SOPRASMART BOARD
Soprema Australia Pty Ltd

Chemwatch Hazard Alert Code: **2**

Chemwatch: **5461-88**
Version No: **3.1.2.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **26/04/2021**
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L.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	SOPRASMART BOARD
Chemical Name	Not Applicable
Synonyms	Not Available
Chemical formula	Not Applicable
Other means of identification	Not Available

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

Relevant identified uses	Pre-laminated roofing insulation panel. Under normal use, this product is not expected to create any health or environmental hazard. Inhalation of dust or fumes from asphalt, rockwool or polyisocyanurate can cause a respiratory irritation and/or congestion. Use according to manufacturer's directions.

Details of the supplier of the safety data sheet

Registered company name	**Soprema Australia Pty Ltd**
Address	100 Barangaroo Avenue Sydney NSW 2000 Australia
Telephone	+61 3 9221 6230
Fax	Not Available
Website	soprema.com.au
Email	info@soprema.com.au

Emergency telephone number

Association / Organisation	**Soprema Australia Pty Ltd**
Emergency telephone numbers	+61 3 9221 6230 (Mon-Fri 8am to 5pm)
Other emergency telephone numbers	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification [1]	Not Applicable

Label elements

Hazard pictogram(s)	Not Applicable
Signal word	**Not Applicable**

Hazard statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

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Mixtures

CAS No	%[weight]	Name
Not Available		solid, shaped article consist of
Not Available		SBS modified bitumen membrane contains
8052-42-4	30-60	bitumen road making
471-34-1	15-40	calcium carbonate
64742-93-4	7-13	bitumen (blown)
9003-55-8	3-7	styrene/ butadiene copolymer
Not Available	1-5	polyester and fiber glass mat contains
64742-52-5.	1-5	naphthenic distillate, heavy, hydrotreated (severe)
65997-17-3	1-5	glass fibres
Not Available	0.1-1	polypropylene film contains
14808-60-7	0.1-1	silica crystalline - quartz
Not Available		rockwool panel contains
65997-17-3	>60	fibreglass reinforcements
25104-55-6	3-7	phenol/ formaldehyde/ urea resin
Not Available		polyisocyanurate panel contains
Not Available	>60	polyisocyanurate.
Not Available	1-5	exclusive additives (panel)
109-66-0	0.1-1	n-pentane
78-78-4	0.1-1	isopentane
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*	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	‣ Generally not applicable. 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 Contact	If skin contact occurs: ‣ Immediately remove all contaminated clothing, including footwear. ‣ Flush skin and hair with running water (and soap if available). ‣ Seek medical attention in event of irritation. ‣ Immediately drench burn area in cold running water. ‣ If hot bitumen adheres to the skin, **DO NOT** attempt to remove it (it acts as a sterile dressing). ‣ For burns to the head and neck and trunk, apply cold wet towels to the burn area, and change frequently to maintain cooling. ‣ Cooling should be maintained for no longer than thirty minutes. ‣ When hot bitumen completely encircles a limb, it may have a tourniquet effect and should be split as it cools. ‣ Transport to hospital or doctor. In case of burns: ‣ Immediately apply cold water to burn either by immersion or wrapping with saturated clean cloth. ‣ **DO NOT** remove or cut away clothing over burnt areas. **DO NOT** pull away clothing which has adhered to the skin as this can cause further injury. ‣ **DO NOT** break blister or remove solidified material. ‣ Quickly cover wound with dressing or clean cloth to help prevent infection and to ease pain. ‣ For large burns, sheets, towels or pillow slips are ideal; leave holes for eyes, nose and mouth. ‣ **DO NOT** apply ointments, oils, butter, etc. to a burn under any circumstances. ‣ Water may be given in small quantities if the person is conscious. ‣ Alcohol is not to be given under any circumstances. ‣ Reassure. ‣ Treat for shock by keeping the person warm and in a lying position. ‣ Seek medical aid and advise medical personnel in advance of the cause and extent of the injury and the estimated time of arrival of the patient.
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.
Ingestion	‣ Not considered a normal route of entry. ‣ Immediately give a glass of water. ‣ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 Firefighting measures

Extinguishing media

Continued...

- There is no restriction on the type of extinguisher which may be used.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

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	Asphalt fumes are flammable. Torch, used to weld waterproofing membranes, can produce temperatures beyond 1100°C (2000°F). Avoid all contact with materials sensitive to these temperatures, as lead or plastic materials. Never work in an enclosed area where gas can accumulate. Shield air conditioning units and other protrusions on the roof with perlite panels or similar material when using the torch around them. - Non combustible. - Not considered a significant fire risk, however containers may burn.
HAZCHEM	Not Applicable

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	If hot material is spilled, allow enough time to cool completely and remove to a container for disposal. - Clean up all spills immediately. - Secure load if safe to do so. - Bundle/collect recoverable product. - Collect remaining material in containers with covers for disposal.
Major Spills	- Minor hazard. - Clear area of personnel. - Alert Fire Brigade and tell them location and nature of hazard. - Wear physical protective gloves e.g. Leather. - Contain spill/secure load if safe to do so. - Bundle/collect recoverable product and label for recycling. - Collect remaining product and place in appropriate containers for disposal. - Clean up/sweep up area. - Water may be required.

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

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	Soprema's products must be applied by qualified applicators who have received an adequate training, for the prevention and the protection (in particular for the use of the extinguishers) against accidents caused by use of combustible or flammable materials, of liquefied propane gas, open flame, and their material of installation. The present recommendations must be imperatively related to the knowledge of the employees before the application of the products to the building site. Check the construction and the composition of the systems of roof and the walls before welding. Ensure of the cleanliness of the places (debris). Use only proper torching equipment in perfect working order, C.S.A. certified. [Mfr]. - 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 storage and handling recommendations contained within this SDS.
Other information	Flashings must be stored in such a way to prevent any creasing, twisting, scratches and other damages of the roof. The materials must be protected adequately and stored permanently away from flames or welding sparks, protected from bad weather and any harmful substances. Store selfadhesive membranes away from the sun [Mfr]. - Keep dry

Conditions for safe storage, including any incompatibilities

Suitable container	- Check that containers are clearly labelled - Packaging as recommended by manufacturer.
Storage incompatibility	For the polyisocyanurate panel, acetone, methyl ethyl ketone, tetrahydrofolic acid, chlorine, chloroform, hydrogen peroxide, ethylene dichloride, dimethyl sulfoxide and dimethylformamide [Mfr]. - Avoid strong acids, acid chlorides, acid anhydrides and chloroformates. - Avoid strong bases.

SECTION 8 Exposure controls / personal protection

Control parameters

Continued...

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	bitumen road making	Bitumen fumes	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	calcium carbonate	Calcium carbonate	10 mg/m3	Not Available	Not Available	(a) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
Australia Exposure Standards	naphthenic distillate, heavy, hydrotreated (severe)	Oil mist, refined mineral	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica crystalline - quartz	Silica - Crystalline: Quartz (respirable dust)	0.05 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	n-pentane	Pentane	600 ppm / 1770 mg/m3	2210 mg/m3 / 750 ppm	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
bitumen road making	30 mg/m3	330 mg/m3	2,000 mg/m3
calcium carbonate	45 mg/m3	210 mg/m3	1,300 mg/m3
naphthenic distillate, heavy, hydrotreated (severe)	140 mg/m3	1,500 mg/m3	8,900 mg/m3
glass fibres	15 mg/m3	170 mg/m3	990 mg/m3
silica crystalline - quartz	0.075 mg/m3	33 mg/m3	200 mg/m3
fibreglass reinforcements	15 mg/m3	170 mg/m3	990 mg/m3
n-pentane	3000* ppm	33000*** ppm	200000*** ppm
isopentane	3000* ppm	33000*** ppm	200000*** ppm

Ingredient	Original IDLH	Revised IDLH
bitumen road making	Not Available	Not Available
calcium carbonate	Not Available	Not Available
bitumen (blown)	Not Available	Not Available
styrene/ butadiene copolymer	Not Available	Not Available
naphthenic distillate, heavy, hydrotreated (severe)	2,500 mg/m3	Not Available
glass fibres	Not Available	Not Available
silica crystalline - quartz	25 mg/m3 / 50 mg/m3	Not Available
fibreglass reinforcements	Not Available	Not Available
phenol/ formaldehyde/ urea resin	Not Available	Not Available
n-pentane	1,500 ppm	Not Available
isopentane	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
bitumen (blown)	C	> 1 to ≤ 10 parts per million (ppm)
glass fibres	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.*	

MATERIAL DATA

NOTE L: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346.
European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP

Exposure controls

Appropriate engineering controls	None required when handling small quantities. **OTHERWISE:** 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. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. An approved self contained breathing apparatus (SCBA) may be required in some situations.

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Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.
For molten materials:
Provide mechanical ventilation; in general such ventilation should be provided at compounding/ converting areas and at fabricating/ filling work stations where the material is heated. Local exhaust ventilation should be used over and in the vicinity of machinery involved in handling the molten material.

Personal protection

Eye and face protection

- 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 lenses 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], [AS/NZS 1336 or national equivalent]

Skin protection

See Hand protection below

Hands/feet protection

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
· Contaminated gloves should be replaced.
As defined in ASTM F-739-96 in any application, gloves are rated as:
· Excellent when breakthrough time > 480 min
· Good when breakthrough time > 20 min
· Fair when breakthrough time < 20 min
· Poor when glove material degrades
For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.
It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.
Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:
· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion

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	or puncture potential Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. ▸ When handling hot materials wear heat resistant, elbow length gloves. ▸ Rubber gloves are not recommended when handling hot objects, materials ▸ Protective gloves eg. Leather gloves or gloves with Leather facing
Body protection	See Other protection below
Other protection	▸ Usually handled as molten liquid which requires worker thermal protection and increases hazard of vapour exposure. ▸ **CAUTION:** Vapours may be irritating. ▸ Overalls. ▸ P.V.C apron. ▸ Barrier cream. ▸ Skin cleansing cream. ▸ Eye wash unit.

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:
SOPRASMART BOARD

Material	CPI
PVA	A
VITON	A
NITRILE	B
NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE+PVC	C
PVC	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.

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.

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)

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Manufactured panel with asphalt odour.		
Physical state	Manufactured	**Relative density (Water= 1)**	Not Applicable
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Applicable
pH (as supplied)	Not Applicable	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	Not Applicable	**Viscosity (cSt)**	Not Applicable
Initial boiling point and boiling range (°C)	Not Applicable	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Not Applicable
Vapour pressure (kPa)	Not Applicable	**Gas group**	Not Available

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Solubility in water	Not Applicable	**pH as a solution (1%)**	Not Applicable
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Applicable

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	Product is considered stable and hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	f the membrane is torch-applied, asphalt fumes can be emitted of the product and cause irritations to the nose, the throat and the respiratory tracts, tiredness, headaches, dizziness, nauseas and insomnia[Mfr]. Not normally a hazard due to physical form of product. Generated dust may be discomforting Central nervous system (CNS) depression may include nonspecific 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. Acute exposure to bitumen/ asphalt vapours may cause coughing, chest tightness, headache, muscle weakness, dizziness, tiredness, poor coordination, and even nausea and vomiting. Workers exposed to hot blown bitumens show bronchitis, rhinitis, oropharyngitis and laryngitis; symptoms include cough, phlegm, burning of the throat and chest, hoarseness, headache and nasal discharge. Guinea pigs, rabbits and mice exposed to blown bitumen fumes, aerosols and smoke, developed patchy regions of emphysema, bronchiolar dilation, pneumonitis, and severe localised bronchitis. Mice, exposed to aerosols of petroleum bitumens and smoke from heated petroleum bitumens, showed congestion, acute bronchitis, pneumonitis, bronchial dilation, abscess formation, epithelial atrophy, and necrosis. In health studies in the workplace, environmental measurement showed concentrations of asphalt, ranging from "non-detectable", where there was good mechanical ventilation, to 40 mg/m3, where there was very poor natural draft. Breathing zone samples, collected during drum-filling operations, ranged from 1.0 (upwind) to 5 mg/m3 (downwind) as means of 4-hour exposures. In the opinion of industrial hygienists conducting these studies, work conditions were satisfactory where asphalt fumes were kept below 10 mg/m3 ▸ Usually handled as molten liquid which requires worker thermal protection and increases hazard of vapour exposure. ▸ **CAUTION:** Vapours may be irritating.
Ingestion	Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract
Skin Contact	The product can cause a mechanical irritation of the skin because of its rough surface and dust. If the membrane is torch-applied, asphalt fumes can cause skin irritation. The asphalt fumes can cause an irritation of the skin. The contact with this product at high temperature can cause thermal burns [Mfr]. Not normally a hazard due to physical form of product. Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
Eye	If the membrane is torch-applied, asphalt fumes can be emitted of the product and cause irritations, redness and conjunctivitis to the eyes. The contact with this product at high temperature can cause thermal burns[Mfr]. Not normally a hazard due to physical form of product. Generated dust may be discomforting Workers exposed to fumes of blown bitumens developed keratoconjunctivitis.
Chronic	Due to the product form, exposure to hazardous dusts or fumes is not expected to occur. ▸ Hazard relates to dust released by sawing, cutting, sanding, trimming or other finishing operations. Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray. Chronic exposure to bitumen/ asphalt fumes, over extended periods, may cause central nervous system depression, and liver and kidney changes. Chronic bitumen/ asphalt poisoning may result in a decrease in the number of white and red blood cells. [*ILO Encyclopedia*] Prolonged contact with bitumens may produce irritation, inflammation, dermatitis, acne-like lesions, keratoses, melanosis and photosensitisation. Animal inhalation studies do NOT yield sufficient evidence of bitumen/ asphalt-induced lung cancer. It is generally accepted that oxidation of polycyclic aromatic hydrocarbons (PAHs) destroys their carcinogenic potential and the differing character of the polycyclic aromatic fraction of petroleum asphalt fume and those of coal tar pitch volatiles suggested a lessened potential for carcinogenicity. Inhalation of fumes of heated bitumens by guinea pigs and rats produced chronic fibrosing pneumonitis with peribronchial adenomatosis; rats developed squamous cell metaplasias. Various extracts of steam-refined and air-refined bitumens and their mixtures, undiluted steam-refined bitumens and cracking residue bitumens, produced skin tumours following application to mouse skin. Subcutaneous injection in mice and rats, of steam- and air- reined bitumens, produced sarcomas at the sites of injection. Application of air-refined bitumens, in toluene, to the skin of mice, produced skin tumours. No tumours were produced by the undiluted bitumen. A pooled mixture of steam- and air-blown petroleum bitumen in benzene, produced tumours at the site of application to mouse skin. No significant difference was found in the health of asphalt workers and of groups of controls in a study conducted in 25 oil refineries. Other studies have not demonstrated health defects in paving and roofing operations (using asphalt-based products) and interstate trucking over asphalt highways. *NOTE: The term bitumen and asphalt are often used interchangeably and have been used to describe products derived from petroleum and/ or coal. Asphalt is a native mixture of hydrocarbons which occurs as an amorphous, brownish-black solid or semisolid and results from the evaporation of the lighter hydrocarbons from petroleum and partial oxidation of the residue. Petroleum asphalts (bitumens) should therefore be differentiated from coal pitch bitumens which result from the destructive distillation of coal.* *The term "asphalt" originally applied to "Trinidad asphalt" which is a mined solid and is closely related to gilsonite.*

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On occasion there are reports of epidemiological studies which have found an increased cancer mortality in workers exposed to heated bitumens and bitumen fumes. There are reports of significantly increased incidence of cancers of the mouth, oesophagus, rectum and lung. The bitumens, used by this cohort, are likely to have their origin in coal and should be distinguished from materials derived from the petroleum industry (the asphalts).
Hardened bitumens/ asphalts do not normally constitute a health hazard. Mined sources of bitumens/ asphalts may present an additional hazard related to their naturally occurring content of quartz. Chronic inhalation of high levels of quartz dusts may produce silicosis, a disabling form of pneumoconiosis which may lead to scarring of the lining of the air-sacs of the lung.
On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.
Chronic symptoms produced by crystalline silicas included decreased vital lung capacity and chest infections. Lengthy exposure may cause silicosis a disabling form of pneumoconiosis which may lead to fibrosis, a scarring of the lining of the air sacs in the lung.
The form and severity in which silicosis manifests itself depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are all recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive lung function changes may result from chronic exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.
Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms may potentially appear years after exposures have ceased. Symptoms of silicosis may include (but are
not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure.
Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than
respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica. There are reports in the literature indicating that crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune and immunity-related disorders. Several studies of persons with silicosis or silica exposure also indicate or suggest increased risk of developing lung cancer, a risk that may increase with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking.
Symptoms may appear 8 to 18 months after initial exposure. Smoking increases this risk. Classic silicosis is a chronic disease characterised by the formation of scattered, rounded or stellate silica-containing nodules of scar tissue in the lungs ranging from microscopic to 1.0 cm or more. The nodules isolate the inhaled silica particles and protect the surrounding normal and functioning tissue from continuing injury. Simple silicosis (in which the nodules are less than 1.0 cm in diameter) is generally asymptomatic but may be slowly progressive even in the absence of continuing exposure. Simple silicosis can develop in complicated silicoses (in which nodules are greater than 1.0 cm in diameter) and can produce disabilities including an associated tuberculous infection (which 50 years ago accounted for 75% of the deaths among silicotic workers).
Crystalline silica deposited in the lungs causes epithelial and macrophage injury and activation. Crystalline silica translocates to the interstitium and the regional lymph nodes and cause the recruitment of inflammatory cells in a dose dependent manner. In humans, a large fraction of crystalline silica persists in the lungs. The question of potential carcinogenicity associated with chronic inhalation of crystalline silica remains equivocal with some studies supporting the proposition and others finding no significant association. The results of recent epidemiological studies suggest that lung cancer risk is elevated only in those patients with overt silicosis. A relatively large number of epidemiological studies have been undertaken and in some, increased risk gradients have been observed in relation to dose surrogates - cumulative exposure, duration of exposure, the presence of radiographically defined silicosis, and peak intensity exposure. Chronic inhalation in rats by single or repeated intratracheal instillation produced a significant increase in the incidences of adenocarcinomas and squamous cell carcinomas of the lung. Lifetime inhalation of crystalline silica (87% alpha-quartz) at 1 mg/m3 (74% respirable) by rats, produced an increase in animals with keratinising cystic squamous cell tumours, adenomas, adenocarcinomas, adenosquamous cell carcinomas, squamous cell carcinoma and nodular bronchiolar alveolar hyperplasia accompanied by extensive subpleural and peribronchiolar fibrosis, increased pulmonary collagen content, focal lipoproteinosis and macrophage infiltration. Thoracic and abdominal malignant lymphomas developed in rats after single intrapleural and intraperitoneal injection of suspensions of several types of quartz.
Some studies show excess numbers of cases of schleroderma, connective tissue disorders, lupus, rheumatoid arthritis chronic kidney diseases, and end-stage kidney disease in workers
NOTE: Some jurisdictions require health surveillance be conducted on workers occupationally exposed to silica, crystalline. Such surveillance should emphasise

- demography, occupational and medical history and health advice
- standardised respiratory function tests such as FEV1, FVC and FEV1/FVC
- standardised respiratory function tests such as FV1, FVC and FEV1/FVC
- chest X-ray, full size PA view
- records of personal exposure

Loose and granular forms produce more dust than preforms (batts) but handling of batts results in fibre dislodgement and dusting.Repeated exposure results in immune response (toughening of skin) so that irritation (rash) often subsides in 2-3 weeks. The irritation and response recurs if exposure is intermittent. If irritation persists, worker exposure must be terminated and medical opinion sought.
There is little evidence for acute toxicity after inhalation of man-made mineral fibres (MMMF). Chronic inhalation of respirable fibres lead to pulmonary fibrosis
Rockwool contains a small proportion of respirable fibres. [CCINFO, ILO ENCYCLOPEDIA] Glasswool administered by inhalation produces little pulmonary fibrosis in experimental animals. No increase in the occurrence of mesothelioma has been observed in man-made mineral fibre / glass fibre production workers. [IARC Monograph 43]
Inhaled synthetic mineral fibres (SMFs) generally exhibit some level of biopersistence, resisting changes in number, dimension, surface chemistry, chemical composition, surface area and other characteristics, depending on their composition. Alteration to any of these parameters, in turn, alters a fibre's residence in the lung, and as a result, the lung's long- term response to the fibre. Fibres, of sufficiently small length, may undergo macrophage-mediated clearance in the lung. For fibres that are too long to be dealt with by alveolar macrophages, principal alternate clearance mechanisms include translocation to other thoracic compartments, dissolution and/or transverse breakage into shorter segments. In vitro fibre dissolution experiments show a broad range of dissolution rate constants (K.dis = ng/cm2/hr) for the various synthetic vitreous (glass-like) fibres. For refractory ceramic fibres (RCF) the K.dis is 3 whilst for slag wool the K.dis is greater than 400. In vitro fibre-degradation studies demonstrate a direct relationship between the fibre's rate of leaching (some components dissolve more rapidly than others leaving a depleted silica matrix) and its tendency to undergo transverse fragmentation. Synthetic mineral fibres tend to break transversely in contrast to asbestos which tends to split longitudinally. This is significant for pathogenesis because over a long period of time in the lung, the actual numbers of long asbestos fibre in the lung can increase due to splitting along the long axis whilst the number of long SMFs decrease as a result of splitting along the short axis. Lung clearance by macrophages and the mucociliary escalator has been found, experimentally, to be more efficient for shorter segments.

Fibres which exhibit a rapid rate of leaching and fragmentation in the lung are less biopersistent, even though they may not dissolve completely. Fiber toxicology tends to be dominated by physical characteristics such as shape and length whilst nonfibrous dusts exhibit a chemical origin of toxicity. Early rodent studies found no tumourigenesis as a result of inhalation exposure to several types of fibreglass other than transient lung inflammation that resolved after a brief recovery period. However, hamsters exposed to a special application glass of high durability (475 glass) developed minimal lung fibrosis; one animal out of 125 developed mesothelioma. This is the first published report of permanent lung damage in laboratory animals following inhalation of glass fibre compositions (albeit of a special type). Preliminary results from another study with another high durability glass (E glass) showed fibrosis and pulmonary tumours in rats exposed to high concentrations of inhaled microfibres. (E glass is now produced as a continuous filament that is too thick to be respirable and is no longer available as microfibres). Several studies have demonstrated that glass fibres, insulation glass in particular, clear the lung more rapidly than amosite asbestos. Early inhalation studies of the chronic toxicity of refractory ceramic fibre (RCF1) reported conflicting results. In more recent studies rodents were exposed to four types of RCF (RCF1-4) for 6 hours/day, 5 days/week, at a maximum dose of 30 mg/m3 (test fibres were selected to have dimensions close to 1 um x 20 um);

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	in rats RCF1 induced lung fibrosis, lung tumours (13%) and pleural mesothelioma (1.6%). In hamsters RCF1 induced lung fibrosis, mesothelioma (38%) and no lung tumours. Species related differences also raise the issue of significance of these findings in humans. Early rodent inhalation studies reported no fibrosis or tumours with chronic exposure to mineral wool. More recent studies with two compositions of mineral wool,- rock wool (MMVF21) and slag wool (MMVF22), size selected to have average dimensions of 1 um x 20 um, showed that neither mineral wool was tumourigenic, in rats but that MMVF21 produced minimal lung fibrosis late in the inhalation period. Biopersistence, as represented by 90% clearance rate (T-90), has been shown, experimentally to agree well with toxicity; composition with long-fibre T-90s greater than 200 days were all fibrogenic and all but MMVF21 were associated with tumourigenesis. This relationship can be explained as follows; fibres too thick to be inhaled into the lower lung or short enough to be transported by alveolar macrophages, are quickly cleared from the respiratory tract and will probably produce no other response than transient pulmonary inflammation. Long fibres with diameters less than 3 um are able to penetrate into the lower lung but will become innocuous if they dissolve rapidly, can break transversely into smaller segments that can be cleared by alveolar macrophages and ciliated epithelium. Long thin fibres that reach the lower lung in sufficient quantities will be pathogenic if they do not dissolve or fragment. Surface chemistry may also play a role; In recent rat inhalation studies, E glass fibres but not 475 glass fibres were pathogenic in rats although both appeared to clear from the rat lung at about the same time. However during a year of post-exposure recovery 475 glass fibres underwent significant changes in chemistry due to leaching.

SOPRASMART BOARD	**TOXICITY**	**IRRITATION**
	Not Available	Not Available

bitumen road making	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >2000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
	Oral(Rat) LD50; >5000 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

calcium carbonate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[1]	Eye (rabbit): 0.75 mg/24h - SEVERE
	Inhalation(Rat) LC50; >3 mg/l4h[1]	Eye: no adverse effect observed (not irritating)[1]
	Oral(Rat) LD50; >2000 mg/kg[1]	Skin (rabbit): 500 mg/24h-moderate
		Skin: no adverse effect observed (not irritating)[1]

bitumen (blown)	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >2000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
	Oral(Rat) LD50; >5000 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]

styrene/ butadiene copolymer	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >20000 mg/kg[2]	Eye (rabbit) 500: mg/24h -
	Oral(Rat) LD50; 71000 mg/kg[2]	Eye : Mild

naphthenic distillate, heavy, hydrotreated (severe)	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >2000 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
	Inhalation(Rat) LC50; 2.18 mg/l4h[2]	Skin: no adverse effect observed (not irritating)[1]
	Oral(Rat) LD50; >5000 mg/kg[2]	

glass fibres	**TOXICITY**	**IRRITATION**
	Oral(Rat) LD50; >2000 mg/kg[1]	Not Available

silica crystalline - quartz	**TOXICITY**	**IRRITATION**
	Oral(Rat) LD50; 500 mg/kg[2]	Not Available

fibreglass reinforcements	**TOXICITY**	**IRRITATION**
	Oral(Rat) LD50; >2000 mg/kg[1]	Not Available

phenol/ formaldehyde/ urea resin	**TOXICITY**	**IRRITATION**
	Oral(Rat) LD50; 7000 mg/kg[2]	Not Available

n-pentane	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 3000 mg/kg[2]	Not Available
	Inhalation(Rat) LC50; >25.3 mg/l4h[1]	
	Oral(Rat) LD50; >2000 mg/kg[1]	

isopentane	**TOXICITY**	**IRRITATION**
	Inhalation(Rat) LC50; >25.3 mg/l4h[1]	Not Available
	Oral(Rat) LD50; >2000 mg/kg[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*

CALCIUM CARBONATE	No evidence of carcinogenic properties. No evidence of mutagenic or teratogenic effects.

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	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
BITUMEN (BLOWN)	as extracts of steam-refined and air-refined bitumens:
STYRENE/ BUTADIENE COPOLYMER	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
NAPHTHENIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE)	Exposure to the material may result in a possible risk of irreversible effects. The material may produce mutagenic effects in man. This concern is raised, generally, on the basis of appropriate studies with similar materials using mammalian somatic cells in vivo. Such findings are often supported by positive results from in vitro mutagenicity studies. Studies indicate that normal, branched and cyclic paraffins are absorbed from the mammalian gastrointestinal tract and that the absorption of n-paraffins is inversely proportional to the carbon chain length,with little absorption above C30. With respect to the carbon chain lengths likely to be present in mineral oil, n-paraffins may be absorbed to a greater extent that iso- or cyclo-paraffins. The major classes of hydrocarbons have been shown to be well absorbed by the gastrointestinal tract in various species. In many cases, the hydrophobic hydrocarbons are ingested in association with dietary lipids. The dependence of hydrocarbon absorption on concomitant triglyceride digestion and absorption,is known as the "hydrocarbon continuum hypothesis", and asserts that a series of solubilising phases in the intestinal lumen, created by dietary triglycerides and their digestion products, afford hydrocarbons a route to the lipid phase of the intestinal absorptive cell (enterocyte) membrane. While some hydrocarbons may traverse the mucosal epithelium unmetabolised and appear as solutes in lipoprotein particles in intestinal lymph, there is evidence that most hydrocarbons partially separate from nutrient lipids and undergo metabolic transformation in the enterocyte. The enterocyte may play a major role in determining the proportion of an absorbed hydrocarbon that, by escaping initial biotransformation, becomes available for deposition in its unchanged form in peripheral tissues such as adipose tissue, or in the liver. The materials included in the Lubricating Base Oils category are related from both process and physical-chemical perspectives; The potential toxicity of a specific distillate base oil is inversely related to the severity or extent of processing the oil has undergone, since: · The adverse effects of these materials are associated with undesirable components, and · The levels of the undesirable components are inversely related to the degree of processing; · Distillate base oils receiving the same degree or extent of processing will have similar toxicities; · The potential toxicity of *residual base oils* is independent of the degree of processing the oil receives. · The reproductive and developmental toxicity of the distillate base oils is inversely related to the degree of processing. The degree of refining influences the carcinogenic potential of the oils. Whereas mild acid / earth refining processes are inadequate to substantially reduce the carcinogenic potential of lubricant base oils, hydrotreatment and / or solvent extraction methods can yield oils with no carcinogenic potential. Unrefined and mildly refined distillate base oils contain the highest levels of undesirable components, have the largest variation of hydrocarbon molecules and have shown the highest potential carcinogenic and mutagenic activities. Highly and severely refined distillate base oils are produced from unrefined and mildly refined oils by removing or transforming undesirable components. In comparison to unrefined and mildly refined base oils, the highly and severely refined distillate base oils have a smaller range of hydrocarbon molecules and have demonstrated very low mammalian toxicity. Mutagenicity and carcinogenicity testing of residual oils has been negative, supporting the belief that these materials lack biologically active components or the components are largely non-bioavailable due to their molecular size. Toxicity testing has consistently shown that lubricating base oils have low acute toxicities. Numerous tests have shown that a lubricating base oil's mutagenic and carcinogenic potential correlates with its 3-7 ring polycyclic aromatic compound (PAC) content, and the level of DMSO extractables (e.g. IP346 assay), both characteristics that are directly related to the degree/conditions of processing Skin irritating is not significant (CONCAWE) based on 14 tests on 10 CASs from the OLBO class (Other Lubricant Base Oils). Each study lasted for 24 hours, a period of time 6 times longer than the duration recommended by the OECD method). Eye irritation is not significant according to experimental data (CONCAWE studies) based on 9 "in vivo" tests on 7 CASs from the OLBO class(Other Lubricant Base Oils). Sensitisation: The substance does not cause the sensitization of the respiratory tract or of the skin. (CONCAWE studies based on 14 tests on 11 CASs from the OLBO class(Other Lubricant Base Oils)) Germ cell mutagenicity: The tests performed within the 'in vivo" studies regarding gene mutation at mice micronuclei indicated negative results (CONCAWE studies. AMES tests had negative results in 7 studies performed on 4 CASs from the OLBO class(Other Lubricant Base Oils)). Reproduction toxicity: Reproduction / development toxicity monitoring according to OECD 421 or 422 methods. CONCAWE tests gave negative results in oral gavage studies. Pre-birth studies regarding toxicity in the unborn foetus development process showed a maternal LOAEL (Lowest Observed Adverse Effect Level) of 125 mg/kg body/day, based on dermal irritation and a NOAEL (No Observable Adverse Effect Level) of 2000 mg/kg body/day, which shows that the substance is not toxic for reproduction. STOT (toxicity on specific target organs) – repeated exposure: Studies with short term repeated doses (28-day test) on rabbit skin indicated the NOAEL value of 1000 mg/kg. NOAEL for inhalation, local effects > 280 mg/m3 and for systemic effects NOAEL > 980 mg/m3. Sub-chronic toxicity 90-day study Dermal: NOAEL > 2000 mg/kg (CONCAWE studies). Repeat dose toxicity: Oral NOAEL for heavy paraffinic distillate aromatic extract could not be identified and is less than 125 mg/kg/day when administered orally. Inhalation The NOAEL for lung changes associated with oil deposition in the lungs was 220 mg/m3. As no systemic toxicity was observed, the overall NOAEL for systemic effects was > 980 mg/m3. Dermal In a 90 day subchronic dermal study, the administration of Light paraffinic distillate solvent extract had an adverse effect on survivability, body weights, organ weights (particularly the liver and thymus), and variety of haematology and serum chemistry parameters in exposed animals. Histopathological changes which were treatment-related were most prominent in the adrenals, bone marrow, kidneys, liver, lymph nodes, skin, stomach, and thymus. Based on the results of this study, the NOAEL for the test material is less than 30 mg/kg/day. Toxicity to reproduction: Mineral oil (a white mineral oil) caused no reproductive or developmental toxicity with 1 mL/kg/day (i.e., 1000 mg/kg/day) in an OECD 421 guideline study, but did cause mild to moderate skin irritation. Therefore, the reproductive/developmental NOAEL for this study is =1000 mg/kg/day and no LOAEL was determined. Developmental toxicity, teratogenicity: Heavy paraffinic distillate furfural extract produced maternal, reproductive and foetal toxicity. Maternal toxicity was exhibited as vaginal discharge (dose-related), body weight decrease, reduction in thymus weight and increase in liver weight (125 mg/kg/day and higher) and aberrant haematology and serum chemistry (125 and/or 500 mg/kg/day). Evidence of potential reproductive effects was shown by an increased number of dams with resorptions and intrauterine death. Distillate aromatic extract (DAE) was developmentally toxic regardless of exposure duration as indicated by increased resorptions and decreased foetal body weights. Furthermore, when exposures were increased to 1000 mg/kg/day and given only during gestation days 10 through 12, cleft palate and ossification delays were observed. Cleft palate was considered to indicate a potential teratogenic effect of DAE. The following Oil Industry Note (OIN) has been applied: OIN 8 - The classifications as a reproductive toxicant category 2; H361d (Suspected of damaging the unborn child) and specific target organ toxicant category 1; H372 (Causes damage to organs through prolonged or repeated exposure) need not apply if the substance is not classified as carcinogenic Toxicokinetics of lubricant base oils has been examined in rodents. Absorption of other lubricant base oils across the small intestine is related to

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	carbon chain length; hydrocarbons with smaller chain length are more readily absorbed than hydrocarbons with a longer chain length. The majority of an oral dose of mineral hydrocarbon is not absorbed and is excreted unchanged in the faeces. Distribution of mineral hydrocarbons following absorption has been observed in liver, fat, kidney, brain and spleen. Excretion of absorbed mineral hydrocarbons occurs via the faeces and urine. Based on the pharmacokinetic parameters and disposition profiles, the data indicate inherent strain differences in the total systemic exposure (~4 fold greater systemic dose in F344 vs SD rats), rate of metabolism, and hepatic and lymph node retention of C26H52, which may be associated with the different strain sensitivities to the formation of liver granulomas and MLN histiocytosis. Highly and Severely Refined Distillate Base Oils **Acute toxicity:** Multiple studies of the acute toxicity of highly & severely refined base oils have been reported. Irrespective of the crude source or the method or extent of processing, the oral LD50s have been observed to be >5 g/kg (bw) and the dermal LD50s have ranged from >2 to >5g/kg (bw). The LC50 for inhalation toxicity ranged from 2.18 mg/l to> 4 mg/l. When tested for skin and eye irritation, the materials have been reported as “non-irritating” to “moderately irritating” Testing in guinea pigs for sensitization has been negative **Repeat dose toxicity: .** Several studies have been conducted with these oils**. T**he weight of evidence from all available data on highly & severely refined base oils support the presumption that a distillate base oil’s toxicity is inversely related to the degree of processing it receives. Adverse effects have been reported with even the most severely refined white oils - these appear to depend on animal species and/ or the peculiarities of the study. ▸ The granulomatous lesions induced by the oral administration of white oils are essentially foreign body responses. The lesions occur only in rats, of which the Fischer 344 strain is particularly sensitive, ▸ The testicular effects seen in rabbits after dermal administration of a highly to severely refined base oil were unique to a single study and may have been related to stress induced by skin irritation, and ▸ The accumulation of foamy macrophages in the alveolar spaces of rats exposed repeatedly via inhalation to high levels of highly to severely refined base oils is not unique to these oils, but would be seen after exposure to many water insoluble materials. **Reproductive and developmental toxicity:** A highly refined base oil was used as the vehicle control in a one-generation reproduction study. The study was conducted according to the OECD Test Guideline 421. There was no effect on fertility and mating indices in either males or females. At necropsy, there were no consistent findings and organ weights and histopathology were considered normal by the study’s authors. A single generation study in which a white mineral oil (a food/ drug grade severely refined base oil) was used as a vehicle control is reported. Two separate groups of pregnant rats were administered 5 ml/kg (bw)/day of the base oil via gavage, on days 6 through 19 of gestation. In one of the two base oil dose groups, three malformed foetuses were found among three litters The study authors considered these malformations to be minor and within the normal ranges for the strain of rat. **Genotoxicity**: *In vitro* (mutagenicity): Several studies have reported the results of testing different base oils for mutagenicity using a modified Ames assay Base oils with no or low concentrations of 3-7 ring PACs had low mutagenicity indices. *In vivo* (chromosomal aberrations): A total of seven base stocks were tested in male and female Sprague-Dawley rats using a bone marrow cytogenetics assay. The test materials were administered via gavage at dose levels ranging from 500 to 5000 mg/kg (bw). Dosing occurred for either a single day or for five consecutive days. None of the base oils produced a significant increase in aberrant cells. **Carcinogenicity:** Highly & severely refined base oils are not carcinogens, when given either orally or dermally. **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.
GLASS FIBRES	The dust has been associated with skin irritation due to the mechanical action of the fibres [CHEMINFO, Sax, ILO ENCYCLOPAEDIA]. MMMF are manufactured to definite fibre diameters and cannot split along their length rather they break across and form small particles not needles [FARIMA]. Borosilicate ingredients are insoluble, inert, and will not significantly penetrate the skin. The metal cations (such as lead, zinc, silver are secure in the molecules and will not be bioavailable. Therefore, there would not be any systemic toxicity expected from dermal application or contact. These ingredients are not dermal irritants or sensitizers. Borosilicate use in personal care products introduces the possibility of inhalation exposure. The particle size of borosilicate glasses was reported to range from 50 nm – 1000 um with the largest portion being in the 50 – 300 um range. The sizes of a substantial majority of the particles of these ingredients, as manufactured, are larger than the respirable range and/or aggregate and agglomerate to form much larger particles in formulation. These ingredients are reportedly used at concentrations up to 4% in cosmetic products that may be aerosolized and up to 97% in products that may become airborne. Around 95% – 99% of droplets/particles would not be respirable to any appreciable amount. Coupled with the small actual exposure in the breathing zone and the short exposure time, this information indicates that incidental inhalation would not be a significant route of exposure that might lead to local respiratory or systemic toxic effects. Notably there is a lack of irritation or sensitization in tests of dermal exposure, no systemic toxicity at 5000 mg/kg, and the absence of genotoxicity in an Ames test for a supernatant of the related chemical calcium borosilicate. Borosilicate glasses are chemically inert and thus not systemically toxic. The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. For fibre glass wool: In October 2001, IARC classified fiber glass wool as Group 3, "not classifiable as to its carcinogenicity to humans." The 2001 decision was based on current human and animal research that shows no association between inhalation exposure to dust from fibre glass wool and the development of respiratory disease. This is a reversal of the IARC finding in 1987 of a Group 2B designation (possibly carcinogenic to humans) based on earlier studies in which animals were injected with large quantities of fiber glass. NTP and ACGIH have not yet reviewed the IARC reclassification or the most current fibre glass health research; at this time, both agencies continue to classify glass wool based on the earlier animal injection studies. There is little evidence for acute toxicity after inhalation of rockwool/ slagwool/ glasswool mineral fibres (MMMF). Rockwool/glasswool administered by inhalation produced little pulmonary fibrosis in experimental animals. [IARC Monograph 43] Animal studies with amorphous silica show that surviving rats rapidly recovered on removal from dust, the silica was largely eliminated and cellular nodules, perivascular infiltrations and emphysema were almost completely resolved [Patty's]. The dust has been associated with skin irritation due to the mechanical action of the fibres [CHEMINFO, Sax, ILO ENCYCLOPEDIA]. MMMF are manufactured to definite diameters and cannot split along their length rather they break across and form small particles not needles [FARIMA].
SILICA CRYSTALLINE - QUARTZ	**WARNING:** For inhalation exposure ONLY: This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS** The International Agency for Research on Cancer (IARC) has classified occupational exposures to **respirable** (<5 um) crystalline silica as being carcinogenic to humans . This classification is based on what IARC considered sufficient evidence from epidemiological studies of humans for the carcinogenicity of inhaled silica in the forms of quartz and cristobalite. Crystalline silica is also known to cause silicosis, a non-cancerous lung disease. Intermittent exposure produces; focal fibrosis, (pneumoconiosis), cough, dyspnoea, liver tumours. * Millions of particles per cubic foot (based on impinger samples counted by light field techniques). NOTE : the physical nature of quartz in the product determines whether it is likely to present a chronic health problem. To be a hazard the material must enter the breathing zone as respirable particles.
FIBREGLASS REINFORCEMENTS	Insulation wools belong to the generic group of man-made vitreous fibres (MMVF) also known as man-made mineral fibres (MMMF) or synthetic mineral fibres (SMF). The insulation wools are significantly different from other types of MMVF such as refractory ceramic fibres, reinforcement fibres and glass microfibres used for special applications. Insulation wools are different not only in the dimensions of their fibres but also in their chemical composition and their biopersistence. Specifically, insulation wools are defined within the European Union and elsewhere as being man-made vitreous (silicate) fibres with random orientation and

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	with the Na2O+K2O+CaO+MgO+BaO content exceeding 18% by weight. The sum of percentages of the weights of oxides in the fibre (KI) has been shown to be the best predictor of in-vitro solubility at pH 7.4. Fibres with a KI of 40 or more are highly soluble and are unlikely to pose a carcinogenic risk. For glass wool reducing the alumina content of fibres and increasing boron has been found to significantly increase in-vitro solubility at pH 7.4 whilst at pH 4.5 the dissolution rate is very low at low alumina contents. For rock (stone) wool composites , biosolubility is created when the alumina content is increased to 17-18% and silicon oxide content is reduced to below 42-43% - alternately alumina may be decreased to below 3-4% and phosphate content increased. Biosoluble insulation wools dissolve more readily in physiological fluids in the lung than most other MMVFs and thus do not persist in the lung. They have a low biopersistence. The length of time which a fibre type stays within tissue is a principal indicator of the pathogenic effect of the fibre. The biopersistence of the substance is the net effect of dissolution, leaching and clearance. Large fibres generally persist in tissue longer than small fibres but glass fibres are probably exceptional as longer glass fibres are cleared more quickly. Regulation around the world nevertheless place limits on the half-life of fibres longer than 20 um following short-term inhalation and intratracheal instillation. The lack of inhalation risk of biosoluble fibres contrasts with the known effects on the lung and pleura of more durable fibres. EEC directive 97/69/EC exonerates these materials from any carcinogenic classification. [Rats have been exposed 6 hours per day, 5 days per week during 2 years at an average concentration of 200 fibres per mL (200 to 300 times higher than concentrations found in manufacturing plants). Preliminary findings are: No formation of fibrous tissue. No significant elevated tumour incidence over the negative control group. Reversible cellular changes are evident: these are similar to the effects observed after inhalation of inert dust. [Manufacturer] Studies in inorganic fibre toxicology demonstrates that fibre biopersistence and in vitro dissolution rate correlate well with fibre pathogenicity. Test fibres for one such study included eight synthetic vitreous fibres (SVFs), refractory ceramic fibre (RCF1), four fibre glasses (FGs), rock wool, slag wool, HT stone wool- and two asbestos types (crocidolite and amosite). Fibre toxicology and biopersistence were investigated using rodents exposed by inhalation. To evaluate chronic inhalation toxicity, rodents were exposed nose-only to 100 fibres > 20 mum in length (F > 20 mum)/cm3, 6 h/day, 5 days/wk, for 2 yr (rats) or 1 1/2yr (hamsters). To evaluate lung biopersistence, rats were exposed nose-only for 5 days to fibre aerosol; lung burdens were then analysed during 1 yr postexposure. In vitro dissolution rate was evaluated in a flow-through system using physiological solutions that mimic the inorganic components of extra- and intracellular lung fluids. The 10 test fibres encompassed a range of respiratory toxicities, from transient inflammation only to carcinogenesis. Lung clearance weighted half-times (WT1/2) for F > 20 mum were 6-15 days for stonewool, building insulation fibre glasses, and slag wool; 50-80 days for rock wool, 2 special-application FGs, and RCF1; and > 400 days for asbestos. WT1/2 correlated with pathogenicity: The rapidly clearing fibres were innocuous (insulation fibre glasses, slag wool, and stonewool), but the more biopersistent fibres were fibrogenic (rock wool) or fibrogenic and carcinogenic (special-application fibre glasses, RCF1, amosite and crocidolite asbestos). In vitro dissolution rates (kdis = ng/cm2/h) of the 10 fibers at pH 7.4 or 4.5 ranged from < 1 to > 600. Fibres that dissolved rapidly in vitro also cleared quickly from the lung and induced only transient inflammation in the chronic studies. In contrast, fibres that dissolved slowly in vitro were biopersistent in the lung and tended to induce permanent pathogenicity. Other in vitro studies of fiber degradation suggest that, in addition to fiber dissolution, fiber leaching and subsequent transverse breakage may also be important mechanisms in lung biopersistence and hence pathogenicity. The validity of using lung biopersistence for predicting the potential pathogenicity of synthetic vitreous fibres (SVFs) is confirmed by this research. The research also supports the use of in vitro fibre degradation at pH 7.4 and/or pH 4.5 as an indicator of SVF potential pathogenicity. [Hesterberg T.W., Hart G.A: Inhalation Toxicology 12, Supplement to Issue 10, October 2000, pp 91-97] In another study the pathology resulting after long- term tests (inhalation and injection into the abdominal cavity) in rats of a new biosoluble type was investigated. The biosoluble fibre type was characterised by a relatively high content of aluminum and a relatively low content of silica compared to the traditional stone wool. This biosoluble fibre had a high in-vitro dissolution rate at pH 4.5 and a relatively low dissolution rate at pH 7.4. In a short-term inhalation study this biosoluble fibre was considerably less biopersistent (more biosoluble) than stone wool and other MMVFs. In contrast, to the biosoluble fibre, stone wool caused pulmonary fibrosis in long- term inhalation studies. For both fibre types the incidence of tumors was comparable to the control groups. Also in injection studies the importance of the high biosolubility of fibres was confirmed, because stone wool caused a significant increase of mesotheliomas in the abdominal cavity while the biosoluble-fibre exposed rats did not show any mesotheliomas.
N-PENTANE	[GENIUM and CCINFO, V.W.&R.]
BITUMEN ROAD MAKING & BITUMEN (BLOWN) & NAPHTHENIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE) & FIBREGLASS REINFORCEMENTS & PHENOL/ FORMALDEHYDE/ UREA RESIN	No significant acute toxicological data identified in literature search.
BITUMEN ROAD MAKING & BITUMEN (BLOWN)	**WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.
CALCIUM CARBONATE & GLASS FIBRES	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
STYRENE/ BUTADIENE COPOLYMER & NAPHTHENIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE) & GLASS FIBRES	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.

Acute Toxicity	✗	**Carcinogenicity**	✗
Skin Irritation/Corrosion	✗	**Reproductivity**	✗
Serious Eye Damage/Irritation	✗	**STOT - Single Exposure**	✗

Continued...

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

SOPRASMART BOARD

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

bitumen road making

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

calcium carbonate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	1h	Fish	4-320mg/l	4
EC50	72h	Algae or other aquatic plants	>14mg/l	2
LC50	96h	Fish	>229.245mg/L	4

bitumen (blown)

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

styrene/ butadiene copolymer

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

naphthenic distillate, heavy, hydrotreated (severe)

Endpoint	Test Duration (hr)	Species	Value	Source
ErC50	72h	Algae or other aquatic plants	>1000mg/l	1
NOEC(ECx)	504h	Crustacea	>1mg/l	1
EC50	96h	Algae or other aquatic plants	>1000mg/l	1
EC50	48h	Crustacea	>1000mg/l	1

glass fibres

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	72h	Crustacea	>=1000mg/l	2
EC50	72h	Algae or other aquatic plants	>1000mg/l	2
LC50	96h	Fish	>1000mg/l	2

silica crystalline - quartz

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

fibreglass reinforcements

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	72h	Crustacea	>=1000mg/l	2
EC50	72h	Algae or other aquatic plants	>1000mg/l	2
LC50	96h	Fish	>1000mg/l	2

phenol/ formaldehyde/ urea resin

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

n-pentane

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	8h	Algae or other aquatic plants	1mg/l	1
EC50	72h	Algae or other aquatic plants	1.26mg/l	2
EC50	48h	Crustacea	2.7mg/l	2
LC50	96h	Fish	4.26mg/l	2

isopentane

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	72h	Algae or other aquatic plants	1.26mg/l	2
EC50	96h	Algae or other aquatic plants	5.2mg/l	2
EC50	72h	Algae or other aquatic plants	1.26mg/l	2
EC50	48h	Crustacea	2.3mg/l	1

Continued...

	LC50	96h	Fish	4.26mg/l	2

Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 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*

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
n-pentane	LOW	LOW
isopentane	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
n-pentane	LOW (BCF = 2.35)
isopentane	LOW (LogKOW = 2.7234)

Mobility in soil

Ingredient	Mobility
n-pentane	LOW (KOC = 80.77)
isopentane	LOW (KOC = 67.7)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ 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 Transport information

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

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

Not Applicable

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

Product name	Group
bitumen road making	Not Available
calcium carbonate	Not Available
bitumen (blown)	Not Available
styrene/ butadiene copolymer	Not Available
naphthenic distillate, heavy, hydrotreated (severe)	Not Available
glass fibres	Not Available
silica crystalline - quartz	Not Available
fibreglass reinforcements	Not Available
phenol/ formaldehyde/ urea resin	Not Available
n-pentane	Not Available
isopentane	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
bitumen road making	Not Available
calcium carbonate	Not Available
bitumen (blown)	Not Available

Continued...

Product name	Ship Type
styrene/ butadiene copolymer	Not Available
naphthenic distillate, heavy, hydrotreated (severe)	Not Available
glass fibres	Not Available
silica crystalline - quartz	Not Available
fibreglass reinforcements	Not Available
phenol/ formaldehyde/ urea resin	Not Available
n-pentane	Not Available
isopentane	Not Available

SECTION 15 Regulatory information

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

bitumen road making is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
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

calcium carbonate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

bitumen (blown) is found on the following regulatory lists

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

styrene/ butadiene copolymer is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

naphthenic distillate, heavy, hydrotreated (severe) is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
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

glass fibres is found on the following regulatory lists

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

silica crystalline - quartz is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
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

fibreglass reinforcements is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

phenol/ formaldehyde/ urea resin is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

n-pentane 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 4
Australian Inventory of Industrial Chemicals (AIIC)

isopentane 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 4
Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (bitumen road making; bitumen (blown); styrene/ butadiene copolymer; naphthenic distillate, heavy, hydrotreated (severe); glass fibres; silica crystalline - quartz; fibreglass reinforcements; phenol/ formaldehyde/ urea resin; n-pentane; isopentane)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (styrene/ butadiene copolymer; phenol/ formaldehyde/ urea resin)
Japan - ENCS	No (bitumen road making; bitumen (blown); glass fibres; fibreglass reinforcements)

Continued...

National Inventory	Status
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	No (phenol/ formaldehyde/ urea resin)
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (bitumen (blown); phenol/ formaldehyde/ urea resin)
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 Other information

Revision Date	26/04/2021
Initial Date	23/04/2021

SDS Version Summary

Version	Date of Update	Sections Updated
3.1.1.1	26/04/2021	Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Chronic Health, Classification, Engineering Control, Fire Fighter (fire/explosion hazard), First Aid (eye), First Aid (inhaled), First Aid (skin), Handling Procedure, Ingredients, Personal Protection (other), Personal Protection (Respirator), Personal Protection (eye), Personal Protection (hands/feet), Spills (minor), Storage (storage incompatibility), Storage (storage requirement), Storage (suitable container), Toxicity and Irritation (Other), Use
3.1.2.1	27/04/2021	Regulation Change

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