Distance 50 metres
Downwind Protection Distance 300 metres
IERG Number 16

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 131 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC - Transport Canada.

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.
- DO NOT use aluminium or galvanised containers.

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/m ³	STEL ppm	STEL mg/m ³
Australia Exposure Standards	ethylene glycol monobutyl ether (2-Butoxyethanol)	20	96.9	50	242
Australia Exposure Standards	lead chromate (Lead chromate (as Cr) (h))		0.05		
Australia Exposure Standards	lead chromate (Lead, inorganic dusts & fumes (as Pb))		0.15		
Australia Exposure Standards	kaolin (Kaolin (a))		10		
Australia Exposure Standards	ethanol (Ethyl alcohol)	1000	1880		
Australia Exposure Standards	ethylcellulose (Inspirable dust (not otherwise		10		

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
ethylene glycol monobutyl ether		700 [Unch]
lead chromate	100	
ethanol		3,300 [LEL]
dibutyl phthalate	4,000	

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 (nitrocellulose with >25% alcohol, <12.6% nitrogen)

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

MATERIAL DATA

None assigned. Refer to individual constituents.

INGREDIENT DATA

DIBUTYL PHTHALATE:

ETHANOL:

ETHYLENE GLYCOL MONOBUTYL ETHER:

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).

ETHANOL:

NITROCELLULOSE WITH >25% ALCOHOL, <12.6% NITROGEN:

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

DIBUTYL PHTHALATE:

ETHYLENE GLYCOL MONOBUTYL ETHER:

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

ETHYLENE GLYCOL MONOBUTYL ETHER:

Exposed individuals are 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 A or B.

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

Odour Threshold Value: 0.10 ppm (detection), 0.35 ppm (recognition)
Although rats appear to be more susceptible than other animals anaemia is not uncommon amongst humans following exposure. The TLV reflects the need to maintain exposures below levels found to cause blood changes in experimental animals. It is concluded that this limit will reduce the significant risk of irritation, haematologic effects and other systemic effects observed in humans and animals exposed to higher vapour concentrations. The toxic effects typical of some other glycol ethers (pancytopenia, testis atrophy and teratogenic effects) are not found with this substance.

LEAD CHROMATE:

The lead concentration in air is to be maintained so that the lead concentration in workers' blood remains below 0.060 mg/100 g of whole blood. The recommended TLV-TWA has been derived following a review of reports of adverse effects on reproduction, blood pressure and other end-points of toxicity. A particular focus was an assessment of pre-natal blood lead (PbB) levels and post-natal cognitive levels. The fact that lead is a cumulative toxicant which can produce subtle, persistent and apparently permanent effects in the off-spring of lead exposed women is of particular concern. A current view holds that the identification of the PbB levels, that are protective during a working lifetime, is a necessary prerequisite in the recommendation of the TLV because PbB values, rather than workplace air lead concentrations, are more clearly related to adverse health effects.

(see Biological Exposure Index - BEI - in "Advice to Doctor".).

The TLV-TWA expressed as lead is recommended to minimise the potential from adverse health effects arising from exposure to lead. At this concentration the excess risk for lead and chromate induced cancers should also be reduced.

KAOLIN:

Kaolin dust appears to have fibrogenic potential even in the absence of crystalline silica. Kaolinosis can exist as simple and complicated forms with the latter often associated with respiratory symptoms. Crystalline silica enhances the severity of the pneumoconiosis.

NITROCELLULOSE WITH >25% ALCOHOL, <12.6% NITROGEN:

None assigned. Refer to individual constituents.

nitrocellulose:

None assigned.

methylated spirits, as ethanol:

TLV TWA: 1000 ppm, 1880 mg/m³

ES TWA: 1000 ppm, 1900 mg/m³

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.

DIBUTYL PHTHALATE:

In animal testing the reproductive system has been the prime target. Exposure at or below the TLV has not caused either systemic effects or irritation in man.

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

Protection Factor	Half-Face Respirator	Full-Face Respirator
5 x ES	Air-line*	A-P--2
	-	A-P--PAPR-2
10 x ES	-	A-P--3
10+ x ES	-	Air-line**

* - Continuous Flow; ** - Continuous-flow or positive pressure demand

^ - 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

Yellow liquid; mixes with water.

PHYSICAL PROPERTIES

Liquid.

Mixes with water.

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

Boiling Range (°C): Not available
Specific Gravity (water=1): 1.325
pH (as supplied): Not available
Vapour Pressure (kPa): Not available
Evaporation Rate: Not available
Flash Point (°C): <61
Upper Explosive Limit (%): Not available
Decomposition Temp (°C): 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

Considered an unlikely route of entry in commercial/industrial environments.

The liquid is highly discomforting and toxic if swallowed.

Ingestion may result in nausea, abdominal irritation, pain and vomiting.

EYE

The liquid is highly 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 vapour is discomforting to the eyes.

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 discomforting to the skin and it is rapidly absorbed.

Toxic effects may result from skin absorption.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure.

Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

Bare unprotected 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.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by skin contact/absorption and inhalation of vapour.

Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS].

Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects.

Exposure before birth can cause mental retardation, behavioural disorders and infant death. Lead can also cause reduced sex drive, impotence, sterility and damage the sperm of males, increasing the potential for birth defects. Periods in women can also be affected.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

ETHYLENE GLYCOL MONOBUTYL ETHER:

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

TOXICITY

Oral (rat) LD50: 470 mg/kg

Dermal (rabbit) LD50: 220 mg/kg

Inhalation (human) TClO: 100 ppm

Inhalation (human) TClO: 195 ppm/8h * [Union Carbide]

Inhalation (rat-male) LC50: 486 ppm *

Inhalation (rat-female) LC50: 450 ppm *

The material may produce severe irritation to the eye causing pronounced inflammation.

IRRITATION

Skin (rabbit): 500 mg, open; Mild

Eye (rabbit): 100 mg/24h-Moderate

Eye (rabbit): 100 mg SEVERE

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: Changes in kidney, liver, spleen and lungs are observed in animals exposed to high concentrations of this substance by all routes.

LEAD CHROMATE:

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

TOXICITY

Oral (mouse) LD50: 12000 mg/kg

WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.

Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects. Exposure before birth can cause mental retardation, behavioural disorders and infant death. Lead can also cause reduced sex drive, impotence, sterility and damage the sperm of males, increasing the potential for birth defects. Periods in women can also be affected.

KAOLIN:

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

No significant acute toxicological data identified in literature search.

NITROCELLULOSE WITH >25% ALCOHOL, <12.6% NITROGEN:

Not available. Refer to individual constituents.

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

ETHYLCELLULOSE:

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

TOXICITY

Oral (rat) LD50: >5000 mg/kg

Dermal (rabbit) LD50: >5000 mg/kg

IRRITATION

Skin (rabbit): 500 mg/24h Mild

DIBUTYL PHTHALATE:

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

TOXICITY

Oral (human) TDLo: 140 mg/kg

Oral (rat) LD50: 8000 mg/kg

Inhalation (rat) LD50: 4250 mg/m³

Oral (rat) LOAEL: 66 mg/kg/day

IRRITATION

Nil Reported

MATERIAL

ethylene glycol monobutyl ether
lead chromate

CARCINOGEN

IARC:3
IARC:2A NOHSC NTPA NTPB

REPROTOXIN

SENSITISER

SKIN

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: ethylene glycol monobutyl ether 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.

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: lead chromate Category: WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.

CARCINOGEN

NOHSC: Australia Exposure Standards - Carcinogens: lead chromate Carcinogen Category: 2

CARCINOGEN

NTPA: US National Toxicology Program (NTP) 11th Report Part A Known to be Human Carcinogens: lead chromate Category:

CARCINOGEN

NTPB: US National Toxicology Program (NTP) 11th Report Part B. Reasonably Anticipated to be a Human Carcinogen: lead chromate Category:

REPROTOXIN

ILOM: ILO Agents toxic to the male reproductive system: ethanol

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

No data for Zeus 5018 Z358 Yellow B.P. Marker / D O.
Refer to data for ingredients, which follows:

ETHYLENE GLYCOL MONOBUTYL ETHER:

Fish LC50 (96hr.) (mg/l):	1490
BCF<100:	0.4
log Kow (Prager 1995):	0.83
log Kow (Sangster 1997):	0.8
Half- life Soil - High (hours):	672
Half- life Soil - Low (hours):	168
Half- life Air - High (hours):	32.8
Half- life Air - Low (hours):	3.28
Half- life Surface water - High (hours):	672
Half- life Surface water - Low (hours):	168
Half- life Ground water - High (hours):	1344
Half- life Ground water - Low (hours):	336
Aqueous biodegradation - Aerobic - High (hours):	672
Aqueous biodegradation - Aerobic - Low (hours):	168
Aqueous biodegradation - Anaerobic - High (hours):	2688
Aqueous biodegradation - Anaerobic - Low (hours):	672
Photooxidation half- life air - High (hours):	32.8
Photooxidation half- life air - Low (hours):	3.28
Fish LC50 (96hr.) (mg/l):	1250- 1650
Daphnia magna EC50 (48hr.) (mg/l):	600- 1000

DO NOT discharge into sewer or waterways.

log Kow: 0.76-0.83

Koc: 67

Half-life (hr) air: 17

Henry's atm m³ /mol: 2.08E-08

BOD 5 if unstated: 0.71

COD: 2.2

Log BCF: 0.4

Fish toxicity:

(-) 24h LD50: 983-1650 mg/L

(Fathead minnow) 96h LC50: 1700 mg/L **

Invertebrate toxicity:

cell mult. inhib. 91-900mg/L

(Daphnia) 48h LC50: >1000 mg/L **

Bioaccumulation: not sig
 Effects on algae and plankton: cell mult. inhib.35-900mg/L
 Degradation Biological: rapid
 processes Abiotic: no hydrol&photol,RxnOH* ** [Union Carbide]

LEAD CHROMATE:

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.

Lead is primarily an atmospheric pollutant that enters soil and water as fallout, a process determined by physical form and particle size. Lead in the form of alkyls has been introduced to the environment primarily from leaded petrol. These are converted to water-soluble lead compounds of high toxicity and availability to plants. Such compounds easily leach from soil to contaminate water sources close to highways. Lead that has entered the aquatic system from run-off or as fallout of insoluble precipitates is found in sediments. The biological methylation of inorganic lead by lake sediment micro-organisms has been demonstrated although its significance is not entirely clear. Other forms of soluble or insoluble lead may also enter the environment and undergo bioaccumulation through a series of biological incidents.

Chromium in the oxidation state +3 (the trivalent form) is poorly absorbed by cells found in microorganisms, plants and animals. Chromate anions (CrO4-, oxidation state +6, the hexavalent form) are readily transported into cells and toxicity is closely linked to the higher oxidation state.

Chromium Ecotoxicology:

Toxicity in Aquatic Organisms:

Chromium is harmful to aquatic organisms in very low concentrations. Fish food organisms are very sensitive to low levels of chromium. Chromium is toxic to fish although less so in warm water. Marked decreases in toxicity are found with increasing pH or water hardness; changes in salinity have little if any effect. Chromium appears to make fish more susceptible to infection. High concentrations can damage and/or accumulate in various fish tissues and in invertebrates such as snails and worms.

Reproduction of Daphnia is affected by exposure to 0.01 mg/kg hexavalent chromium/litre

Toxicity of chromium in fresh-water organisms (50% mortality)*

Compound	Category	Exposure	Toxicity Range (mg/litre)	Most sensitive species
hexavalent chrome	invertebrate	acute	0.067-59.9	scud
		long-term	-	-
	vertebrate	acute	17.6-249	fathead minnow
		long-term	0.265-2.0	rainbow trout
trivalent chrome	invertebrate	acute	2.0-64.0	cladoceran
		long-term	0.066	cladoceran
	vertebrate	acute	33.0-71.9	guppy
	invertebrate	long-term	1.0	fathead minnow

* from Environmental Health Criteria 61: WHO Publication.

Toxicity in Microorganisms:

In general, toxicity for most microorganisms occurs in the range of 0.05-5 mg chromium/kg of medium. Trivalent chromium is less toxic than the hexavalent form. The main signs of toxicity are inhibition of growth and the inhibition of various metabolic processes such as photosynthesis or protein synthesis. Gram-negative soil bacteria are generally more sensitive to hexavalent chromium (1-12 mg/kg) than the gram-positive types. Toxicity to trivalent chromium is not observed at similar levels. The toxicity of low levels of hexavalent chromium (1 mg/kg) indicates that soil microbial transformation, such as nitrification, may be affected. Chromium should not be introduced to municipal sewage treatment facilities.

Toxicity in Plants: Chromium in high concentrations can be toxic for plants. The main feature of chromium intoxication is chlorosis, which is similar to iron deficiency.

Chromium affects carbohydrate metabolism and leaf chlorophyll concentration decreases with hexavalent chromium concentration (0.01-1 mg/l). The hexavalent form appears to more toxic than the trivalent species.

Biological half-life: The elimination curve for chromium, as measured by whole-body counting, has an exponential form. In rats, three different components of the curve have been identified, with half-lives of 0.5, 5.9 and 83.4 days, respectively.

Water Standards: Chromium is identified as a hazardous substance in the Federal (U.S.) Water Pollution Control Act and further regulated by Clean Air Water Act Amendments (US). These regulations apply to discharge. The US Primary drinking water Maximum Contaminant Level (MCL), for chromium, is 0.05 mg/l (total chromium).
DO NOT discharge into sewer or waterways.

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.

DIBUTYL PHTHALATE:

Hazardous Air Pollutant:	Yes
Algae IC50 (72hr.) (mg/l):	10- 50 (24h)
log Kow (Sangster 1997):	4.72
Half- life Soil - High (hours):	552
Half- life Soil - Low (hours):	48
Half- life Air - High (hours):	74
Half- life Air - Low (hours):	7.4
Half- life Surface water - High (hours):	336
Half- life Surface water - Low (hours):	24
Half- life Ground water - High (hours):	552
Half- life Ground water - Low (hours):	48
Aqueous biodegradation - Aerobic - High (hours):	552
Aqueous biodegradation - Aerobic - Low (hours):	24
Aqueous biodegradation - Anaerobic - High (hours):	552
Aqueous biodegradation - Anaerobic - Low (hours):	48
Aqueous biodegradation - Removal secondary treatment - High (hours):	95%
Aqueous biodegradation - Removal secondary treatment - Low (hours):	35%
Photolysis maximum light absorption - High (nano- m):	274

Photolysis maximum light absorption - Low (nano- m):	224.5
Aqueous photolysis half- life - Low (hours):	3466
Photooxidation half- life water - High (hours):	1.10E+06
Photooxidation half- life water - Low (hours):	2.10E+04
Photooxidation half- life air - High (hours):	74
Photooxidation half- life air - Low (hours):	7.4
First order hydrolysis half- life (hours):	10

The phthalate esters are distributed throughout the environment ubiquitously. They are found complexed with fulvic acid components of the humic substances in soil and marine and estuarine waters. Fulvic acid appears to act as a solubiliser for the otherwise insoluble ester and serves to mediate its transport and mobilisation in water or immobilisation in soil. Phthalate esters have been found in open ocean environments, in deep sea jelly fish, Atlantic herring and in mackerel. Phthalic ester plasticisers are clearly recognised as general contaminants of almost every soil and water ecosystem. In general they have low acute toxicity but the weight of evidence supporting their carcinogenicity is substantial. Other subtle chronic effects have also been reported. As little as 4 ug/ml in culture medium is lethal to chick embryo heart cells. This concentration is similar to that reached in human blood stored in vinyl plastic bags for as little as one day. Some phthalates (notably di2-ethylhexyl phthalate and dibutyl phthalate) may also be detrimental to the reproduction of the water flea (Daphnia magna), zebra fish and guppies. As phthalates are present in drinking water and food, concerns have been raised about their long term effects on humans.

log Kow: 4.72

Koc: 160-6400

Half-life (hr) air: 18

Half-life (hr) H2O surface water: 1824

Henry's atm m³ /mol: 4.60E-07

BOD 5 if unstated: 0.43

ThOD: 2.24

BCF: 5000

Log BCF: 1.07-1.5

Fish - Salmo gairdneri LC50 (96h): 1.6 mg/L.

Daphnia Magna EC50 (48h): 3.4 mg/L.

Algae - Selenastrum capricornutum EC50 (96h): 0.75 mg/L.

Phytotoxicity: Vapours of DBP at low concentrations can cause serious damage to plants.

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, TOXIC

HAZCHEM: 3W

UNDG:

Dangerous Goods Class:	3	Subrisk:	6.1
UN Number:	1992	Packing Group:	III
Shipping Name: FLAMMABLE LIQUID, TOXIC, N.O.S.			
(contains ethanol and ethylene glycol monobutyl ether)			

Air Transport IATA:

ICAO/IATA Class:	3	ICAO/IATA Subrisk:	6.1
UN/ID Number:	1992	Packing Group:	III
Special provisions:	A3		

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

Maritime Transport IMDG:

IMDG Class:	3	IMDG Subrisk:	6.1
UN Number:	1992	Packing Group:	III
EMS Number:	F-E,S-D	Special provisions:	223 274 944
Limited Quantities:	5 L	Marine Pollutant:	Not Determined
Shipping Name:	FLAMMABLE LIQUID, TOXIC, N.O.S.		

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: S6

REGULATIONS

Zeus 5018 Z358 Yellow B.P. Marker / D O (CAS: None):
No regulations applicable

ethylene glycol monobutyl ether (CAS: 111-76-2) 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 Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix E (Part 2)
- IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
- International Agency for Research on Cancer (IARC) Carcinogens
- OECD Representative List of High Production Volume (HPV) Chemicals

lead chromate (CAS: 7758-97-6) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)
- Australia - New South Wales Hazardous Substances Requiring Health Surveillance
- Australia - Tasmania Hazardous Substances Requiring Health Surveillance
- Australia - Western Australia Hazardous Substances Prohibited for Specified Uses or Methods of Handling
- Australia - Western Australia Hazardous Substances Requiring Health Surveillance
- Australia Exposure Standards
- Australia Hazardous Substances
- Australia Hazardous Substances Requiring Health Surveillance
- Australia Inventory of Chemical Substances (AICS)
- Australia National Pollutant Inventory
- Australia Occupational Health and Safety (Commonwealth Employment) (National Standards) Regulations 1994
- Hazardous Substances Requiring Health Surveillance
 - 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) - Appendix F (Part 3)
 - Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4
 - 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
 - International Agency for Research on Cancer (IARC) Carcinogens
 - International Council of Chemical Associations (ICCA) - High Production Volume List
 - OECD Representative List of High Production Volume (HPV) Chemicals

kaolin (CAS: 1332-58-7) is found on the following regulatory lists;

- Australia Exposure Standards
- Australia High Volume Industrial Chemical List (HVICL)
- 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

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

ethylcellulose (CAS: 9004-57-3) is found on the following regulatory lists;

Australia Exposure Standards
 Australia Inventory of Chemical Substances (AICS)
 CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP
 United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II

dibutyl phthalate (CAS: 84-74-2) is found on the following regulatory lists;

Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
 Australia - Australian Capital Territory Environment Protection Regulation Ecosystem maintenance - Organic chemicals - Non-pesticide anthropogenic organics
 Australia Exposure Standards
 Australia Hazardous Substances
 Australia Inventory of Chemical Substances (AICS)
 Australia National Pollutant Inventory
 IMO IBC Code Chapter 17: Summary of minimum requirements
 IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
 OECD Representative List of High Production Volume (HPV) Chemicals
 OSPAR List of Chemicals for Priority Action
 OSPAR List of Substances of Possible Concern

No data available for nitrocellulose with >25% alcohol, <12.6% nitrogen as CAS: Not avail.

Section 16 - OTHER INFORMATION

Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
dibutyl phthalate	84- 74- 2	N; R51/53

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproductive no -observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoi	CR	Adeq
		nt	TLV		
ethylene glycol monobutyl ether	3.6 mg/m ³		100	D	NA -
ethanol	1880 mg/m ³	NA	NA	NA	Yes
dibutyl phthalate	0.72 mg/m ³	1000	D	NA	-

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): 1880 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	Breathing Zone		
Mixture Conc	(ppm)	(mg/m ³)	(%)	
nitrocellulose with >25% alcohol, <12.6% nitrogen	1000.00	1880.0000	10.0	

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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Issue Date: 2-Dec-2007

Print Date: 19-Feb-2008