

‘Pocket’ Guide to the Safe Delivery of Bitumen

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Introduction

Eurobitume is the voice of the European bitumen industry, promoting the efficient, effective and safe use of refined bitumen in road, industrial and building applications.

Eurobitume activities include:

- Raising awareness of the benefits of bitumen to policy makers and the general public.
- Working with industry and regulatory bodies to further the development of specifications and test methods for bitumen.
- Promoting long-term planning, asset management and structured infrastructure maintenance programs.
- Promote development in the bitumen industry.

The Guide to the Safe Delivery of Bitumen

The Guide to Safe Delivery of Bitumen was revised in 2018. The UK Version of this document covers:

- Access, Induction and the Delivery Point
- Emergency Equipment
- Personal Protective Equipment
- The Delivery Vehicle
- Operation and Maintenance of Storage Tanks and Pipework
- Delivery Procedures
- Bitumen Specific Training



Access and Induction

- Bitumen delivery drivers **MUST**:
 - ✓ Receive a site specific safety induction (see the Eurobitume UK toolbox talk on delivery driver inductions).
 - ✓ Be aware of the site safety and emergency procedures.
 - ✓ Be in possession of a current Eurobitume UK driver's passport.
- The customer is responsible for the delivery driver's well-being whilst on their premises.
- Clearly designated and signposted safe routes to and from the delivery point must be provided including access to and from the weighbridge for both the delivery vehicle and driver.



Delivery Point

- During the delivery access within 6 metres of the delivery point **MUST** be restricted to authorised operatives involved in the delivery and wearing the correct PPE.
- If possible the 6 metre exclusion zone should be marked with signs or barriers.
- The delivery driver must have safe access to the delivery point, unrestricted movement around the delivery vehicle and a clear safe emergency exit route to the safety shower.
- Avoid surrounding or adjacent operations which could impair a safe delivery.
- At least one 6kg dry powder fire extinguisher must be provided in the area of the delivery point.



Emergency Safety Shower

- The Emergency Shower must have safe access at all times, with clearly visible signs indicating its position (see the Eurobitume UK Toolbox Talk on Emergency Safety Showers).
- The Emergency Shower should be between 6 and 20 metres away from the discharge point.
- If the Emergency Shower is within 6 metres of the discharge point it must be screened from the possible effects of bitumen spray.
- Advice on the treatment of bitumen burns must be displayed in the delivery area.
- The Eurobitume Bitumen Burns Card should be available if medical treatment is required.



Personal Protective Equipment (PPE)

Any person within 6 metres of the delivery point or involved in the delivery, **MUST** wear the appropriate PPE:

1. Helmet (with chin strap)
2. Full visor to protect the face
3. Safety glasses
4. Neck apron
5. Heat-resistant gloves with long sleeves
6. 100% cotton and fire retardant coverall
7. Coverall, legs to be worn over boots
8. Safety boots that can be removed easily.


See the Eurobitume UK Toolbox Talk on PPE



Bitumen Discharge Permit (BDP)

- A BDP **MUST** be completed:
 - ✓ Before commencing the bitumen delivery.
 - ✓ By both the driver and customer at the delivery point.
- The correct completion of the BDP will ensure that:
 - ✓ There is sufficient ullage for the delivery.
 - ✓ The grade and quantity being delivered are correct, discharged into the correct tank and the lines and valves are correctly routed.
- If the BDP is completed with the correct information it should eliminate uncontrolled bitumen spills and crossovers (see the Eurobitume UK Toolbox Talk on the BDP.)

BITUMEN DISCHARGE PERMIT (BDP)



Tank number	A
Flange number/description	B
Grade	C
Theoretical design capacity, tonnes	D
Safe working capacity, tonnes	E
Current contents, tonnes	F
ULLAGE: useable capacity, tonnes	G
Quantity to be delivered, tonnes	H
Is the bitumen temp. within the acceptable range for this grade?	I
Delivery ticket number	J
Date	K

TOP COPY: Retain on site
 DUPLICATE: Hand to delivery driver

Company Name.....
 Site Name/Location.....
 Plant Description.....
 Delivery Company.....

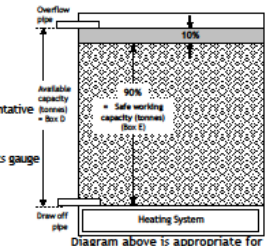


Diagram above is appropriate for both horizontal and vertical tanks

PLANT OPERATOR / SUPERVISOR (Person issuing this BDP)		✓ or X
<i>Please confirm the following prior to commencement of delivery/offloading</i>		
All boxes A-K completed with correct values and details		
Verification that HLA, HHLA and tank gauge are functioning via test button or weekly test		
Emergency shower tested and is functional on delivery day		
Figure in box G is GREATER than the amount to be delivered (box H)		
Is there the need to discharge part of the load into another tank? (Yes or No)		
If 'yes' to above question, complete the table opposite. Note - a 2 nd BDP must be completed		
Have any modifications or repairs been made to the plant since the last delivery? (Yes or No)		
Has the driver's passport been checked and verified that it is valid? (Yes or No)		
Is the site induction in date for this driver? (Yes or No)		
<i>If 'X' is in any box (above or below) do not proceed with delivery. Seek advice from site management and driver's supervisor.</i>		
DELIVERY DRIVER (Person receiving this BDP)		✓ or X
<i>Please confirm the following prior to commencement of delivery/offloading</i>		
Key (identification) issued matches tank/flange details in boxes A and/or B		
Tank flange and transporter's equipment visually OK for safe connection and delivery		
Grade to be discharged matches the grade in box C		
Figure in box H equates to the delivery ticket amount		
Figure in box F is the same as the contents gauge reading on the receiving tank. Place 'X' if there is no gauge or it is unreadable		
Received confirmation that the emergency shower has been checked and is working		
Driver confirms the packing is clean and the flange connection is correct prior to discharge		
Plant Operator/Supervisor Name: _____		Signature: _____
Delivery Driver's Name: _____		Signature: _____

If the delivery is stopped complete the table below:

Reason for stopping the delivery (Driver to tick as required)					
Spillage		High Level Alarm		Split Load	
Seen	Informed	Visual	Noise	On Arrival	During Delivery
Driver's comments:					
Action Taken (Customer to tick only one box)					
Wait for ullage		Split load		Return product	
Customer's comments:					

One of these BDP forms to be completed for every delivery, two or more if the load has to be split

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Authority to Continue Discharge (ATD)

- An ATD must be completed by the delivery driver and customer if:
 - ✓ The delivery is made into more than one storage tank.
 - ✓ The discharge of bitumen has to be stopped for any reason.
- If either of the above occur this is considered to be a new delivery and therefore a new BDP must be completed to ensure the same controls are in place.
- The original copy is kept by the delivery driver and a copy left with the customer.

(See the Eurobitume Toolbox Talk on the BDP)

If the delivery is stopped complete the table below:

Reason for stopping the delivery (Driver to tick as required)					
Spillage		High Level Alarm		Split Load	
Seen	Informed	Visual	Noise	On Arrival	During Delivery
Driver's comments:					
Action Taken (Customer to tick only one box)					
Wait for ullage		Split load		Return product	
Customer's comments:					

Storage Tank Markings

- All storage tanks must display the:
 - ✓ Storage tank number.
 - ✓ Product/Grade of bitumen in the storage tank.
 - ✓ Safe Working Capacity.
- It is good practice for storage tanks to display an 'Elevated Temperature' sign.

See the Eurobitume UK Toolbox Talk on Bitumen Storage Tank Content Gauges & HLAs.



Storage Tank Content Gauges

- An adequate and reliable means of gauging the storage tank contents and ullage must be available.
- Content gauges must:
 - ✓ Clearly identify which storage tank they refer to and must be visible to the delivery driver at the discharge point.
 - ✓ Be operational and calibrated.
 - ✓ Be regularly checked, maintained in accordance with the manufacturer's recommendations and service logs maintained.
- On-going validation of the content gauges by comparing gauge readings with a manual inventory is highly recommended.



Storage Tank Alarms

- A high level alarm (HLA) triggering at 90% of the storage tank capacity must be installed on each storage tank.
- An independent high high level alarm (HHLA) triggering at 92.5% of the storage tank capacity must be installed on each storage tank.
- All alarms must be operational and calibrated.
- Alarms must be regularly checked, maintained in accordance with the manufacture's recommendations and service logs maintained.



Storage Tank Openings

- Vent pipes must be located where produce emission or release do not pose a risk to any personnel or delivery vehicles.
- Vent pipes must be kept clear at all times.
- Storage tank lids must be kept closed and secured at all times during the delivery.
- If there is a need to take bitumen samples a purpose designed valve should be permanently fitted to the storage tank or pipework.



Storage Tank Pipework and Flanges

- The storage tank pipework must:
 - ✓ Be of appropriate design, well supported and maintained (see the Eurobitume UK Toolbox Talk on Blocked/Partially blocked pipelines).
 - ✓ Have flange shrouds which must be used during the delivery.
 - ✓ Have a connection security system, e.g. padlocks, fitted to control discharge, prevent cross contamination and possible spillage.
- Storage tank vent/overflow pipes must be kept clear of blockage at all times.



Ground Based Pumps (GBPs)

- GBPs are the preferred means of bitumen delivery.
- If the delivery is made using a GBP:
 - ✓ The installation must have had a thorough Hazard Operability (HAZOP) study during design and installation.
 - ✓ The driver must be trained in the use of the GBP.
 - ✓ Instructions on the operation of the GBP should be at the delivery point.
 - ✓ If an alarm is activated during a GBP discharge the GBP and all ancillary equipment must automatically switch off and valves close to a safe position.



See the Eurobitume Toolbox Talk on GBPs

Delivery procedures

- It is the responsibility of the customer to authorise each delivery.
- The customer must monitor the safety of the delivery driver during the delivery.
- The delivery driver is solely responsible for the operation of the delivery vehicle and equipment and must remain by the delivery vehicle during the delivery.
- The delivery driver must stop the discharge whenever there is concern about safety during the delivery.



Bitumen Specific Training

- Training requirements should be reviewed regularly and refresher training provided as required.
- Training records of all individuals must be kept on file.
- The Eurobitume website has numerous guidance documents on bitumen safety related subjects and toolbox talks.



Bitumen Safety Documents

Guidance documents on a range of bitumen safety related subjects can be downloaded free from the Eurobitume website:

- UK Version of the 2018 Guide to Safe Delivery of Bitumen.
- Safety Showers
- Eurobitume Bitumen Burns Card
- Safety Footwear Risk Assessment for Bitumen Delivery Drivers
- Operational considerations for Hot Bitumen Storage Tanks and Off-loading Systems.
- Design and use of Ground Based Pumps (EBUK/MPA document).
- Safe Bitumen Tank Management (EBUK/MPA document).
- Returning Bitumen Storage Tanks to Service.

See also the Energy Institute Model Code of Safe Practice Part 11: Bitumen Safety Code

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Bitumen Toolbox Talks

The following toolbox talks can be downloaded free from the Eurobitume website:

- Bitumen Delivery Driver Induction
- Bitumen Discharge Permit
- Personal Protective Equipment
- Emergency Safety Showers
- Ground Based Pumps
- Blocked/Partially Blocked Pipelines
- Trace Heating of Bitumen Pipelines
- Emergency Shutdown of Bitumen Delivery Vehicles
- Content Gauges and High Level Alarms

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