

TITAN[®] 2000

Heavy ANFO Blends

Technical
Information



Description

TITAN[®] 2000 Heavy ANFO blends are comprised of a mixture of TITAN 2000 Emulsion and ANFO manufactured from Detaprill[®] and are designed for use in dry or dewatered blastholes of medium to large diameter. As the proportion of emulsion increases in the blend, both the water resistance and density increase. TITAN 2000 Heavy ANFO blends are designed to be delivered by auger into the blasthole from the Bulk Emulsion Vehicle. TITAN 2050 (a 50:50 weight mixture of emulsion and ANFO) may be augered or pumped to the bottom of fully wet holes.

Advantages

TITAN 2000 Heavy ANFO blends have densities ranging from 0.86g/cm³ to 1.32g/cm³ allowing control of bulk strength and explosive distribution as ground conditions vary. This can lead to improved fragmentation or permit blast hole pattern expansion. Pumped TITAN 2050 can deliver the performance of a Heavy ANFO in a fully wet hole.

NOTES:

1. In hole gassed density is dependant on hole depth.
2. All Dyno Nobel energy values are calculated using a proprietary Dyno Nobel thermodynamic code – Prodet. Other programs may give different values.
3. Water Resistance determined using laboratory testing methods.
4. For non-reactive ground.
5. RWS and RBS determined using a density of 0.82g/cm³ and an energy of 3.7MJ/kg for ANFO.

Properties

Property	TITAN 2010	TITAN 2020	TITAN 2030	TITAN 2040	TITAN 2050
Density (g/cm ³) ¹	0.86	0.97	1.10	1.25	1.32
Rec. Min. Diam (mm)	102	102	102	127	200
Energy (MJ/kg) ²	3.6	3.4	3.3	3.2	3.1
Water Resistance ³	Poor	Poor	Poor	Average	Good
Rec. Sleep Time ⁴	14 days	14 days	14 days	14 days	14 days
RWS ⁵	0.97	0.94	0.90	0.87	0.84
RBS ⁵	1.02	1.11	1.21	1.32	1.34

Typical Velocities of Detonation

Product	Hole Diameter (mm)	Density (g/cm ³)	Booster	VoD (m/s)
TITAN 2020	270	1.1	HDP 400	4760 ⁷
TITAN 2030	102	1.1	HDP 400	3150 ⁶
TITAN 2040	102	1.3	HDP 400	2900 ⁶

6. VOD recorded using a continuous VOD method, in unconfined conditions. VOD for non-ideal explosives is a function of borehole diameter, product density and confinement conditions. These figures are indicative only and represent the unconfined conditions used in the test. Typically the product will shoot at higher VODs as the borehole diameter and confinement increase.
7. VOD recorded using a continuous VOD method, on a customer site. The VOD recorded is indicative of the conditions at that site, and will vary due to variations in confinement from site to site.

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Recommendations

Priming Requirements - TITAN 2000 emulsion blends are formulated to be booster sensitive and require a minimum HDP 400 (400g) primer. Smaller booster types may reduce the performance of the explosive. Additional boosters should be used when the column height exceeds 10 to 15 metres or where there is risk of column disruption. Detonating cord downlines are not recommended.

Shelf Life - TITAN 2000 emulsion matrix has minimum shelf life of three (3) months, when transported and stored under ideal conditions.

Sleep Time - For applications where unusual or specific conditions exist please consult your local Dyno Nobel representative.

Reactive Ground Conditions - TITAN 2000 emulsion blends are not designed for use in reactive (pyritic) ground conditions. For applications in reactive ground conditions please consult your local Dyno Nobel representative.

Ground Temperature - TITAN 2000 emulsion blends are suitable for use in ground with a temperature of 0°C to a maximum of 55°C.

Dangerous Goods Classification

Product Name:	TITAN [®] 2000 Heavy ANFO Blends
Correct Shipping Name:	Explosive, Blasting, Type E
UN Number:	0241
DG Class:	1.1D

Safe handling, transportation & storage

First Aid - Detailed first aid information regarding this product is contained on the relevant Dyno Nobel Material Safety Data Sheet.

Safety - All explosives are classified as dangerous goods and can cause personal injury and damage to property if used incorrectly.

Transportation and Storage - All explosives must be handled, transported and stored in accordance with all relevant regulations. Stock should be rotated such that older product is used first.

The information and suggestions contained in this document concern explosive products that should only be dealt with by persons having the appropriate technical skills, training and licence. The results obtained from the use of such products depend to a large degree on the conditions under which the products are stored, transported and used.

While Dyno Nobel makes every effort to ensure the details contained in the document are as accurate as possible, the conditions under which the products are used are not within its control. Each user is responsible for being aware of the details in the document and the product applications in the specific context of the intended use. If technical advice is required in the specific application of the products then you should contact Dyno Nobel for assistance.

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