

WATTYL INDUSTRIAL PIGMENTED LACQUER

Chemwatch Material Safety Data Sheet (REVIEW)
Issue Date: 12-Aug-2004
NC317TCP

CHEMWATCH 44731
Version No:3

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

WATTYL INDUSTRIAL PIGMENTED LACQUER

SYNONYMS

pigmented, lacquer, nitrocellulose

PROPER SHIPPING NAME

PAINT

PRODUCT USE

Pigmented nitrocellulose lacquer for interior timber. Application is usually by spray atomisation.

SUPPLIER

Company: WattyL Granosite	Company: WattyL Pty Ltd
Address:	Address:
Level 1, 68 Waterloo Rd	4 Steel St
North Ryde	Blacktown
NSW, 2113	NSW, 2148
AUS	AUS
Telephone: +61 2 9813 3333	Telephone: +61 2 9621 6255
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Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

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

POISONS SCHEDULE

S5

RISK

Highly flammable.

Harmful by inhalation.

Irritating to eyes and respiratory system.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

May impair fertility.

May cause harm to the unborn child.

HARMFUL-May cause lung damage if swallowed.

Repeated exposure may cause skin dryness and cracking.

Vapours may cause drowsiness and dizziness.

Skin contact and/or ingestion may produce health damage*.

Cumulative effects may result following exposure*.

May produce skin discomfort*.

* (limited evidence).

SAFETY

Keep locked up.

Keep away from sources of ignition. No smoking.

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 and detergent.

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.

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

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
alkyd resin solution	Various	10-30
n- butyl acetate	123-86-4	10-30
methyl ethyl ketone	78-93-3	10-30
nitrocellulose with >25% alcohol, <12.6% nitrogen	Not avail.	10-30
naphtha petroleum, light aromatic solvent	64742-95-6.	5-15
industrial methylated spirits (ethanol/methanol mixture)	8013-52-3	1-9
di- sec- octyl phthalate	117-81-7	1-5
solvents at levels not determined to be hazardous		1-9
additives		1-9
some materials will contain some of the following pigments		
titanium dioxide	13463-67-7	0-15
aluminium powder coated	7429-90-5	
contains less than 0.1% benzene		

Section 4 - FIRST AID MEASURES

SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

EYE

- If this product comes in contact with the eyes:
- Wash out immediately with fresh 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.
 - If pain persists or recurs seek medical attention.
 - 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, without delay.

NOTES TO PHYSICIAN

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

for simple esters:

BASIC TREATMENT

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

EMERGENCY DEPARTMENT

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
 - Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
 - Consult a toxicologist as necessary.
- BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.
- for simple ketones:

BASIC TREATMENT

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Consider intubation at first sign of upper airway obstruction resulting from oedema.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
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- BRONSTEIN, A.C. and CURRANCE, P.L.
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.
- For acute and short term repeated exposures to methanol:
- Toxicity results from accumulation of formaldehyde/formic acid.
 - Clinical signs are usually limited to CNS, eyes and GI tract. Severe metabolic acidosis may produce dyspnea and profound systemic effects which may become intractable. All symptomatic patients should have arterial pH measured. Evaluate airway, breathing and circulation.
 - Stabilise obtunded patients by giving naloxone, glucose and thiamine.
 - Decontaminate with Ipecac or lavage for patients presenting 2 hours post-ingestion. Charcoal does not absorb well; the usefulness of cathartic is not established.
 - Forced diuresis is not effective; haemodialysis is recommended where peak methanol

levels exceed 50 mg/dL (this correlates with serum bicarbonate levels below 18 mEq/L).

- Ethanol, maintained at levels between 100 and 150 mg/dL, inhibits formation of toxic metabolites and may be indicated when peak methanol levels exceed 20 mg/dL. An intravenous solution of ethanol in D5W is optimal.
- Folate, as leucovorin, may increase the oxidative removal of formic acid. 4-methylpyrazole may be an effective adjunct in the treatment. 8. Phenytoin may be preferable to diazepam for controlling seizure.

[Ellenhorn Barceloux: Medical Toxicology]
BIOLOGICAL EXPOSURE INDEX - BEI

Determinant	Index	Sampling Time	Comment
1. Methanol in urine	15 mg/l	End of shift	B, NS
2. Formic acid in urine	80 mg/gm creatinine	Before the shift at end of workweek	B, NS

B: Background levels occur in specimens collected from subjects NOT exposed.
NS: Non-specific determinant - observed following exposure to other materials.
Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

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.
- Consider evacuation (or protect in place).
- Fight fire from a safe distance, with adequate cover.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- Use water delivered as a fine spray to control the 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 highly flammable.
- Severe fire hazard when exposed to heat, flame and/or oxidisers.
- 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).

Combustion products include: carbon dioxide (CO₂), nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

Nitrocellulose burns intensely with rapidly increasing decomposition and resultant explosion hazard; causing container rupture, rapid and wide spread of fire, demolition of building structures.

Nitrocellulose is a contributing fuel making a fast burning intense fire.

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM: 3[Y]E

Personal Protective Equipment

Breathing apparatus.

Chemical splash suit.

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.
- Consider evacuation (or protect in place).
- 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 assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees either side of the predominant wind direction, resulting in a crosswind protective action distance to the downwind protective action distance.
- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the site and working away from the site in the downwind direction. Within the protective action zone a level vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated 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 probability of localised wind reversal may expose nearly all persons without appropriate protective 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 (jerrycan) 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:

n-butyl acetate	3000 ppm
methyl ethyl ketone	3000 ppm
naphtha petroleum, light aromatic solvent	750 ppm
di-sec-octyl phthalate	500 mg/m ³
titanium dioxide	500 mg/m ³

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

n-butyl acetate	200 ppm
methyl ethyl ketone	300 ppm
naphtha petroleum, light aromatic solvent	750 ppm
di-sec-octyl phthalate	25 mg/m ³
titanium dioxide	15 mg/m ³

other than mild, transient adverse effects without perceiving a clearly defined odour is:

n-butyl acetate	5 ppm
methyl ethyl ketone	300 ppm
naphtha petroleum, light aromatic solvent	750 ppm
di-sec-octyl phthalate	10 mg/m ³
titanium dioxide	15 mg/m ³

The threshold concentration below which most people will experience no appreciable risk of health effects

n-butyl acetate	5 ppm
methyl ethyl ketone	200 ppm
naphtha petroleum, light aromatic solvent	500 ppm
di-sec-octyl phthalate	5 mg/m ³
titanium dioxide	15 mg/m ³

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

Contains low boiling substance:

Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.

- Check for bulging containers.
- Vent periodically
- Always release caps or seals slowly to ensure slow dissipation of vapours.
- DO NOT allow clothing wet with material to stay in contact with skin.
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure 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, heat or ignition sources.
- When handling, DO NOT eat, drink or smoke.
- Vapour may ignite on pumping or pouring due to static electricity.
- DO NOT use plastic buckets.
- Earth and secure metal containers when dispensing or pouring product.
- Use spark-free tools when handling.
- Avoid contact with incompatible materials.
- Keep containers securely sealed.
- 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

Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid. Check that containers are clearly labelled and free from leaks.

- For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure.
- For materials with a viscosity of at least 2680 cSt. (23 deg. C)
- For manufactured product having a viscosity of at least 250 cSt. (23 deg. C)
- Manufactured product that requires stirring before use and having a viscosity of at least 20 cSt (25 deg. C)
- (i) : Removable head packaging;
- (ii) : Cans with friction closures and
- (iii) : low pressure tubes and cartridges may be used.
- Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages
- In addition, where inner packagings are glass and contain liquids of packing group I there must be sufficient inert absorbent to absorb any spillage, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

STORAGE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as violent reaction may occur, with spontaneous decomposition or explosion.

Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

- Store in original containers in approved flame-proof area.
- No smoking, naked lights, heat or ignition sources.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- 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.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC
Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC
Australia Exposure Standards	n- butyl acetate (n- Butyl acetate)	150	713	200	950			
Australia Exposure Standards	methyl ethyl ketone (Methyl ethyl ketone (MEK))	150	445	300	890			
Australia Exposure Standards	di- sec- octyl phthalate (Di- sec- octyl phthalate)		5		10			
Australia Exposure Standards	titanium dioxide (Titanium dioxide (a))		10					
Australia Exposure Standards	aluminium powder coated (Aluminium, pyro powders (as Al))		5					
Australia Exposure Standards	aluminium powder coated (Aluminium (welding fumes) (as Al))		5					
Australia Exposure Standards	aluminium powder coated (Aluminium (metal dust))		10					

The following materials had no OELs on our records

- naphtha petroleum, light aromatic solvent: CAS:64742-95-6
- industrial methylated spirits (ethanol/methanol mixture): CAS:8013-52-3

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH value (ppm)
n-butyl acetate		1,700 [LEL]
methyl ethyl ketone		3,000 [Unch]
di-sec-octyl phthalate	5,000	
titanium dioxide	5,000	

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=2 (industrial methylated spirits (ethanol/methanol mixture))

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

Not available. Refer to individual constituents.

INGREDIENT DATA

METHYL ETHYL KETONE:

N-BUTYL ACETATE:

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

ALKYD RESIN SOLUTION:

NAPHTHA PETROLEUM, LIGHT AROMATIC SOLVENT:

No exposure limits set by NOHSC or ACGIH.

N-BUTYL ACETATE:

Odour Threshold value: 0.0063 ppm (detection), 0.038-12 ppm (recognition)

Exposure at or below the recommended TLV-TWA is thought to prevent significant irritation of the eyes and respiratory passages as well as narcotic effects. In light of the lack of substantive evidence regarding teratogenicity and a review of acute oral data a STEL is considered inappropriate.

METHYL ETHYL KETONE:

Odour Threshold Value: Variously reported as 2 ppm and 4.8 ppm
 Odour threshold: 2 ppm (detection); 5 ppm (recognition)
 25 ppm (easy recognition); 300 ppm IRRITATING
 Exposures at or below the recommended TLV-TWA are thought to prevent injurious systemic effects and to minimise objections to odour and irritation. Where synergism or potentiation may occur stringent control of the primary toxin (e.g. n-hexane or methyl butyl ketone) is desirable and additional consideration should be given to lowering MEK exposures.

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

NAPHTHA PETROLEUM, LIGHT AROMATIC SOLVENT:

REL TWA: 25-100 ppm*, 125 mg/m³* [Various Manufacturers]
 CEL TWA: 50 ppm, 125 mg/m³

INDUSTRIAL METHYLATED SPIRITS (ETHANOL/METHANOL MIXTURE):

Not available

DI-SEC-OCTYL PHTHALATE:

Not available

TITANIUM DIOXIDE:

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.

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.

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

IDLH Level: 5000 mg/m³

Animal studies at 10 mg/m³ show no significant fibrosis, possibly reversible tissue reaction and the architecture of lung air spaces remains intact.

ALUMINIUM POWDER COATED:

aluminium, metal dust
 ES TWA: 10 mg/m³
 TLV TWA: 10 mg/m³

PERSONAL PROTECTION**EYE**

- Safety glasses with side shields.
- Chemical goggles.
- 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

Wear chemical protective gloves, eg. PVC.
Wear safety footwear or safety gumboots, eg. Rubber.

OTHER

- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.

RESPIRATOR

Respiratory protection may be 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
5 x ES	A- AUS	-
	A- PAPR - AUS	
25 x ES	Air-line*	A-2
		A- PAPR-2
50 x ES	-	A-3
50+ 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

For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into	1-2.5 m/s (200-500 f/min.)

zone of rapid air motion)	
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within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear, white or silver highly flammable liquid with a strong solvent odour; does not mix with water.

PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Molecular weight: Not Applicable
 Melting Range (?C): Not Available
 Solubility in water (g/L): Immiscible

pH (1% solution): Not Available

Volatile Component (%vol): 60-78
 Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Available

Autoignition Temp (?C): Not Available

State: Liquid

Boiling Range (?C): 78-128
 Specific Gravity (water=1): 0.9-1.1
 pH (as supplied):

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (?C): -7

Upper Explosive Limit (%): Not Available

Decomposition Temp (?C): Not Available

Viscosity: 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

Accidental ingestion of the material may be damaging to the health of the individual. Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis. Ingestion of petroleum hydrocarbons can irritate the pharynx, oesophagus, stomach and small intestine, and cause swellings and ulcers of the mucous. Symptoms include a burning mouth and throat; larger amounts can cause nausea and vomiting, narcosis, weakness, dizziness, slow and shallow breathing, abdominal swelling, unconsciousness and

convulsions. Damage to the heart muscle can produce heart beat irregularities, ventricular fibrillation (fatal) and ECG changes. The central nervous system can be depressed. Light species can cause a sharp tingling of the tongue and cause loss of sensation there. Aspiration can cause cough, gagging, pneumonia with swelling and bleeding.

Methanol may produce a burning or painful sensation in the mouth, throat, chest, and stomach. This may be accompanied by nausea, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behaviour, visual disturbance, drowsiness, coma and death. These symptoms may not occur until several hours after exposure. Visual impairment produces blurring, double vision, colour distortion, reduced visual field, and blindness. In higher doses, the liver, kidney, heart and muscle can all be damaged. 10mL can cause blindness, and 60-200mL will cause death in adults.

EYE

There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. There may be damage to the cornea. Unless treatment is prompt and adequate there may be permanent loss of vision. Conjunctivitis can occur following repeated exposure. The liquid may produce eye discomfort and is capable of causing temporary impairment of vision and/or transient eye inflammation, ulceration.

Direct eye contact with petroleum hydrocarbons can be painful, and the corneal epithelium may be temporarily damaged. Aromatic species can cause irritation and excessive tear secretion.

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

SKIN

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

There is some evidence to suggest that the material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering. Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

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

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. The main effects of simple esters are irritation, stupor and insensibility. Headache, drowsiness, dizziness, coma and behavioural changes may occur. Respiratory symptoms may include irritation, shortness of breath, rapid breathing, throat inflammation, bronchitis, lung inflammation and pulmonary oedema, sometimes delayed. Nausea, vomiting, diarrhoea and cramps are observed. Liver and kidney damage may result from massive exposures. Prolonged exposure may cause headache, nausea and ultimately loss of consciousness.

If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.

CHRONIC HEALTH EFFECTS

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

Constant or exposure over long periods to mixed hydrocarbons may produce stupor with dizziness, weakness and visual disturbance, weight loss and anaemia, and reduced liver and kidney function. Skin exposure may result in drying and cracking and redness of the skin. Chronic exposure to lighter hydrocarbons can cause nerve damage, peripheral neuropathy, bone marrow dysfunction and psychiatric disorders as well as damage the liver and kidneys.

Ingestion may result in intoxication and drunkenness. In chronic form this may result in alcoholism and liver damage.

Exposure to phthalates over years leads to pain, numbness and spasms in the hands and feet. Many people have developed multiple disorders in the nervous system and the balancing system. Levels of sex hormones are reduced in women, leading to missed ovulations and miscarriages. They also reduce sperm counts and fertility in men. They mimic certain sex hormones and can damage the foetus. Phthalates are found in paints,

inks and glues.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

ALKYD RESIN SOLUTION:

"alkyd resin" describes a generic insoluble polymer which has no residual hazardous reactants and is not absorbed in the gastro-intestinal tract. No acute or chronic human exposure / toxicity data available. Almost always in solvent solution - the hazard is from the solvent.

N-BUTYL ACETATE:

TOXICITY

Oral (rat) LD50: 13100 mg/kg
 Dermal (rabbit) LD50: 3200 mg/kg*
 Inhalation (human) TClO: 200 ppm
 Inhalation (rat) LC50: 2000 ppm/4h
 Inhalation (Human) TClO: 200 ppm/4h
 Oral (Rat) LD50: 10768 mg/kg
 Inhalation (Rat) LC50: 390 ppm/4h
 Intraperitoneal (Mouse) LD50: 1230 mg/kg
 Oral (Rabbit) LD50: 3200 mg/kg
 Oral (Guinea) pig: LD50 4700 mg/kg

IRRITATION

Skin (rabbit): 500 mg/24h- Moderate
 Eye (rabbit): 20 mg (open)- SEVERE
 Eye (rabbit): 20 mg/24h - Moderate
 Eye (human): 300 mg

* [PPG]

Intraperitoneal (Guinea) pig: LD 1500 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.

METHYL ETHYL KETONE:

TOXICITY

Oral (rat) LD50: 2737 mg/kg
 Inhalation (human) TClO: 100 ppm/5 m
 Inhalation (rat) LD50: 23500 mg/m³/8 hr
 Dermal (rabbit) LD50: 6480 mg/kg
 Inhalation (man) TClO: 10 mg/m³/6 hr
 Inhalation (rat) LC50: 50100 mg/m³/8 hr
 Dermal (rabbit) LD50: 20000 mg/kg

IRRITATION

Eye (human): 350 ppm - Irritant
 Eye (rabbit): 80 mg - Irritant
 Skin (rabbit): 402 mg/24 hr - Mild
 Skin (rabbit): 13.78mg/24 hr Open
 - Mild

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

Not available. Refer to individual constituents.

NAPHTHA PETROLEUM, LIGHT AROMATIC SOLVENT:

TOXICITY

Oral (rat) LD50: >5000 mg/kg *
 Inhalation (rat) LC50: >3670 ppm/8 h *
 Inhalation (rat) TClO: 1320 ppm/6h/90D- I
 * [Devoe]

IRRITATION

Nil Reported

INDUSTRIAL METHYLATED SPIRITS (ETHANOL/METHANOL MIXTURE):

Not available. Refer to individual constituents.

DI-SEC-OCTYL PHTHALATE:

TOXICITY

Oral (rat) LD50: 30000 mg/kg
 Oral (human) TDLo: 143 mg/kg
 Oral (mouse) LD50: 1500 mg/kg
 Oral (rabbit) LD50: 34000 mg/kg
 Dermal (rabbit) LD50: 25000 mg/kg
 Oral (guinea) pig: LD50 26000 mg/kg
 Dermal (g.pig) LD50: 10000 mg/kg
 Oral (rat) NOAEL: 28.9- 36.1 mg/kg/day

IRRITATION

Skin (rabbit): 500 mg/24h Mild
 Eye (rabbit): 500 mg/24h Mild

Gastrointestinal changes, respiratory system changes, somnolence, haemorrhage, necrotic changes in GI tract, lowered blood pressure, liver, endocrine tumours, foetotoxicity, paternal effects, maternal effects, specific developmental abnormalities (hepatobiliary system, musculoskeletal system, cardiovascular system, urogenital system, central nervous system, eye/ear), foetolethality recorded.

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.

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.

Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen

[National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

TITANIUM DIOXIDE:

TOXICITY

Skin (human): 0.3 mg/3d- I Mild

IRRITATION

The material may produce moderate eye irritation leading to 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.

ALUMINIUM POWDER COATED:

Not available.

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
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methyl ethyl ketone ILOE1
 di- sec- octyl phthalate IARC:3 NTPB
 titanium dioxide IARC:2B

REPROTOXIN

ILOE1: ILO Chemicals in the electronics industry that have toxic effects on reproduction: methyl ethyl ketone

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: di-sec-octyl phthalate Category: 3

CARCINOGEN

NTPB: US National Toxicology Program (NTP) 11th Report Part B. Reasonably Anticipated to be a Human Carcinogen: di-sec-octyl phthalate Category:

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: titanium dioxide Category: 2B

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

Drinking water standards:

hydrocarbon total: 10 ug/l (UK max.).

DO NOT discharge into sewer or waterways.

Refer to data for ingredients, which follows:

N-BUTYL ACETATE:

Fish LC50 (96hr.) (mg/l):	18
Daphnia magna EC50 (48hr.) (mg/l):	44
log Kow (Prager 1995):	1.82
Fish LC50 (96hr.) (mg/l):	100- 185
Daphnia magna EC50 (48hr.) (mg/l):	44
Algae IC50 (72hr.) (mg/l):	280
log Kow (Sangster 1997):	1.78
COD:	78%

DO NOT discharge into sewer or waterways.

Half-life (hr) air: 144

Half-life (hr) H2O surface water: 178-27156

Henry's atm m³ /mol: 3.20E-04

BOD 5 if unstated: 0.15-1.02,7%

COD: 78%

ThOD: 2.207

BCF: 4-14

Toxicity Fish: LC50(96)100-185ppm

Toxicity invertebrate: cell mult. inhib.78-3700mg/L

Effects on algae and plankton: cell mult. inhib.21-280mg/L

Degradation Biological: sig

processes Abiotic: hydroly,RxnOH*

METHYL ETHYL KETONE:

Hazardous Air Pollutant:

Fish LC50 (96hr.) (mg/l):	Yes
Algae IC50 (72hr.) (mg/l):	1690- 5640
log Kow (Prager 1995):	110- 4300
log Kow (Sangster 1997):	0.26- 0.29
log Pow (Verschueren 1983):	0.29
BOD5:	0.26
COD:	1.92
ThOD:	2.2
Half- life Soil - High (hours):	2.44
Half- life Soil - Low (hours):	168
Half- life Air - High (hours):	24
Half- life Air - Low (hours):	642
Half- life Surface water - High (hours):	64.2
Half- life Surface water - Low (hours):	168
Half- life Ground water - High (hours):	24
Half- life Ground water - Low (hours):	336
Aqueous biodegradation - Aerobic - High (hours):	48
Aqueous biodegradation - Aerobic - Low (hours):	168
Aqueous biodegradation - Anaerobic - High (hours):	24
Aqueous biodegradation - Anaerobic - Low (hours):	672
Aqueous biodegradation - Removal secondary treatment - High (hours):	96
Aqueous biodegradation - Removal secondary treatment - Low (hours):	100%
Photooxidation half- life water - High (hours):	86%
Photooxidation half- life water - Low (hours):	7.10E+05
Photooxidation half- life air - High (hours):	1.80E+04
Photooxidation half- life air - Low (hours):	642
First order hydrolysis half- life (hours):	64.2
	>50 YR

log Kow (Prager 1995):

log Kow (Sangster 1997):

log Pow (Verschueren 1983):

BOD5:

COD:

ThOD:

Half- life Soil - High (hours):

Half- life Soil - Low (hours):

Half- life Air - High (hours):

Half- life Air - Low (hours):

Half- life Surface water - High (hours):

Half- life Surface water - Low (hours):

Half- life Ground water - High (hours):

Half- life Ground water - Low (hours):

Aqueous biodegradation - Aerobic - High (hours):

Aqueous biodegradation - Aerobic - Low (hours):

Aqueous biodegradation - Anaerobic - High (hours):

Aqueous biodegradation - Anaerobic - Low (hours):

Aqueous biodegradation - Removal secondary treatment - High (hours):

Aqueous biodegradation - Removal secondary treatment - Low (hours):

Photooxidation half- life water - High (hours):

Photooxidation half- life water - Low (hours):

Photooxidation half- life air - High (hours):

Photooxidation half- life air - Low (hours):

First order hydrolysis half- life (hours):

DO NOT discharge into sewer or waterways.

log Kow: 0.26-0.69

log Koc: 0.69

Koc: 34

Half-life (hr) air: 2.3

Half-life (hr) H2O surface water: 72-288

Henry's atm m³ /mol: 1.05E-05

BOD 5 if unstated: 1.5-2.24,46%

COD: 2.2-2.31,100%

ThOD: 2.44

BCF: 1

Toxicity Fish: LC50(96)13.16-277.8mg/L
 Toxicity invertebrate: LD0 1g/L
 Bioaccumulation: not sig
 Anaerobic effects: some degrad
 Effects on algae and plankton: algae LD0 125mg/L
 Degradation Biological: sig
 processes Abiotic: photox,RxnOH*,hydr1 photol/deg notsig

INDUSTRIAL METHYLATED SPIRITS (ETHANOL/METHANOL MIXTURE):
 DO NOT discharge into sewer or waterways.
 Biodegradable.

DI-SEC-OCTYL PHTHALATE:

Half- life Soil - High (hours):	550
Half- life Soil - Low (hours):	120
Half- life Air - High (hours):	29
Half- life Air - Low (hours):	2.9
Half- life Surface water - High (hours):	550
Half- life Surface water - Low (hours):	120
Half- life Ground water - High (hours):	9336
Half- life Ground water - Low (hours):	240
Aqueous biodegradation - Aerobic - High (hours):	550
Aqueous biodegradation - Aerobic - Low (hours):	120
Aqueous biodegradation - Anaerobic - High (hours):	9336
Aqueous biodegradation - Anaerobic - Low (hours):	980
Aqueous biodegradation - Removal secondary treatment - High (hours):	91%
Aqueous biodegradation - Removal secondary treatment - Low (hours):	70%
Aqueous photolysis half- life - High (hours):	4800
Aqueous photolysis half- life - Low (hours):	3500
Aqueous photolysis half- life - High (hours):	4800
Aqueous photolysis half- life - Low (hours):	3500
Photooxidation half- life water - High (hours):	1.40E+04
Photooxidation half- life water - Low (hours):	1056
Photooxidation half- life air - High (hours):	29
Photooxidation half- life air - Low (hours):	2.9
Half- life Soil - High (hours):	550
Half- life Soil - Low (hours):	120
Half- life Air - High (hours):	29
Half- life Air - Low (hours):	2.9
Half- life Surface water - High (hours):	550
Half- life Surface water - Low (hours):	120
Half- life Ground water - High (hours):	9336
Half- life Ground water - Low (hours):	240
Aqueous biodegradation - Aerobic - High (hours):	550
Aqueous biodegradation - Aerobic - Low (hours):	120
Aqueous biodegradation - Anaerobic - High (hours):	9336
Aqueous biodegradation - Anaerobic - Low (hours):	980
Aqueous biodegradation - Removal secondary treatment - High (hours):	91%
Aqueous biodegradation - Removal secondary treatment - Low (hours):	70%
Aqueous photolysis half- life - High (hours):	4800
Aqueous photolysis half- life - Low (hours):	3500
Aqueous photolysis half- life - High (hours):	4800
Aqueous photolysis half- life - Low (hours):	3500
Photooxidation half- life water - High (hours):	1.40E+04
Photooxidation half- life water - Low (hours):	1056
Photooxidation half- life air - High (hours):	29
Photooxidation half- life air - Low (hours):	2.9

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.

TITANIUM DIOXIDE:
 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.
- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture

containers, to prevent re-use, and bury at an authorised landfill.

· Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: FLAMMABLE LIQUID
HAZCHEM: 3[Y]E

UNDG:

Dangerous Goods Class:	3	Subrisk:	NONE, NC
UN Number:	1263	Packing Group:	II

Shipping Name: PAINT

PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)

Air Transport IATA:

ICAO/IATA Class:	3	ICAO/IATA Subrisk:	NC
UN/ID Number:	1263	Packing Group:	II
ERG Code:	3L		

Shipping name: PAINT

Maritime Transport IMDG:

IMDG Class:	3	IMDG Subrisk:	None
UN Number:	1263	Packing Group:	II
EMS Number:	F-E,S-E	Marine Pollutant:	Not Determine

Shipping Name: PAINT RELATED MATERIAL (including paint thinning or reducing compound)

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: S5

REGULATIONS

alkyd resin solution (CAS No: Various):
No regulations applicable

n-butyl acetate (CAS: 123-86-4) is found on the following regulatory lists;

- Australia Exposure Standards
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
- International Council of Chemical Associations (ICCA) - High Production Volume List
- OECD Representative List of High Production Volume (HPV) Chemicals
- United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II

methyl ethyl ketone (CAS: 78-93-3) is found on the following regulatory lists;

- Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents
- Australia Exposure Standards
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Illicit Drug Reagents/Essential Chemicals - Category III
- Australia Inventory of Chemical Substances (AICS)
- Australia National Pollutant Inventory
- Australia Poisons Schedule
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
- IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
- OECD Representative List of High Production Volume (HPV) Chemicals
- United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II (English)

naphtha petroleum, light aromatic solvent (CAS: 64742-95-6) is found on the following regulatory lists;

- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- Australia Poisons Schedule
- International Council of Chemical Associations (ICCA) - High Production Volume List
- OECD Representative List of High Production Volume (HPV) Chemicals

industrial methylated spirits (ethanol/methanol mixture) (CAS: 8013-52-3) is found on the following regulatory lists;

- Australia Inventory of Chemical Substances (AICS)
- Australia Poisons Schedule

di-sec-octyl phthalate (CAS: 117-81-7) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - organic compounds)
- Australia - Australian Capital Territory Environment Protection Regulation Ecosystem maintenance - Organic chemicals - Non-pesticide anthropogenic organics

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
 Australia Exposure Standards
 Australia High Volume Industrial Chemical List (HVICL)
 Australia Inventory of Chemical Substances (AICS)
 Australia National Pollutant Inventory
 IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
 International Agency for Research on Cancer (IARC) Carcinogens
 OECD Representative List of High Production Volume (HPV) Chemicals
 OSPAR List of Chemicals for Priority Action
 OSPAR List of Substances of Possible Concern
 UNEP Montreal Protocol Ozone Depletors - Annex C
 WHO guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

titanium dioxide (CAS: 13463-67-7) is found on the following regulatory lists;
 Australia - Australia New Zealand Food Standards Code - Food Additives - Schedule 3 Colours permitted in accordance with GMP in processed foods specified in Schedule 1
 Australia Exposure Standards
 Australia High Volume Industrial Chemical List (HVICL)
 Australia Inventory of Chemical Substances (AICS)
 Australia Therapeutic Goods Administration (TGA) Sunscreening agents permitted as active ingredients in listed products
 CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP
 International Agency for Research on Cancer (IARC) Carcinogens
 OECD Representative List of High Production Volume (HPV) Chemicals

aluminium powder coated (CAS: 7429-90-5) is found on the following regulatory lists;
 Australia - Australia New Zealand Food Standards Code - Food Additives - Schedule 1 Permitted uses of food additives by food type
 Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)
 Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)
 Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
 Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)
 Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Agricultural uses (Stock)
 Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
 Australia Exposure Standards
 Australia High Volume Industrial Chemical List (HVICL)
 Australia Inventory of Chemical Substances (AICS)
 OECD Representative List of High Production Volume (HPV) Chemicals
 WHO guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

No data available for alkyd resin solution as CAS: Various.

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

Section 16 - OTHER INFORMATION

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 nt	CR	Adeq TLV
methyl ethyl ketone	590 mg/m ³	NA	NA	NA	Yes
naphtha petroleum, light aromatic solvent	12 mg/m ³	100	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): 330.9859 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)	(%)
naphtha petroleum, light aromatic solvent	44.13	110.3286	15.0
nitrocellulose with >25% alcohol, <12.6% nitrogen	117.37	220.6573	30.0

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): 45 mg/m³
 Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc (%).

Component	Breathing Zone (mg/m ³)	Concentration (%)
aluminium powder coated	0.7355	0.1

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