

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 1 of 20

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

SEA200 EPICLAD ADHESIVE

SYNONYMS

Manufacturer's Code: SEA200

PROPER SHIPPING NAME

ADHESIVES

PRODUCT USE

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. Contact Adhesive for Epiclad Rubber.

SUPPLIER

Company: CRC Industries New Zealand Ltd
Address:
PO Box 58-121
Greenmount
Auckland,
NZL
Telephone: +64 9 274 5710
Fax: +64 9 274 9696

Company: CRC Industries New Zealand Ltd
Address:
10 Waionaru Road
East Tamaki
Auckland,
NZL

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

Highly flammable.
Harmful by inhalation and if swallowed.
Irritating to eyes and skin.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
HARMFUL-May cause lung damage if swallowed.
Vapours may cause drowsiness and dizziness.

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 2 of 20

Section 2 - HAZARDS IDENTIFICATION ...

SAFETY

Keep away from sources of ignition. No smoking.
Keep container in a well ventilated place.
Avoid exposure - obtain special instructions before use.
Do not empty into drains.
To clean the floor and all objects contaminated by this material, use water and detergent.
Keep container tightly closed.
Keep away from food, drink and animal feeding stuffs.
Take off immediately all contaminated clothing.
In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
If you feel unwell contact Doctor or Poisons Information Centre. (Show the label if possible).

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
brominated butyl rubber	68441-14-5	0-6
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, colourants and additives		0-15

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.

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 3 of 20

Section 4 - FIRST AID MEASURES ...

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

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

INHALED

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

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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 4 of 20

Section 4 - FIRST AID MEASURES ...

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.
- 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.
- When any large container (including road and rail tankers) is involved in a fire,

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 5 of 20

Section 5 - FIRE FIGHTING MEASURES ...

consider evacuation by 500 metres in all directions.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are highly flammable.
- Severe fire hazard when exposed to heat, flame and/or oxidisers.
- Vapour may travel a considerable distance to source of ignition.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include
carbon dioxide (CO₂)

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

3[Y]E

Personal Protective Equipment

PERSONAL PROTECTION EQUIPMENT

Breathing apparatus.

Chemical splash suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb small quantities with vermiculite or other absorbent material.
- Wipe up.
- Collect residues in a flammable waste container.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.

continued...

SEA200 EPICLAD ADHESIVE

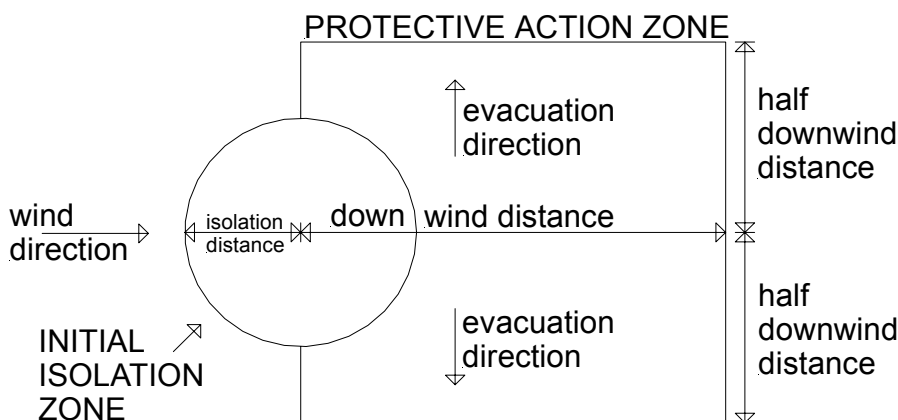
ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 6 of 20

Section 6 - ACCIDENTAL RELEASE MEASURES ...

- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse /absorb vapour.
- Contain spill with sand, earth or vermiculite.
- Use only spark-free shovels and explosion proof equipment.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	25 metres
Downwind Protection Distance	300 metres
IERG Number	14

FOOTNOTES

- 1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This 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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 7 of 20

Section 6 - ACCIDENTAL RELEASE MEASURES ...

less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".

LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 128 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

EMERGENCY RESPONSE PLANNING GUIDLINES (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 1000 ppm

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

toluene 300 ppm

other than mild, transient adverse effects

without perceiving a clearly defined odour is:

toluene 50 ppm

American Industrial Hygiene Association (AIHA)

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.

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 8 of 20

Section 7 - HANDLING AND STORAGE ...

- 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

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.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 9 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

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

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of vapour components/concentrations:

Composite Exposure Standard for Mixture (TWA) (mg/m^3): 383.1831 mg/m^3

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m^3 Mixture Conc: (%)

Component	Breathing zone (ppm)	Breathing Zone (mg/m^3)	Mixture Conc (%)
cyclohexane		121.0052	30.0
brominated butyl rubber		24.2010	6.0
n-hexane	2.24	8.0670	2.0
mixed hexanes aliphatic hydrocarbo	10.31	36.3016	9.0
toluene	31.68	121.0052	30.0
acetone	11.88	28.2345	7.0
heptane	4.92	20.1675	5.0
naphtha petroleum, light aliphatic	6.05	24.2010	6.0

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 10 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

literature search for reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits.

Ingredient	ORG	UF	Endpoint	CR	TLV Adeq
toluene	9.6 mg/m ³	10	D	NA	-
n-hexane	176 mg/m ³	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)

INGREDIENT DATA

TOLUENE:

TLV TWA: 50 ppm Skin;A4;BEI [ACGIH]

PEL: 8hr TWA 200 ppm ; Ceiling Conc: 300ppm ; Max excursion: 500 ppm for 10 minutes [OSHA Z2]

ES TWA: 50 ppm, 191 mg/m³; STEL 150 ppm, 574 mg/m³ SKIN

TLV TWA: 50 ppm, 188 mg/m³ SKIN A4

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans

OES TWA: 50 ppm, 191 mg/m³; STEL: 150 ppm, 574 mg/m³ SKIN

MAK value: 50 ppm, 190 mg/m³

MAK Category II Peak Limitation: For substances with systemic effects and with a half-life in humans ranging from two hours to shift-length.

Allows excursions of 5 times the MAK value, for 30 minutes (on average), twice per shift.

MAK Group C: There is no reason to fear risk of damage to the developing embryo when MAK and BAT values are observed.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany

IDLH Level: 500 ppm

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

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

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.

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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 11 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

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.

CYCLOHEXANE:

TLV TWA: 100 ppm [ACGIH]

PEL TWA: 300 ppm, 1050 mg/m³ [OSHA Z1]

TLV TWA: 100 ppm

ES TWA: 100 ppm, 350 mg/m³; STEL 300 ppm, 1050 mg/m³

OES TWA: 100 ppm, 350 mg/m³; STEL: 300 ppm, 1050 mg/m³

MAK value: 200 ppm, 700 mg/m³

MAK Category II Peak Limitation: For substances with systemic effects and with a half-life in humans of less than two hours.

Allows excursions of 2 times the MAK value, for 30 minutes (on average), four times per shift.

MAK Group IIc: Substances with MAK Values but no pregnancy risk group classification. These are substances which have been investigated but for which no information regarding possible damage to the foetus/embryo was found. Mention calls attention to the absence of adequate data.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany

Odour Threshold Value: 784 ppm (detection)

IDLH Level: 1300 ppm

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.

MIXED HEXANES ALIPHATIC HYDROCARBON SOLVENT:

ES TWA: 50 ppm, 176 mg/m³ (as n-hexane)

TLV TWA: 50 ppm, 176 mg/m³ SKIN (as n-hexane)

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.

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

IDLH Level : 5000 ppm

for alkanes (C5-C8)

CEL TWA: 350 mg/m³ (10 hours); STEL: 1800 mg/m³ (15 minutes) - NIOSH

ACETONE:

TLV TWA: 500 ppm A4; BEI [ACGIH]

TLV STEL: 750 ppm A4; BEI [ACGIH]

PEL TWA: 1000 ppm, 2400 mg/m³ [OSHA Z1]

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 12 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

TLV TWA: 500 ppm, 1188 mg/m³; STEL: 750 ppm, 1782 mg/m³ A4
NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans
ES TWA: 500 ppm, 1185 mg/m³; STEL: 1000 ppm, 2375 mg/m³
OES TWA: 750 ppm, 1810 mg/m³; STEL: 1500 ppm, 3620 mg/m³
NIOSH REL TWA: 250 ppm
MAK Value: 500 ppm, 1200 mg/m³
IDLH Level: 2500 ppm (lower explosive limit)
MAK Category I Peak Limitation: For local irritants Allows excursions of twice the MAK value for 5 minutes at a time, 8 times per shift.
MAK Group IIc: Substances with MAK Values but no pregnancy risk group classification. These are substances which have been investigated but for which no information regarding possible damage to the foetus/embryo was found. Mention calls attention to the absence of adequate data.
MAK values, and categories and groups are those recommended within the Federal Republic of Germany
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.

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.

BROMINATED BUTYL RUBBER:

TLV TWA: 10 mg/m³ (Value for particulate matter containing no asbestos and <1% crystalline silica, Inhalable fraction) [ACGIH]

TLV TWA: 3 mg/m³ (Value for particulate matter containing no asbestos and <1% crystalline silica, Respirable fraction) [ACGIH]

Dusts not otherwise classified, as inspirable dust;

ES TWA: 10 mg/m³

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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 13 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

ES TWA: 10 mg/m³ inspirable dust
TLV TWA: 10 mg/m³ total dust
TLV TWA: 3 mg/m³ 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:

REL TWA: 370 ppm [SHELL]
for petroleum distillates:
CEL TWA: 500 ppm, 2000 mg/m³ (compare OSHA TWA)

HEPTANE:

TLV TWA: 400 ppm [ACGIH]
TLV STEL: 500 ppm [ACGIH]
PEL TWA: 500 ppm, 1800 mg/m³ [OSHA Z1]
ES TWA: 400 ppm, 1640 mg/m³; STEL: 500 ppm, 2050 mg/m³
TLV TWA: 400 ppm, 1640 mg/m³; STEL: 500 ppm, 2050 mg/m³
MAK value: 500 ppm, 2085 mg/m³
MAK Category I Peak Limitation: For local irritants Allows excursions of twice the MAK value for 5 minutes at a time, 8 times per shift.
MAK Group IIc: Substances with MAK Values but no pregnancy risk group classification. These are substances which have been investigated but for which no information regarding possible damage to the foetus/embryo was found. Mention calls attention to the absence of adequate data.
MAK values, and categories and groups are those recommended within the Federal Republic of Germany
IDLH Level: 5000 ppm
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:

TLV TWA: 500 ppm [ACGIH]
TLV STEL: 1000 ppm [ACGIH]
TLV TWA: 50 ppm Skin;BEI [ACGIH]
PEL TWA: 500 ppm, 1800 mg/m³ [OSHA Z1]
TLV TWA: 50 ppm, 176 mg/m³ SKIN
ES TWA: 20 ppm, 72 mg/m³
OES TWA: 20 ppm, 72 mg/m³
MAK value: 50 ppm, 180 mg/m³
MAK Category II Peak Limitation: For substances with systemic effects and with a half-life in humans of less than two hours.
Allows excursions of 2 times the MAK value, for 30 minutes (on average), four times per shift.
MAK Group C: There is no reason to fear risk of damage to the developing embryo when MAK and BAT values are observed.

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 14 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

MAK values, and categories and groups are those recommended within the Federal Republic of Germany

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.

Odour Threshold Value: 65 ppm

IDLH Level: 1100 ppm (lower explosive limit)

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.

PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

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.

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the computer-generated selection:

Substance

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 15 of 20

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

toluene	
cyclohexane	
acetone	
heptane	
n-hexane	
VITON	B
PVA	B
NITRILE+PVC	C
NITRILE	C
NEOPRENE	C
PVC	C
BUTYL/NEOPRENE	C
NATURAL RUBBER	C

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

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.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Blue to greenish highly flammable viscous liquid; does not mix with in water.

PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Molecular Weight: Not Applicable
Melting Range (°C): Not Available
Solubility in water (g/L): Immiscible
pH (1% solution): Not Applicable
Volatile Component (%vol): Not Available
Relative Vapour Density (air=1): Not Available

Boiling Range (°C): Not Available
Specific Gravity (water=1): Not Available
pH (as supplied): Not Applicable
Vapour Pressure (kPa): Not Available
Evaporation Rate: Not Available
Flash Point (°C): <23

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 16 of 20

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ...

Lower Explosive Limit (%): Not Available
Autoignition Temp (°C): Not Available
State: Liquid

Upper Explosive Limit (%): Not Available
Decomposition Temp (°C): Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

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

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

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.

SKIN

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

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 17 of 20

Section 11 - TOXICOLOGICAL INFORMATION ...

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.

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 narcosis, drowsiness, reduced alertness, loss of reflexes, lack of coordination 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 inco-ordination.

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 that human exposure to the material may result in developmental toxicity. This evidence is based on animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS] Intentional abuse (glue sniffing) or occupational exposure to

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 18 of 20

Section 11 - TOXICOLOGICAL INFORMATION ...

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.

SEA200 Epiclad Adhesive

Not available. Refer to individual constituents.
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

TOLUENE:

TOXICITY

Oral (human) LDLo: 50 mg/kg
Oral (rat) LD50: 636 mg/kg
Inhalation (human) TCLo: 100 ppm
Inhalation (man) TCLo: 200 ppm
Inhalation (rat) LC50: > 26700 ppm/1h
Dermal (rabbit) LD50: 12124 mg/kg
Reproductive effector in rats

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.

IRRITATION

Skin (rabbit): 20 mg/24h-moderate
Skin (rabbit): 500 mg - moderate
Eye (rabbit): 0.87 mg - mild
Eye (rabbit): 2 mg/24h - SEVERE
Eye (rabbit): 100 mg/30sec - mild

CYCLOHEXANE:

TOXICITY

Oral(rat) LD50: 12705 mg/kg
Bacteria mutagen

IRRITATION

Skin(rabbit): 1548 mg/48hr - mild

MIXED HEXANES ALIPHATIC HYDROCARBON SOLVENT:

TOXICITY

Oral (rat) LD50: 28710 mg/kg
Inhalation (human) TCLo: 190 ppm/8W
Inhalation (rat) LD50: 48000 ppm/4h

IRRITATION

Eye(rabbit): 10 mg - mild

ACETONE:

TOXICITY

Oral (man) TDLo: 2857 mg/kg
Oral (rat) LD50: 5800 mg/kg
Inhalation (human) TCLo: 500 ppm
Inhalation (man) TCLo: 12000 ppm/4 hr
Inhalation (man) TCLo: 10 mg/m³/6 hr
Inhalation (rat) LC50: 50100 mg/m³/8 hr
LD50: 20000 mg/kg

IRRITATION

Eye (human): 500 ppm - irritant
Eye (rabbit): 3.95 mg - SEVERE
Eye (rabbit): 20mg/24hr -moderate
Skin (rabbit):395mg (open) - mild
Skin (rabbit): 500 mg/24hr - mild

Dermal (rabbit)

BROMINATED BUTYL RUBBER:

No significant acute toxicological data identified in literature search.

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet
Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39
CD 2004/3 Page 19 of 20

Section 11 - TOXICOLOGICAL INFORMATION ...

NAPHTHA PETROLEUM, LIGHT ALIPHATIC SOLVENT:
Not available. Refer to individual constituents.

HEPTANE:
TOXICITY IRRITATION
heptane as n-heptane:
Inhalation (human) TCLo: 1000 ppm/6m Nil reported

N-HEXANE:
TOXICITY IRRITATION
Oral (rat) LD50: 28710 mg/kg Eye(rabbit): 10 mg - mild
Inhalation (human) TCLo: 190 ppm/8W
Inhalation (rat) LD50: 48000 ppm/4h

Section 12 - ECOLOGICAL INFORMATION

Drinking Water Standards:
hydrocarbon total: 10 ug/l (UK max.).
Very toxic to aquatic organisms.
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
May cause long-term adverse effects in the aquatic environment.
DO NOT discharge into sewer or waterways.

Section 13 - DISPOSAL CONSIDERATIONS

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

Section 14 - TRANSPORTATION INFORMATION



Shipping Name:
ADHESIVES
Dangerous Goods Class: 3
UN/NA Number: 1133
ADR Number: 33
Packing Group: II

continued...

SEA200 EPICLAD ADHESIVE

ChemWatch Material Safety Data Sheet

Issue Date: Wed 20-Oct-2004

CHEMWATCH 4823-39

CD 2004/3 Page 20 of 20

Section 14 - TRANSPORTATION INFORMATION ...

Labels Required: flammable liquid

Additional Shipping Information:

International Transport Regulations:

IMO: 3

HAZCHEM

3[Y]E

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

NZS3

REGULATIONS

No data available for toluene as (CAS: 108-88-3). (CAS: 110-82-7).
(CAS: 64742-89-8). (CAS: 67-64-1). (CAS: 68441-14-5). (CAS:
64742-89-8). (CAS: 142-82-5). (CAS: 110-54-3).

Section 16 - OTHER INFORMATION

This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.

Issue Date: Wed 20-Oct-2004

Print Date: Wed 20-Oct-2004