

# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

Hazard Alert Code:  
HIGH

Chemwatch Material Safety Data Sheet (REVIEW)

Version No: 2.0

Chemwatch 7115-64

Issue Date: 3-Jan-2008

CD 2011/1

NC317TCP

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

### SYNONYMS

"nail enamel remover"

### PROPER SHIPPING NAME

PERFUMERY PRODUCTS with flammable solvents

### PRODUCT NUMBERS

40277

### PRODUCT USE

Liquid applied to nails for the purpose of removing nail enamel.

### SUPPLIER

Company: Coty Pty Ltd

Address:

Level 31, 1 Market Street

Sydney

NSW, 2000

Australia

Telephone: +61 2826 39914

Fax: +61 29267 5452

Email: mikel\_crawley@cotyinc.com

## Section 2 - HAZARDS IDENTIFICATION

### STATEMENT OF HAZARDOUS NATURE

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

### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	3	
Toxicity:	2	
Body Contact:	2	
Reactivity:	1	
Chronic:	2	

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



### POISONS SCHEDULE

None

### RISK

- Highly flammable.
- Harmful if swallowed.
- Irritating to eyes.
- Possible respiratory sensitiser\*.

\* (limited evidence).

### SAFETY

- Keep away from sources of ignition. No smoking.
- Do not breathe gas/ fumes/ vapour/ spray.
- Avoid contact with eyes.
- Wear suitable protective clothing.
- Use only in well ventilated areas.
- Keep container in a well ventilated place.
- Do not empty into drains.
- To clean the floor and all objects contaminated by this material, use water.
- Keep away from food, drink and animal feeding stuffs.
- In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

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- If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).
- This material and its container must be disposed of as hazardous waste.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
alcohol denatured, as <a href="#">ethanol</a>	64-17-5	Notspec
<a href="#">methyl ethyl ketone</a>	78-93-3	Notspec
cocos nucifera <a href="#">denatonium benzoate</a>	3734-33-6	Notspec
<a href="#">benzophenone</a>	119-61-9	Notspec
FD&C Yellow No.5, as <a href="#">C.I. Acid Yellow 23</a>	1934-21-0	Notspec
D&C Red No. 17, as <a href="#">C.I. Solvent Red 23</a>	85-86-9	Notspec
<a href="#">water</a>	7732-18-5	Notspec

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- 
- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- 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.
- 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 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.

### 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.
- Seek medical attention without delay; 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 or hair contact occurs:
- 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.
- Other measures are usually unnecessary.

### NOTES TO PHYSICIAN

- Treat symptomatically.

## Section 5 - FIRE FIGHTING MEASURES

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## 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/ irritating fumes.

## FIRE INCOMPATIBILITY

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

## HAZCHEM

•3YE

### Personal Protective Equipment

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

## Section 6 - ACCIDENTAL RELEASE MEASURES

### 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.

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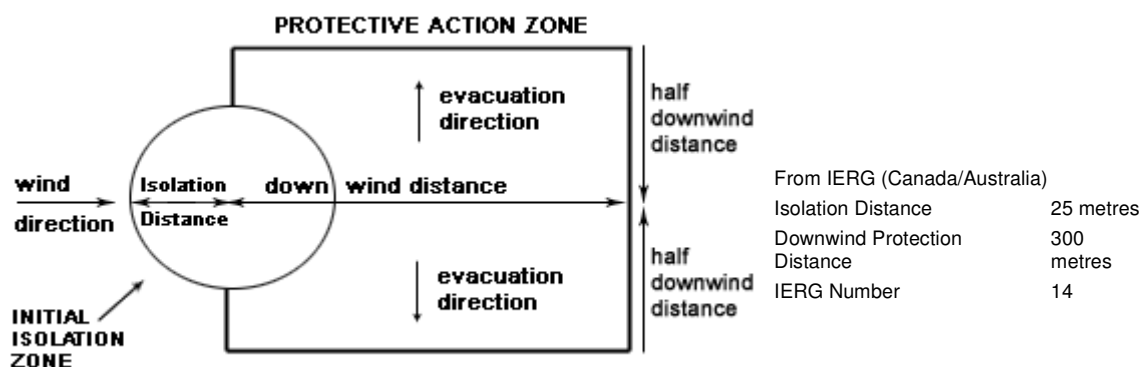
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- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

## PROTECTIVE ACTIONS FOR SPILL



From US Emergency Response Guide 2000 Guide 127

## 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 127 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTECH - 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 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

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- 
- 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 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.

## SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X: Must not be stored together

O: May be stored together with specific preventions

+: May be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
Australia Exposure Standards	ethanol (Ethyl alcohol)	1000	1880						
Australia Exposure Standards	methyl ethyl ketone (Methyl ethyl ketone (MEK))	150	445	300	890				
The following materials had no OELs on our records									
• denatonium benzoate:	CAS:3734-33-6								
• benzophenone:	CAS:119-61-9								
• C.I. Acid Yellow 23:	CAS:1934-21-0 CAS:642-62-6 CAS:1342-47-8 CAS:1342-53-6 CAS:12000-64-5 CAS:50809-64-8 CAS:84842-94-4 CAS:117209-34-4 CAS:134240-82-7 CAS:139601-06-2 CAS:154881-98-8 CAS:183808-13-1 CAS:191807-79-1 CAS:389057-90-3 CAS:469888-21-9								
• C.I. Solvent Red 23:	CAS:85-86-9								

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• water: CAS:7732-18-5

## EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
ethanol	278	3,300 [LEL]
methyl ethyl ketone	395	3,000 [Unch]

## NOTES

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

## ODOUR SAFETY FACTOR (OSF)

OSF=6 (ETHANOL)

■ Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded. Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

Classification into classes follows:

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

## MATERIAL DATA

BENZOPHENONE:

C.I. ACID YELLOW 23:

C.I. SOLVENT RED 23:

DENATONIUM BENZOATE:

ETHANOL:

■ 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.

BENZOPHENONE:

C.I. ACID YELLOW 23:

C.I. SOLVENT RED 23:

DENATONIUM BENZOATE:

■ It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

ETHANOL:

■ For 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.

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## METHYL ETHYL KETONE:

■ 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: Various 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.

## BENZOPHENONE:

CEL TWA: 5 mg/m<sup>3</sup> (compare WEEL TWA)

While benzophenone appears to be of low toxicity, the absence of inhalation data and reports of some toxicity has led the AIHA to recommend a workplace environmental exposure level (WEEL).

## WATER:

■ No exposure limits set by NOHSC or ACGIH.

## 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

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■ Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	A-AUS	-
1000	50	-	A-AUS
5000	50	Airline *	-
5000	100	-	A-2
10000	100	-	A-3
	100+		Airline**

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

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.)
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direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
--	----------------------------

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only.
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 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

Orange coloured, highly flammable liquid with a characteristic odour; miscible with water.

### PHYSICAL PROPERTIES

Liquid.

Mixes with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not Available
Boiling Range (°C)	Not Available	Solubility in water (g/L)	Miscible
Flash Point (°C)	<23	pH (1% solution)	Not Available
Decomposition Temp	Not	pH (as	Not



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(°C)	Available	supplied)	Available
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	Not Available
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	Not Available
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

Ingestion of ethanol (ethyl alcohol, "alcohol") may produce nausea, vomiting, bleeding from the digestive tract, abdominal pain, and diarrhoea. Effects on the body:

Blood concentration	Effects
<1.5 g/L	Mild: impaired vision, co-ordination and reaction time; emotional instability
1.5-3.0 g/L	Moderate: Slurred speech, confusion, inco-ordination, emotional instability, disturbances in perception and senses, possible blackouts, and impaired objective performance in standardized tests. Possible double vision, flushing, fast heart rate, sweating and incontinence. Slow breathing may occur rarely and fast breathing may develop in cases of metabolic acidosis, low blood sugar and low blood potassium. Central nervous system depression may progress to coma.
3-5 g/L	Severe: cold clammy skin, low body temperature and low blood pressure. Atrial fibrillation and heart block have been reported. Depression of breathing may occur, respiratory failure may follow serious poisoning, choking on vomit may result in lung inflammation and swelling. Convulsions due to severe low blood sugar may also occur. Acute liver inflammation may develop.

Concentrated solutions of many cationics may cause corrosive damage to mucous membranes and the oesophagus. Nausea and vomiting (sometimes bloody) may follow ingestion. Serious exposures may produce an immediate burning sensation of the mouth, throat and abdomen with profuse salivation, ulceration of mucous membranes, signs of circulatory shock (hypotension, laboured breathing, and cyanosis) and a feeling of apprehension, restlessness, confusion and weakness. Weak convulsive movements may precede central nervous system depression. Erosion, ulceration, and petechial haemorrhage may occur through the small intestine with glottic, brain and pulmonary oedema. Death may result from asphyxiation due to paralysis of the muscles of respiration or cardiovascular collapse. Fatal poisoning may arise even when the only pathological signs are visceral congestion, swallowing, mild pulmonary oedema or varying signs of gastrointestinal irritation. Individuals who survive a period of severe hypertension may develop kidney failure. Cloudy swelling, patchy necrosis and fatty infiltration in such visceral organs as the

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heart, liver and kidneys shows at death.

## EYE

■ This material can cause eye irritation and damage in some persons.

## SKIN

■ Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

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.

## INHALED

■ The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

## CHRONIC HEALTH EFFECTS

■ Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

One ingredient of the product has caused skin sensitisation reactions, shown as localised reddening and hives, or may produce respiratory sensitisation characterised by asthma-like symptoms and runny nose.

## TOXICITY AND IRRITATION

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

BENZOPHENONE:

C.I. SOLVENT RED 23:

DENATONIUM BENZOATE:

■ 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.

C.I. ACID YELLOW 23:

BENZOPHENONE:

■ Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

COTY CUTEX NAIL POLISH REMOVER (NPR) ACETONE FREE 100ML:

■ Not available. Refer to individual constituents.

ETHANOL:

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

■ 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.

TOXICITY

IRRITATION

METHYL ETHYL KETONE:

Oral (rat) LD50: 2737 mg/kg

IRRITATION

Skin (rabbit):20 mg/24hr-Moderate

Skin (rabbit):400 mg (open)-Mild

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

Eye (rabbit): 500 mg SEVERE

Eye  
(human):  
350 ppm

# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

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**-Irritant**

Inhalation (human) TClO: 100 ppm/5 m

Eye (rabbit): 80 mg - Irritant

**Skin  
(rabbit):  
402  
mg/24 hr  
- Mild**

**Inhalation (rat) LD50: 23500  
mg/m<sup>3</sup>/8 hr**

Dermal (rabbit) LD50: 6480 mg/kg

Skin (rabbit):13.78mg/24 hr Open

**Inhalation (man) TClO: 10  
mg/m<sup>3</sup>/6 hr**

- Mild

Inhalation (rat) LC50: 50100 mg/m<sup>3</sup>/8 hr

**Dermal (rabbit) LD50: 20000  
mg/kg**

**DENATONIUM BENZOATE:**

**Oral (rat) LD50: 584 mg/kg**

**Nil  
Reported**

Oral (rabbit) LD50: 508 mg/kg

■ Most undiluted cationic surfactants satisfy the criteria for classification as Harmful (Xn) with R22 and as Irritant (Xi) for skin and eyes with R38 and R41.

Somnolence, tremor, ataxia recorded.

**BENZOPHENONE:**

**Oral (rat) LD50: >10,000 mg/kg**

**Nil  
Reported**

Oral (mouse) LD50: 2895 mg/kg

**Dermal (rabbit) LD50: 3535 mg/kg**

**C.I. ACID YELLOW 23:**

**Oral (Human) TDL0: 0.014 mg/kg**

**Nil  
Reported**

Oral (Mouse) LD50: 12750 mg/kg

**Oral (Rat) LD50: >2000 mg/kg**

Intravenous (Rat) LD50: 2000 mg/kg

■ Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins.

Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.

Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.

Suspected allergen

\*[Hawley's]

**C.I. SOLVENT RED 23:**

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## Intraperitoneal (Rabbit) LD: 250 mg/kg

- Detailed analysis of molecular structure indicates that the azo colourant can split off cancer-causing arylamines.

The azo linkage, a double bond between two nitrogen atoms, is considered the most unstable part of an azo dye. This bond is easily broken down by not only enzymes, but heat or light. Breakdown results in the release of component amines. The ultimate degradation pathway of the dyes is dependent on solubility in water. For example, the azo linkage in many azo pigments is not available for breakdown by enzymes in the cell due to its poor water solubility, but is broken down by normal bacteria in the gut.

After the azo linkage is broken, the component aromatic amines. Of these, 22 are recognised as potentially causing cancer in humans, and several in animals. Sulfonation of the dye promotes excretion, thus reducing toxicity.

The component amines which may be released by azo dyes are mostly aromatic amines (compounds where an amine group or amine-generating group (s) are connected to an aryl moiety). In general, aromatic amines known to cause cancer may be grouped into five groups:

- anilines, e.g. o-toluidine.
- Extended anilines, e.g. benzidine.
- Fused ring amines, e.g. 2-naphthylamine.
- Aminoazo and other azo compounds, e.g. 4-(phenylazo)aniline.
- Heterocyclic amines.

The aromatic amines containing moieties of anilines, extended anilines and fused ring amines are components of most industrially important azo dyes.

Reductive fission of azo group, by bacteria in the gut or by enzymes in and outside the liver can cause benzidine-based aromatic amines to be released, which have been detected in the urine in humans. The release of these amines has been associated with mutations and cancer in laboratory animal testing. Research shows that there are indications that occupational exposure to benzidine-based azo colourants can increase the chances of developing bladder cancer.

The acute toxicity of azo dyes is low. Red azoic dyes have been linked to allergic contact dermatitis in heavily exposed workers. Furthermore, textiles coloured with disperse azo dyes have caused allergic dermatitis in a few cases.

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.

Substance has been investigated as a tumorigen and mutagen micro-organisms and rodents.

IARC Review is continuing.

### WATER:

- No significant acute toxicological data identified in literature search.

### CARCINOGEN

Ethanol in alcoholic beverages	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group 1
Sudan III	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group 3

### REPROTOXIN

methyl ethyl ketone	ILO Chemicals in the electronics industry that have toxic effects on reproduction	Reduced fertility or sterility
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## Section 12 - ECOLOGICAL INFORMATION

METHYL ETHYL KETONE:  
DENATONIUM BENZOATE:  
BENZOPHENONE:  
C.I. ACID YELLOW 23:  
C.I. SOLVENT RED 23:  
ETHANOL:

- DO NOT discharge into sewer or waterways.

BENZOPHENONE:  
DENATONIUM BENZOATE:

- 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.

ETHANOL:

# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

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

■ 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.

**Environmental Fate:**

**TERRESTRIAL FATE:** An estimated Koc value of 1 indicates that ethanol is expected to have very high mobility in soil. Volatilisation of ethanol from moist soil surfaces is expected to be an important fate process given a Henry's Law constant of  $5 \times 10^{-6}$  atm-m<sup>3</sup>/mole. The potential for volatilisation of ethanol from dry soil surfaces may exist based upon an extrapolated vapor pressure of 59.3 mmHg. Biodegradation is expected to be an important fate process for ethanol based on half-lives on the order of a few days for ethanol in sandy soil/groundwater microcosms.

**AQUATIC FATE:** An estimated Koc value of 1 indicates that ethanol is not expected to adsorb to suspended solids and sediment. Volatilisation from water surfaces is expected based upon a Henry's Law constant of  $5 \times 10^{-6}$  atm-m<sup>3</sup>/mole. Using this Henry's Law constant and an estimation method, volatilisation half-lives for a model river and model lake are 3 and 39 days, respectively. An estimated BCF = 3, from a log Kow of -0.31 suggests bioconcentration in aquatic organisms is low. Hydrolysis and photolysis in sunlight surface waters is not expected to be an important environmental fate process for ethanol since this compound lacks functional groups that hydrolyse or absorb light under environmentally relevant conditions. Ethanol was degraded with half-lives on the order of a few days in aquatic studies conducted using microcosms constructed with a low organic sandy soil and groundwater, indicating it is unlikely to be persistent in aquatic environments(8).

**ATMOSPHERIC FATE:** Ethanol, which has an extrapolated vapor pressure of 59.3 mm Hg at 25 deg C, is expected to exist solely as a vapor in the ambient atmosphere. Vapour-phase ethanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 5 days, calculated from its rate constant of  $3.3 \times 10^{-12}$  m<sup>3</sup>/molecule-sec at 25 deg C.

**Ecotoxicity:**

log Kow: -0.31 - -0.32

Half-life (hr) air: 144

Half-life (hr) H<sub>2</sub>O surface water: 144Henry's atm m<sup>3</sup> /mol: 6.29E-06

BOD 5 if unstated: 0.93-1.67,63%

COD: 1.99-2.11,97%

ThOD: 2.1.

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METHYL ETHYL KETONE:

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

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 m<sup>3</sup>/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

DENATONIUM BENZOATE:

■ Toxic to aquatic organisms.

# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

**Hazard Alert Code:**  
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For organic cationics

Cationic substances, and their polymers and those polymers that are reasonably anticipated to become cationic in the natural aquatic environment (pH range 4-9) may be environmental hazards.

Exempt from this concern are those polymers to be used only in solid phase, such as ion-exchange resins, and where the FGEW (Functional Group Equivalent Weight) of cationic groups is not 5000 and above.

The numerous studies of aquatic toxicity, many of which were conducted in natural waters with and without added effluents, indicate that the source and composition of the test water dramatically affects the toxicity of the test substance. These results are consistent with the known behavior of these materials in the environment. Cationic substances in the environment instantaneously form complexes with naturally occurring negatively charged constituents in sewage, soils, sediments, and with dissolved humic substances in surface waters. This complexation behavior results in reduced bioavailability in actual environmental conditions that is not adequately represented by standard laboratory assays and/or predictions by various QSAR models.

Ecotoxicity:

These chemicals, by the nature of their surfactant properties, are toxic to aquatic organisms at low concentrations. Cationic groups such as alkylsulfoniums, alkylphosphoniums and quaternary ammonium polymers are highly toxic to fish and other aquatic organisms. Similarly potentially cationic groups such as amines and isocyanates are of concern. Some cationics, however, may fall into the category of PLCs (polymers of low concern) provided they possess low charge density, and/or are not water-soluble or are not self-dispersing polycarboxylates or poly- (aromatic or aliphatic) sulfonate polymers.

The toxicity of quaternary ammonium compounds is known to be greatly reduced in the environment because of preferential binding to dissolved organics in surface water.

For cationic surfactants:

Environmental fate:

Although cationic surfactants will sorb onto sludge particles and eventually reach the digester during the treatment of wastewater sludge, there is very limited information about the biodegradability of these compounds under anoxic conditions. It has been demonstrated, however, that the concentration of quaternary ammonium salts does not decrease, or only slightly decreases, in an anaerobic digester.

The numerous studies of aquatic toxicity, many of which were conducted in natural waters with and without added effluents, indicate that the source and composition of the test water dramatically affects the toxicity of the test substance. These results are consistent with the known behavior of these materials in the environment. Cationic substances in the environment instantaneously form complexes with naturally occurring negatively charged constituents in sewage, soils, sediments, and with dissolved humic substances in surface waters. This complexation behavior results in reduced bioavailability in actual environmental conditions that is not adequately represented by standard laboratory assays and/or predictions by various QSAR models.

Ecotoxicity:

Algae constitute a group of organisms which appears to be very sensitive to cationic surfactants.

BENZOPHENONE:

## Marine Pollutant

Yes

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

Inhibitory concentration on respiration of aerobic waste water bacterial:

IC20: >1000 ppm

IC50: >1000 ppm

IC80: >1000 ppm [Double Bond]

C.I. ACID YELLOW 23:

■ for acid dyes:

Ecotoxicity:

Analysis of over 200 acid dyes indicates that some monoacid and diacid dyes show moderate to high toxicity (that is acute values <100 mg/l and < 1 mg/l) to fish and aquatic organisms. Dyes with three of more acid groups show low toxicity (that is acute values >100 mg/l) towards fish and invertebrates. All acid dyes show moderate toxicity towards green algae. The effects on algae were not the result of direct toxicity but represented an indirect effect due to shading.

Algae are generally susceptible to dyes, but the inhibitory effect is thought to be related to light inhibition at high dye concentrations, rather than a direct inhibitory effect of the dyes. This effect may account for up to 50% of the inhibition observed.

Virtually all dyes from all chemically distinct groups are prone to fungal oxidation but there are large differences between fungal species with respect to their catalysing power and dye selectivity. A clear relationship between dye structure and fungal dye biodegradability has not been established. Fungal degradation of aromatic structures is a secondary metabolic event that starts when nutrients (C, N and S) become limiting. Therefore, while the enzymes are optimally expressed under starving conditions, supplementation of energy substrates and nutrients are necessary for propagation of the cultures

Some chelated dyes, i.e., Al, Co, Cr, Fe, have shown moderate toxicity towards fish and daphnids and the toxicity has not been explained by the residual free (unchelated) metal ion in the dye product.

Environmental fate:

Many dyes are visible in water at concentrations as low as 1 mg/l. Textile-processing waste waters, typically with a dye content in the range 10- 200 mg /l are therefore usually highly coloured and discharge in open waters presents an aesthetic problem. As dyes are designed to be chemically and photolytically stable, they are highly persistent in natural environments. It is thus unlikely that they, in general, will give positive results in short-term tests for aerobic biodegradability. The release of dyes may therefore present an ecotoxic hazard and introduces the potential danger of bioaccumulation that may eventually affect man by transport through the food chain

In general the ionic dyes will be almost completely or partly dissociated in an aqueous solution. Solubility in the range 100 mg/l to 80,000 mg/l has been reported for the ionic azo dyes. In addition, they would be expected to have a high to a moderate mobility in soil, sediment and particular matter, indicated by the low Koc values. However, due to their ionic nature, they adsorb as a result of ion-exchange processes.

In addition, ionic compounds are not considered to be able to volatilise neither from moist nor dry surfaces, and the vapour pressures for these dyes are very low.

C.I. SOLVENT RED 23:

■ for solvent dyes:

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HIGH

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## Environmental fate:

Solvent dyes have low solubility; these dyes are basically characterised as non-ionic or neutral dyes, and thereby hydrophobic in character. Solubility in water is in the range of 0.2 mg/l to 34.3 mg/l.

Solvent dyes, like the other main class of neutral colourant, the disperse dyes, are hydrophobic.

The solvent dyes are large, complex molecules, that can be expected to have lower vapour pressures than disperse dyes.

The partition coefficients (Kow) are very high for the non-ionic dyes (in the range of 420 for Solvent Yellow 1 to 11,220 for Solvent Yellow 2)

The molecular size of solvent and disperse dyes (especially azo derivatives), may reduce the rate and probability of biodegradation. This is due to limited uptake; substituents may also influence the degradation rate. When the aromatic rings of the neutral dyes had substituted hydroxyl, amino, acetamido or nitro groups, the biodegradation/ mineralisation was greater than by those with unsubstituted rings.

In principle, the solvent and disperse dyes have the potential to be volatile, but as they are large, complex molecules they can be expected to have low vapour pressures. Volatilisation is unlikely for uncharged dyes because that the escaping tendency (fugacity) which drives volatilisation, is also the driving force behind both sorption and bioconcentration.

The estimated log BCFs for the non-ionic dyes, i.e. disperse and solvent, indicate a potential risk of bioaccumulation. However these values are generally too high when measured experimentally. Therefore, the risk of bioaccumulation of the non-ionic azo dyes must be further validated especially in view of their large molecular sizes.

Many dyes are visible in water at concentrations as low as 1 mg/l. Textile-processing waste waters, typically with a dye content in the range 10- 200 mg /l are therefore usually highly coloured and discharge in open waters presents an aesthetic problem. As dyes are designed to be chemically and photolytically stable, they are highly persistent in natural environments. It is thus unlikely that they, in general, will give positive results in short-term tests for aerobic biodegradability. The release of dyes may therefore present an ecotoxic hazard and introduces the potential danger of bioaccumulation that may eventually affect man by transport through the food chain

## Ecotoxicity:

Indications are that the non-ionic (disperse, mordant and solvent) dyes are toxic or potentially toxic to aquatic organisms.. Solvent dyes may even be acutely toxic to aquatic organisms.

Algae are generally susceptible to dyes, but the inhibitory effect is thought to be related to light inhibition at high dye concentrations, rather than a direct inhibitory effect of the dyes. This effect may account for up to 50% of the inhibition observed. Virtually all dyes from all chemically distinct groups are prone to fungal oxidation but there are large differences between fungal species with respect to their catalysing power and dye selectivity. A clear relationship between dye structure and fungal dye biodegradability has not been established. Fungal degradation of aromatic structures is a secondary metabolic event that starts when nutrients (C, N and S) become limiting. Therefore, while the enzymes are optimally expressed under starving conditions, supplementation of energy substrates and nutrients are necessary for propagation of the cultures.

The effects of the substitutional pattern of the dyes are inconclusive, but it has been suggested that introduction of the functional groups; methyl, nitro, sulfo or acid, weakens the inhibition of bacteria, whereas introduction of chlorine and bromine strengthens the inhibition.

Biodegradation of azo dyes can occur in both aerobic and anaerobic environments. In both cases, the initial step in the biodegradation is the reductive cleavage of the azo-bond. Under aerobic conditions the initial step of cleavage of the azo-bond is typically followed by hydroxylation and ring opening of the aromatic intermediates.

The electron-withdrawal character of azo-groups generates electron deficiency and thus makes the compounds less susceptible to oxidative catabolism. As a consequence, many of these chemicals tend to persist under aerobic environmental conditions. Aerobic degradation of azo dyes is not expected as oxygen is often an inhibitor of azo reduction. Biodegradation of these dyes by aerobic sludge is reported to be insignificant as greater than 50% of the dye remains unchanged or is only slightly modified.

Reduction of azo dyes occurs primarily under anaerobic conditions through cleavage of the azo linkage. While azo dyes are generally stable under aerobic conditions, they are susceptible to reductive degradation under the anaerobic conditions characteristic of sediment. A possible pathway of azo dye degradation is azo-reductase under anaerobic conditions followed by mineralisation under aerobic conditions, with the resultant end products being NH<sub>3</sub>, CO<sub>2</sub> and H<sub>2</sub>O.

The great majority of azo dyes are water soluble and they colour different substrates by becoming physically attached. The attachment may be due to adsorption, absorption or mechanical adherence. Most of the commercial available azo dyes are in fact formulations of several components in order to improve the technical properties of the dyeing process.

The content of a specific dye lies in the range of 10 to 98%.

Soluble azo dyes, which are likely to remain in solution and therefore are unlikely to adsorb to sediment or sludge, the above anaerobic pathway is unlikely to occur.

An important natural abiotic degradation mechanism is photolysis and hydrolysis as a function of pH in the range of pH 4-9 . The evidence of the role of hydrolysis in degradation of azo dyes is not conclusive. Even though the dyes have absorption maxima in the range of visible and UV-light, photo-reduction does not play a dominant role in the environmental fate of dyes, although its contribution to the total mineralisation of widely dispersed trace amounts may be underestimated. Furthermore, hydrolysis seems not to be an important degradation pathway either, except for reactive dyes, which are hydrolysed rapidly in aqueous solution. For the metabolites, photolysis may be of some importance, whereas hydrolysis does not seem to be an important degradation route.

If the dye is not broken during rigors of biological waste treatment, it is unlikely to degrade rapidly in the less severe conditions of the environment. The reductive cleavage of the azo-bond is the major degradation pathway for azo dyes. Photo-reduction of azo dyes to hydrazines and amines is possible, but it is likely to be very slow, except in oxygen-poor water. The stability of the dyes to visible and UV-light is very high, and therefore only slow degradation has been shown. The photo-stability of azo dyestuffs is high in pure water but in the presence of natural humic materials, the photo decomposition is strongly accelerated, probably through oxidation by single oxygen or oxy-radicals

Although azo dyes are generally not readily or inherently biodegradable, bioaccumulation or adsorption to sediment is not expected due to their, generally, low partition coefficient

Certain of the Acid and Basic azo dyes are acutely toxic to aquatic organisms (fish, crustaceans, algae and bacteria); this is also true of some Direct dyes. Reactive dyes generally have very high effect concentration levels (>100 mg/l) and are not considered to be toxic to aquatic organisms. The non-ionic (Disperse and Solvent) dyes are toxic or potentially toxic. Solvent dyes may even be acutely toxic to aquatic organisms. The Mordant dyes (nonionics) generally do not exhibit any toxicity at levels below 100 mg/l.

WATER:



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**Ecotoxicity**

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml	No Data Available	No Data Available		
ethanol	LOW	MED	LOW	HIGH
methyl ethyl ketone	LOW	HIGH	LOW	HIGH
denatonium benzoate	No Data Available	No Data Available		
benzophenone	HIGH	No Data Available	LOW	MED
C.I. Acid Yellow 23	HIGH	No Data Available	LOW	HIGH
C.I. Solvent Red 23	HIGH	No Data Available	LOW	LOW

**Section 13 - DISPOSAL CONSIDERATIONS**

- - 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:**

●3YE (ADG7)

Land Transport UNDG:

Class or division: 3

Subsidiary risk: None

UN No.: 1266

UN packing group: II

Shipping Name: PERFUMERY PRODUCTS with flammable solvents

**Air Transport IATA:**

# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

**Hazard Alert Code:**  
**HIGH**

Chemwatch Material Safety Data Sheet (REVIEW)

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UN/ID Number:	1266	Packing Group:	II
Special provisions:	A3		
Shipping Name: PERFUMERY PRODUCTS WITH FLAMMABLE SOLVENTS			
<b>Maritime Transport IMDG:</b>			
IMDG Class:	3	IMDG Subrisk:	None
UN Number:	1266	Packing Group:	II
EMS Number:	F-E , S-D	Special provisions:	None
Limited Quantities:	5 L		
Shipping Name: PERFUMERY PRODUCTS with flammable liquid			

## Section 15 - REGULATORY INFORMATION

### POISONS SCHEDULE

None

### REGULATIONS

#### Regulations for ingredients

#### **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 Illicit Drug Reagents/Essential Chemicals - Category III", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "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", "IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Air Transport Association (IATA) Dangerous Goods Regulations", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals", "World Anti-Doping Agency - Prohibited List - World Anti-Doping Code - Substances Prohibited in Particular Sports", "World Anti-Doping Agency - The 2009 Prohibited List World Anti-Doping Code - Substances Prohibited in Particular Sports (Korean)"

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

"Australia Exposure Standards", "Australia Hazardous Substances", "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 Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals"

#### **denatonium benzoate (CAS: 3734-33-6) is found on the following regulatory lists;**

"Australia Inventory of Chemical Substances (AICS)", "International Fragrance Association (IFRA) Survey: Transparency List"

#### **benzophenone (CAS: 119-61-9) is found on the following regulatory lists;**

"Australia Inventory of Chemical Substances (AICS)", "Australia Therapeutic Goods Administration (TGA) Sunscreening agents permitted as active ingredients in listed products - Under Review", "International Chemical Secretariat (ChemSec) REACH SIN\* List (\*Substitute It Now!) 1.1", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals"

#### **C.I. Acid Yellow 23 (CAS: 1934-21-0,642-62-6,1342-47-8,1342-53-6,12000-64-5,50809-64-8,84842-94-4,117209-34-4,134240-82-7,139601-06-2,154881-98-8,183808-13-1,191807-79-1,389057-90-3,469888-21-9) is found on the following regulatory lists;**

"Australia Inventory of Chemical Substances (AICS)", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals"

#### **C.I. Solvent Red 23 (CAS: 85-86-9) is found on the following regulatory lists;**

"Australia Inventory of Chemical Substances (AICS)", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Fragrance Association (IFRA) Survey: Transparency List"

#### **water (CAS: 7732-18-5) is found on the following regulatory lists;**

"Australia Inventory of Chemical Substances (AICS)", "IMO IBC Code Chapter 18: List of products to which the Code does not apply", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals"

**No data for Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml (CW: 7115-64)**

## Section 16 - OTHER INFORMATION

### Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
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# Coty Cutex Nail Polish Remover (NPR) Acetone Free 100ml

**Hazard Alert Code:  
HIGH**

Chemwatch Material Safety Data Sheet (REVIEW)

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denatonium benzoate

3734- 33- 6

Xn; R22

C.I. Acid Yellow 23

1934- 21- 0

Mut3; R68

C.I. Solvent Red 23

85- 86- 9

Mut3; R68 Xn;

R22

## Ingredients with multiple CAS Nos

Ingredient Name	CAS
C.I. Acid Yellow 23	1934-21-0, 642-62-6, 1342-47-8, 1342-53-6, 12000-64-5, 50809-64-8, 84842-94-4, 117209-34-4, 134240-82-7, Yellow 23
C.I. Solvent Red 23	139601-06-2, 154881-98-8, 183808-13-1, 191807-79-1, 389057-90-3, 469888-21-9

## REPRODUCTIVE HEALTH GUIDELINES

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
ethanol	1880 mg/m3	NA	NA	NA	Yes
methyl ethyl ketone	590 mg/m3	NA	NA	NA	Yes

■ These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive

American Industrial Hygiene Association Journal 57: 641-649 (1996).

■ 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](http://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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