

Pumpable & Augerable Bulk Explosives, Support Facilities & Loading Systems

Explosives Division of GULF OIL Corporation Ltd offers a full range of emulsion based pumpable and augerable **bulk explosives**, suitable for use in a wide range of rock types, ores, minerals, coal, and under various geo-mining conditions. The products offered are the result of technology developed through in-house R&D.

Emulsion explosives are new generation explosives, as they exhibit 'near-ideal' detonation characteristics among present commercial explosives. In an emulsion explosive, the oxidizer and fuel ingredients are in liquid form.

The bulk emulsion offered is a water-in-oil type, in which the oxidizers are dispersed as micro droplets in a continuous and thin layer of fuel (oil). This results in an intimate contact of ingredients, leading to a high order detonation reaction, resulting in higher velocity of detonation and higher energy release. Since the oxidizer is covered by fuel, emulsion explosives exhibit excellent water resistance and perform reliably at low temperatures.

Advantages

- Superior borehole coupling results in better utilization of explosive energy. Expanded drillhole patterns possible.
- Tailor-made explosive suiting to material being blasted and prevailing geo-mining conditions.
- Safe, as raw materials carried are non-explosive in nature.
- Supply source near to user. Explosive available at short notice. Ability to charge large quantity of explosive in a single day.
- Eliminates manual handling of cartridge explosives, which is labour-intensive and time consuming, especially while conducting large blasts.
- Cost saving to user through elimination of packaging and transportation costs.
- Reduced infrastructure to user. No need of large magazines and fleet of explosive vans.
- Reduced manpower in terms of charging crew, explosive van drivers and magazine security personnel.
- Eliminates the threat of pilferage of explosives.

The **bulk explosive** system of GULF OIL Corporation Limited is very versatile and consists of:

1. Support facility where 'non-explosive emulsion matrix' is manufactured and stored.
2. Facility having a silo for storing non-explosive emulsion matrix.
3. Bulk Mixing & Delivery (BMD) vehicles (pump truck).
4. Mobile 'dedicated' road tankers for transporting non-explosive matrix from mother plant to silo facility.

Special Features

Safe - Only 'non-explosive matrix' is manufactured, stored and carried on pump truck and tanker.

Assured Quality - Non-explosive matrix carried by the pump truck or tanker is of assured quality. Matrix is re-leased for use only after stringent quality checks.

Reliable – The operations on the Pump truck are very simple and minimal. Only blending of few ingredients is carried out on the pump truck. The probability of a defective product going down the borehole is very remote.

Flexible – Non-explosive matrix is carried from the mother plant in dedicated road tankers and transferred into the storage silo erected at user sites. The Pump truck draws the requirement from the support facility, thus ensuring uninterrupted supply.

The 'Storage Silo' concept is a unique feature of system wherein non-explosive matrix is transported through road tankers from a manufacturing facility and stored in silo of 25 MT or 50 MT capacity erected at user's site. This concept is very useful for opencast mines consuming 1000-2000 MT of explosives per annum.

Through density control, non-explosive matrix charged into the drillhole becomes booster-sensitive after a lapse of 15-20 minutes. It is initiated using PETN-TNT cast booster or cap-sensitive cartridge booster, set off using detonating cord down lines or shock tube based non-electric detonators.

The consistency of the product enables decking and stemming. The product has excellent stability, water resistance and sleeping characteristics, thus making it suitable as a sleeping charge in watery drill holes.

Digital weight indicator accurately monitors the quantity of material discharged into the drillhole. Earthing chains discharge any static electricity accumulated on the pump truck. Exhaust pipe is fitted with flame arrestor and fire extinguisher is provided on the pump truck.



Contact Information

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Features and specifications mentioned in this brochure are subject to change due to continuous improvements through research and development.

Mines desirous of carrying out trial blasts with bulk explosives have to seek exemption from their local Directorate of Mines Safety as under:

- Metalliferous Mines Regulation 155 (1) / Coal Mines Regulation 161 (1) – for using explosive other than in cartridge form.
- Metalliferous Mines Regulation 162 (5) / Coal Mines Regulation 168 (5) – using one or more complete cartridges of same diameter and same type of explosive.

Product Range

Pumped Emulsion:

Emulking 100 & 200, Emulblast 100 & 200 and Emulmix 100 & 200 are emulsion explosives delivered through anti-static loading hose and discharged at the bottom of the watery drillholes. The 100 series products are suitable for soft to medium hard strata and 200 series is recommended for use in medium hard to hard strata.

Augered Heavy AN-FO:

Supermix 100 is an emulsified AN-FO suitable for dry and moist boreholes. It is discharged at the drillhole collar through a mechanical auger system. **Supermix 200** contains a higher percentage of emulsion, and is suitable for watery drillholes.

Specifications

	Density g/cc	VOD m/sec	Application
Emulking 100, Emulblast 100 & Emulmix 100	1.00 to 1.20	3500 to 4500	Soft to medium hard strata and watery drillholes
Emulking 200, Emulblast 200 & Emulmix 200	1.00 to 1.20	3500 to 4500	Medium hard to hard strata and watery drillholes
Supermix 100	1.00 to 1.20	3000 to 4000	Medium hard to hard strata and watery drillholes
Supermix 200	1.00 to 1.20	3500 to 4500	Medium hard to hard strata and watery drillholes

Precautions

- Do NOT subject explosives and detonators to impact, friction and fire.
- Connect detonator to detonating cord trunkline just prior to firing the blast.
- After lowering the primer into the drillhole, cut-off the detonating fuse downline from the reel and anchor the downline at the drillhole collar.
- Do NOT carry out explosives charging during an approaching storm and lightning activity in the blast area. Vacate the blast area and resume operations only after the storm has passed.
- Do NOT attempt to fight explosive fires.

Statutory Classification and Shipping Information

Petroleum & Explosives Safety Organization (PESO), Govt. of India	Class 2
IMDG Classification:	
Class	1
Division	1.1
Group	D
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Explosives

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