Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
KBS FR CAULK

PRODUCT USE
■ Used according to manufacturer's directions.
Fire protection.

SUPPLIER
Company: Antec Engineering
Address:
9 Chicago Avenue
Blacktown
NSW, 2148
AUS
Telephone: +61 2 9622 9622
Fax: +61 2 9622 9199

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

POISONS SCHEDULE
None

RISK

Risk Codes	Risk Phrases
R52/53	■ Harmful to aquatic organisms may cause long- term adverse effects in the aquatic environment.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
paraffinic distillate, heavy, solvent- refined (severe)	64741-88-4.	<1
tricresyl phosphate	1330-78-5	<1
triphenyl phosphate	115-86-6	<1
cresyldiphenyl phosphate	26444-49-5	<1
phosphoric acid, bis(methylphenyl) phenyl ester		<1
ingredients nonhazardous		>60

Section 4 - FIRST AID MEASURES

SWALLOWED
■ - Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

continued...

EYE
■ If this product comes in contact with eyes:
- Wash out immediately with water.
- If irritation continues, 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

EXTINGUISHING MEDIA
■ - There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

FIRE FIGHTING
■ - Use water delivered as a fine spray to control fire and cool adjacent area.
- 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.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
■ - Non combustible.
- Not considered a significant fire risk, however containers may burn.

FIRE INCOMPATIBILITY
■ None known.

HAZCHEM
None

PERSONAL PROTECTION

Glasses:	Gloves:	Respirator:
Chemical goggles.	When handling larger quantities:	Type A- P Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
■ - Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Wear impervious gloves and safety goggles.
- Trowel up/scrape up.
- Place spilled material in clean, dry, sealed container.
- Flush spill area with water.

continued...

MAJOR SPILLS
■ Minor hazard.
- Clear area of personnel.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment as required.
- Prevent spillage from entering drains or water ways.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.
- Wash area and prevent runoff into drains or waterways.
- If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
■ - Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

SUITABLE CONTAINER
■ - Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
■ None known.

STORAGE REQUIREMENTS
■ - Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.
Store at 5-30 degC.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m³
Australia Exposure Standards	paraffinic distillate, heavy, solvent-refined (severe) (Oil mist, refined mineral)	5
Australia Exposure Standards	triphenyl phosphate (Triphenyl phosphate)	3

The following materials had no OELs on our records

continued...

• tricresyl phosphate: CAS:1330- 78- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
triphenyl phosphate	1, 000	
cresyldiphenyl phosphate		250 [Unch]

MATERIAL DATA

KBS FR CAULK:

None assigned.

PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE):

■ Human exposure to oil mist alone has not been demonstrated to cause health effects except at levels above 5 mg/m3 (this applies to particulates sampled by a method that does not collect vapour). It is not advisable to apply this standard to oils containing unknown concentrations and types of additive.

TRICRESYL PHOSPHATE:

■ Exposure to TOCP causes central and peripheral neuropathies with paralysis of the distal muscles of the lower and upper extremities.

Air concentrations between 0.55 and 1.7 mg/m3 have been associated with polyneuritis, reduced cholinesterase activity has been related to air concentrations of 0.27 - > 3 mg/m3.

No exposure limits set by NOHSC or ACGIH.

CEL TWA: 0.1 mg/m3 [compare OEL TWA (Poland): 0.1 mg/m3]

TRIPHENYL PHOSPHATE:

■ 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.

Triphenyl phosphate (TPP) is a cholinesterase inhibitor in animals although no evidence of neurological disease or other abnormalities have been identified in workers exposed to TPP at a time-weighted average of 3.5 mg/m3 for an average of 7.4 years.

CRESYLDIPHENYL PHOSPHATE:

■ No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION

continued...

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 general protective gloves, eg. light weight rubber gloves.

OTHER
■ No special equipment needed when handling small quantities.
OTHERWISE:
- Overalls.
- Barrier cream.
- Eyewash unit.

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

Protection Factor (Min)	Half- Face Respirator	
Full- Face Respirator	10 x ES A- P- - 2	Air- line*
-		A- P- - PAPR- 2
20 x ES A- P- - 3	- 20+ x ES	-

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

^ - Full-face.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
■ General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Grey paste with a characteristic odour; mixes with water.

PHYSICAL PROPERTIES
Mixes with water.

State	Non Slump Paste	Molecular Weight	Not Applicable
Melting Range (℃)	Not Available	Viscosity	Not Available

continued...

Boiling Range (℃)	Not Available	Solubility in water (g/L)	M iscible
Flash Point (℃)	Not Available	pH (1% solution)	Not Availabl e
Decomposition Temp (℃)	Not Available	pH (as supplied)	5- 8
Autoignition Temp (℃)	Not Available	Vapour Pressure (kPa)	Not Available
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.5@20C
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	Not Applicable
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY
■ Product is considered stable and 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
■ The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

EYE
■ Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

SKIN
■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

INHALED
■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, 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.

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

TOXICITY IRRITATION

continued...

Oral (None) LD50: >2000 mg/kg

PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE):
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

■ No significant acute toxicological data identified in literature search.
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.

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

TOXICITY	IRRITATION
Oral (human) TDLo: 70 mg/kg/14d	Skin (rabbit): 500 mg - Mild
Oral (rat) LD50: 5190 mg/kg	Eye (rabbit): 500 mg/24h - Mild

■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

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

TOXICITY	IRRITATION
Oral (human) LDLo: 50 mg/kg*	Nil Reported
Oral (rat) LD50: 3500 mg/kg [Genium]*	
Oral (rat) LDLo: 3000 mg/kg*	

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

TOXICITY	IRRITATION
Oral (rat) LD50: 6400 mg/kg	Nil Reported
Oral (mouse) LD50: 6400- 12800 mg/kg	
Oral (g.pig) LD50: 1600- 3200 mg/kg	

SKIN

cresyldiphenyl phosphate	Australia Exposure Standards - Skin	Notes	Sk

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

CRESYLDIPHENYL PHOSPHATE:
TRICRESYL PHOSPHATE:
■ The principal problems of phosphate contamination of the environment relates to eutrophication processes in lakes and ponds. Phosphorus is an essential plant nutrient and is usually the limiting nutrient for blue-green algae. A lake undergoing eutrophication shows a rapid growth of algae in surface waters. Planktonic algae cause turbidity and flotation films. Shore algae cause ugly muddying, films and damage to reeds. Decay of these algae causes oxygen depletion in the deep water and shallow water near the shore. The process is self-perpetuating because anoxic conditions at the sediment/water interface causes the release of more adsorbed phosphates from the sediment. The growth of algae produces undesirable effects on the treatment of water for drinking purposes, on fisheries, and on the use of lakes for recreational purposes.

continued...

TRICRESYL PHOSPHATE:
TRIPHENYL PHOSPHATE:
KBS FR CAULK:
■ 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.

TRICRESYL PHOSPHATE:
TRIPHENYL PHOSPHATE:
PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE):
■ DO NOT discharge into sewer or waterways.

TRICRESYL PHOSPHATE:
KBS FR CAULK:
■ Harmful to aquatic organisms.

KBS FR CAULK:
■ May cause long-term adverse effects in the aquatic environment.

PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE):

TRICRESYL PHOSPHATE:
Marine Pollutant: Severe
BCF: 928-1589
Toxicity Fish: LC50(96)7000-8700ppm

TRIPHENYL PHOSPHATE:
■ Fish LC50 (96hr.) (mg/l): 95- 290

■ Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
■ For organophosphorus compounds:
Environmental fate:
Organophosphorus compounds and pesticides are relatively non-persistent in the environment with half-lives ranging from hours to several weeks or months. Only rarely are pesticides found in crops beyond the growing season during which they are applied. Chemical or photochemical mechanisms may produce a leaving group which is easily degraded. As a rule these compounds do not represent a serious problem as contaminants of soil and water. Breakdown products are usually non-toxic being composed of low-molecular weight, volatile molecules that are easily degraded and utilised by micro-organisms.
Being esters they are also susceptible to hydrolysis. Most organophosphorus pesticides are stable to acid pHs but under alkaline conditions hydrolysis is rapid with the breakdown rate increasing 10-fold for each pH unit above 7. An increase of 10 deg. C of temperature will increase the hydrolysis rate approximately 4-fold. When these compounds are present in the soil their disappearance is affected by their interaction with the physical characteristics and water content of the soil, and the microflora present.
In certain types of soil strong binding may make them unavailable for biological decomposition. In such soils even running water produces little movement and thus minimal contamination of water supplies. Less tightly bound substances are similarly unlikely to produce substantial contamination because of rapid breakdown.
Metallic ions in the soil interact with organophosphorus esters through hydrogen linkage whilst increased organic matter facilitates further binding.
In general only minute amounts of residue and their breakdown products are found in natural water systems.
In soil however there is a greater likelihood of the presence and buildup of toxic residues.
Half-life (hr) H2O surface water: 31.2
Half-life (hr) sediment: 48-192

CRESYLDIPHENYL PHOSPHATE:
Kow 31622
log Kow 3.83
BCF 1548.82

continued...

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
tricresyl phosphate	HIGH		LOW	LOW
triphenyl phosphate	HIGH		LOW	MED
cresyldiphenyl phosphate	HIGH		LOW	LOW

Section 13 - DISPOSAL CONSIDERATIONS

■ - Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
□ None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE
None

REGULATIONS
Regulations for ingredients

paraffinic distillate, heavy, solvent-refined (severe) (CAS: 64741-88-4) is found on the following regulatory lists;
"Australia Hazardous Substances","Australia High Volume Industrial Chemical List (HVICL)","Australia Inventory of Chemical Substances (AICS)","OECD Representative List of High Production Volume (HPV) Chemicals"

tricresyl phosphate (CAS: 1330-78-5) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)","IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk","International Council of Chemical Associations (ICCA) - High Production Volume List","OECD Representative List of High Production Volume (HPV) Chemicals","OSPAR Substances removed from the List of Substances of Possible Concern"

triphenyl phosphate (CAS: 115-86-6) is found on the following regulatory lists;
"Australia Exposure Standards","Australia Inventory of Chemical Substances (AICS)","International Council of Chemical Associations (ICCA) - High Production Volume List","OECD Representative List of High Production Volume (HPV) Chemicals"

cresyldiphenyl phosphate (CAS: 26444-49-5) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)","IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk","OECD Representative List of High Production Volume (HPV) Chemicals"

No data for KBS FR Caulk (CW: 4732-12)

continued...

Section 16 - OTHER INFORMATION

Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
tricresyl phosphate	1330- 78- 5	Xn Carc3; R40 Mut3; R68 Repr3; R63 N R50/53
triphenyl phosphate	115- 86- 6	Xn Mut3; R68 Repr3; R63 N R50/53
cresyldiphenyl phosphate	26444- 49- 5	Xn Mut3; R68 Repr3; R63 N R50/53

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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continued...

This is the end of the MSDS.