MATERIAL SAFETY DATA SHEET
AUSTRALIAN STANDARD BITUMEN

HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS/DANGEROUS NATURE:
Non-Hazardous substance dangerous goods.

FIRST AID MEASURES

EYE CONTACT:
1) COLD PRODUCT: Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.
2) HOT PRODUCT: Flood with water to dissipate heat. In the event of any product remaining, do not try to remove it other than by continued irrigation with water. Obtain medical attention immediately.

SKIN CONTACT:
1) COLD PRODUCT: Wash contaminated skin with soap and water. Remove contaminated clothing and wash underlying skin as soon as reasonably practicable.
2) HOT PRODUCT: Flood skin with cold water to dissipate heat, cover with clean cotton or gauze, obtain medical advice immediately.

INHALATION:
1) If inhaled, remove to fresh air. Get medical attention if symptoms appear.
2) Inhalation of hydrogen sulphide may cause central respiratory depression leading to coma and death. It is irritant to the respiratory tract causing chemical pneumonitis and pulmonary oedema. The onset of pulmonary oedema may be delayed for 24 to 48 hours. Treat with oxygen and ventilate as appropriate. Administer broncho-dilators if indicated and consider administration of corticosteroids. Keep casualty under surveillance for 48 hours in case pulmonary oedema develops.
3) Where skin burns occur the area should be immediately immersed in cold water until the product is thoroughly cooled.
4) Do not attempt to remove the product from the skin as it provides an air-tight sterile covering over the burn which will eventually fall away with the scab as the burn heals.
5) If for any reason the product must be removed, this can be done using a slightly warmed medicinal liquid paraffin.
6) Kerosine and other solvents should never be used.
7) All burns should receive medical attention.
8) It should be noted that the product contracts on cooling and where a limb is encased care should be taken to avoid the development of a tourniquet effect.

FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA:
Ensure adequate ventilation.
1) SUITABLE: In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.
2) NOT SUITABLE: Do not use water jet.

HAZARDOUS DECOMPOSITION:
Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides.

UNUSUAL FIRE/EXPLOSION HAZARDS:
Do not allow hot molten product to come into contact with water or other liquids. Avoid spraying directly into storage containers because of the danger of boil-over. In a fire or if heated, a pressure increase will occur and the container may burst. Boil-over is the rapid increase in volume caused by the presence of water in hot product and the subsequent overflow from a tank.
Do not spray water onto hot product because of the danger of steam explosion. The rapid increase in pressure that is caused when water suddenly turns to steam can cause storage containers to rupture and can eject the product with great force over a wide area.
Self-heating, leading to auto-ignition can occur at the surface of porous or fibrous materials that have become impregnated with the product and its condensed fumes/vapours. Contamination by the product of thermal insulation near hot surfaces should be avoided. When it is necessary, thermal insulation that is non-absorbent should be used.

SPECIAL FIRE-FIGHTING PROCEDURES:
No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

PROTECTION OF FIRE-FIGHTERS:
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing vapour or mist. Ensure good ventilation. Follow all fire-fighting procedures. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. When handling hot material, wear heat resistant protective gloves, clothing and face shield that are able to withstand the temperature of the heated product.
This material can contain hydrogen sulphide (H2S) which is very toxic. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained positive pressure breathing apparatus (SCBA).

The preparation has not been tested but, the slow rates of bio degradation of bitumen can cause interference with the normal functioning of ecological cycles. Bitumens should therefore be contained and spills avoided.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately.

In case of spillages in the water, the product will cool down rapidly and become solid. The solid product is denser than water and will slowly sink to the bottom, and usually no intervention will be feasible.

If possible, contain the product. Collect the product and contaminated materials with mechanical means.

Transfer recovered product and other materials to suitable tanks or containers and store/dispose of according to relevant regulations.

LARGE SPILL:

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately.

SMALL SPILL:

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

LARGE SPILL:

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately.

HANDLING AND STORAGE

HANDLING:

Contact with hot product may cause burns. Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate. Avoid contact with skin and clothing. Wash thoroughly after handling. Do not spray onto wet road surfaces or when rain is forecast as any resultant run-off could contaminate ditches and drains.

STORAGE:

Clean, dry and heat resistant hoses should be used. Do not use steam or compressed air to empty pipelines and hoses. Do not use solvents to clear obstructions from pipelines. Gentle heat can be used to clear obstructions.

Australian Industry standards recommend a maximum temperature for storage of 200C. Under no circumstances should water be allowed to contact hot product because of the danger of boil-over. Particular care should be taken to ensure that bulk storage tanks are watertight and that any steam heating coils are regularly checked for leaks. For bulk product, the storage temperature should not fluctuate above and below 100°C as this increases the risk of water condensation leading to boil-over. Care must always be exercised when heating product through 100°C.

This product can be delivered, stored and used at temperatures above 100°C. For quality, technical, and health, safety and environmental reasons, bitumen should not be overheated during handling and storage. Our company representative will provide advice on storage and application temperatures, which are grade specific. Operating temperatures should be kept as low as possible to minimise fume generation. We recommend however that, as a general rule, bitumen temperature should be kept in the range 130°C to 200°C and never exceed the industry recommended maximum safe working temperature of 230°C. At temperatures above 230°C, significant decomposition can occur, with an increased risk of generating flammable/hazardous atmospheres. If exposure to bitumen fume generated at temperatures above 200°C cannot be precluded, skin and inhalation exposure should be avoided by ensuring adequate workplace ventilation and if necessary the use of appropriate personal protective equipment.

When product is stored for a long period of time, deposits may form on the walls and roofs of storage tanks. These deposits (carbonaceous materials, iron sulphide) may be pyrophoric and auto-ignite when they come into contact with oxygen in the air, for example, when product is removed from the tank. The control of oxygen concentration in the vapour space of the tank will help to prevent the formation of pyrophoric deposits.

Tanks containing product can be heated by heater tubes. Care should be taken when product is being pumped from a tank to avoid the risk of fire or explosion caused by exposing hot heater tubes. Unless the heat has been switched off for a period of time to allow sufficient cooling to occur, precautions should be taken to prevent the level of product above the heater tubes dropping below 150 mm.

This material can contain hydrogen sulphide (H2S), a very toxic and extremely flammable gas. Vapours containing hydrogen sulphide may accumulate during storage or transport and may also be vented during filling of tanks. Hydrogen sulphide has a typical "bad egg" smell but at high concentrations the sense of smell is rapidly lost, therefore do not rely on sense of smell for detecting hydrogen sulphide. Use specially designed measuring instruments for determining its concentration.

EXPOSURE CONTROLS

OCCUPATIONAL EXPOSURE CONTROLS:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organization for standards.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

HYGIENE MEASURES:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION

Use only with adequate ventilation. Do not breathe vapour or mist. In case of insufficient ventilation, wear suitable respiratory equipment.

Avoid breathing of vapours, mists or spray. Select and use respirators in accordance with AS/NZS 1715/1716. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure level.

Approved air-supplied breathing apparatus must be worn where there is a risk of inhaling hydrogen sulphide gas. Personal gas monitors may also provide early warning of hydrogen sulphide.

Air-filtering respirators, also called air-purifying respirators, will not be adequate under conditions of oxygen deficiency (i.e. low oxygen concentration), and would not be considered suitable where airborne concentrations of chemicals with a significant hazard are present. In these cases air-supplied breathing apparatus will be required.

SKIN AND BODY:

Avoid contact with skin and clothing. Wear suitable protective clothing. Wear impervious overalls covering full body and limbs, with legs worn over protective boots.

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Thermal resistant clothing will be required when handling hot products.

HAND PROTECTION:

1) **COLD MATERIAL:** Wear chemical resistant gloves. Recommended: Nitrile gloves.

2) **HOT MATERIAL:** To prevent thermal burns wear heat resistant and impervious gauntlets/gloves.

EYE PROTECTION:

1) **COLD MATERIAL:** Wear safety glasses with side shields.

2) **HOT MATERIAL:** To prevent thermal burns wear a helmet, full face visor and heat resistant neck flap / apron. Chemical splash goggles.

STABILITY AND REACTIVITY

STABILITY:

The product is stable.

CONDITIONS TO AVOID:

Avoid extreme temperatures, strong oxidizers, fire.

INCOMPATIBILITY WITH VARIOUS SUBSTANCES/HAZARDOUS REACTIONS:

Reactive or incompatible with the following materials: oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS:

Decomposition products may include the following materials: carbon dioxide, carbon monoxide and sulfur oxides.

TOXICOLOGICAL INFORMATION

EFFECTS AND SYMPTOMS:

1) **EYES:** Will cause burns if hot material contacts eyes. Vapour, mist or fume may cause eye irritation.
2) **SKIN:** Will cause burns if hot material contacts skin.
3) **INHALATION:** May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.
4) **INGESTION:** Ingestion of hot product is unlikely but will cause severe burns.

CHRONIC TOXICITY:

1) **CARCINOGENIC EFFECTS:** No component of this product at levels greater than or equal to 0.1% is identified as a carcinogen by ACGIH, the International Agency for Research on Cancer (IARC), the European Commission (EC), or the National Occupational Health and Safety Commission (Australia).
2) **MUTAGENIC EFFECTS:** No known significant effects or critical hazards..
3) **OTHER INFORMATION:** When product is heated to high temperatures, vapour, mists or fumes will be given off and may condense, contaminating the skin or clothing of operatives. Prolonged or repeated contact with this condensate may give rise to dermatitis.

ECOLOGICAL INFORMATION

PERSISTENCE/DEGRADABILITY:

Not readily biodegradable.

MOBILITY:

Spillages are unlikely to penetrate the soil.

BIOACCUMULATIVE POTENTIAL:

This product is not expected to bioaccumulate through food chains in the environment.

OTHER ECOLOGICAL INFORMATION:

Density (g/cm3): ~1. This product has a density close to that of water. Spills are unlikely to form a distinct film on the water surface, and may become dispersed as globules if mixed or agitated.

Density (g/cm3): < 1 Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS / WASTE INFORMATION:

The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SPECIAL PRECAUTIONS FOR LANDFILL OR INCINERATION:

No additional special precautions identified.

OTHER INFORMATION

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.