

The transportation of explosives and detonators in a UK mine

Introduction

This guidance has been produced by the Mining Industry Leadership Group (MILG) with input from HSE Mines Inspectorate, UK suppliers and manufacturers of explosives and detonators and the Senior Explosives Engineer of the Health and Safety Executive. This guidance covers transportation at a mine only*. It is applicable for the transportation of explosives and detonators from the surface/surface store to or from an underground store, reserve station to a point of use. The requirements for the licensed storage of explosives and detonators underground in a mine are covered in separate guidance.

*Note: Transportation on a public highway is covered by the ADR Regulations. Whilst not necessary for a private site, if explosives are required to be transported in a vehicle or trailer on a public road, for example between two mine sites, then an [Application for first ADR road vehicle certification](#) form must first be completed. This form also provides guidance on the requirements it must have to meet the necessary standards.

The Mines Regulations 2014 (including The Mines Regulations (Northern Ireland) 2016)

The Mines Regulations 2014 specify the following requirements for the transportation of explosives and detonators in a mine:

- **Regulation 28 General duties relating to explosives**
The mine operator must ensure that, so far as is reasonably practicable, all explosives are transported, stored, handled and used safely and securely.
- **Regulation 30 - Storage of explosives**
The Guidance Notes for paragraph 142 in relation to Regulation 30 advises that:
The containers used for transportation underground should be suitable for holding explosives and/or detonators. Containers or carriages of explosives should not be mixed with those containing detonators.

Effective segregation of explosives and detonators during transportation

Containers of explosives should not be mixed with those containing detonators. Each type of detonator and explosive must be effectively segregated by being in its own container as this will significantly reduce the risk of an unintended initiation. This applies to both manual transportation and for transportation on a vehicle. If on the same vehicle detonators and explosives should be separated by at least one meter (BS 5607: 2017 **9429.4.2 Vehicles**) unless other suitable control measures are in place, such as an effective barrier provided by either a partition or the storage container.

Transportation requirements for explosives and detonators

The type of packaging/container selected for transportation should have been determined by a risk assessment that takes into account that particular mines characteristics and the type of explosives being used. The risk assessment should also ensure that appropriate security arrangements have been put in place for the containers selected. Options available include:

- ensuring explosives and detonators that are being transported remain under the constant supervision of a person appointed by the mine operator;
- the provision of appropriate arrangements to prevent unauthorised access to the detonators and explosives.

Explosives and detonators that are being transported should be retained within either their original packaging or packaging/containers that meets or exceeds the standards of the original packaging. The purpose of the packaging/container for explosives and detonators is to provide protection from ignition sources including those from:

- impact;
- fire;
- extraneous currents.

The packaging/container should also provide protection from the mines environment. Where appropriate, containers should be provided with carrying handles to reduce the risk of being accidentally dropped. Handles will also aid in effectively securing a container when it is being transported inside a vehicle, for example by straps from anchor points within the vehicle. However, the means chosen to secure the container should allow easy detachment so that in the event of a vehicle fire containers could be quickly removed from the danger area if safe to do so.

The containers used for the transportation of detonators must ensure that the detonators are always electrically isolated with no part of the detonator or lead wires exposed to conducting material. The container must also:

- be designed so that it is anti-static;
- kept clean;
- only used for this purpose.

Examples of transportation containers for explosives and detonators

Detonator case and explosives canister used for manual transportation. Also example of a robust waterproof backpack used where explosives need to be carried to an area with difficult access such as up steep gradients.



For transportation in the back of a four wheel drive vehicle the container can be made of wood or other suitable material. The containers must however have a means of being secured during transportation.



For larger quantities of explosives a purpose designed trailer lined with lined with wood or other suitable non-conductive material can be used.



Correctly designed trailers can also be used to transport a combination of ANFO, primers and detonators. The primer and detonator compartments are lined with plywood and are all lockable. The ANFO is transported in 25kg anti-static drums which sit in a stainless steel tray to catch any spillage. There are no electric components on the trailer, with high level lighting on the rear of the towing tractor being provided instead.



Larger quantities of ANFO are transported in stainless steel containers of 850kg capacity that are loaded onto a custom designed trailer for transportation underground by a small telehandler.

