

Guidance Note No. GN 2

Approval of an Explosives Delivery Vehicle



**Mines Division, Geotechnical Engineering Office
Civil Engineering and Development Department**

1. Purpose and Scope

This Guidance Note is to assist the holder of a Mode A Store Licence or a Blasting Permit to obtain approval of an explosives delivery vehicle (EDV), which will be required under the Licence/Permit conditions, if the licence/permit holder proposes to transport explosives (including blasting explosives or fireworks) by vehicle on a public road.

2. Application for Approval of an Explosives Delivery Vehicle

If the holder of a Mode A Store Licence or a Blasting Permit intends to transport explosives by vehicle on a public road, an application must be submitted to the Commissioner of Mines (CoM) for approval of the EDV. This will be required under the conditions of the Mode A Store Licence or Blasting Permit. The following documents should be submitted:

- (a) a covering letter requesting approval of the EDV, which must be built to satisfy the 'Requirements for Approval of an Explosives Delivery Vehicle' in Annex A,
- (b) a Method Statement, which must include, but not be limited to: the location of the blast sites, the procedures and routes for explosives delivery, the duties of the responsible persons, the details of temporary traffic control measures, safety/emergency procedures and a contingency plan, and the design drawings of the proposed EDV,
- (c) a copy of a 'Roads Worthiness Certificate' issued by the Transport Department for the vehicle concerned,
- (d) a copy of the vehicle registration documents and vehicle licence issued by the Transport Department,
- (e) documents issued by a testing body certifying the relevant weights, including the 'Permitted Gross Vehicle Weight' and 'Vehicle Net Weight', in order to determine the 'Permissible Laden Weight' of the EDV, and
- (f) the names of the driver(s) and attendant(s) with documentary proof that they have acquired basic knowledge of firefighting, safe handling of explosives and the properties of explosives being carried, and confirmation that they are conversant with the emergency procedures. (A driver must be over the age of 25, with less than 5 driving-offence points over the previous 3 years and more than 5 years' driving experience. A driver must hold a current Driving Licence for the appropriate class of vehicle, which has been valid for at least one year, have attended a defensive driving course within the previous 12 months, and passed a medical check.)

3. Processing of Application

3.1 Upon receipt of an application for approval of an EDV, the CoM will:

- (a) respond to the applicant within 28 days after all of the required information has been provided,
- (b) determine the 'Permissible Laden Weight' of explosives to be carried by the vehicle, calculated using the following formula:
$$PLW = PGVW - (VNW + 75 \times N \text{ kg})$$
wherein PLW (kg) : Permissible Laden Weight
PGVW (kg) : Permitted Gross Vehicle Weight
VNW (kg) : Vehicle Net Weight
N : Maximum number of persons permitted in the vehicle
- (c) issue, in writing, approval for use of the EDV within 3 working days after the vehicle has been inspected by Mines Division staff and found to comply with the 'Requirements for Approval of an Explosives Delivery Vehicle' in Annex A and confirmation that the documents submitted in Section 2(b) to (f) are in order. Approval for use of the vehicle will be valid for 1 year from the date of issue. The CoM may impose conditions on the use of the vehicle to suit specific circumstances.

3.2 Any application to renew or amend the approval to use an EDV should reach the CoM not less than 28 days before the expiry date of the existing approval. The applicant should submit the updated documents as per Section 2.

4. References

Australian Standard, AS5062-2016: Fire protection for mobile and transportable equipment.

Australian Explosives Industry and Safety Group Inc. (AEISG) (2014), Code of Practice – Segregation Barriers for Transporting Mixed Loads of Detonators and High Explosives.

Mines Division

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General guidance is provided in this Note. Specific requirements may be imposed by the Commissioner of Mines to suit the conditions and characteristics of the site. Any feedback on this document should be sent to the Chief Geotechnical Engineer/Mines, Geotechnical Engineering Office, Civil Engineering and Development Department.

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Requirements for Approval of an Explosives Delivery Vehicle

1. Safety Requirements

1.1 The vehicle must:

- (a) be powered by a diesel engine,
- (b) comply with the Road Traffic (Construction and Maintenance of Vehicles) Regulations, Chapter 374, Laws of Hong Kong,
- (c) be kept clean, in sound mechanical condition and roadworthy, and
- (d) be licensed to carry the maximum number of persons required for the delivery convoy. (For example, if only one vehicle is going to be used for the delivery convoy, then the vehicle must be licensed to carry at least six people, including the driver, registered shotfirer, Contractor's representative, RSS's resident explosives supervisor, armed security guard and Mines Division's representative). Subject to the agreement obtained from Mines Division and the Police, an armed security guard may not be required if an approved Global Positioning System (GPS) has been installed in the vehicle. The applicant must confirm the requirements with Mines Division.

1.2 Cargo compartment

- (a) The cargo compartment of the vehicle, including the floor, must be constructed from sheet metal, at least 3mm thick, and lined internally with plywood, at least 13mm thick, and there must be no exposed ferrous metal in the interior of the cargo compartment.
- (b) The interior of cargo compartment, including doors, must be kept in good condition and free from defects or projections that could damage to the explosives or their packaging.
- (c) Electric wiring or electrical devices must not be installed inside the cargo compartment.
- (d) The doors of the cargo compartment must be capable of being securely locked using a padlock. The padlock must meet BS EN 12320 Security Grade 4 or above requirements, or equivalent.
- (e) Proper means of stowage must be provided to secure the loads during transport.
- (f) If the vehicle is designed to carry both detonators and other types of blasting explosives at the same time, additional requirements, given in AEISG (2014), are required (see Annex B).

1.3 Safety Provisions

- (a) The driver's cabin must be separated by not less than 150mm from the cargo compartment of the vehicle.
- (b) The exhaust system must be located as far from the cargo compartment as possible, preferably at the front of the vehicle. The Transport Department must approve any modification to the exhaust system.
- (c) An emergency fuel cut-off device must be located at an easily accessible position with a label, in Chinese and English, prominently and legibly stating:

“EMERGENCY ENGINE STOP 緊急死火掣”.

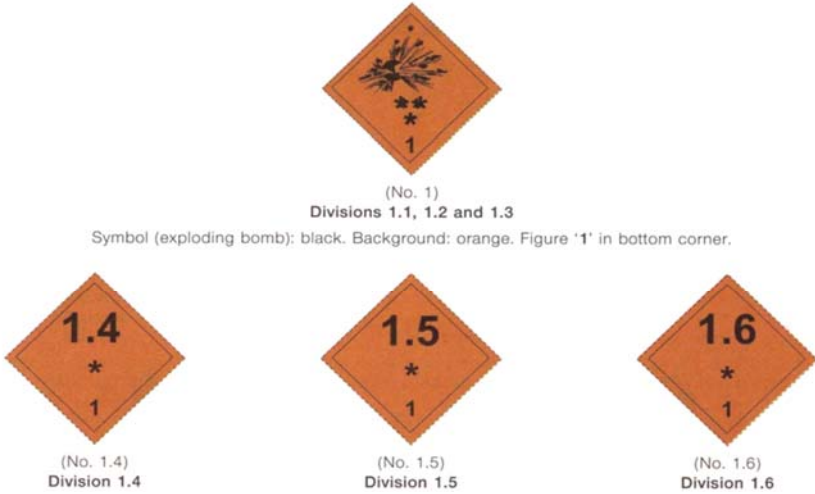
- (d) For a typical vehicle with a gross vehicle weight of 9 tonnes or above, four fire extinguishers, comprising two 2.5kg dry powder and two 9-litre foam fire extinguishers of an approved type, with certificates, must be provided. They must be mounted in front and on both sides of the rear body, in easily accessible positions, using securely mounted brackets and quick release clamps. For a vehicle with a gross vehicle weight of less than 9 tonnes, the number of fire extinguishers must be agreed with Mines Division.
- (e) A fire suppression system must be fitted to the engine bay of vehicles, complying with the AS5062-2016.
- (f) All electrical installations must be designed, constructed and protected so that they cannot cause any ignition or short-circuit under normal conditions of use, and to ensure that the risk of this occurring will be minimized in the event of a traffic accident. All electrical wiring and fittings must be shrouded in fire resisting conduits.
- (g) The fuel tank must be located below the cargo compartment of the vehicle. It must be protected from accidental damage and designed to prevent accumulation of spilt fuel on any part of the vehicle.
- (h) Fire resistant material must be fitted between the wheel arches and the cargo compartment.
- (i) Detonators and other types of blasting explosives must not be loaded or transported within the same cargo compartment of the vehicle, unless the cargo compartment fulfils the additional requirements as specified in Annex B.
- (j) A hand-held lightning detector must be provided in the vehicle to detect lightning before and during loading and unloading of explosives. Should lightning be detected within a distance of 16km from the loading/unloading point by the hand-held detector, loading or unloading of explosives must cease until the lightning signal has cleared.
- (k) For a typical vehicle with a gross vehicle weight of 9 tonnes or above, two strobe beacons approved by the Transport Department must be installed on top of the cargo compartment. For a vehicle with gross vehicle weight of less than 9 tonnes, at least one strobe beacon is required.
- (l) Laminated sheets containing: (i) the Occupational Safety and Health information for first responders relating to the explosives being carried; (ii) the Emergency Procedures in the event of traffic accident or fire; and (iii) the Emergency Contact List must be displayed in a conspicuous position in the driver's compartment. The applicant must confirm the requirements with Mines Division. The driver and attendants must be fully conversant with the safety/emergency procedures at all times.

2. Signage on Vehicle

2.1 Signage/Placards

- (a) Whenever the vehicle is carrying explosives, it must display:
 - (i) on both sides and on the rear door of the cargo compartment, placards (minimum 250mm x 250mm) showing the label of the highest Hazard Code of explosives (see Specimen Labels of Hazard Code in Section 2.2), and
 - (ii) a rectangular red flag, in a prominent position, not less than 230mm x 300mm in size.
- (b) Placards showing “EMPTY 空車” or blank placards must be displayed when the vehicle is empty.
- (c) The vehicle must be painted white with a warning in Chinese and English, at least 150mm high, as follows:
 “DANGER-EXPLOSIVES” and “危險－爆炸品”
 The warning must be in red or black and displayed on both sides and rear face of the cargo compartment. If possible, the warning must also be displayed on the front face of the vehicle.
- (d) The company name and contact telephone number of the contractor together with the project name and contract number must be displayed on the side doors of the vehicle in black.

2.2 Specimen Labels of Hazard Code



Background: orange. Figures: black.
 Numerals must be about 75mm in height and be about 12.5mm thick.
 Figure '1' in bottom corner.
 ** Place for division – to be left blank if explosive is the subsidiary risk.
 * Place for compatibility group – to be left blank if explosive is the subsidiary risk.
 Placards should be min. 250mm x 250mm

Additional Requirements for Cargo Compartment of an Explosives Delivery Vehicle Carrying both Detonators and other Explosives (see Figure 1)

- (1) The interior and roof of the entire cargo compartment must be panelled with 3mm thick aluminium alloy sheet and covered with 18mm thick Wisa-Form special plywood or equivalent. There must be an additional vertical fire screen, with heat resistance equivalent to 3mm of steel, between the vehicle cabin and the cargo compartment of the vehicle.
- (2) The interior flooring of the entire cargo compartment, including wheel boxes must be made of 3 layers as follows:
 - (a) Layer 1. The underside of the interior flooring must be covered entirely with 3mm galvanized steel plate adequately reinforced underneath with steel bracing.
 - (b) Layer 2. 12mm fire resistant lining ('Supalux' calcium silicate board or products having equivalent properties) must be sandwiched between Layers 1 and 3.
 - (c) Layer 3. The top layer of interior flooring must be covered with 24mm Wisa-Hexa Floor special plywood or equivalent.
- (3) The entire cargo compartment must be divided into 3 sub-compartments, namely the detonator (DET) sub-compartment, the VOID sub-compartment and the other explosives (EXP) sub-compartment.
- (4) The VOID sub-compartment must be fabricated by creating a 105mm wide void space between the partition panel of the DET sub-compartment and the partition panel of the EXP sub-compartment of the cargo compartment. The depth of the DET and EXP sub-compartments must suit the quantities of explosives to be transported.
- (5) The partition panels between VOID/EXP sub-compartments must be as follows:
 - (a) The partition panel must span the full width and height of the VOID/EXP sub-compartments.
 - (b) Each partition panel must be constructed using 40mm x 40mm x 2.6mm thick mild steel box section tubes and composite panel board on the side facing the EXP sub-compartment.
 - (c) The segregation barrier must be made of 6 layers, as follows:
 - (i) Layer 1 (facing EXP sub-compartment) – 24mm Wisa-Form special plywood or equivalent;
 - (ii) Layer 2 – 12mm fire resistant lining ('Supalux' calcium silicate board or equivalent);
 - (iii) Layer 3 – 3mm galvanized steel plate;
 - (iv) Layer 4 and 5 – two criss-cross layers of dressed hardwood (grade F8 or better), with each layer having a final dressed thickness of at least 50mm or equivalent;
 - (v) Layer 6 (facing the VOID sub-compartment) – 3mm galvanized steel plate.
- (6) The partition panels between DET/VOID sub-compartments must be 12mm Wisa-Form special plywood or equivalent, and fixed to the four side edges of the frame.
- (7) A 6mm galvanized floor plate must be secured to the underside of the EXP sub-compartment floor. The floor plate is at least 900mm in width extended from the

segregation barrier, and must be continuously welded along all sides and plug welded to the container floor support beams.

- (8) The floor of the detonator compartment must be raised at least 300mm above the baseline of the vehicle. This may be done by incorporating a false floor in the detonator compartment.
- (9) The rear wheel arches must be constructed from 2mm aluminium alloy plate and joined to the body panelling.
- (10) All fixing screws must be M6 countersunk head brass screws, recessed into the plywood at 150mm maximum pitch, and all countersinks must be properly filled with wooden plugs.

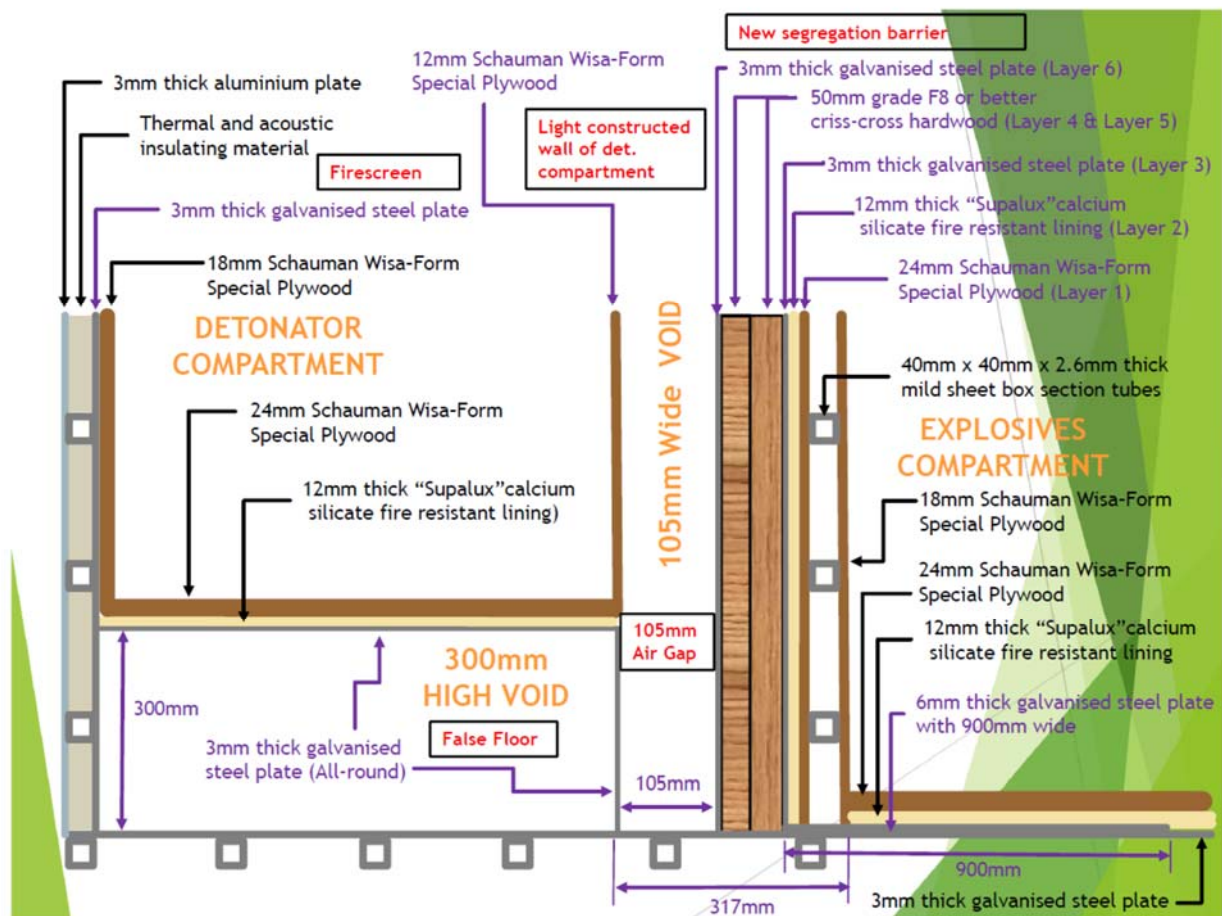


Figure 1: Cross section through detonator compartment, void and explosives compartment