

## MATERIAL SAFETY DATA

**ISSUE DATE: MAY 2009****Product Name : BIPL BITUMEN EMUSION**

### 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name** : BIPL –BITUMEN EMULSION  
**Company Name** : Benzene International Pte Ltd  
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#### Recommended Use

Bitumen product for road building, industrial and civil engineering materials and processes. For specific application advice see appropriate Technical Data Sheet or consult your BIPL representative. This data sheet and health, safety and environmental information it considered to be accurate as of the date specified above. We have reviewed any information contained herein which we received from sources outside BIPL .However, no warranty or representation, expressed or implied is made as to the accuracy or completeness of the data and information contained in this Data sheet. Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and /or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this Data Sheet shall be construed as permission, recommendation or authorization given or implied to practice any patented invention without a valid licence.The BIPL shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material.

### 2. HAZARDS IDENTIFICATION

#### Hazard Classification

HAZARDS SUBSTANCE.NON – DANGEROUS GOODS

Contact with the hot product may cause burns .Contact with cold product is likely to cause skin& eye irritation. Bitumen contains polycyclic aromatic hydrocarbons (PCHA) which become more bioavailable when bitumen is solublised with water. Some PCHA have been shown by experimental studies to induce skin cancer. Vapors 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 high concentrations the sense of the smell is rapidly lost; therefore do not rely on sense of smell of detecting hydrogen sulphide. Use specially designed instruments for determining its concentration.

#### Risk Phrase(s)

R36/38 Irritating to eyes and skin

#### Safety Phrase(s)

S23 Do not breathe gas/fumes/vapour /spray

S24/25 In case of contact with the eyes rinse immediately with plenty of water and seek medical advice.

S28 After contact with skin, wash immediately with plenty of water  
S36/37/39 Wear suitable protective clothing, gloves and eye face protection.

### 3. COMPOSITION /INFORMATION ON INGREDIEBNTS

#### Composition, Information on Ingredients

This product consists of Bitumen, a complex black solid consisting predominantly of high molecular weight organic compounds with carbon numbers greater than the C25 and high carbon to hydrogen ratios, with amines and performances additives in a mixture of kerosene and water.

Bitumen CAS No. 8052-42-4 >60% w/w

Or

Asphalt, Oxidized CAS No. 64742-93-4 >60%w/w

Cationic Emulsifier <10 %

Other ingredients considered non-hazardous to 100%

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non-hazardous ingredients are also possible.

### 4. FIRST AID MEASURES

#### Inhalation

If inhalation of mists, fumes or vapour causes irritation to the nose or throat, or coughing, removes to fresh air. If symptoms persist obtain medical advice.

#### Exposure to Hydrogen Sulphide

Casualties suffering ill effects as a result of exposure to hydrogen sulphide should be immediately removed to fresh air and medical assistance obtained without delay. Unconscious casualties must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth-to-mouth method. Administer external cardiac massage if necessary. Seek immediate medical attention. It is advisable that all who are engaged in operations, in which contact with hydrogen sulphide may reasonably be anticipated, should be trained in the techniques of emergency resuscitation and in the care of an unconscious patient.

#### Ingestion

If contamination of the mouth occurs, wash out thoroughly with water. Except as deliberate act, the ingestion of large amounts of product is unlikely. If it should occur, DO NOT INDUCE VOMITTING; obtain medical advice.

#### Skin

Where skin burns occur, the area should be immediately immersed in cold water until the bitumen is cooled. Do not attempt to remove the bitumen from the skin as it provides an air tight sterile cover over the burn, which will eventually fall away with the scab as the wound heals. If for any reason, the bitumen must be removed, this can be done using slightly warmed medicinal liquid paraffin. Kerosene or other solvents should never be used to remove bitumen from skin or clothing.

All burns should receive medical attention. It should be noted that bitumen contracts on cooling and where a limb encased, care should be taken to avoid the development of tourniquet effect. If the skin becomes contaminated with product at ambient temperature wash the skin thoroughly with soap and water. Seek medical advice if irritation persists.

**Eye**

Cold product –Wash thoroughly with copious quantities of water, ensuring eyelids are open. Obtain medical advice if any pain or redness develops or persists. Hot product- Flood immediately with water to dissipate the heat, if possible ensuring eyelids are held open. In the event of any product remaining, do not try to remove it other than by continued irrigation with water take the casualty to hospital for examination and treatment without delay.

**Advice to Doctor**

Treatment should in general be symptomatic and directed to relieving effects. Inhalation of hydrogen may cause central nervous system depression leading to coma and death. It is irritant to the respiratory tract chemical pneumonitis and pulmonary edema. The onset of pulmonary may be delayed 24 to 48 hours. Treat with oxygen and ventilate as appropriate.

Administer bronchodilators if indicated and consider administration of corticosteroids. Keep casualty under surveillance for 48 hours in case of pulmonary edema develops. Aspiration of the product is unlikely to occur except as a result of ingestion, followed by vomiting or regurgitation in a partially or totally unconscious individual, where immediate effects are most likely to result from the aspiration of acidic stomach contents. If it should occur transport casualty immediately to hospital.

**5. FIRE FIGHTING MEASURES****Fire fighting Measures**

Under normal conditions, the product will not support combustion. However, if the liquid is subjected to high temperatures, sufficient for decomposition, this may not apply and the product may burn. For major fires, call the fire Brigade immediately. Ensure an escape path is always available from any fire. There is a danger of flashback if sparks or hot surfaces ignite vapour. In case of fire, use foam, dry Chemical, carbon dioxide, vaporizing liquid or water delivered as a fine spray.

DO NOT USE WATER JETS.

FIRES IN CONFINED SPACES SHOULD BE DEALT WITH BY TRAINED PERSONNEL WEARING APPROVED BREATHING APPARATUS.

Water may be used to cool nearby heat exposed areas/objects/packages. Avoid spraying directly into storage containers because of the danger of boil-over.

**Hazards from Combustion Products**

Toxic fumes may be evolved on burning or exposure to heat. See stability and reactivity, section 10 of this Material Safety Data Sheet.

**Hazchem Code**

None allocated.

## 6. ACCIDENTAL RELEASE MEASURES

### Emergency Procedures

This product contains emulsified bitumen droplets that are suspended in an aqueous (water based) solution. The product will be liquid under standard storage conditions. The bitumen in the product may precipitate if it is diluted with large volumes of water, or comes in contact with reactive surfaces (eg. road aggregates, sand, and soil, concrete surfaces).

Wear protective equipment (See exposure controls/Personal Protection of this Material Safety Data Sheet for details.) Contain and recover liquid using sand or other suitable inert absorbent material.

Protect drains from potential spills and prevent entry of product. Do not wash product in to drainage system since this results in a blockage if the bitumen in the product precipitates. Should blockage occur, notify the appropriate authority immediately. Scrape up bulk of solid material and remove the remainder with sand or other suitable absorbent material. It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage, which may be reasonably anticipated. If necessary, clean the resultant area using hot water and detergent; absorb the washings with suitable absorbent material or sand. Do not wash in to drains. In the case of large spills contact the appropriate authorities. Spillage of hot product in confined spaces may be especially hazardous because flammable gases including highly toxic hydrogen sulphide gas may be present. For such spillages, the use of approved breathing apparatus by personnel specially trained in its use may be required. Vapour may collect in any confined spaces. If spillage has occurred in a confined space, ensure adequate ventilation and check that a safe, breathable atmosphere is before entry. Protect environmentally sensitive areas and water supplies. In the case of spillage on water, the product may sink and recovery may be difficult. Regular surveillance on the location of the spillage should be maintained.

## 7. HANDLING AND STORAGE

### Precautions for Safe Handling

Avoid skin contact. Good working practices, high standards of personnel hygiene and plant cleanliness must be maintained at all times. Whilst using, do not eat, drink or smoke. Wear appropriate gloves. Wash hands thoroughly after contact. Removal of bitumen from the skin is best achieved by the use of a suitable hand cleaner. Do not use solvents, such as kerosene. Regular periodic self inspection of the skin is recommended, especially those areas subject to contamination. In the event of any localized changes in appearance or texture of the skin being noticed, medical advice should be sought without delay. Contact with hot product will cause burns. Ensure good ventilation and avoid, as far as reasonably practicable, the inhalation and contact with the vapours, mists or fumes which may be generated during use. If such vapour, mists or fumes are generated their concentration in the workplace air should be controlled to the lowest reasonably practicable level. Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate. Do not siphon product by mouth. Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets. Take all necessary precautions against accidental spillage into soil or water.

### Conditions for safe storage

Bitumen emulsions should be stored above 5°C (to avoid freezing) and below 90°C (to avoid boil over). During heating, the product should be thoroughly circulated to avoid overheating. Highly toxic hydrogen sulphide gas may be emitted from hot product and accumulate in enclosed spaces or tanks.

extreme care must therefore be taken during venting of tanks and enclosed spaces which have, at any time, contained hot product. Under no circumstances should entry be made into small enclosures without taking full precautions. Confined spaces contaminated with hydrogen sulphide must always be considered as constituting potentially life-threatening environments. Entry into such spaces must never be undertaken except under extreme emergency when no alternative is possible and then by trained operators wearing air-supplied breathing apparatus of an approved type and following procedures strictly in accordance with statutory regulations. Always have sufficient personnel standing outside the tank with appropriate breathing apparatus and equipment to effect a quick rescue. It is advisable that all who are engaged in operation in which contact with hydrogen sulphide may reasonably be expected should be trained in the techniques of emergency resuscitation and in the care of unconscious patient.

#### **Other Information**

##### **Fire prevention**

Bitumen emulsions must not be allowed to come into contact with hot bitumen as there is a serious risk of rapid violent expansion of this mixture. When changing between bitumen and emulsions, spraying equipment should be thoroughly drained and correct cleaning/filling procedures followed. Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperature below the normal flash point.

(Note: Flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank head spaces).

Tank headspaces should always be regarded as potentially flammable. For advice on storage temperature, please contact our local BIPL representative.

## **8. EXPOSURE CONTROL/PERSONEL PROTECTION**

#### **National Exposure Standards**

Avoid, as far as reasonably practicable, inhalation of vapour, mists or fumes generated during use. If vapour, mists or fumes are generated, their concentration in workplace air should be controlled to the lowest reasonably practicable level.

NOHSC Australia recommends an exposure standard for an 8 hour time weighted average (TWA) of 10 ppm for hydrogen sulphide and 5 mg/m<sup>3</sup> for bitumen fumes. The short term exposure limit for hydrogen sulphide is 15 ppm.

#### **Biological Limit Values**

No biological limit allocated.

#### **Engineering Controls**

Ensure good ventilation.

#### **Respiratory Protection**

If operations are such that excessive generation and inhalation of vapour mist or fume may be anticipated, then respiratory equipment meeting appropriate Australian Standards for mists and organic vapours should be worn. Reference should be made to Australian/New Zealand Standards AS/NZS 1715 section. Use and maintenance of respiratory protective devices; and AS/NZS 1716, Respiratory Protective Devices.

The use of respiratory equipment must be strictly in accordance with the manufacturer's instructions and any statutory requirements governing its selection and use.

### Body Protection

When handling product, suitable protective clothing of an appropriate standard should be worn. Depending on the type of operation this may include:-Visor to protect face and head covering with neck Flap (Eye protection should confirm with Australian/New Zealand Standard AS/NZS 1337-Eye Protectors for Industrial Applications.)-Gauntlets (heat resistant and impervious to solvent)(Reference should be made to AS/NZS 2161.1: Occupational protective gloves-selection, use and maintenance.)-Overalls, impervious to bitumen covering full body and limbs with legs of overalls. Worn over boots to prevent burns to the legs and feet;-Protective boots.

Protective clothing should be regularly dry cleaned and laundered. Changes heavily contaminated clothing as soon as reasonably practicable and launder before use. Wash any contaminated underlying skin with soap and water

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Dark brown liquid
<b>Odour</b>	Mild Bitumen odour
<b>Freezing Point</b>	0°C (water)
<b>Boiling Point</b>	100°C (water)
<b>Solubility in Water</b>	Miscible then precipitates bitumen
<b>Ph Value</b>	2.1 to 3.5
<b>Vapour Pressure</b>	2.37kPa @ 20°C (water)
<b>Vapour Density (Air=1)</b>	Not Available
<b>Viscosity</b>	25mm <sup>2</sup> /s@ 40°C (ASTM D455)
<b>Density</b>	1.02 kg/L at 15°C
<b>Flash Point</b>	Not Applicable. Will not burn under normal circumstances
<b>Auto-Ignition Temperature</b>	Not Applicable
<b>Flammable Limits-Lower</b>	Not Applicable
<b>Flammable Limits-Upper</b>	Not Applicable

## 10. STABILITY AND REACTIVITY

### Inhalation Stability

This product stable and unlikely to react in a hazardous manner under normal conditions of use.

### Incompatible Materials

Avoid contact with strong oxidizing agents. Other hot bitumen products.

### Hazardous Decomposition Products

Thermal decomposition can produce a variety of compounds, the precise nature of which will depend on the decomposition conditions. Incomplete combustion /thermal decomposition will generate smoke, carbon dioxide and hazardous gases, which will include carbon monoxide, hydrogen sulphide and oxides

of sulphur. Overheating in storage may cause partial vaporization and decomposition with the production of toxic hydrogen sulphide gas.

**Hazardous Polymerization**

Hazardous polymerization reactions will not occur.

**11. TOXICOLOGICAL INFORMATION**

**Inhalation**

Inhalation at normal temperatures this product will be unlikely to present an inhalation hazard because of its low volatility. This material contains polycyclic aromatic hydrocarbons (PCHA's) at low levels. The handling procedures and personal protective measures described should be followed to minimize employee exposure.

**Ingestion**

Unlikely to be accidentally swallowed in view of the high handling temperatures. Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhea.

**Skin**

Will cause burns if hot material contacts skin. Likely to cause skin irritation. Symptoms may include itching and reddening of eyes and watering which may become copious.

**Chronic Effects**

Bitumen's contain polycyclic aromatic hydrocarbons (PCHA's) which become more bioavailable when bitumen is solubilised with water. Some PCHA's have been shown by experimental studies to induce skin cancer.

**12. ECOLOGICAL INFORMATION**

<b>Persistence/Degradability</b>	This product is not biodegradable
<b>Mobility</b>	Spillage may penetrate the soil causing groundwater contamination.
<b>Bioaccumulative Potential</b>	This material may accumulate in sediments.
<b>Other Adverse Effects</b>	May be harmful to aquatic organisms.
<b>Environ. Protection</b>	Prevent this material entering waterways, drains and sewers

**13. DIPOSAL CONSIDERATION**

**Disposal Considerations**

Dispose of via an authorized person/licensed waste disposal contractor in accordance with local regulations. Incineration may be carried out under controlled conditions provided that local regulations for emissions are met. Where possible, arrange for product to be recycled.

**14. TRANSPORT INFORMATION**

<b>Transport Information</b>	Not classified as Dangerous for transport (ADG, UN, IATA/ICAO).
<b>U.N. Number</b>	None Allocated
<b>Proper Shipping Name</b>	None Allocated
<b>DG Class</b>	None Allocated

<b>Hazchem Code</b>	None Allocated
<b>Packing Group</b>	None Allocated

## 15. REGULATORY INFORMATION

**Poisons Schedule** Not Scheduled

### Packing & Labeling

Not classified using the criteria in the Standard Uniform Schedule for Drugs and Poisons.

### Hazard Category AICS (Australia)

Irritant All of the significant ingredients in this formulation are compliant with NICNAS regulations.

## 16. OTHER INFORMATION

**Date of Preparation or Last** MSDS Creation: May 2009