

mullafex Gassed Emulsion Blends

Technical Data Sheet



VERSION 1.0

Mar 2020

Product Description

Mullafex Gassed Emulsion Blends are a bulk explosive that is emulsion rich containing lower proportions of ANFO. The blends are specifically designed for use in medium to large blast hole diameter surface mining applications.

This product is not suitable in situations where reactive ground conditions exist.

Advantages and Benefits

Mullafex Gassed Emulsion Blends can be used in wet holes containing water and can be chemically gassed with either single or dual stream gassing method.

Mullafex Gassed Emulsion Blends are blended and delivered into boreholes using the customer's own Mobile Processing Units. The blend is pumped from an MPU through a loading hose to the bottom of wet blastholes

Application

This booster-sensitive bulk emulsion explosive can be used in boreholes with minimum diameters ranging from 89 to 115 mm, depending on the chosen open cup gassed density and charge length.

Open cup densities ranging from 0.90 to 1.25 g/cc can be used, depending on customer's energy requirements, ground conditions, blast hole diameter, and blast hole depth.

Technical Properties

Property	60/40	70/30	80/20	90/10	100%
Percent Emulsion	60%	70%	80%	90%	100%
Percent ANFO	40%	30%	20%	10%	0%
Minimum Diameter ¹ - mm	115	89	89	89	89
Maximum Charge Depth ² - m	Up to 25 m				
Hole Type	Dry, Wet or Dewatered				
Delivery System	Pumped				
Typical VOD ⁶ - km/s	3.7 - 6.5	3.7 - 6.5	3.7 - 6.5	3.7 - 6.4	3.7 - 6.3
Effective Energy ³ - MJ/kg	2.45	2.36	2.27	2.18	2.09
RWS ^{3,4}	110.3	106.2	102.1	98.1	93.8
RBS ^{3,4}	172.3	165.9	159.6	153.2	146.6
Maximum Sleep Time ⁵ - days	7 Days				

NOTES:

1. Minimum blast hole diameter is dependent on the gassed open cup density, ground water conditions, and the initiation system used.
2. Maximum charge length is dependent on the gassed open cup density, blasthole diameter, ground water conditions, and the initiation system used.
3. CSBP's energy values, relative weight strength, and relative bulk strength are calculated independently using an ideal detonation modelling computer program developed by Professor Martin Braithwaite (working independently via Imperial Consultants). The calculated energy is to a cut-off pressure of 100 MPa.
4. For calculation of Relative Weight Strength (RWS) and Relative Bulk Strength (RBS); ANFO - density 800 kg/m³ and effective energy of 2.23 MJ/kg.
5. When used in ideal conditions.

Charging of Blastholes

The MPUs used to manufacture Mullafex Gassed Emulsion Blends must be calibrated and maintained on a regular basis. The customer shall ensure MPU safety systems are functioning before blending is to take place.

Blasthole Charge Length

Mullafex Gassed Emulsion Blends are suitable for use in explosive columns up to 25 m in depth, depending on hole diameter, density and the presence of water. Please contact CSBP Product Support for advice if intended charge lengths exceed 15 m in length.

Sleep Time Within Boreholes

The recommended maximum sleep time in optimal, non-reactive ground conditions is 7 days. The maximum sleep time should be confirmed by reactive ground Sleep Time Testing using rock samples sourced from the site of use. Mullafex Inhibited Gassed Emulsion Blends must not be slept for more than 1 week.

CSBP product support should be consulted before using Mullafex in reactive ground.

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Diameter, Density and Depth Constraints

The table below shows the relationship between the suggested open cup densities for the required average hole densities depending on charge column length. Please contact CSBP Product Support for detailed application advice.

Column Depth (m)	Average In-hole Density (g/cc)					
	1.00	1.05	1.10	1.15	1.20	1.25
5	0.92	0.98	1.04	1.10	1.16	1.23
10		0.93	0.99	1.06	1.14	1.21
15		0.90	0.96	1.03	1.11	1.19
20			0.93	1.00	1.09	
25			0.90	0.98	1.07	
	Not supported					
	For use in hole diameters > 89 mm					
	For use in hole diameters > 115 mm					

Priming and Initiation

Priming of blastholes greater than 115mm in diameter or greater than 10m in length must be with 400gm cast boosters. 150gm cast boosters can only be used in blast hole diameters less than 115mm and less than 10m in length. The use of detonating cord in hole with Mullafex Gassed Emulsion Blends is not recommended.

Gassing Time

Allow at least 30 to 60 minutes before stemming the blast holes from the time of loading. It is recommended that CSBP's chemical gassing agent be used to gas Mullafex Blends.

Refer to the Gassing Solution for Mullafex TDS for appropriate trace chemical addition rates.

Ground Temperature

Mullafex Gassed Emulsion Blends must only be used where the ground temperature is less than 55°C.

Contact a CSBP product support representative for advice with regards to product suitability in situations outside these conditions.

Authorisation and Transport

Mullafex Gassed Emulsion are created during the blast hole loading process.

If transported on a road, Mullafex Gassed Emulsion Blends are classified as 1.1D explosives and must be transported in accordance with Federal and State laws and regulations governing the transport of explosives.

Authorised Trading Name: Mullafex Inhibited Gassed Emulsion Blends (Sensitised)

Proper Shipping Name: Explosive, Blasting, Type E
UN No.: 0241

Classification: 1.1D Explosive

Disposal

Disposal of Mullafex Gassed Emulsion Blend can be hazardous. Methods of safe disposal can vary depending on the user's situation. Contact a CSBP product support representative for disposal advice.

Safety and First Aid

Reactive Product Selection Tests must be performed to confirm that the chosen Mullafex Inhibited Gassed Emulsion Blend is suitable for the site requirements.

Mullafex Inhibited Gassed Emulsion Blends are relatively insensitive to accidental initiation under normal conditions of use. Detonation may occur from heavy impact or excessive heating, particularly under conditions of confinement.

Post detonation fumes are a health hazard. Users should ensure adequate ventilation is provided prior to re-entry into the blast area.



More detailed safety information can be found in the Mullafex Ammonium Nitrate Emulsion Blend Safety Data Sheet (SDS).

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