

TIP sheet

Bitumen Works

T012 – FEBRUARY 2007



Definition

Hot molten bitumen is designated both a hazardous substance and a dangerous good.

UNNO	HAZ	DGC	PG	Poison
	CHEM			SCH
3257	2W	Class 9	III	S5

Minimum requirements

Managers and Supervisors must implement measures to control and/or minimise the health and safety risks associated with bitumen works to personnel, visitors, contractors and the public and to prevent damage to plant and equipment. All RTA worksites shall:

- Identify the hazards associated with bitumen works and risk assess personnel exposure.
- Implement measures to control exposure to bitumen and its fumes and document them in OHS project and site-specific plans.
- Ensure the Material Safety Data Sheet (MSDS) is available to all employees.
- Develop written Safe Work Method Statements (SWMS) for all tasks involving hot bitumen.
- Develop Traffic Control Plans (TCP) to control the movement of vehicles, mobile plant and pedestrians, in accordance with the RTA Traffic Control at Work Sites Manual.

- Develop emergency procedures to prevent /contain fire and control risks due to escape or spillage of bitumen and associated chemicals.
- Ensure that all staff and contractors, who may interact with hot bitumen, are trained in the nature of the hazards involved, the means adopted to control exposure and emergency procedures in place.

Hazards

Some of the hazards associated with hot bitumen include:

- Thermal burns – resulting from bitumen hose bursts, spillages and exposure to solar radiation.
- Heat stress and fatigue – resulting from overexposure to hot bitumen and the working environment.
- Fire and explosion – resulting from over heated bitumen & released fumes,
- Boil over – of bitumen tanks due to water contamination.
- Spills – from faulty containment or incorrect handling.
- Fumes – respiratory problems or nausea may be induced by high concentrations of fumes from hot bitumen.
- Hydrogen Sulphide – in confined spaces H₂S may accumulate.

- Pyrophoric deposits – may develop in bitumen tanks which could self ignite.

Risk Assessment

A Risk Assessment must be completed by a technically competent person prior to work involving hot bitumen.

The Risk Assessment shall comply with the RTA OHS Risk Management Procedure and include consideration of tasks associated with supply, transport, handling, storage, transport and disposal of bitumen.

The purpose of a Risk Assessment is to determine and implement appropriate control measures, induction and training, monitoring and health surveillance.

Control the Risk

The exposure of employees and other persons to hot bitumen should be eliminated where practicable. If this is not possible, it should be kept as low as reasonably practical.

Work on foot around moving plant

All activities involving work on foot around moving plant will be undertaken using the information provided in the [TIP Sheet 002](#) – Working on foot in the vicinity of moving plant.

Bitumen Temperature Ranges

Activity	Range °C
Blending and/or heating of bitumen binders with or without modifiers, solvents or additives	150-200
Asphalt laying patching & paving	140-200
Spray sealing – hot bitumen, cutback bitumen, modified bitumen	140-200
Road maintenance operations – asphalt	140-200
Crack sealing and jointing – hot sealants	130-190
Spray sealing – emulsions	Amb.-80
Crack sealing – jointing emulsions	Ambient
Road maintenance operations – cold mix	Ambient

All TIP sheets are available on the RTA [internet](#) or contact your OHS facilitator for assistance.

Handling Hot Bitumen

The following principles shall be observed:

- Only persons trained in its use can work with hot bitumen.
- Avoid direct skin contact.
- Do not eat, drink or smoke while handling.
- Do not allow water to contact the material.
- Wear the appropriate PPE for the task.
- Be aware of the location of all emergency equipment - Fire extinguishers / shut off buttons / cut off valves etc.
- Water for first aid use should be available near sites using bitumen.

Overhead Utilities

Where overhead utilities are identified during the risk assessment, the hazard shall be managed using [TIP Sheet 003](#) – Overhead Utilities.

Competency Based Training

Employees working with bitumen must be trained in exposure control to bitumen hazards. Which is to be recorded and includes:

- Storage and handling requirements.
- Ventilation and other 'control' devices and their use.
- PPE use, care, maintenance and storage.
- Refresher training every 2 years.

Personal Protective Equipment (PPE)

Bitumen products and processes represent a range of hazards and therefore appropriate PPE is required for each task.

Lace up and elastic sided boots must be worn but safety shoes are not adequate protection for bitumen works.

PPE task	Safety Boots	Splats	Long Sleeve Shirt	Long trousers	Gloves	Safety Glasses / Shield	½ Face Respirator	Full Face Respirator	Hi Vis Vest
Spray Seal	✓	✓	✓	✓	✓	✓	✓	✓	✓
Crack Sealing	✓	✓	✓	✓	✓	✓	✓	✓	✓
Asphalt	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cold Mix	✓	✓	✓	✓	✓	✓	✓	✓	✓
Emulsion Spray	✓	✓	✓	✓	✓	✓	✓	✓	✓
Emulsion Patching	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bitumen Delivery	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paver Driver	✓	✓	✓	✓	✓	✓	✓	✓	✓
Screen hand	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tipper	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tanker Driver	✓	✓	✓	✓	✓	✓	✓	✓	✓

Plant and Vehicles Used in Bituminous Work Process

All plant and equipment used in bitumen works must meet the design and use provisions of the NSW OHS Reg (2001). In particular:

- Regularly check pipes, gauges, heating systems, valves etc as part of the preventive maintenance regime.
- Traffic control plans developed and implemented at bitumen work sites in accordance with RTA Traffic Control at Work Sites Manual.
- Ensure appropriate labelling on vehicles and containers.
- Ensure pressure testing is completed within regulations where appropriate.
- Ensure good housekeeping standards in care / maintenance of equipment

- Ensure that the heating medium used is controlled (refer to below).

Handling a Small Bitumen Fire

Where a small bitumen fuelled fire starts:

- Switch off all electrical power to heaters, circulation pumps etc.
- Close all associated valves to reduce spread of a fire.
- Fill the tank with bitumen to remove oxygen and smother the fire.

Contact Site Emergency Services Team for further advice and evaluation.

In the event of an emergency

An emergency response plan should be prepared in consultation with the persons at the workplace & emergency service agencies and include emergency response strategies consistent with the potential for fire, explosion and incidents of serious burns and inhalation of fumes.

Information to address an emergency plan can be found in the MSDS. Spills & leaks should be immediately contained/cleaned up when safe to do so.

Review

Risk Assessments, SWMS, and work procedures must be reviewed & revised when there is evidence that:

- The original assessment is no longer valid or older than 3 years.
- Injury or illness results from exposure.
- A significant change is proposed at the place of work, or in work practices or procedures to which the assessment relates.

First Aid

Refer to the RTA Bitumen Burns card.

Skin contact – cool affected area with running water and cold wet towels – do not remove adherent bitumen from injured person – remove excess clothing and boots to assist with cooling without disturbing adherent bitumen – treat shock symptoms.

Flush burns to the eyes immediately with running water.

For respiratory distress due to fume exposure – remove person from contaminated atmosphere into fresh air. Where such relocation does not assist improvement, use forced air resuscitator if available.

Seek medical attention as soon as possible.

References

[OHS Act 2000](#) & [OHS Regulation 2001](#) Ch2, 3, 6, 6a & 8.

[WorkCover COP](#) – Control of Workplace Hazardous Substances

[WorkCover COP](#) – Storage and Handling of Dangerous Goods

[RTA OHS Policy 2.0](#) – OHS Risk Management

[RTA OHS Policy 2.13](#) – Hazardous Substances

[RTA OHS Policy 2.5](#) – Bituminous Works

[RTA OHS Policy 4.0](#) – Personal Protective Equipment

[AAPA](#) – Pavement Works Tips

[Austroads](#) – Bitumen Sealing Safety Guide

[RTA HR Circular](#) – Bituminous works update