

SAFETY DATA SHEET

Bitumen 7-10%



SECTION 1: Identification of the Substance and Supplier

Product Name:	Bitumen 7-10%
Recommended Use:	Product is predominantly used in road making
Company Details:	Road Science
Address:	9 Owens Place, Mt Maunganui
Telephone Number:	07 575 1150
Emergency Telephone Number:	07 575 1150 24hr / 7 days or National Poisons Centre 0800 POISON (0800 764 766)

SECTION 2: Hazards Identification

Hazard Classification:	Classified as hazardous according to the Hazardous Substances (Classification) Regulation 2001 3.1D
Group Standard:	HSR001519
Risk Phrase:	R14 – Reacts violently with water R18 – In use, may form flammable/explosive vapour/air mixture R35 - Causes severe burns in liquid state R38 – irritating to skin R36 – irritating to eyes R42 – may cause sensitisation by inhalation

SECTION 3: Composition/Information on Ingredients

Chemical Identity	Concentration	Cas Number
Bitumen – petroleum hydrocarbons	> 90%	8052-42-4
Kerosene	< 10%	800-20-6
Diesel	< 10%	68334-30-5

SECTION 4: First Aid Measures

Requirement for First Aid: Bitumen is unlikely to be ingested or swallowed in view of the high handling temperature of the product (120-180°C). The most likely need for first aid when handling hot bitumen is the treatment of burns. Bitumen fumes give off Hydrogen Sulphide which may irritate the eyes, nasal passages and throat.

Workplace Facilities: An emergency cooling shower with a step-on footplate (or equivalent) hands-free mode of operation) and eyewash should be situated within 15 metres of permanent bitumen discharge points. Every road tanker or sprayer should be fitted with a readily accessible, clean, stainless-steel water filled pressure extinguisher (fine spray nozzle) for first aid use.

FIRST AID INSTRUCTIONS:

Swallowed: Wash mouth out with water. Do not induce vomiting. Seek medical attention.

Eye: In case of contact with eyes, rinse immediately with plenty of water for at least 15 minutes and seek medical advice. Skin:

Bitumen Burns – First Aid: If hot bitumen contacts the skin, no attempt should be made to remove it. The bitumen covered burn area should be drenched immediately in cold, preferably running water for at least 20 minutes. (DO NOT use ice). Remove any constricting rings, belts etc provided doing so does not cause further damage to the burn area, but do NOT attempt to remove clothing stuck to the bitumen. Do NOT attempt to clean the affected area or apply lotions and

ointments. Cover any exposed burns with clean non-stick dressings or cling film to exclude the air. Do not wrap dressings too tightly and DO NOT dress areas covered with bitumen.

Circumferential Burns: When hot bitumen completely circles a limb it may have a tourniquet effect and diminish blood circulation to the limb. If reduced circulation is evident, elevate the limb to reduce swelling. If it does not and advanced medical care is more than 20 minutes away, try carefully splitting the bitumen from the top to bottom with a heavy pair of scissors, using extreme caution to prevent damage to underlying skin. The patient should be referred urgently for medical attention.

Inhaled: If inhalation of mists, fumes or vapour causes nose or throat irritation, or coughing, remove to fresh air. Keep patient warm and at rest. Seek medical advice if any symptoms persist.

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.

Medical Attention/Special Treatment: For severe skin burns refer to the Bitumen Burns Card accompanying the patient.

SECTION 5: Fire-Fighting Measures

Fire and Explosion Hazards: Flammable liquid vapour/air mixture may ignite explosively. Flashback along vapour trail may occur. Avoid sources of ignition. Hoses should be electrically continuous bonded to avoid static charge build-up. All vessels should be earthed during transfer of product. Violent steam generation or eruption may occur upon application of direct water stream on hot liquid. Hydrogen Sulphide vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flashback considerable distances. Combustion products include oxides of carbon and sulphur.

Extinguishing Media & Methods: Use foam, CO₂, or dry powder fire extinguishers. DO NOT use water jets. Cool tanks and containers exposed to fire with water mist and avoid spraying directly into storage containers because of the danger of boil-over. Ensure any water spray does not spread fire over a large area.

Hazchem Code: 2Y

Recommended Protective Clothing: Structural fire-fighting clothing, gloves, boots and helmet should be worn when extinguishing bitumen fires. In confined spaces where there is a lack of natural ventilation, fires should be dealt with by trained personnel wearing self-contained breathing apparatus (SCBA).

SECTION 6: Accidental Release Measures

Land Spill – Wear appropriate personal protective equipment to minimise exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unnecessary personnel. If possible, contain the spill. Prevent product from entering sewers, watercourses or low areas. Contain spilled liquid with sand, gravel, or earth bunds. Place inert absorbent, non-combustible material such as sand or aggregate onto spillage.

Use clean non-sparking tools to collect the material and place in a suitable labelled container for subsequent disposal.

Water Spill – Remove from water with shovels or earthmoving machinery and immediately load into suitable receptacles for recycling or disposal. If large quantities of this material enter waterways, contact the Local Environmental Authority.

SECTION 7: Handling and Storage

Precautions for Safe Handling: Avoid contact with strong oxidising agents. Avoid skin contact. Contact with hot product may cause burns. Wear heat resistant, impervious gauntlet gloves. Avoid contact with eyes. If splashing is likely to occur, wear a full-face visor. Avoid inhalation of mists, fumes or vapour generated during use.

Bitumen storage and transfer should occur in areas that are well ventilated to prevent the inhalation and contact with vapours, mists or fumes that 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 practicable level. This material can contain hydrogen sulphide (H₂S) an extremely toxic and flammable gas (refer to the RNZ Code of Practice for Safe Handling of Bituminous Materials Used in Roading).

High standards of personal hygiene and plant cleanliness must be maintained at all times. 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 turpentine or kerosene. When product is heated to high temperatures, mists or fumes may be given off and may condense, contaminating the clothing or skin of operatives. Prolonged or repeated exposure with this condensate may give rise to dermatitis or other skin conditions of a serious or irreversible nature. Regular, periodic self-inspection of the skin is recommended, especially those areas subject to contamination. In the event of any localised changes in appearance or texture of the skin being noticed, medical advice should be sought.

Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets.

Handling Practices: Under no circumstances should hot product be allowed to contact water or damp surfaces, as frothing and rapid expansion of the product may occur, sometimes resulting in boil-over from tanks.

Due to the elevated temperature of the product, tanks, equipment and pipelines containing hot bitumen or heating

medium such as hot oil, should be adequately insulated to prevent accidental contact by personnel. Any surface that will reach a temperature of 70°C or above must be insulated for personal protection.

Conditions for Safe Storage: Containers should always be kept closed in storage and properly labelled. Store under cover away from moisture, water and ignition sources.

Product is stored at temperatures above 100°C. Therefore, avoid contact of hot product with water or damp surfaces, as frothing and rapid expansion of the product may occur, sometimes resulting in boil-over from tanks. For bulk product, particular care should be taken to ensure that bulk storage tanks are watertight and that any steam-heated coils are regularly checked for leaks. 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.

Overheating of product may cause thermal decomposition, resulting in the generation of flammable vapours. Maintain product storage temperatures and handling temperatures below 200°C. Highly toxic hydrogen sulphide gas may be emitted from hot product and accumulate in enclosed spaces or the headspace of product storage tanks. Concentrations of hydrogen sulphide above 10ppm may cause eye irritation. Higher concentrations may be an irritant to the skin and respiratory system. Extremely high concentrations (1000-2000ppm) may be immediately lethal. Extreme care must therefore be taken during the 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. The atmosphere in empty storage tanks must be carefully checked before entering and precautions for confined space entry followed as per AS/NZS 2865.

Carbonaceous deposits can form on inner surfaces of bitumen storage tanks and sometimes, on external surfaces where spillage or overflow occurs. These deposits may provide a source of ignition due to auto-ignition of pyrophors. To reduce this risk, always maintain storage at the lowest practical temperature and maintain stable storage temperatures. Avoid exposure of tank vapour spaces to air flow. Clean tanks at regular intervals.

Store Site Requirements: Storage tanks and depots should comply with the requirements of the RNZ Code of Practice for Safe Handling of Bituminous Materials Used in Roading 9904 (section 4).

Storage tanks with a capacity of more than 5,000 litres of cutback bitumen 7-10% may require a stationery tank container certificate.

SECTION 8: Exposure Control/Personal Protection

1) Workplace Exposure Guidelines: Bitumen handling operations should take place in a well ventilated area to ensure that ventilation is adequate to maintain air concentrations below exposure standards.

NZ Workplace Exposure Standards (WES):	TWA mg/m ³	STEL mg/m ³
Hydrogen Sulphide	14	21
Asphalt (Bitumen) Fumes	5	Not set

2) Engineering Controls: Use in a well-ventilated area. If operating conditions generate vapour or fumes that exceed NZ WES use process enclosures, local exhaust ventilation or other engineering controls to control exposure.

3) Personal Protective Equipment (PPE): When handling hot cutback bitumen, wear suitable protective clothing and equipment manufactured to an appropriate AS/NZS standard.

General: When handling hot cutback bitumen, wear suitable protective clothing and equipment manufactured to an appropriate AS/NZS standard.

Eye/Face Protection: Visor to protect face, and balaclava or head covering with cotton flap to protect neck and throat.

Skin Protection: Overalls impervious to bitumen (100% cotton or 65% cotton/35% polyester mix) covering full body and limbs with legs worn over protective boots. Protective clothing should be regularly dry cleaned and laundered. Change heavily contaminated clothing as soon as reasonably practicable and launder before re-use. Wash any contaminated underlying skin with soap and water.

Respiratory Protection: Respiratory protection is not normally required if airborne concentrations are below the recommended NZ WES. Where the bitumen WES is exceeded, wear an approved respirator that provides adequate protection such as air purifying dust/mist respirators. Where Hydrogen Sulphide WES is exceeded wear a positive pressure air-supplying respirator.

Hand Protection: Gauntlet gloves that are heat resistant and impervious to bitumen.

SECTION 9: Physical and Chemical Properties

Appearance:	Black liquid	
Odour:	Petroleum solvent odour	
pH:	Not Applicable	
Vapour Pressure:	3.2 mmHg @ 15°C for solvent content	
Vapour Density:	Not Available	
Boiling Point:	147 – 199°C for solvent content	
Freezing/Melting Point:	Softens at 40 – 55°C	
Solubility in Water:	Insoluble	
Specific Density:	Not Available	
Flammability Limits:	LEL: 0.9%	UEL: 8%
Flashpoint:	> 60.5°C	
Auto-ignition Temperature	Not Available	

Specific Advice: This section should be read in conjunction with Section 5 for specific fire hazard information. Petroleum vapours are flammable (explosive) in proportions between

approximately 1% and 10% of vapour in air by volume at ambient temperatures and pressures.

SECTION 10: Stability and Reactivity

Chemical Stability: Bitumen is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Reacts with oxidising agents.

Materials to Avoid: Avoid contact of hot product with water or damp surfaces, as frothing and rapid expansion of the product may occur, sometimes resulting in violent boil-over from tanks. Avoid contact with strong oxidising materials.

Hazardous Decomposition Products: Thermal decomposition products will vary with conditions. Incomplete combustion

will generate smoke, carbon dioxide and hazardous gases including carbon monoxide, hydrogen sulphide and oxides of sulphur. Overheating in storage may cause partial vaporisation and thermal decomposition with the production of toxic hydrogen sulphide gas (H₂S). Maintain product storage and handling temperatures below 200°C.

Hazardous Polymerization: Hazardous polymerisation has not been reported to occur under normal ambient and anticipated storage and handling conditions of temperature and pressure.

SECTION 11: Toxicological Information

SYMPTOMS FROM LIKELY ROUTES OF EXPOSURE:

Eyes: May damage eyes if contact with hot product occurs. May cause slight to moderate irritation to eyes if exposed to vapours, mist or fumes. Symptoms include redness, excessive tearing, stinging and swelling.

Skin: May cause irritation in contact with the skin, which can result in redness, itchiness, drying and defatting of the skin that can lead to dermatitis. Hot product will cause burns to the skin.

Ingestion: Unlikely to be swallowed in view of the high handling temperatures. Hot product will cause burns to mouth.

Inhalation: Vapours or mists generated in confined and/

or poorly ventilated areas may cause respiratory system irritation, headache, nausea and dizziness. At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility.

Chronic Effects: Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons (PAHs) at low levels, some of which are known to produce skin cancer. The inhalation of vapour, mists or fumes over long periods may therefore be hazardous. The exposure standard of 5mg/m³ is more than adequate to protect workers exposed to bitumen fumes. Sub-chronic and chronic toxicity studies found that no systematic effects have been noticed other than skin and lung irritancy. Smoking may increase irritant effects. No acute toxicity studies have been

published although extrapolation from data on sub-chronic and chronic studies suggest that the acute toxicity of bitumen is likely to be very low.

There is no conclusive data available on long term exposure to Bitumen fumes. All studies to date have shown no long term effects on humans. Bitumen is classified by IARC as a Class 3 carcinogen – unclassifiable as to carcinogenicity to humans.

SECTION 12: Ecotoxicity Information

Spillages are unlikely to penetrate soil. Bitumen contains hydrocarbon compounds in the molecular weight range from 500 to 15,000. Water solubility will be so low that significant migration of the material into water is improbable. Concentrations acutely toxic to aquatic organisms will not

occur and significant bioaccumulation is unlikely because of the light molecular weight of the hydrocarbons. The components of bitumen are not biodegradable to any significant extent and although it may accumulate in soil or water, it will not cause any significant environmental impact.

SECTION 13: Disposal Considerations

Product may be placed in steel drums and disposed of in accordance with local regulations to an approved landfill.

Where possible, arrange for product to be recycled.

SECTION 14: Transport Information

UN Number:	3256
UN Proper Shipping Name:	ELEVATED TEMPERATURE FLAMMABLE LIQUID N.O.S
Class:	3
Subsidiary Risk:	None
Packing Group:	III
Hazchem Code:	2W

SECTION 15: Regulatory Information

Regulatory Status:	This product is classified according to the Hazardous Substances (Classification) Regulation 2001 as 3.1D Flammable Liquid Low Hazard
HSNO Approval Code:	HSR001519

SECTION 16: OTHER INFORMATION

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Key/Legend: ERMA – Environmental Risk Management Authority

IARC – International Agency for Research on Cancer

IBP – Initial boiling Point

HSNO – Hazardous Substances and New Organisms Act

PMB – Polymer Modified Bitumen

RNZ – Roading New Zealand

UN Number – United Nations Number

WES – Workplace Exposure Standards

Literature References: Roading New Zealand Code of Practice 9904 for the Safe Handling of Bituminous Products Land

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