

## Use of Explosives in Hong Kong

**Key Messages:** In Hong Kong, explosives are commonly used in the local construction industry for rock blasting. They are also used for other purposes, including fireworks, safety cartridges for industrial fastening tools, distress signals, and small arms ammunition. Explosives are classified as dangerous goods and they are strictly controlled to ensure their safe use and security. The Commissioner of Mines is responsible for regulatory control of the manufacture, storage, use and transport (on land) of most types of explosives in Hong Kong. The Chief Geotechnical Engineer/Mines of the Geotechnical Engineering Office, Civil Engineering and Development Department (CEDD), carries out these duties and aims to facilitate the use of explosives by the industry without compromising safety and security.

### Introduction

Explosives are commonly used in blasting by the local construction industry as an efficient and cost-effective means of excavating rock. They are typically used for site formation and tunnelling in rock, as well as in quarrying, where large volumes of rock need to be excavated efficiently and in an environmentally acceptable manner.

Whilst explosives are mainly used for rock blasting in construction projects, explosive products are also used for other purposes, including fireworks, safety cartridges for industrial fastening tools, distress signals, and small arms ammunition.

Under the Dangerous Goods Ordinance (DGO), Chapter 295, explosives are classified as Schedule 1 Dangerous Goods. Except for conveyance by sea, and the discharge of fireworks, the Commissioner of Mines (CoM), who is also the Director of Civil Engineering and Development, is responsible for the regulatory control of most types of explosives in Hong Kong. The Chief Geotechnical Engineer/Mines undertakes the regulatory control duties under delegated authority from the CoM. Explosives used as pyrotechnic special effects materials for entertainment purposes, such as film-making and stage performances, are regulated under the Entertainment Special Effects Ordinance, Chapter 560, which is administered by the Special Effects Licensing Unit under the Create Hong Kong.

For safety and security reasons, the Government of the Hong Kong Special Administrative Region exercises very stringent control on the manufacture, storage, transport and use of explosives. The DGO stipulates that no person, other than specific parties who are exempt, shall manufacture, possess, store, convey or use any explosives in Hong Kong without a licence granted by the relevant authorities.

The following paragraphs discuss the use of explosives that are under the authority of the CoM. Further information can be found on the CEDD website (<https://www.cedd.gov.hk/eng/public-services-forms/explosives-blasting-quarries/index.html>).



## **Explosives for Rock Blasting**

### Types of Explosives

Explosives that are currently used in the construction industry are either in ‘bulk’ or ‘cartridge’ form. Bulk explosives are mainly bulk Ammonium Nitrate Emulsion (ANE) and Ammonium Nitrate Fuel Oil (ANFO) explosives manufactured on-site by a licensed explosives manufacturer for immediate use. Cartridged explosives are emulsion type explosives. Detonators, boosters, and detonating cords, which are explosive products, are generally used to initiate bulk and cartridged explosives for rock blasting. Explosive products and cartridged explosives are imported and stored in a Government Explosives Depot before being delivered to a blasting site or a Mode A store (explosives site magazine) by Mines Division staff. Mines Division keeps a list of all explosives and explosive products that have been approved for use in Hong Kong.

### Storage of Explosives

Imported explosives are stored at two Government Explosives Depots. The Kau Shat Wan Explosives Depot on Lantau Island is the Government’s principal store. The Kowloon Explosives Depot at Sha Tin Heights serves mainly as a transit store. These depots maintain strict control measures in accordance with international standards and comply with the government risk guidelines for Potentially Hazardous Installations. An independent specialist safety expert audits the depots annually.

In special circumstances, limited quantities of blasting explosives, including explosive products, can be stored in a Mode A store that has been licensed by the CoM.

### Delivery of Explosives from a Government Explosives Depot to a Blasting Site

When requested by a contractor possessing a valid Blasting Permit, Mines Division staff will deliver the required quantity of explosives from a Government Explosives Depot to a blasting site. The contractor is also required to obtain a Conveyance Permit issued by the CoM for transport of explosives on land as stipulated under the DGO. The contractor may be permitted by Mines Division to collect explosives directly from a Government Explosives Depot and deliver them to their blasting site, in the presence of the Resident Site Staff. Resident Site Staff and, if deployed to a site, Mines Division staff, are required to maintain surveillance on the explosives delivered to the site until the explosives are used and, in case of surplus, destroyed on-site or returned to a Mode A store or a Government Explosives Depot. This is to prevent the explosives from being lost or stolen. In addition, Mines Division staff audit sites and Mode A stores to assure the effectiveness of the surveillance system.

### Manufacture of Explosives On-Site

The explosives manufacturer must obtain a Manufacture Licence from the CoM before being allowed to manufacture bulk explosives at a specific blasting site for immediate use. As part of the licensing process, the manufacturer has to submit documents detailing how the manufacturing process can be carried out safely on-site.

### Blasting Permit

No person shall carry out any blasting without the permission of the CoM. To apply for a Blasting Permit, the applicant has to submit details of the proposed blasting works, including a blasting assessment report and a method statement prepared by a competent person, to Mines Division for consideration. The effects of blasting on nearby sensitive receivers, including buildings, utilities, slopes and other structures should be carefully assessed.

The shotfirer, who is the person that initiates the blast, must possess a valid Mine Blasting Certificate or be otherwise authorised by the CoM. To obtain a Mine Blasting Certificate, the applicant is required to complete an approved structured training or an apprenticeship training, and pass the subsequent written, oral and practical examinations.

### **Fireworks**

The Secretary for Home Affairs and the Director of Marine are the licence issuing authorities for fireworks displays launched on land and on water, respectively. Mines Division provides technical support to these licensing authorities. In Hong Kong, major fireworks displays are usually carried out on National Day, Lunar New Year, New Year's Eve, and on other special occasions at Victoria Harbour. Fireworks displays are also launched on land (e.g. Hong Kong Disneyland).

Mines Division is responsible for the disposal of illegal fireworks, which have been confiscated by the Hong Kong Police Force, Marine Department, and Customs and Excise Department. These fireworks are destroyed by Mines Division staff in a purpose-built fireworks destruction bunker at the Kau Shat Wan Government Explosives Depot.

### **Other Explosives**

For explosives other than those used for blasting or fireworks, regulatory requirements mainly relate to controlling their storage and transport. The DGO stipulates that, unless otherwise specified, a licence to store any dangerous goods is deemed to include a licence to use such goods and any exemption from a storage licence is deemed to include exemption from the licensing requirement in respect of use.

Small quantities of non-blasting explosives such as distress signals, safety cartridges and small arms ammunition can be stored in a Mode B store, which has been licensed by the CoM. Under the DGO, exemption from storage and transport licensing requirements is given to limited quantities of specific categories of explosive articles, such as safety cartridges for industrial fastening tools.

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