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The webinar will start shortly.

Please remember to turn off your cameras and mute your microphones.



Mission

- to educate and promote efficient, economic, effective, safe and sustainable use of refined bitumen in road, industrial and building applications
- to provide information and guidance on technical, health, safety and environmental matters, based on proven data
- to create a positive image and environment for a sustained bitumen demand based on the communication of the product benefits to key audiences
- **Enabled by our network of experts**

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Safe Handling of Bitumen



Summary

- Understanding Hazard & Risk
- Key hazards when handling bitumen
- Personal Protective Equipment (PPE)



Hazard and Risk

- **Hazard:** something that can potentially cause harm
- **Exposure:** a quantitative measurement of the extent to which a given hazard is present
- **Risk:** the probability that an adverse event will occur: $\text{Risk} = f [\text{Hazard} \times \text{Exposure}]$



Hazards Associated with Bitumen

- Elevated temperature
- Contact with water
- Hydrogen sulphide
- Fire
- High pressure

Temperature

Hazard: Elevated Temperature

Main **hazard** from bitumen is its temperature:

- Stored and transported 180 - 220°C
- Applications at 140 - 230 °C

Risk can be managed by avoiding exposure!

Key actions to remember:

- Always follow safe handling guidelines during loading, unloading and storage
- Always operate a six metre exclusion zone during unloading operation
- Avoid contact with skin and eyes by careful working in line with a risk assessment, including the wearing of protective clothing and equipment
- Reduced temperature



Managing risk with PPE

No exposed skin!



Use protective clothing and equipment

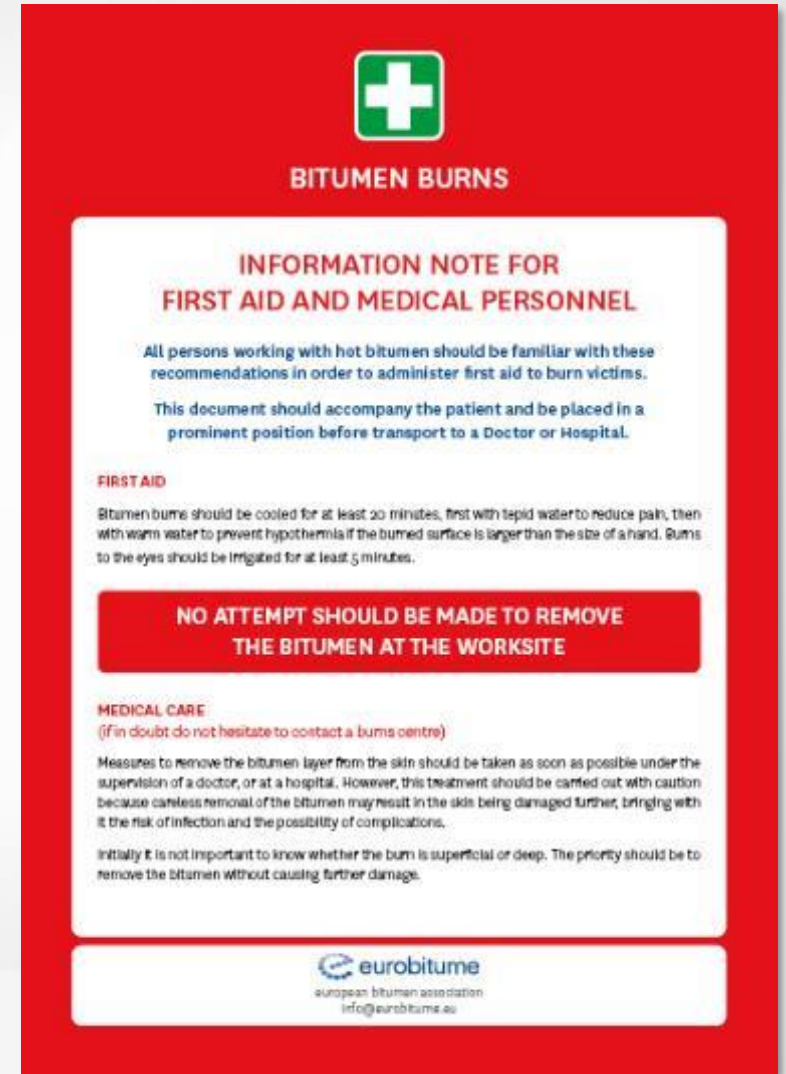
I was hot, but I lowered my visor!




Bitumen Burns

What to do in case of bitumen burns:

- Cool the burn!
 - Minimum 20 minutes under tepid water
- Do not try to remove the bitumen
 - Risk of further damage to the skin
 - If a limb is encircled the bitumen should be softened with medicinal paraffin or vegetable oil
- Removal of the bitumen should only be conducted under medical supervision



The image shows a red-bordered information note for bitumen burns. At the top is a green cross icon. Below it, the text reads 'BITUMEN BURNS'. The main heading is 'INFORMATION NOTE FOR FIRST AID AND MEDICAL PERSONNEL'. The text states: 'All persons working with hot bitumen should be familiar with these recommendations in order to administer first aid to burn victims. This document should accompany the patient and be placed in a prominent position before transport to a Doctor or Hospital.' Under the heading 'FIRST AID', it says: 'Bitumen burns should be cooled for at least 20 minutes, first with tepid water to reduce pain, then with warm water to prevent hypothermia if the burned surface is larger than the size of a hand. Burns to the eyes should be irrigated for at least 5 minutes.' A prominent red box contains the text: 'NO ATTEMPT SHOULD BE MADE TO REMOVE THE BITUMEN AT THE WORKSITE'. Under the heading 'MEDICAL CARE', it says: '(if in doubt do not hesitate to contact a burns centre) Measures to remove the bitumen layer from the skin should be taken as soon as possible under the supervision of a doctor, or at a hospital. However, this treatment should be carried out with caution because careless removal of the bitumen may result in the skin being damaged further, bringing with it the risk of infection and the possibility of complications. Initially it is not important to know whether the burn is superficial or deep. The priority should be to remove the bitumen without causing further damage.'

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Contact with Water



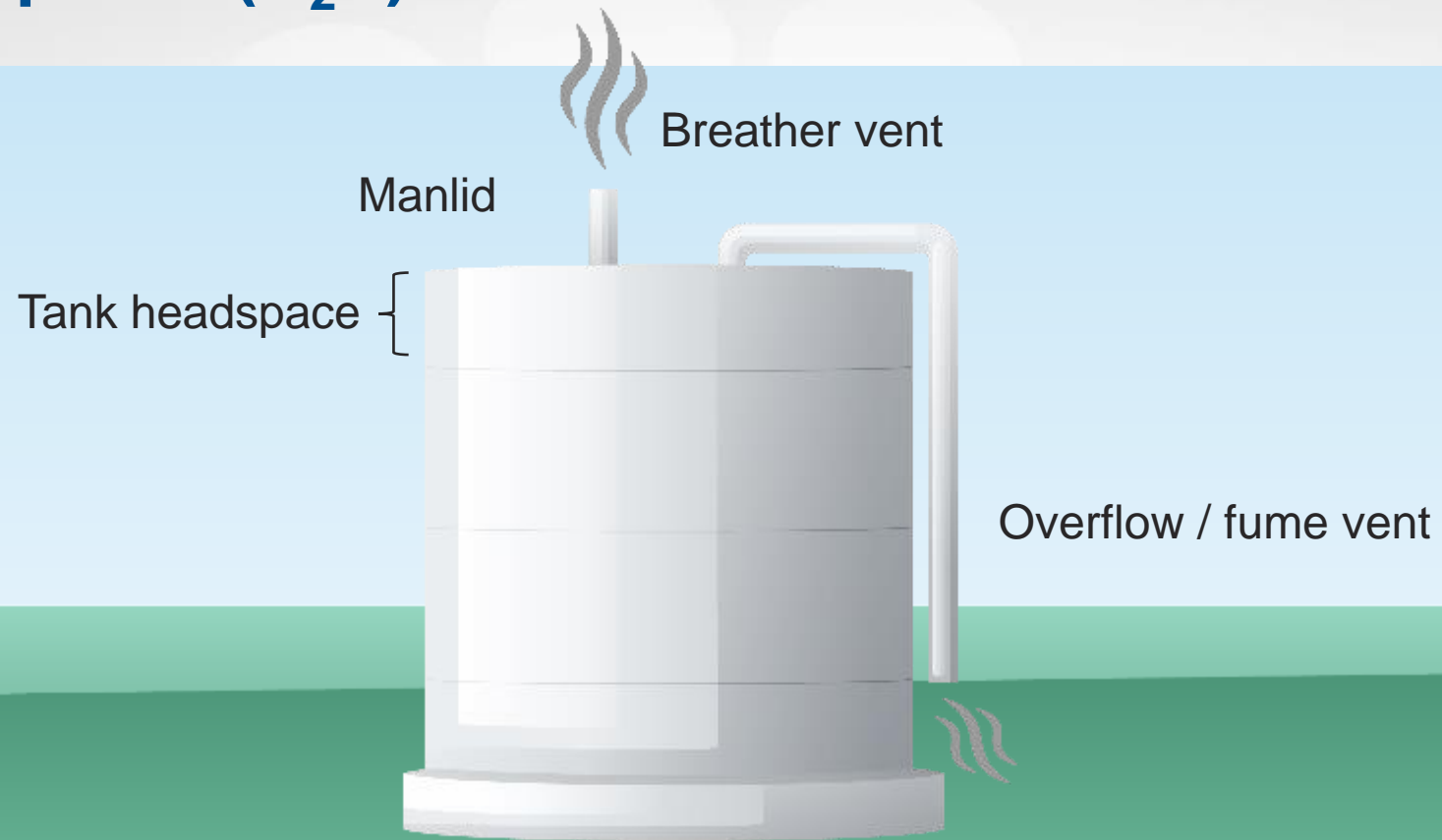
Hydrogen Sulphide (H_2S)

Hazard: Hydrogen Sulphide (H₂S)

- Toxic, colourless, corrosive, flammable gas
 - Bad egg smell at low concentration
 - Odourless & tasteless at high concentration
- Heavier than air
- **NEVER**
 - Rely on smell
 - Enter a tank without a test
- **ALWAYS**
 - Undertake a risk assessment
 - Follow safe handling guidelines
 - Signage
 - Review PPE
 - Use detection equipment



Hydrogen Sulphide (H₂S)



Fire

Hazard: Fire

Where and when fire could occur?

- Inside storage tanks
 - When heating system is not completely covered with bitumen
- Insulation
- Solve pipework blockage using flame
- Using solvent, oils to clean bitumen
- Causes
 - Flash point
 - Storage temperature
 - Emissions from cut back and fluxed bitumen
 - Pyrophoric sulphide
 - Contaminated insulation with bitumen in contact with O₂



If a fire occurs

- Evacuate area
- **Call emergency services**
- Shut down tank heating systems
- Isolate other tanks
- Small fires (e.g. lab)
 - Only tackle if trained and competent
 - Use CO₂, foam, fire blanket
 - Never water!
- When safe:
 - Investigate causes
 - Remove and replace all insulation



Pressure

Hazard: Pressure

Where and when high pressure could occur:

- Bitumen tanks are not pressure vessels
- Hoses
- Ground based pumps
- Delivery under pressure
- Connection – disconnection
- Pipe blockage



Summary

Health & Safety - Summary



Understand the **hazards**



Manage the **risks**

Safe working procedures

Personal Protective Equipment

Minimise the temperature



Bitumen is a safe product to use when handled correctly

For more information

- www.eurobitume.eu
 - Safe handling documents
 - Safe delivery guidance
 - Toolbox talks
- www.energyinst.org
 - Bitumen safety code

SAFE HANDLING OF BITUMEN

The purpose of this safe handling card is to give brief general advice as best practice on safely handling of bitumen. Any controls and means of protection must be based on both site specific risk assessments, e.g. laboratory analyses, questions etc.

- Heating bitumens (including polymer modified bitumen) are supplied and stored as hot liquids at temperatures up to 200°C.
- Industrial bitumens are supplied and stored at temperatures up to 250°C.

PRINCIPAL HAZARDS AND RISKS

- Severe thermal burns (up to third degree) and shock.
- Fire and explosion. If bitumen is over heated flammable decomposition products may be formed resulting in a fire or explosion hazard.
- Roll-over of tanks due to the presence of water.
- Burns. Respiratory problems or issues may be induced by high concentrations of fumes from hot bitumen.
- Hydrogen sulphide. In confined spaces hydrogen sulphide may accumulate and may reach hazardous levels.
- Pyrophoric deposits may develop in bitumen to which may self ignite.

GENERAL SAFETY ADVICE

- Storage temperatures should not exceed 200°C for paving bitumens and 250°C for industrial bitumens. Bitumens should be kept at least 30°C below flash point, or national limits whichever is the lower.
- Heat-resistant hoses free from leaks, kinks, damage and supported along their length should be used. They should be clean, dry and free from plugs of solid bitumen.
- Do not use steam to empty pipelines or hoses, to avoid water in the system. Use suction pumps, compressed dry air or starter gas.

PERSONAL SAFETY MEASURES

Protective clothing to be considered includes:

- Head protection: helmet, preferably fitted with ear straps, neck apron, full visor to protect the face.
- Heat resistant gloves with long sleeves.
- Safety boots that can be removed easily.
- Goggles only protect eyes.
- Coveralls, high to be worn over boots, made cotton fire retardant (Proban® or similarly treated), preferably with high visibility markings.
- Safety boots that can be removed easily.

Note: Additional site specific equipment may be required: safety spectacles / goggles, ear defenders, respiratory boots or similar, anti-static clothing etc.

FIRST AID

- Bitumen burns should be cooled for at least 15 minutes. Rinse with cool water to reduce pain, then with warm water to prevent hypothermia if the burned surface is larger than the size of a hand.
- Burns to the eyes should be irrigated for at least 15 minutes.
- NO ATTEMPT SHOULD BE MADE TO REMOVE HOT BITUMEN AT THE SCENE.
- Measures to remove the bitumen layer from the skin should be taken as soon as possible under the supervision of a doctor or at a hospital.
- Careless removal of the bitumen may result in the skin being damaged further, bringing with it the risk of infection and the possibility of complications.
- Respiratory problems due to excessive fume exposure. Under safe conditions remove person from contaminated atmosphere and fresh air. Seek medical assistance if breathing remains difficult. Apply emergency first aid measures.

BITUMEN FIRE

- Call the fire brigade immediately.
- Switch off all electrical power to heaters, circulation pumps, etc.
- Close valves if safe to do so in order to limit the spread of fire.
- Attempt to extinguish fire by using dry chemical powder, foam, inert gas, or water spray (fog).

Never use water jets.

TELEPHONE NUMBERS:	FIRE DEPARTMENT	AMBULANCE	PRODUCT EXPERT

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Guide to the Safe Delivery of Bitumen



The image shows a white bitumen tanker truck with a blue stripe and the number '99 3257' on its side, parked next to several large blue storage tanks. The background is a dark blue gradient.

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Thank you

