



Dangerous goods safety information sheet

Transport of explosives in underground mines

Introduction

The transport of explosives in underground mines involves unique risks that must be properly managed. This document sets out the critical issues to consider and how they should be approached. Further information on explosives transport on mines is available in Resources Safety's *Transport of explosives on roads and at mines – guidance note*, available in the publications section at www.dmp.wa.gov.au/ResourcesSafety

In recent years, the scale of many underground mining operations has expanded, with a subsequent increase in the number and size of underground explosives storage magazines. Large shipments of explosives are usually transferred from the surface to underground magazines on explosives transport vehicles or "bomb utes". Smaller quantities of explosives are often transferred from the main underground explosives storage magazine to the point of use on underground explosives charging vehicles (e.g. ANFO charger). The explosives transfer process needs to be managed through risk assessment and appropriate action.

General underground transport requirements

The requirements to plan, communicate, separate, segregate and go straight to the destination when transporting explosives are detailed below. These points apply to all vehicles transporting explosives, including "bomb utes" and underground explosives charging vehicles.

Key requirements for transport of explosives underground

Plan

Plan the trip from point of pick-up of explosives to delivery to the underground location.

- Organise personnel and materials handling equipment in advance to enable the safe and secure transfer of explosives from the surface to underground storage.
- Vehicles must comply with requirements for use on mine sites. See the guidance note on transporting of explosives on roads and at mines for more information.

Communicate

Communicate to all personnel which route and vehicle will be used to transport explosives.

- Communicate information through appropriate signage or communication via a selected radio channel.
- Mark the vehicle with appropriate placards and signage. See the guidance note on transporting of explosives on roads and at mines for more information.

Separate

Separate the explosives from people and critical infrastructure.

- Avoid regularly used travel ways, such as service shafts or declines, whenever possible.
- If it is necessary to use a service shaft or decline for transport, minimise the exposure of personnel to explosives by conducting the transfer during shift change or at a time when minimal personnel are underground.

Segregate

Segregate detonators from other explosives, and incompatible explosives from one another.

- Detonators of Classification Code 1.1B must *not* be transported on the same vehicle as other explosives except in accordance with an approved method. See the guidance note on transporting of explosives on roads and at mines for more information.
- Explosives must be securely stowed in designated, fit-for-purpose storage boxes on the vehicle, and carry boxes must be securely attached to the vehicle.
- Explosives must *not* be stowed loose in the tray of a vehicle, or in nooks and crannies of underground explosives charging vehicles.
- Explosives should be kept in their original boxes where possible to facilitate ready identification and containment.

Go direct

Go straight to the destination.

- Conduct the transfer as directly as possible between the point of pick up and the end destination (e.g. direct from surface to underground magazine, or from magazine to the shot). Do not deviate to deliver explosives to other sections of the mine.
- Vehicles accessing the explosives storage section of a magazine (e.g. forklifts, charging vehicles) must satisfy the requirements of Australian Standard AS 2187.1:1998 for powered vehicles.
- Vehicles must not be:
 - started or stored inside the explosives storage section of the magazine
 - refuelled, maintained or left running unattended near the magazine.
- Vehicles should be parked facing towards a wall to prevent them from “running away”.

Parking underground explosives charging vehicles

Given the distances involved in underground mines and the logistics of the cleansing process required, it is often impracticable for an underground explosives charging vehicle to be returned to the surface, or sterilised from ANFO, between shift changes and other short-term breaks in operation.

To accommodate operational needs, designated underground lay-up areas may be developed for the safe and secure short-term parking of underground explosives charging vehicles with residual ANFO contained in the kettle.

A risk assessment must be completed when designing the lay-up area. The area's location and design must satisfy safety and security requirements, including:

- adequate separation from main mine facilities and critical infrastructure;
- adequate separation from explosives magazines; and
- appropriate security measures (e.g. locked gates) to prevent unauthorised access to lay-up area.

The following requirements apply to parking in a lay-up area:

- all packaged and loose explosives and detonators must be removed from the underground explosives vehicle before parking in the lay-up area;
- all explosives removed from the vehicle must be returned to the main explosives storage magazine (preferably), or to a compliant external portable magazine;
- stock reconciliation of the explosives is required upon return;
- where appropriate, a procedure to “dip the kettle” may be used as a means of determining and recording residual ANFO in kettles;
- where possible, the inlets and outlets to the ANFO kettle should be closed and locked;
- the driver should walk around and check the vehicle to ensure there are no fires (e.g. overheated brakes) or smouldering combustibles on board the vehicle; and
- safety and security measures must be complied with at all times.