

# TITAN<sup>®</sup> 1000 G

## Technical Information



### Unsensitized Gassable Bulk Emulsion Matrix



#### Product Description

TITAN 1000 G is an unsensitized bulk emulsion matrix specifically formulated to be sensitized during loading at the borehole using Dyno Nobel chemical gassing technology. TITAN 1000 G, Dyno Nobel's high performance, booster sensitive emulsion explosive can be used alone in 65 mm (2-1/2 in) and larger boreholes or in larger boreholes when used in an emulsion/ANFO blend. Chemical gassing can vary the density from 1.10 and 1.30 g/cc. In addition, the percentage of TITAN 1000 G can vary to deliver explosive performance that best matches specific blasting requirements. Refer to the data table at right for the physical properties and loading methods for some typical TITAN 1000 G emulsion/ANFO explosive blends.

#### Application Recommendations

- TITAN 1000 G emulsion matrix is shipped as an oxidizer and must be sensitized with Dyno Nobel chemical gassing technology to become detonable prior to use.
- Only ANFO manufactured with emulsion compatible AN prills is recommended for use in TITAN 1000 G emulsion/ANFO explosive blends.
- The minimum cast booster weight recommended to prime TITAN 1000 G emulsion explosives or emulsion/ANFO explosive blends is 340 g (12 oz).
- **ALWAYS** double prime when bulk explosive columns exceed 6 m (20 ft). One primer should be positioned near the bottom of the hole and the second nearer the

### Properties

MSDS  
#1052

	1000 G	1070 G	1060 G	1050 G
<b>Percent Emulsion</b>	100	70	60	50
<b>Density</b> (g/cc) Avg	1.20	1.20	1.20	1.25
<b>Energy<sup>a</sup></b> (cal/g)	680	740	760	780
(cal/cc)	815	890	910	975
<b>Relative Weight Strength<sup>a,b</sup></b>	0.77	0.84	0.86	0.89
<b>Relative Bulk Strength<sup>a,b</sup></b>	1.13	1.23	1.26	1.36
<b>Velocity<sup>c</sup></b> (m/sec)	4,500	4,300	4,100	4,300
(ft/sec)	14,800	14,100	13,500	14,100
<b>Detonation Pressure<sup>c</sup></b> (Kbars)	61	55	50	58
<b>Gas Volume<sup>a</sup></b> (moles/kg)	45.4	44.8	44.6	44.4
<b>Water Resistance</b>	Excellent	Excellent	Excellent	Good
<b>Minimum Diameter</b> (mm)	65	75	100	150
(inches)	2.5	3	4	6
<b>Loading Method</b>	Pump	Pump	Pump	Auger
<b>Critical Density</b> (g/cc)	1.30	1.30	1.30	1.30

<sup>a</sup> All Dyno Nobel Inc. energy and gas volume values are calculated using PRODET™, a computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.

<sup>b</sup> ANFO = 1.00 @ 0.82 g/cc

<sup>c</sup> Confined in 150 mm (6 in) diameter at average density.

#### Hazardous Shipping Description

##### United States

Oxidizing Liquid, n.o.s. (Ammonium Nitrate)  
5.1 UN 3139 II

##### Canada

Explosive, Blasting, Type E 1.5 UN 0332 II



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### Application Recommendations (continued)

- top of the explosive column.
- Do not use detonating cord in borehole diameters less than 159 mm (6¼ in).
- NEVER** use TITAN 1000 G in boreholes deeper than 30 m (100 ft). Consult your Dyno Nobel representative for an alternative product
- ALWAYS** use average borehole loading density for blast design and to estimate explosive requirements. Chemically gassed emulsion explosives provide a unique loading density gradient in the borehole with highest density at the bottom and lowest density at the top. Consult the density/depth curves to determine average borehole density.
- NEVER** load augered TITAN 1000 G/ANFO blend with 50% ANFO into boreholes where standing water is present! Augered TITAN 1000 G emulsion/ANFO explosive blend with 50% ANFO is for use in dry or dewatered boreholes only. To produce consistently good results, wet boreholes must be dewatered. After dewatering, check the borehole to ensure there is no re-entering or residual water. As soon as the borehole is confirmed dry, immediately prime and load. When standing water remains in a borehole, use only pumped TITAN 1000 G emulsion ANFO blends with 0 to 40% ANFO.
- Maximum Borehole sleep time is two (2) weeks. Where geology is wet and extended sleep times are anticipated, **ALWAYS** limit ANFO percentage in TITAN 1000 G Heavy ANFO blends to less than 50%. When product will sleep overnight and less water resistant blends are being considered, consult your Dyno Nobel representative for loading recommendations.
- ALWAYS** use only delivery equipment specifically designed or approved by Dyno Nobel for TITAN 1000G. Ensure safety systems are operational before each use.
- TITAN 1000 G emulsion explosives or TITAN 1000 G emulsion/ANFO explosive blends require specialized delivery equipment that must be operated only by personnel who have received Dyno Nobel chemical gassing training.
- TITAN 1000 G emulsion explosive or TITAN 1000 G emulsion ANFO explosive blend delivery equipment should be calibrated periodically to ensure blend quality and explosive performance.

- Continuously monitor the TITAN 1000 G emulsion explosive and TITAN 1000 G emulsion/ANFO explosive blend density to ensure that equipment remains in calibration during loading.

### Transportation, Storage and Handling

- TITAN 1000 G can be stored for 3 months at temperatures between -18° C and 32° C (0° F and 90° F ). Older product should be used first and all storage tanks should be kept clean of residual product.
- Use only pumps which have been approved by Dyno Nobel for 5.1 emulsion matrix transfer. Pump type, pump speed, worn pump parts, repeated repumping and pumping against high hose pressures can increase TITAN 1000 G viscosity and decrease shelf life.
- ALWAYS** monitor emulsion pump performance and check pumps periodically for excessively worn parts. Design storage facilities to minimize repeated pumping.
- Transport, store, handle and use TITAN 1000 G in compliance with federal, state, provincial and local laws governing bulk oxidizing liquids..

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