

spinifex Heavy ANFO Blends

Technical Data Sheet



VERSION 3.0

May 2023

Product Description

Spinifex Heavy ANFO Blends are ANFO rich emulsion blend bulk explosives specifically designed for use in dry or dewatered, medium to large diameter, blast holes in surface mining applications.

The blends are formulated to provide excellent heave energy for loosening of medium to hard ground in surface mining applications.

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

Advantages and Benefits

The addition of Spinifex Emulsion to ANFO provides the ability to vary the relative weight strength and the gas volume generated during detonation by modifying the ammonium nitrate content and density of the down hole explosive.

The densities and energy output can then be tailored to match the ground conditions to enable pattern expansion and blasting cost savings.

Application

Spinifex Heavy ANFO Blends can be blended and delivered into boreholes using the customer's own Mobile Processing Units.

The blends are designed to be delivered into bore holes by way of the MPU's discharge auger. High volume discharge rates can be achieved with this method of loading.

This booster sensitive bulk explosive can be used in boreholes with minimum diameters from 102 mm.

Spinifex Heavy ANFO Blends are designed for use in dry or dewatered blast holes. The 40/60 and 50/50 blends may be used in dewatered blast holes where dynamic water is not present.

Charging of Blastholes

The MPUs used to manufacture Spinifex Heavy ANFO 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.

Technical Properties

Property	10/90	20/80	30/70	40/60	50/50
Percent Emulsion	10%	20%	30%	40%	50%
Percent ANFO	90%	80%	70%	60%	50%
Nominal Cup Density - g/cc	0.83	0.93	1.07	1.21	1.30
Minimum Diameter ¹ - mm	102	102	102	127	127
Maximum Charge Depth ² - m	Up to 30 m	Up to 30 m	Up to 25 m	Up to 20 m	Up to 20 m
Hole Type	Dry	Dry	Dry	Dewatered	Dewatered
Typical VOD ⁵ - km/s	3.7 - 5.3	3.7 - 5.8	3.7 - 6.0	3.7 - 6.6	3.7 - 6.8
Effective Energy ³ - MJ/kg	2.34	2.41	2.49	2.58	2.66
RWS ^{3,4}	105.3	108.3	112.0	116.0	119.5
RBS ^{3,4}	109.3	125.9	149.8	175.4	194.1
Maximum Sleep Time ⁵ - days	14 Days	14 Days	14 Days	14 Days	14 Days

NOTES:

1. Minimum blast hole diameter is dependent on the density, ground conditions, and the initiation system used.
2. Maximum charge length is dependent on the density, blasthole diameter, ground 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.

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Disclaimer: CSBP Limited (CSBP) is the manufacturer of de-sensitised ammonium nitrate emulsion, ammonium nitrate prill and gassing solution (Constituents). CSBP does not manufacture sensitised ammonium nitrate emulsion or explosives. SPINIFEX Emulsion Blend (Product) is manufactured by CSBP's customers on their sites using Constituents supplied by CSBP. Information contained in this data sheet is accurate as at the date of issue but cannot cover every application or variation of conditions under which the Product is manufactured and used. Each user is responsible for understanding the details in this data sheet and the Product applications in the context of the intended manufacture and use. It is the sole responsibility of the user to make enquiries, obtain advice and determine the necessary safe conditions for the Product's intended use. To the extent permitted by law, CSBP will not be responsible for damages of any nature resulting from use of or reliance on the information in this data sheet.

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Blasthole Charge Length

Spinifex Heavy ANFO Blends are suitable for use in explosive columns up to 30 m in depth, depending on blend type, hole diameter, and ground conditions. Multiple primers may be required with charge lengths greater than 20 m.

It is recommended to sensitise the emulsion contained in the 50/50 blend. This sensitisation may lead to a reduction in the in-hole density.

Please contact CSBP Product Support for advice if intended charge lengths exceed 20 m in length.

Priming and Initiation

Priming of blastholes greater than 127mm in diameter or greater than 10m in length, CSBP recommends the use of 400gm cast boosters. 150gm cast boosters can only be used in blast hole diameters less than 127mm and less than 10m in length.

The use of detonating cord in hole with Spinifex Heavy ANFO Blends is not recommended.

Sleep Time Within Blastholes

The recommended maximum sleep time in optimal conditions is 14 days. However, sleep time is dependent on application factors such as hole diameter, density, ground water conditions, and the initiation system used. CSBP product support should be consulted if special conditions exist.

Ground Temperature

Spinifex Heavy ANFO Blends must only be used where the ground temperature is less than 55°C and must not be used in a reactive ground area. Contact a CSBP product support representative for advice with regards to product suitability in situations outside these conditions.

Authorisation and Transport

Spinifex Heavy ANFO Blends are created during the blast hole loading process.

If transported on a road, Spinifex Heavy ANFO 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: Spinifex Heavy ANFO Emulsion Blends

Proper Shipping Name: Explosive, Blasting, Type B

UN No.: 0082

Classification: 1.1D Explosive

Disposal

Disposal of Spinifex Heavy ANFO Blends 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

Spinifex Heavy ANFO 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 that adequate ventilation is provided prior to re-entry into the blast area.



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

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