

# ADOS F101 ADHESIVE

Issue Date: 06-December-2012

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

ADOS F101 ADHESIVE

### SYNONYMS

### PROPER SHIPPING NAME

ADHESIVES

### PRODUCT USE

Contact Adhesive for EPDM Rubber.

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing.

Before starting consider control of exposure by mechanical ventilation.

### SUPPLIER

Company: CRC Industries Ltd

Address:

10 Highbrook Drive

East Tamaki

Auckland,

NZL

Telephone: +64 9 272 2700

Fax: +64 9 274 9696

## Section 2 - HAZARDS IDENTIFICATION

### STATEMENT OF HAZARDOUS NATURE

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

### POISONS SCHEDULE

NZS3

### RISK SAFETY

» Highly flammable. » Keep away from sources of ignition. No smoking.

» Harmful if swallowed. » Do not breathe gas/ fumes/ vapour/ spray.

» Irritating to eyes and skin. » Use only in well ventilated areas.

» Harmful: danger of serious damage to health

by prolonged exposure through inhalation.

» Keep container in a well ventilated place.

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

» Avoid exposure - obtain special instructions before use.

» Possible risk of harm to the unborn child.

» To clean the floor and all objects contaminated by this material use water and detergent.

» HARMFUL - May cause lung damage if swallowed.

» Keep container tightly closed.

» Vapours may cause drowsiness and dizziness.

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

» Inhalation and/or skin contact may produce health damage\*.

» Keep away from food drink and animal feeding stuffs.

» Cumulative effects may result following exposure\*.

» In case of contact with eyes rinse with plenty of

water and contact Doctor or Poisons Information Centre.

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- » May produce discomfort of the respiratory system\*.
- » If swallowed IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).
- » Limited evidence of a carcinogenic effect\*.
- » Use appropriate container to avoid environment contamination.
- \* (limited evidence).
- » Avoid release to the environment. Refer to special instructions/ safety data sheets.
- » This material and its container must be disposed of as hazardous waste.

### **Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

NAME CAS RN %

Toluene 108-88-3 10-30

Cyclohexane 110-82-7 10-30

mixed hexanes aliphatic hydrocarbon solvent 64742-89-8. 1-9

Acetone 67-64-1 0-7

naphtha petroleum, light aliphatic solvent 64742-89-8. 0-6

Heptane 142-82-5 0-5

n- hexane 110-54-3 0-2

other non- hazardous ingredients, including resin, fillers, 0-15  
colourants and additives

### **Section 4 - FIRST AID MEASURES**

#### **SWALLOWED**

- If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.
- 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.
- Seek medical advice.
- Avoid giving milk or oils.
- Avoid giving alcohol.

#### **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.

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- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior

to initiating first aid procedures.

- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

#### **NOTES TO PHYSICIAN**

» 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. Following acute or short term repeated exposures to toluene:

- Toluene is absorbed across the alveolar barrier, the blood/air mixture being 11.2/15.6 (at 37 degrees C.) The concentration of toluene, in expired breath, is of the order of 18 ppm following sustained exposure to 100 ppm. The tissue/blood proportion is 1/3 except in adipose where the proportion is 8/10.
- Metabolism by microsomal mono-oxygenation, results in the production of hippuric acid. This may be detected in the urine in amounts between 0.5 and 2.5 g/24 hr which represents, on average 0.8 gm/gm of creatinine. The biological half-life of hippuric acid is in the order of 1-2 hours.
- Primary threat to life from ingestion and/or inhalation is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (eg cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases ( $pO_2 < 50$  mm Hg or  $pCO_2 > 50$  mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial damage has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenaline) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- Lavage is indicated in patients who require decontamination; ensure use.

#### **BIOLOGICAL EXPOSURE INDEX - BEI**

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

Determinant Index Sampling Time Comments

o-Cresol in urine 0.5 mg/L End of shift B

Hippuric acid in urine 1.6 g/g creatinine End of shift B, NS

Toluene in blood 0.05 mg/L Prior to last shift of workweek

NS: Non-specific determinant; also observed after exposure to other material

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

## **Section 5 - FIRE FIGHTING MEASURES**

### **EXTINGUISHING MEDIA**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

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- 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 (CO<sub>2</sub>), hydrogen bromide, other pyrolysis products typical of burning organic material.
- Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

#### **FIRE INCOMPATIBILITY**

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

**HAZCHEM: None**

### **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.

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- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

#### **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:

toluene 1000ppm

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

toluene 300ppm

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

toluene 50ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)  $\geq 0.1\%$  Toxic (T)  $\geq 3.0\%$

R50  $\geq$  0.25% Corrosive (C)  $\geq$  5.0%

R51  $\geq$  2.5%

else  $\geq$  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.
- 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.
- DO NOT allow clothing wet with material to stay in contact with skin.

### **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.

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#### **SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS**

+ X X X X +

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+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

#### **Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

##### **EXPOSURE CONTROLS**

Source Material TWA

ppm

TWA

mg/m<sup>3</sup>

STEL

ppm

STEL

mg/m<sup>3</sup>

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Australia Exposure

Standards

toluene (Toluene) 50 191 150 574

Australia Exposure

Standards

cyclohexane

(Cyclohexane)

100 350 300 1050

Australia Exposure

Standards

acetone (Acetone) 500 1185 1000 2375

Australia Exposure

Standards

heptane (Heptane (n-

Heptane))

400 1640 500 2050

Australia Exposure

Standards

n-hexane (Hexane (n-

Hexane))

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The following materials had no OELs on our records

- mixed hexanes aliphatic hydrocarbon solvent: CAS:64742-89-8

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- brominated butyl rubber: CAS:68441-14-5

- naphtha petroleum, light aliphatic solvent: CAS:64742-89-8

##### **EMERGENCY EXPOSURE LIMITS**

Material Revised IDLH Value (mg/m<sup>3</sup>) Revised IDLH Value (ppm)

toluene 500

cyclohexane 1,300 [LEL]

acetone 2,500 [LEL]

heptane 750

n-hexane 1,100 [LEL]

##### **NOTES**

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

##### **ODOUR SAFETY FACTOR (OSF)**

OSF=0.042 (naphtha petroleum, light aliphatic solvent)

» 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:

$OSF = \text{Exposure Standard (TWA) ppm} / \text{Odour Threshold Value (OTV) ppm}$

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.

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## **INGREDIENT DATA**

N-HEXANE:

TOLUENE:

» 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).

N-HEXANE:

TOLUENE:

» Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

TOLUENE:

» For toluene:

Odour Threshold Value: 0.16-6.7 (detection), 1.9-69 (recognition)

NOTE: Detector tubes measuring in excess of 5 ppm, are available.

High concentrations of toluene in the air produce depression of the central nervous system (CNS) in humans. Intentional toluene exposure (glue-sniffing) at maternally-intoxicating concentration has also produced birth defects. Foetotoxicity appears at levels associated with CNS narcosis and probably occurs only in those with chronic toluene-induced kidney failure. Exposure at or below the recommended TLV-TWA is thought to prevent transient headache and irritation, to provide a measure of safety for possible disturbances to human reproduction, the prevention of reductions in cognitive responses reported amongst humans inhaling greater than 40 ppm, and the significant risks of hepatotoxic, behavioural and nervous system effects (including impaired reaction time and incoordination). Although toluene/ethanol interactions are well recognised, the degree of protection afforded by the TLV-TWA among drinkers is not known.

Odour Safety Factor(OSF)

OSF=17 (TOLUENE).

CYCLOHEXANE:

» For cyclohexane:

Odour Threshold Value: 784 ppm (detection)

NOTE: Detector tubes for cyclohexane, measuring in excess of 100 ppm are commercially available.

The recommended TLV-TWA represents the borderline of irritation but takes into account the practical difficulties of achieving lower values in the workplace. Whether serious or long-lasting consequences result from exposure at 300 ppm or whether humans become narcosed or fatigued remains to be established. The present value is thought to be a satisfactory bench-mark until further studies are made.

Odour Safety Factor(OSF)

OSF=4 (CYCLOHEXANE).

MIXED HEXANES ALIPHATIC HYDROCARBON SOLVENT:

» NOTE L: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346. European Union (EU) List of Dangerous Substances (Annex I) - up to the 29th ATP.

Odour Threshold Value: 65 ppm (as n-hexane)

ACETONE:

» Odour Threshold Value: 3.6 ppm (detection), 699 ppm (recognition)

Saturation vapour concentration: 237000 ppm @ 20 C

NOTE: Detector tubes measuring in excess of 40 ppm, are available.

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Exposure at or below the recommended TLV-TWA is thought to protect the worker against mild irritation associated with brief exposures and the bioaccumulation, chronic irritation of the respiratory tract and headaches associated with long-term acetone exposures. The NIOSH REL-TWA is substantially lower and has taken into account slight irritation experienced by volunteer subjects at 300 ppm. Mild irritation to acclimatised workers begins at about 750 ppm - unacclimatised subjects will experience irritation at about 350-500 ppm but acclimatisation can occur rapidly. Disagreement between the peak bodies is based largely on the view by ACGIH that widespread use of acetone, without evidence of significant adverse health effects at higher concentrations, allows acceptance of a higher limit.

Half-life of acetone in blood is 3 hours which means that no adjustment for shift-length has to be made with reference to the standard 8 hour/day, 40 hours per week because body clearance occurs within any shift with low potential for accumulation.

A STEL has been established to prevent excursions of acetone vapours that could cause depression of the central nervous system.

Odour Safety Factor(OSF)

OSF=38 (ACETONE).

BROMINATED BUTYL RUBBER:

CEL TWA: 0.01 ppm; for trihalo compounds containing at least two bromine atoms. \*

CEL TWA: 1.0 ppm; for dibromo-compounds \*

CEL TWA: 0.1 ppm; for unsaturated monobromo compounds \*

CEL TWA: 0.001 ppm; for unsaturated dihalo compounds containing at least 1 bromine atom \*

\* Exxon

» dusts not otherwise classified, containing no asbestos and < 1% crystalline silica

ES TWA: 10 mg/m<sup>3</sup> inspirable dust

TLV TWA: 10 mg/m<sup>3</sup> total dust

TLV TWA: 3 mg/m<sup>3</sup> respirable particulate

Inspirable dust concentrations in a worker's breathing zone should be collected and measured in accordance with AS3640. Sampling of the Respirable dust fraction requires cyclone separator devices (elutriators) and procedures to comply with AS2985.

NAPHTHA PETROLEUM, LIGHT ALIPHATIC SOLVENT:

» 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.

Odour threshold: 0.25 ppm.

The TLV-TWA is protective against ocular and upper respiratory tract irritation and is recommended for bulk handling of gasoline based on calculations of hydrocarbon content of gasoline vapour. A STEL is recommended to prevent mucous membrane and ocular irritation and prevention of acute depression of the central nervous system. Because of the wide variation in molecular weights of its components, the conversion of ppm to mg/m<sup>3</sup> is approximate. Sweden recommends hexane type 10

limits of 100 ppm and heptane and octane type limits of 300 ppm. Germany does not assign a value because of the widely differing compositions and resultant differences in toxic properties.

Odour Safety Factor (OSF)

OSF=0.042 (gasoline).

for petroleum distillates:

CEL TWA: 500 ppm, 2000 mg/m<sup>3</sup> (compare OSHA TWA).

REL TWA: 370 ppm [SHELL]

HEPTANE:

» for heptane (all isomers)

The TLV-TWA is protective against narcotic and irritant effects which are greater than those of pentane or n-hexane but less than those of octane. The TLV-TWA applies to all isomers.

Inhalation by humans of 1000 ppm for 6 minutes produced slight dizziness. Higher concentrations for shorter periods produce marked vertigo, incoordination and hilarity. Signs of central nervous system depression occur in the absence of mucous membrane irritation. Brief exposures to high levels (5000 ppm for 4 minutes) produce nausea, loss of appetite and a "gasoline-like" taste in the mouth that persists for many hours after exposure ceases.

N-HEXANE:

» For n-hexane:

Odour Threshold Value: 65 ppm

NOTE: Detector tubes for n-hexane, measuring in excess of 100 ppm, are available commercially.

Occupational polyneuropathy may result from exposures as low as 500 ppm (as hexane), whilst nearly continuous exposures of 250 ppm have caused neurotoxic effects in animals. Many literature reports have failed to distinguish hexane from n-hexane and on the assumption that the commercial hexane contains 30% n-hexane, a worst case recommendation for TLV is assumed to reduce the risk of peripheral neuropathies (due to the metabolites 2,5-heptanedione and 3,6-octanedione) and other adverse neuropathic effects.

Concurrent exposure to chemicals (including MEK) and drugs which induce hepatic liver oxidative metabolism can reduce the time for neuropathy to appear.

Odour Safety Factor(OSF)

OSF=0.15 (n-HEXANE).

## **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.

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

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 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 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**

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Straw Coloured highly flammable viscous liquid; does not mix with in water.

### **PHYSICAL PROPERTIES**

Liquid.

Does not mix with water.

Molecular Weight: Not Applicable Boiling Range (°C): Not Available

Melting Range (°C): Not Available Specific Gravity (water=1): Not Available

Solubility in water (g/L): Immiscible pH (as supplied): Not Applicable

pH (1% solution): Not Applicable Vapour Pressure (kPa): Not Available

Volatile Component (%vol): Not Available Evaporation Rate: Not Available

Relative Vapour Density (air=1): Not Available Flash Point (°C): <23

Lower Explosive Limit (%): Not Available Upper Explosive Limit (%): Not Available

Autoignition Temp (°C): Not Available Decomposition Temp (°C): Not Available

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

## **Section 11 - TOXICOLOGICAL INFORMATION**

### **POTENTIAL HEALTH EFFECTS**

#### **ACUTE HEALTH EFFECTS**

##### **SWALLOWED**

» There is some evidence to suggest that this material can cause, if swallowed once, irreversible damage of organs.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Not a likely route of entry into the body in commercial or industrial environments. The liquid may produce considerable gastrointestinal discomfort and be harmful or toxic if swallowed. Ingestion may cause nausea, pain and vomiting. Vomit entering the lungs by aspiration can cause inflammation of the lungs, which can lead to death.

##### **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 produces a high level of eye discomfort and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

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**

» There is some evidence to suggest that this material, on a single contact with skin, can cause irreversible damage of organs.

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

This material can cause inflammation of the skin on contact in some persons.

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The material may accentuate any pre-existing dermatitis condition.

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**

» There is some evidence to suggest that this material can cause, if inhaled once, irreversible damage of organs.

There is some evidence to suggest that 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.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and incoordination.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. Vapour is heavier than air and may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

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

Nerve damage can be caused by some non-ring hydrocarbons. Symptoms are temporary, and include weakness, tremors, increased saliva, some convulsions, excessive tears with discolouration and inco-ordination lasting up to 24 hours.

Ketone vapours irritate the nose, throat and mucous membrane. High concentrations depress the central nervous system, causing headache, vertigo, poor concentration, sleep and failure of the heart and breathing. Some ketones can cause multiple nerve disorders, inducing "pins and needles" and weakness in the limbs.

#### **CHRONIC HEALTH EFFECTS**

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

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby.

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

Intentional abuse (glue sniffing) or occupational exposure to toluene can result in chronic habituation. Chronic abuse has caused inco-ordination, tremors of the extremities (due to widespread cerebrum withering), headache, abnormal speech, temporary memory loss, convulsions, coma, drowsiness, reduced colour perception, blindness, nystagmus (rapid, involuntary eye movements), hearing loss leading to deafness and mild dementia. Toluene addicts often display a range of disease phenomena in their nervous systems. Toluene abuse can cause kidney disease but occupational toluene exposures usually do not cause it. Chronic exposure to toluene can damage the heart and the blood, especially causing heartbeat irregularities. High concentrations of toluene can harm the unborn baby and the developing infant.

Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.g. finger, toes with loss of sensation. Symptoms can progress for months even after removal of exposure, and recovery may take years and may not be complete.

#### **Section 12 - ECOLOGICAL INFORMATION**

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

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

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Avoid release to the environment.

Refer to special instructions/ safety data sheets.

#### **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: 3[Y]E (ADG6)

UNDG:

Dangerous Goods Class: 3 Subrisk: None

UN Number: 1133 Packing Group: II

Shipping Name: ADHESIVES containing flammable liquid

### **Air Transport IATA:**

ICAO/IATA Class: 3 ICAO/IATA Subrisk: None

UN/ID Number: 1133 Packing Group: II

Special provisions: A3

Shipping Name: ADHESIVES CONTAINING FLAMMABLE LIQUID

### **Maritime Transport IMDG:**

IMDG Class: 3 IMDG Subrisk: None

UN Number: 1133 Packing Group: II

EMS Number: F-E,S-D Special provisions: 944

Limited Quantities: 5 L Marine Pollutant: Not Determined

Shipping Name: ADHESIVES containing flammable liquid

## **Section 15 - REGULATORY INFORMATION**

**POISONS SCHEDULE: NZS3**

### **REGULATIONS**

No regulations applicable

## **Section 16 - OTHER INFORMATION**

### **INGREDIENTS WITH MULTIPLE CAS NUMBERS**

Ingredient Name CAS

heptane 142- 82- 5, 31394- 54- 4

### **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.

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Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for the reproductive noobserved-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 Endpoint CR Adeq

TLV

toluene 9.6 mg/m<sup>3</sup> 10 D NA -

n- hexane 176 mg/m<sup>3</sup> 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 timeweighted 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

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