Expanded PAH Mix

Novachem Pty Ltd

Chemwatch Hazard Alert Code: **4**

Version No: **2.4**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **16/07/2023**
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SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	Expanded PAH Mix
Synonyms	Z-014G-FL
Proper shipping name	FLAMMABLE LIQUID, TOXIC, N.O.S. (contains Dichloromethane and benzene)
Other means of identification	Z-014G-FL

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Laboratory Chemical Reference Material

Details of the manufacturer or supplier of the safety data sheet

Registered company name	**Novachem Pty Ltd**	**Novachem Pty Ltd**
Address	25 Crissane Road, Heidelberg West Victoria 3081 Australia	25 Crissane Road, Heidelberg West Victoria 3081 Australia
Telephone	+61384151255	+61384151255
Fax	+61386250088	+61386250088
Website	www.novachem.com.au	www.novachem.com.au
Email	novachem@novachem.com.au	novachem@novachem.com.au

Emergency telephone number

Association / Organisation	**Victorian Poisons Information Centre**	**Victorian Poisons Information Centre**
Emergency telephone numbers	13 11 26	13 11 26
Other emergency telephone numbers	Not Available	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification [1]	Flammable Liquids Category 2, Acute Toxicity (Oral) Category 3, Aspiration Hazard Category 1, Acute Toxicity (Dermal) Category 3, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2A, Acute Toxicity (Inhalation) Category 3, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Germ Cell Mutagenicity Category 1A, Carcinogenicity Category 1A, Reproductive Toxicity Category 1A, Specific Target Organ Toxicity - Single Exposure Category 1, Specific Target Organ Toxicity - Repeated Exposure Category 1, Hazardous to the Aquatic Environment Acute Hazard Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 2
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
Signal word	**Danger**

Hazard statement(s)

H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H304	May be fatal if swallowed and enters airways.

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H311	Toxic in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H370	Causes damage to organs.
H372	Causes damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe mist/vapours/spray.
P264	Wash all exposed external body areas thoroughly after handling.

Precautionary statement(s) Response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P331	Do NOT induce vomiting.
P308+P311	IF exposed or concerned: Call a POISON CENTER/doctor/physician/first aider.
P330	Rinse mouth.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
83-32-9	0.2	acenaphthene
208-96-8	0.2	acenaphthylene
120-12-7	0.2	anthracene
56-55-3	0.2	benz[a]anthracene
50-32-8	0.2	benz[a]pyrene
205-99-2	0.2	benzo[b]fluoranthene
191-24-2	0.2	benzo[ghi]perylene
207-08-9	0.2	benzo[k]fluoranthene
218-01-9	0.2	chrysene
53-70-3	0.2	dibenz[a,h]anthracene
206-44-0	0.2	fluoranthene
86-73-7	0.2	fluorene
193-39-5	0.2	indeno[1,2,3-cd]pyrene
91-20-3	0.2	naphthalene
85-01-8	0.2	phenanthrene
129-00-0	0.2	pyrene
90-12-0	0.2	1-methylnaphthalene
91-57-6	0.2	2-methylnaphthalene
75-09-2*	48.2	Dichloromethane
71-43-2	48.2	benzene
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*	

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SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▸ Immediately hold eyelids apart and flush the eye continuously with 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. ▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ▸ Transport to hospital or doctor without delay. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▸ Quickly remove all contaminated clothing, including footwear. ▸ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▸ Transport to hospital, or doctor.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor, without delay.
Ingestion	▸ 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. ▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

Indication of any immediate medical attention and special treatment needed

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For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO2 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury 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 (adrenalin) 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 of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology]

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

for naphthalene intoxication: Naphthalene requires hepatic and microsomal activation prior to the production of toxic effects. Liver microsomes catalyse the initial synthesis of the reactive 1,2-epoxide intermediate which is subsequently oxidised to naphthalene dihydrodiol and alpha-naphthol. The 2-naphthoquinones are thought to produce haemolysis, the 1,2-naphthoquinones are thought to be responsible for producing cataracts in rabbits, and the glutathione-adducts of naphthalene-1,2-oxide are probably responsible for pulmonary toxicity. Suggested treatment regime:

- Induce emesis and/or perform gastric lavage with large amounts of warm water where oral poisoning is suspected.
- Instill a saline cathartic such as magnesium or sodium sulfate in water (15 to 30g).
- Demulcents such as milk, egg white, gelatin, or other protein solutions may be useful after the stomach is emptied but oils should be avoided because they promote absorption.
- If eyes/skin contaminated, flush with warm water followed by the application of a bland ointment.
- Severe anaemia, due to haemolysis, may require small repeated blood transfusions, preferably with red cells from a non-sensitive individual.
- Where intravascular haemolysis, with haemoglobinuria occurs, protect the kidneys by promoting a brisk flow of dilute urine with, for example, an osmotic diuretic such as mannitol. It may be useful to alkalinise the urine with small amounts of sodium bicarbonate but many researchers doubt whether this prevents blockage of the renal tubules.
- Use supportive measures in the case of acute renal failure. GOSSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products, 5th Ed.

For acute and short term repeated exposures to methanol:

· Toxicity results from accumulation of formaldehyde/formic acid.
· Clinical signs are usually limited to CNS, eyes and GI tract Severe metabolic acidosis may produce dyspnea and profound systemic effects which may become intractable. All symptomatic patients should have arterial pH measured. Evaluate airway, breathing and circulation.
· Stabilise obtunded patients by giving naloxone, glucose and thiamine.
· Decontaminate with Ipecac or lavage for patients presenting 2 hours post-ingestion. Charcoal does not absorb well; the usefulness of cathartic is not established.
· Forced diuresis is not effective; haemodialysis is recommended where peak methanol levels exceed 50 mg/dL (this correlates with serum bicarbonate levels below 18 mEq/L).
· Ethanol, maintained at levels between 100 and 150 mg/dL, inhibits formation of toxic metabolites and may be indicated when peak methanol levels exceed 20 mg/dL. An intravenous solution of ethanol in D5W is optimal.
· Folate, as leucovorin, may increase the oxidative removal of formic acid. 4-methylpyrazole may be an effective adjunct in the treatment. 8.Phenytoin may be preferable to diazepam for controlling seizure.

[Ellenhorn Barceloux: Medical Toxicology]

Methanol poisoning can be treated with fomepizole, or if unavailable, ethanol. Both drugs act to reduce the action of alcohol dehydrogenase on methanol by means of competitive inhibition. Ethanol, the active ingredient in alcoholic beverages, acts as a competitive inhibitor by more effectively binding and saturating the alcohol dehydrogenase enzyme in the liver, thus blocking the binding of methanol. Methanol is excreted by the kidneys without being converted into the very toxic metabolites formaldehyde and formic acid. Alcohol dehydrogenase instead enzymatically converts ethanol to acetaldehyde, a much less toxic organic molecule. Additional treatment may include sodium bicarbonate for metabolic acidosis, and hemodialysis or hemodiafiltration to remove methanol and formate from the blood. Folinic acid or folic acid is also administered to enhance the metabolism of formate.

BIOLOGICAL EXPOSURE INDEX - BEI

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

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

SECTION 5 Firefighting measures

Extinguishing media

Special hazards arising from the substrate or mixture

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

Advice for firefighters

Fire Fighting	‣ Alert Fire Brigade and tell them location and nature of hazard. ‣ Wear breathing apparatus plus protective gloves in the event of a fire. ‣ Prevent, by any means available, spillage from entering drains or water courses. ‣ Use fire fighting procedures suitable for surrounding area.
Fire/Explosion Hazard	carbon dioxide (CO_2) formaldehyde other pyrolysis products typical of burning organic material. May emit poisonous fumes.
HAZCHEM	•3WE

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	‣ Remove all ignition sources. ‣ Clean up all spills immediately.

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	▸ Avoid breathing vapours and contact with skin and eyes. ▸ Control personal contact with the substance, by using protective equipment.
Major Spills	▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus. ▸ Prevent, by all means available, spillage from entering drains or water courses.

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

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	The conductivity of this material may make it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid. ▸ Containers, even those that have been emptied, may contain explosive vapours. ▸ Do NOT cut, drill, grind, weld or perform similar operations on or near containers. · Electrostatic discharge may be generated during pumping - this may result in fire. · Ensure electrical continuity by bonding and grounding (earthing) all equipment. · Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<=1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). · Avoid splash filling. ▸ 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.
Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ Store in a cool, dry, well-ventilated area. ▸ Store away from incompatible materials and foodstuff containers.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Lined metal can, lined metal pail/ can. ▸ Plastic pail. ▸ Polyliner drum. ▸ Packing as recommended by manufacturer. For low viscosity materials ▸ Drums and jerricans must be of the non-removable head type. ▸ 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) and solids (between 15 C deg. and 40 deg C.): ▸ Removable head packaging; ▸ Cans with friction closures and ▸ low pressure tubes and cartridges may be used. All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.
Storage incompatibility	Methanol: ▸ reacts violently with strong oxidisers, acetyl bromide, alkyl aluminium salts, beryllium dihydride, bromine, chromic acid, 1-chloro-3,3-difluoro-2-methoxycyclopropene, cyanuric chloride, diethylzinc, isophthaloyl chloride, nitric acid, perchloric acid, potassium-tert-butoxide, potassium sulfur diimide, Raney nickel catalysts, 2,4,6-trichlorotriazine, triethylaluminium, 1,3,3-trifluoro-2-methoxycyclopropene ▸ is incompatible with strong acids, strong caustics, alkaline earth and alkali metals, aliphatic amines, acetaldehyde, benzoyl peroxide, 1,3-bis(di-n-cyclopentadienyl iron)-2-propen-1-one, calcium carbide, chloroform, chromic anhydride, chromium trioxide, dialkylzinc, dichlorine oxide, dichloromethane, ethylene oxide, hypochlorous acid, isocyanates, isopropyl chlorocarbonate, lithium tetrahydroaluminate, magnesium, methyl azide, nitrogen dioxide, palladium, pentafluoroguanidine, perchloryl fluoride, phosphorus pentasulfide, phosphorus trioxide, potassium, tangerine oil, triisobutylaluminium ▸ mixtures with lead perchlorate, sodium hypochlorite are explosive ▸ may react with metallic aluminium at high temperatures ▸ slowly corrodes lead and aluminium ▸ may generate electrostatic charges, due to low conductivity, on flow or agitation ▸ attacks some plastics, rubber and coatings. Static induced flash fires have happened when filling plastic containers with methanol / water solutions with as low as 30% methanol content For alkyl aromatics: The alkyl side chain of aromatic rings can undergo oxidation by several mechanisms. The most common and dominant one is the attack by oxidation at benzylic carbon as the intermediate formed is stabilised by resonance structure of the ring. ▸ Following reaction with oxygen and under the influence of sunlight, a hydroperoxide at the alpha-position to the aromatic ring, is the primary oxidation product formed (provided a hydrogen atom is initially available at this position) - this product is often short-lived but may be stable dependent on the nature of the aromatic substitution; a secondary C-H bond is more easily attacked than a primary C-H bond whilst a tertiary C-H bond is even more susceptible to attack by oxygen ▸ Monoalkylbenzenes may subsequently form monocarboxylic acids; alkyl naphthalenes mainly produce the corresponding naphthalene carboxylic acids. ▸ Oxidation in the presence of transition metal salts not only accelerates but also selectively decomposes the hydroperoxides. ▸ Vigorous reactions, sometimes amounting to explosions, can result from the contact between aromatic rings and strong oxidising agents. ▸ Aromatics can react exothermically with bases and with diazo compounds. Alcohols ▸ are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents. ▸ reacts, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen ▸ react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide,

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pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, triisobutylaluminium
- should not be heated above 49 deg. C. when in contact with aluminium equipment

Benzene:
- reacts violently with iodine pentafluoride.
- hydrogenation to cyclohexane was effected in a fixed bed reactor at 210-230 deg C, but a fall in conversion was apparent; increasing the bed temp by 10 deg C and the hydrogen flow led to a large increase in reaction rate which the interbed cooling coils could not handle; an exotherm to 280 deg C developed, with a hot spot around 600 deg C which bulged the reactor wall.
- ignites in contact with iodine heptafluoride gas
- ignition may occur following addition of a small particle of dioxygenyl tetrafluoroborate (a very powerful oxidant) to small samples at ambient temp caused/ ignition.
- ignites at -78 deg C following addition of a 2% solution dioxygen difluoride in hydrogen fluoride
- ignites following simultaneous contact of sodium peroxide with benzene .
- Avoid storage with reducing agents.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	naphthalene	Naphthalene	10 ppm / 52 mg/m3	79 mg/m3 / 15 ppm	Not Available	Not Available
Australia Exposure Standards	Dichloromethane	Methylene chloride	50 ppm / 174 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	benzene	Benzene	1 ppm / 3.2 mg/m3	Not Available	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
acenaphthene	3.6 mg/m3	40 mg/m3	240 mg/m3
acenaphthylene	10 mg/m3	110 mg/m3	660 mg/m3
anthracene	48 mg/m3	530 mg/m3	3,200 mg/m3
benz[a]anthracene	0.6 mg/m3	120 mg/m3	700 mg/m3
benz[a]pyrene	0.6 mg/m3	120 mg/m3	700 mg/m3
benzo[b]fluoranthene	0.12 mg/m3	1.3 mg/m3	7.9 mg/m3
benzo[ghi]perylene	30 mg/m3	330 mg/m3	2,000 mg/m3
chrysene	0.6 mg/m3	12 mg/m3	69 mg/m3
dibenz[a,h]anthracene	0.093 mg/m3	1 mg/m3	2.9 mg/m3
fluoranthene	8.2 mg/m3	90 mg/m3	400 mg/m3
fluorene	6.6 mg/m3	72 mg/m3	430 mg/m3
indeno[1,2,3-cd]pyrene	1.2 mg/m3	13 mg/m3	79 mg/m3
naphthalene	15 ppm	83 ppm	500 ppm
phenanthrene	5.4 mg/m3	59 mg/m3	360 mg/m3
pyrene	0.15 mg/m3	1.7 mg/m3	110 mg/m3
1-methylnaphthalene	20 mg/m3	61 mg/m3	360 mg/m3
2-methylnaphthalene	9 mg/m3	54 mg/m3	320 mg/m3
Dichloromethane	Not Available	Not Available	Not Available
benzene	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
acenaphthene	Not Available	Not Available
acenaphthylene	Not Available	Not Available
anthracene	Not Available	Not Available
benz[a]anthracene	Not Available	Not Available
benz[a]pyrene	Not Available	Not Available
benzo[b]fluoranthene	Not Available	Not Available
benzo[ghi]perylene	Not Available	Not Available
benzo[k]fluoranthene	Not Available	Not Available
chrysene	Not Available	Not Available
dibenz[a,h]anthracene	Not Available	Not Available
fluoranthene	Not Available	Not Available
fluorene	Not Available	Not Available
indeno[1,2,3-cd]pyrene	Not Available	Not Available
naphthalene	250 ppm	Not Available
phenanthrene	Not Available	Not Available
pyrene	Not Available	Not Available
1-methylnaphthalene	Not Available	Not Available

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Ingredient	Original IDLH	Revised IDLH
2-methylnaphthalene	Not Available	Not Available
Dichloromethane	2,300 ppm	Not Available
benzene	500 ppm	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
acenaphthene	E	≤ 0.01 mg/m³
acenaphthylene	E	≤ 0.01 mg/m³
anthracene	E	≤ 0.01 mg/m³
benz[a]pyrene	D	> 0.01 to ≤ 0.1 mg/m³
chrysene	D	> 0.01 to ≤ 0.1 mg/m³
fluoranthene	E	≤ 0.01 mg/m³
phenanthrene	E	≤ 0.01 mg/m³
pyrene	E	≤ 0.01 mg/m³
1-methylnaphthalene	E	≤ 0.1 ppm
2-methylnaphthalene	E	≤ 0.01 mg/m³
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.
Individual protection measures, such as personal protective equipment	
Eye and face protection	‣ Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure. ‣ Chemical goggles. Whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted. [AS/NZS 1337.1, EN166 or national equivalent] ‣ Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes; these afford face protection.
Skin protection	See Hand protection below
Hands/feet protection	‣ Elbow length PVC gloves **NOTE:** ‣ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ‣ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.
Body protection	See Other protection below
Other protection	‣ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent] ‣ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent] ‣ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely. ‣ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. ‣ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.

Recommended material(s)

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:
Expanded PAH Mix

Material	CPI

Respiratory protection

Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

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TEFLON	A
BUTYL	C
BUTYL/NEOPRENE	C
NATURAL RUBBER	C
NEOPRENE	C
NITRILE	C
NITRILE+PVC	C
PE/EVAL/PE	C
PVA	C
PVC	C
VITON	C
VITON/NEOPRENE	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.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AX-AUS P2	-	AX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AX-AUS / Class 1 P2	-
up to 100 x ES	-	AX-2 P2	AX-PAPR-2 P2 ^

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear Liquid

Physical state	Liquid	**Relative density (Water = 1)**	Not Available
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Available
Flash point (°C)	<23	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	HIGHLY FLAMMABLE.	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	>99
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water	Partly miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7

Continued...

Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. The symptoms of exposure to high vapour concentrations of benzene include confusion, dizziness, tightening of the leg muscles and pressure over the forehead followed by a period of excitement. If exposure continues, the casualty quickly becomes stupefied and lapses into a coma with narcosis. 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. Minor but regular methanol exposures may effect the central nervous system, optic nerves and retinae. Symptoms may be delayed, with headache, fatigue, nausea, blurring of vision and double vision. Continued or severe exposures may cause damage to optic nerves, which may become severe with permanent visual impairment even blindness resulting. **WARNING**: Methanol is only slowly eliminated from the body and should be regarded as a cumulative poison which cannot be made non-harmful [*CCINFO*] Inhalation of naphthalene vapour is linked with headache, loss of appetite, nausea, damage to the eyes and kidneys. According to animal testing, long term exposure may cause excessive weakness and increased salivation, weight loss,difficulty breathing, collapse, and evidence of damage to the skin, liver and lungs. The acute toxicity of inhaled alkylbenzene is best described by central nervous system depression. These compounds may also act as general anaesthetics. Whole body symptoms of poisoning include light-headedness, nervousness, apprehension, a feeling of well-being, confusion, dizziness, drowsiness, ringing in the ears, blurred or double vision, vomiting and sensations of heat, cold or numbness, twitching, tremors, convulsions, unconsciousness, depression of breathing, and arrest. Heart stoppage may result from cardiovascular collapse.
Ingestion	**Toxic effects** may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733) Methanol may produce a burning or painful sensation in the mouth, throat, chest, and stomach. This may be accompanied by nausea, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behaviour, visual disturbance, drowsiness, coma and death. 60-200 ml of methanol is a fatal dose for most adults with as little as 10 ml producing blindness. In massive overdose, liver, kidney, heart and muscle injury have been described. Ingestion of naphthalene and related compounds may produce abdominal cramps with nausea, vomiting, diarrhoea, headache, profuse sweating, listlessness, confusion, and in severe poisonings, coma with or without convulsions. Irritation of the bladder may also occur, producing urgency, painful urination, and the passage of brown or black urine with or without albumin or casts.
Skin Contact	The material may accentuate any pre-existing dermatitis condition Skin contact with the material may produce severe damage to the health of the individual; systemic effects may result following absorption and these may be fatal. Workers sensitised to naphthalene and related compounds show an inflammation of the skin with scaling and reddening. Some individuals show an allergic reaction. Open cuts, abraded or irritated skin should not be exposed to this material 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. There is strong evidence to suggest that this material, on a single contact with skin, can cause very serious, irreversible damage of organs. There is strong evidence to suggest that this material, on a single contact with skin, can cause serious, irreversible damage of organs.
Eye	Methanol is a mild to moderate eye irritant. High vapor concentration or liquid contact with eyes causes irritation, tearing, and burning. Direct contact of the eye with ethanol may cause immediate stinging and burning with reflex closure of the lid and tearing, transient injury of the corneal epithelium and hyperaemia of the conjunctiva. Long term exposure to naphthalene has produced clouding of the lens (cataracts) in workers. 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.
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. There is sufficient evidence to suggest that this material directly causes cancer in humans. There is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited. Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. Ample evidence exists that this material directly causes reduced fertility Ample evidence exists that developmental disorders are directly caused by human exposure to the material. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Polycyclic aromatic hydrocarbons are found in a number of materials such as coal tar, tobacco smoke, petroleum and air pollution. Some substituted derivatives have been identified as extremely liable to cause cancer, especially that of the lung and genito-urinary tract. Long-term exposure to methanol vapour, at concentrations exceeding 3000 ppm, may produce cumulative effects characterised by gastrointestinal disturbances (nausea, vomiting), headache, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, conjunctivitis and clouded or double vision. Liver and/or kidney injury may also result. Animal testing indicates that inhalation of naphthalene may increase the incidence of respiratory tumours and may aggravate chronic inflammation. Chronic exposure to benzene may cause headache, fatigue, loss of appetite and lassitude with incipient blood effects including anaemia and blood changes. Benzene is a myelotoxicant known to suppress bone- marrow cell proliferation and to induce haematologic disorders in humans and animals.

Continued...

Expanded PAH Mix	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
acenaphthene	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 2100 mg/kg[2]	Not Available
acenaphthylene	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 1760 mg/kg[2]	Not Available
anthracene	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >1320 mg/kg[1]	Not Available
	Oral (Mouse) LD50; 4900 mg/kg[2]	
benz[a]anthracene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
benz[a]pyrene	**TOXICITY**	**IRRITATION**
	Not Available	Skin (mouse): 0.014 mg - mild
benzo[b]fluoranthene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
benzo[ghi]perylene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
benzo[k]fluoranthene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
chrysene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
dibenz[a,h]anthracene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
fluoranthene	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 3180 mg/kg[2]	Not Available
	Oral (Rat) LD50: 2000 mg/kg[2]	
fluorene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
indeno[1,2,3-cd]pyrene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
naphthalene	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2500 mg/kg[2]	Eye (rabbit): 100 mg - mild
	Inhalation(Rat) LC50: >0.4 mg/l4h[1]	Skin (rabbit):495 mg (open) - mild
	Oral (Rat) LD50: 490 mg/kg[2]	
phenanthrene	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 700 mg/kg[2]	Not Available
pyrene	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 800 mg/kg[2]	Skin (rabbit): 500 mg/24h - mild
1-methylnaphthalene	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: 1840 mg/kg[2]	Not Available
2-methylnaphthalene	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: 1630 mg/kg[2]	Not Available
Dichloromethane	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[2]	Not Available

Continued...

	Inhalation(Rat) LC50: 76 mg/L4h[2]	
	Oral (Rat) LD50: 1600 mg/kg[2]	
benzene	**TOXICITY**	**IRRITATION**
	dermal (mouse) LD50: 48 mg/kg[2]	Eye (rabbit): 2 mg/24h - SEVERE
	Inhalation(Rat) LC50: 43.767 mg/L4h[1]	Eye: adverse effect observed (irritating)[1]
	Oral (Rat) LD50: 930 mg/kg[2]	SKIN (rabbit):20 mg/24h - moderate
		Skin: adverse effect observed (irritating)[1]
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

Expanded PAH Mix	For polynuclear aromatic hydrocarbons (PAH) such as the benz[a]anthracenes (BA), carcinogenic activity is appreciably influenced by the numbers and positions of methyl and other substituents and hence by the molecular shapes. The planarities and dimensions of methyl-substituted BA and related PAH, including methyl phenanthrenes (MP) which also contain the carcinogenically important bay and K regions, have been compared. BA molecules with substituents well removed from the bay region, including those substituted at 5 or 6 (the K region), are nearly, but not quite, planar, with a mutual inclination of several degrees between A and C rings on each side of the bay region. With one or both bay positions 1 and 12 methyl-substituted, distortion is much greater (A/C up to 29 deg in 1,12-dimethyl BA). For phenanthrenes, the presence of the two methyl substituents in the bay, as in 2,4,5,7-tetra MP, can lead to A/C of 28 deg compared with the very small (2 deg) mutual inclination in 9,10-di MP.
ANTHRACENE	Oral (rat) TDLo: 20000 m g/kg/79w -I Skin (mouse): 0.118 mg - mild Equivocal tumorigen by RTECS criteria
BENZ[A]PYRENE	Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
BENZO[B]FLUORANTHENE	Lung, kidney, skin tumors and tumors at site of application recorded.
BENZO[K]FLUORANTHENE	Tumours at site of application.
CHRYSENE	Target organs in include skin (tumours at site of application).
DIBENZ[A,H]ANTHRACENE	**WARNING:** This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
FLUORANTHENE	Equivocal tumorigen bt RTECS criteria. Tumors at site of application recorded. Based on laboratory and animal testing, exposure to the material may result in irreversible effects and mutations in humans.
NAPHTHALENE	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
PHENANTHRENE	Tumors at site of application. Neoplastic and tumorigenic by RTECS criteria.
PYRENE	Conjunctival irritation, excitement and muscle contraction recorded.
BENZENE	Inhalation (man) TCLo: 150 ppm/1y - I
Expanded PAH Mix & ACENAPHTHENE & ACENAPHTHYLENE & ANTHRACENE & FLUORANTHENE & PHENANTHRENE & PYRENE & 1-METHYLNAPHTHALENE & 2-METHYLNAPHTHALENE	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.
Expanded PAH Mix & 1-METHYLNAPHTHALENE	Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins. Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema. Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.
Expanded PAH Mix & BENZ[A]PYRENE & 1-METHYLNAPHTHALENE & 2-METHYLNAPHTHALENE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.
Expanded PAH Mix & 1-METHYLNAPHTHALENE & 2-METHYLNAPHTHALENE & BENZENE	Data demonstrate that during inhalation exposure,aromatic hydrocarbons undergo substantial partitioning into adipose tissues. Following cessation of exposure, the level of aromatic hydrocarbons in body fats rapidly declines. Thus, the aromatic hydrocarbons are unlikely to bioaccumulate in the body. Selective partitioning of the aromatic hydrocarbons into the non-adipose tissues is unlikely.
ACENAPHTHENE & BENZO[B]FLUORANTHENE & BENZO[GHI]PERYLENE & BENZO[K]FLUORANTHENE & DIBENZ[A,H]ANTHRACENE & INDENO[1,2,3-CD]PYRENE	No significant acute toxicological data identified in literature search.
ACENAPHTHENE & ANTHRACENE & BENZO[GHI]PERYLENE & FLUORANTHENE & FLUORENE & PHENANTHRENE & PYRENE	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.
ANTHRACENE & BENZ[A]PYRENE & NAPHTHALENE & PYRENE & BENZENE	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.

Continued...

ANTHRACENE & BENZO[B]FLUORANTHENE & BENZO[GHI]PERYLENE & BENZO[K]FLUORANTHENE & CHRYSENE & DIBENZ[A,H]ANTHRACENE & FLUORANTHENE & INDENO[1,2,3-CD]PYRENE & PHENANTHRENE & PYRENE	**NOTE:** Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
BENZ[A]ANTHRACENE & BENZO[B]FLUORANTHENE & BENZO[K]FLUORANTHENE & CHRYSENE & INDENO[1,2,3-CD]PYRENE & NAPHTHALENE	**WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.
BENZ[A]ANTHRACENE & BENZ[A]PYRENE & BENZO[B]FLUORANTHENE & BENZO[K]FLUORANTHENE & DIBENZ[A,H]ANTHRACENE & INDENO[1,2,3-CD]PYRENE	Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [*National Toxicology Program: U.S. Dep. of Health & Human Services 2002*]
BENZ[A]PYRENE & BENZENE	**WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**.

Acute Toxicity	✔	**Carcinogenicity**	✔
Skin Irritation/Corrosion	✔	**Reproductivity**	✔
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✔
Mutagenicity	✔	**Aspiration Hazard**	✔

Legend: ✘ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

SECTION 12 Ecological information

Toxicity

Expanded PAH Mix

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

acenaphthene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	254-1270	7
EC50	48h	Crustacea	1.102-1.475mg/l	4
EC50	96h	Algae or other aquatic plants	0.23-1.15mg/l	4
NOEC(ECx)	96h	Crustacea	0.014mg/l	4
LC50	96h	Fish	0.51-0.66mg/l	4

acenaphthylene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	225-545	7

anthracene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	903-2710	7
EC50	72h	Algae or other aquatic plants	>0.008mg/L	2
EC50	48h	Crustacea	0.011mg/L	4
LC50	96h	Fish	0.00194-0.00392mg/l	4
EC50(ECx)	24h	Crustacea	~0.001mg/L	2

benz[a]anthracene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	0.001mg/L	4
EC50(ECx)	48h	Crustacea	0.001mg/L	4

benz[a]pyrene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	0.005mg/l	4
EC50	48h	Crustacea	0.001mg/L	4
NOEC(ECx)	24h	Crustacea	0.00002mg/l	4

benzo[b]fluoranthene

Endpoint	Test Duration (hr)	Species	Value	Source
EC20(ECx)	24h	Fish	<0.001mg/L	4

Continued...

benzo[ghi]perylene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	<0.001mg/L	4
EC50(ECx)	48h	Crustacea	<0.001mg/L	4

benzo[k]fluoranthene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	24h	Algae or other aquatic plants	0.003mg/L	4

chrysene

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	1.5h	Fish	2.283mg/L	4

dibenz[a,h]anthracene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	0.001mg/L	4
EC50(ECx)	48h	Crustacea	0.001mg/L	4

fluoranthene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	0.094-0.112mg/L	4
EC50	48h	Crustacea	0.004mg/L	4
EC50	96h	Algae or other aquatic plants	29.4-71.5mg/L	4
NOEC(ECx)	24.5h	Fish	0.0001mg/l	4
LC50	96h	Fish	0.00009-0.0001mg/l	4

fluorene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	219-830	7
EC50	48h	Crustacea	0.212mg/l	4
EC50	96h	Algae or other aquatic plants	3.4mg/l	4
NOEC(ECx)	336h	Crustacea	0.063mg/l	4
LC50	96h	Fish	0.55-1.21mg/l	4

indeno[1,2,3-cd]pyrene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	24h	Algae or other aquatic plants	0.001mg/L	4

naphthalene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	23-146	7
EC50	72h	Algae or other aquatic plants	ca.0.4mg/l	1
EC50	48h	Crustacea	1.09-3.4mg/l	4
EC50(ECx)	0.05h	Crustacea	<0.000001mg/l	4
LC50	96h	Fish	0.213mg/l	4

phenanthrene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	0.29-0.363mg/l	4
EC50	48h	Crustacea	0.093-0.147mg/l	4
NOEC(ECx)	168h	Algae or other aquatic plants	0.005mg/l	4
LC50	96h	Fish	0.224-0.244mg/l	4

pyrene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	0.004mg/L	4
LC50	96h	Fish	>2mg/l	4
EC50(ECx)	24h	Crustacea	0.001mg/L	2

1-methylnaphthalene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	8.2mg/L	5
EC50(ECx)	24h	Crustacea	1.54-1.68mg/l	4
LC50	96h	Fish	9mg/l	4

2-methylnaphthalene

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	48h	Crustacea	5mg/L	5
EC50(ECx)	96h	Crustacea	1.3mg/L	5
LC50	96h	Fish	9mg/l	Not Available

Dichloromethane

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1008h	Fish	2-5.4	7
EC50	72h	Algae or other aquatic plants	202-286mg/l	4

Continued...

	EC50	48h	Crustacea	108.5mg/l	1
	EC50	96h	Algae or other aquatic plants	0.98mg/l	4
	LC50	96h	Fish	2-3.3mg/l	4
	EC50(ECx)	96h	Algae or other aquatic plants	0.98mg/l	4

benzene	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	EC50	72h	Algae or other aquatic plants	29mg/l	1
	EC50	48h	Crustacea	7.578-13.983mg/L	4
	EC50	96h	Algae or other aquatic plants	>1360mg/l	1
	LC50	96h	Fish	2.54-7.217mg/L	4
	ErC50	72h	Algae or other aquatic plants	>1360mg/l	1
	EC50(ECx)	24h	Algae or other aquatic plants	<0.001mg/L	4

Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
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.
For Aromatic Substances Series:
Environmental Fate: Large, molecularly complex polycyclic aromatic hydrocarbons, or PAHs, are persistent in the environment longer than smaller PAHs.
Atmospheric Fate: PAHs are 'semi-volatile substances" which can move between the atmosphere and the Earth's surface in repeated, temperature-driven cycles of deposition and volatilization. Terrestrial Fate: BTEX compounds have the potential to move through soil and contaminate ground water, and their vapors are highly flammable and explosive.
Ecotoxicity - Within an aromatic series, acute toxicity increases with increasing alkyl substitution on the aromatic nucleus.
For naphthalene:
Environmental Fate: Naphthalene may be reach surface water and soil through transportation in water or being carried by air. Most airborne naphthalene is in a vapour form and hence deposition is expected to be slow. A minimal amount of naphthalene emitted to the air is transported to other environmental components mostly by dry deposition. Naphthalene in surface water may volatililize into the atmosphere, depending on environmental condiditons.
For benzene:
log Kow: 1.95-2.15
log Koc: 1.7-2
Koc: 85
log Kom: 1.04-2.56
Half-life (hr) air: 2.4-501
Half-life (hr) H2O surface water: 4.81-384
Half-life (hr) H2O ground: 240-17280
Half-life (hr) soil: 48-922
Henry's Pa m3 /mol: 441-595
Henry's atm m3 /mol: 5.43E-03
BOD 5 if unstated: 2.18
COD: 0.25-2.8
ThOD: 3.1
BCF: 3.5-3.9
Log BCF: 0.54-1.48
Drinking Water Standards: hydrocarbon total: 10 ug/l (UK max.); benzene: 10 ug/l (WHO guideline)
Soil Guidelines: Dutch Criteria: 0.05 mg/kg (detection limit) target; 1 mg/kg (intervention)
Air Quality Standards: 1 ppb averaging time 1 year (UK)
No safe level recommended due to carcinogenic properties (WHO Guideline)
If benzene is released to the atmosphere it remains predominantly in the vapour phase.
Vapour phase benzene is not subject to direct photolysis but reacts with photochemically produced hydroxyl radicals (half-life approximately 13.4 days). Reaction time in polluted atmospheres which contain nitrogen oxide (NO) or sulfur dioxide (SO2) is accelerated (half-life 4-6 hours); products of photooxidation include phenol, nitrophenols, nitrobenzene, formic acid and peroxyacetyl nitrates.
In water, benzene is rapidly volatilised (half-life 2.7 hours).
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
acenaphthene	HIGH (Half-life = 204 days)	LOW (Half-life = 0.37 days)
acenaphthylene	MEDIUM (Half-life = 120 days)	LOW (Half-life = 0.05 days)
anthracene	HIGH (Half-life = 920 days)	LOW (Half-life = 0.21 days)
benz[a]anthracene	HIGH (Half-life = 1360 days)	LOW (Half-life = 0.33 days)
benz[a]pyrene	HIGH (Half-life = 1060 days)	LOW (Half-life = 0.18 days)
benzo[b]fluoranthene	HIGH (Half-life = 1220 days)	LOW (Half-life = 0.6 days)
benzo[ghi]perylene	HIGH (Half-life = 1300 days)	LOW (Half-life = 0.13 days)
benzo[k]fluoranthene	HIGH (Half-life = 4280 days)	LOW (Half-life = 0.46 days)
chrysene	HIGH (Half-life = 2000 days)	LOW (Half-life = 0.33 days)
dibenz[a,h]anthracene	HIGH (Half-life = 1880 days)	LOW (Half-life = 0.18 days)
fluoranthene	HIGH (Half-life = 880 days)	LOW (Half-life = 0.84 days)
fluorene	MEDIUM (Half-life = 120 days)	LOW (Half-life = 2.84 days)
indeno[1,2,3-cd]pyrene	HIGH (Half-life = 1460 days)	LOW (Half-life = 0.26 days)
naphthalene	HIGH (Half-life = 258 days)	LOW (Half-life = 1.23 days)
phenanthrene	HIGH (Half-life = 400 days)	LOW (Half-life = 0.84 days)

Continued...

Ingredient	Persistence: Water/Soil	Persistence: Air
pyrene	HIGH (Half-life = 3800 days)	LOW (Half-life = 0.33 days)
1-methylnaphthalene	HIGH	HIGH
2-methylnaphthalene	HIGH	HIGH
Dichloromethane	LOW (Half-life = 56 days)	HIGH (Half-life = 191 days)
benzene	HIGH (Half-life = 720 days)	LOW (Half-life = 20.88 days)

Bioaccumulative potential

Ingredient	Bioaccumulation
acenaphthene	LOW (BCF = 387)
acenaphthylene	MEDIUM (BCF = 545)
anthracene	HIGH (BCF = 10500)
benz[a]anthracene	HIGH (LogKOW = 5.76)
benz[a]pyrene	HIGH (LogKOW = 6.13)
benzo[b]fluoranthene	HIGH (LogKOW = 5.78)
benzo[ghi]perylene	HIGH (LogKOW = 6.697)
chrysene	HIGH (LogKOW = 5.81)
dibenz[a,h]anthracene	HIGH (LogKOW = 6.697)
fluoranthene	HIGH (LogKOW = 5.16)
fluorene	MEDIUM (BCF = 830)
naphthalene	HIGH (BCF = 18000)
phenanthrene	MEDIUM (LogKOW = 4.46)
pyrene	HIGH (LogKOW = 4.88)
1-methylnaphthalene	MEDIUM (LogKOW = 3.87)
2-methylnaphthalene	MEDIUM (LogKOW = 3.86)
Dichloromethane	LOW (BCF = 40)
benzene	HIGH (BCF = 4360)

Mobility in soil

Ingredient	Mobility
acenaphthene	LOW (KOC = 6123)
acenaphthylene	LOW (KOC = 6123)
anthracene	LOW (KOC = 20400)
benz[a]anthracene	LOW (KOC = 231300)
benz[a]pyrene	LOW (KOC = 786800)
benzo[b]fluoranthene	LOW (KOC = 803100)
benzo[ghi]perylene	LOW (KOC = 2676000)
chrysene	LOW (KOC = 236100)
dibenz[a,h]anthracene	LOW (KOC = 2622000)
fluoranthene	LOW (KOC = 70850)
fluorene	LOW (KOC = 11290)
naphthalene	LOW (KOC = 1837)
phenanthrene	LOW (KOC = 20830)
pyrene	LOW (KOC = 69410)
1-methylnaphthalene	LOW (KOC = 3038)
2-methylnaphthalene	LOW (KOC = 2976)
Dichloromethane	LOW (KOC = 23.74)
benzene	LOW (KOC = 165.5)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ 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 SDS and observe all notices pertaining to the product. ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▸ It may be necessary to collect all wash water for treatment before disposal. ▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority.

Continued...

	▸ Recycle wherever possible or consult manufacturer for recycling options. ▸ Consult State Land Waste Authority for disposal. ▸ Bury or incinerate residue at an approved site. ▸ Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 Transport information

Labels Required

	
Marine Pollutant	
HAZCHEM	•3WE

Land transport (ADG)

UN number or ID number	1992
UN proper shipping name	FLAMMABLE LIQUID, TOXIC, N.O.S. (contains Dichloromethane and benzene)
Transport hazard class(es)	Class: 3 Subsidiary risk: Not Applicable
Packing group	II
Environmental hazard	Environmentally hazardous
Special precautions for user	Special provisions: 274 Limited quantity: 1 L

Air transport (ICAO-IATA / DGR)

UN number	1992
UN proper shipping name	Flammable liquid, toxic, n.o.s. * (contains Dichloromethane and benzene)
Transport hazard class(es)	ICAO/IATA Class: 3 ICAO / IATA Subrisk: Not Applicable ERG Code: 3HP
Packing group	II
Environmental hazard	Environmentally hazardous
Special precautions for user	Special provisions: A3 Cargo Only Packing Instructions: 364 Cargo Only Maximum Qty / Pack: 60 L Passenger and Cargo Packing Instructions: 352 Passenger and Cargo Maximum Qty / Pack: 1 L Passenger and Cargo Limited Quantity Packing Instructions: Y341 Passenger and Cargo Limited Maximum Qty / Pack: 1 L

Sea transport (IMDG-Code / GGVSee)

UN number	1992
UN proper shipping name	FLAMMABLE LIQUID, TOXIC, N.O.S. (contains Dichloromethane and benzene)
Transport hazard class(es)	IMDG Class: 3 IMDG Subrisk: Not Applicable
Packing group	II
Environmental hazard	Marine Pollutant
Special precautions for user	EMS Number: F-E, S-D Special provisions: 274 Limited Quantities: 1 L

Transport in bulk according to Annex II of MARPOL and the IBC code

Continued...

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
acenaphthene	Not Available
acenaphthylene	Not Available
anthracene	Not Available
benz[a]anthracene	Not Available
benz[a]pyrene	Not Available
benzo[b]fluoranthene	Not Available
benzo[ghi]perylene	Not Available
benzo[k]fluoranthene	Not Available
chrysene	Not Available
dibenz[a,h]anthracene	Not Available
fluoranthene	Not Available
fluorene	Not Available
indeno[1,2,3-cd]pyrene	Not Available
naphthalene	Not Available
phenanthrene	Not Available
pyrene	Not Available
1-methylnaphthalene	Not Available
2-methylnaphthalene	Not Available
Dichloromethane	Not Available
benzene	Not Available

Transport in bulk in accordance with the IGC Code

Product name	Ship Type
acenaphthene	Not Available
acenaphthylene	Not Available
anthracene	Not Available
benz[a]anthracene	Not Available
benz[a]pyrene	Not Available
benzo[b]fluoranthene	Not Available
benzo[ghi]perylene	Not Available
benzo[k]fluoranthene	Not Available
chrysene	Not Available
dibenz[a,h]anthracene	Not Available
fluoranthene	Not Available
fluorene	Not Available
indeno[1,2,3-cd]pyrene	Not Available
naphthalene	Not Available
phenanthrene	Not Available
pyrene	Not Available
1-methylnaphthalene	Not Available
2-methylnaphthalene	Not Available
Dichloromethane	Not Available
benzene	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

acenaphthene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

acenaphthylene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

anthracene is found on the following regulatory lists

Continued...

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

benz[a]anthracene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

benz[a]pyrene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

benzo[b]fluoranthene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

benzo[ghi]perylene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

benzo[k]fluoranthene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

chrysene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

dibenz[a,h]anthracene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

fluoranthene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

fluorene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

indeno[1,2,3-cd]pyrene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

naphthalene is found on the following regulatory lists

Continued...

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

phenanthrene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

pyrene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

1-methylnaphthalene is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

2-methylnaphthalene is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

Dichloromethane is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans

benzene is found on the following regulatory lists

Australia - New South Wales Work Health and Safety Regulation - Restricted carcinogens
Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations- Restricted carcinogens
Australia - Queensland Work Health and Safety Regulation - Restricted Carcinogens
Australia - South Australia - Work Health and Safety Regulations - Restricted carcinogens
Australia - Tasmania - Work Health and Safety Regulations - Restricted carcinogens
Australia - Western Australia Carcinogenic substances to be used only for purposes approved by the Commissioner
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Model Work Health and Safety Regulations - Restricted carcinogens
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	No (acenaphthylene; benz[a]anthracene; benz[a]pyrene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; dibenz[a,h]anthracene; indeno[1,2,3-cd]pyrene)
Canada - DSL	No (acenaphthylene; benz[a]anthracene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; dibenz[a,h]anthracene; fluoranthene; indeno[1,2,3-cd]pyrene)
Canada - NDSL	No (acenaphthene; anthracene; benz[a]pyrene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; chrysene; fluorene; naphthalene; phenanthrene; pyrene; Dichloromethane; benzene)
China - IECSC	No (benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; chrysene; indeno[1,2,3-cd]pyrene)
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (benz[a]anthracene; benz[a]pyrene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; chrysene; dibenz[a,h]anthracene; indeno[1,2,3-cd]pyrene)
Korea - KECI	No (acenaphthylene; benz[a]anthracene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; dibenz[a,h]anthracene; fluoranthene; indeno[1,2,3-cd]pyrene; 1-methylnaphthalene; 2-methylnaphthalene)
New Zealand - NZIoC	No (naphthalene)
Philippines - PICCS	No (benz[a]anthracene; benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; chrysene; dibenz[a,h]anthracene; fluoranthene; indeno[1,2,3-cd]pyrene)
USA - TSCA	No (benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene)
Taiwan - TCSI	Yes
Mexico - INSQ	No (acenaphthene; benz[a]anthracene; benzo[b]fluoranthene; chrysene; fluoranthene; fluorene; 1-methylnaphthalene)
Vietnam - NCI	Yes
Russia - FBEPH	No (benzo[b]fluoranthene; benzo[ghi]perylene; benzo[k]fluoranthene; chrysene; indeno[1,2,3-cd]pyrene)
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Continued...

Revision Date	16/07/2023
Initial Date	26/01/2021

SDS Version Summary

Version	Date of Update	Sections Updated
1.4	16/07/2023	Toxicological information - Acute Health (eye), Toxicological information - Acute Health (inhaled), Toxicological information - Acute Health (skin), Toxicological information - Acute Health (swallowed), Toxicological information - Chronic Health, Hazards identification - Classification, Exposure controls / personal protection - Exposure Standard, Firefighting measures - Fire Fighter (fire/explosion hazard), Accidental release measures - Spills (major)

Other information

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.
The 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.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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end of SDS