

FORCE ANFO™

Packaged FORCE ANFO

Description

FORCE ANFO™ is a range of porous prilled Ammonium Nitrate based packaged explosives formulated for a range of blasting applications. The *FORCE ANFO™* range is not suited for use in reactive environments.

Application

The *FORCE ANFO™* range is suitable for use where the blastholes are dry and will remain dry until firing. It can be used as a column charge in open cut mining, quarrying and for general blasting. The *FORCE ANFO™* range can be loose poured or pneumatically (blow) loaded into blastholes.

Key Benefits

- *FORCE ANFO™* is reliable and easy to use, providing consistent results
- *FORCE ANFO™* is a cost effective explosive for dry hole blasting applications.
- *FORCE ANFO™* products provide fully coupled explosive charges to maximise blasting outcomes.
- The *FORCE ANFO™* range can be pneumatically loaded to increase explosive density, and to enable small blastholes to be loaded quickly and efficiently

Recommendations for Use

Blasthole Diameter

The minimum recommended hole diameter for pneumatically loaded *FORCE ANFO™* is 64 mm.

Blasthole Depth

FORCE ANFO™ can be used in holes of any practical depth.

Priming and Initiation

FORCE ANFO™ can be reliably initiated by a *FORCE ANFO™* packaged explosive cartridge in conjunction with an *Exel™* detonator. Cartridge explosives must be appropriate to holes size. The use of detonating cord is not recommended.

Ground Temperature

These products are available for use in ground temperatures 0 °C to a maximum of 55 °C. If your application requires you to operate outside this temperature range please contact your local Nobel Account Manager.

Technical Properties

Product	<i>Exan™</i>
Density (g/cm ³) ⁽¹⁾	0.80
Minimum Blasthole Diameter (mm) ⁽²⁾	64
Hole Type	Dry
Typical VOD (km/s) ⁽³⁾	4.800
Relative Effective Energy (REE) ⁽⁴⁾	
Relative Weight Strength (%)	100
Relative Bulk Strength (%)	100
CO ₂ Output (kg/t) ⁽⁵⁾	191
Sleep Time (d)	30

Charging

The recommended pressure for pneumatic loading of *FORCE ANFO™* is 350-400 kPa. During pneumatic loading a build-up of static electricity can occur. Precautions such as the use of a semi-conductive loading hose must be taken. The pneumatic loader must also be properly earthed. Pneumatic loading over bare detonators is not recommended. Never load *FORCE ANFO™* into wet blastholes.

Sleep Time within Blastholes

In dry blastholes the maximum recommended sleep time for *FORCE ANFO™* is 30 days. Sleep time is dependent on ground temperature or environmental humidity and becomes shorter as the temperature or humidity increases.

Packaging

FORCE ANFO™ is packaged in polypropylene bags coloured to differentiate each product type. See table below for package weight and colour. Contact your local Nobel representative for further information.

Packaging	Net weight (kg)	Colour
Bag	25	White

Storage and Handling

Product Classification

Authorised Name: *FORCE ANFO™*
 Proper Shipping Name: Explosive, Blasting, Type B
 UN No: 0082
 Classification: 1.1D
 EC Type Certificate: ENB/B/095/09

FORCE ANFO™ Packaged FORCE ANFO

All regulations on the handling and use of such explosives apply.

Storage

Store *FORCE ANFO™* in a suitably licensed magazine for Class 1.1D explosives. *FORCE ANFO™* has a storage life of 6 months in stable, temperate conditions.

FORCE ANFO™ is best stored at ambient temperatures. Extreme changes in temperature, which cause *FORCE ANFO™* to cycle through -18 °C or 32 °C, will reduce its shelf life, and make it lumpy and hard to handle.

Disposal

Disposal of explosives materials can be hazardous. Methods for safe disposal of explosives may vary depending on the user's situation. Please contact a local Nobel representative for information on safe practices.

Safety

The post detonation fume characteristics of *FORCE ANFO™* make it suitable for both underground and surface blasting applications. Users should ensure that adequate ventilation is provided prior to re-entry into the blast area.

FORCE ANFO™ can be initiated by extremes of shock, friction or mechanical impact. As with all explosives, *FORCE ANFO™* should be handled and stored with care. *FORCE ANFO™* must be kept clear of flame and excessive heat. *FORCE ANFO™* is readily desensitised by water.

Trademarks

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Disclaimer

Explosives based on Ammonium Nitrate such as *FORCE ANFO™* may react with pyretic materials in the ground and create potentially hazardous situations. Nobel accepts no responsibility for any loss or liability arising from use of the product in ground containing pyretic or other reactive material.

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Notes

1. Nominal Density Only.
2. Contact your local Nobel Representative for further advice on loading at minimum hole diameters.
3. VOD will depend on application including explosive density, blasthole diameter and degree of confinement. The VOD range is based on minimum unconfined and calculated ideal.
4. REE is the Effective Energy relative to *FORCE ANFO™* at a density of 0.8 g/cm³. *FORCE ANFO™* has an effective energy of 2.30 MJ/kg. Energies quoted are based on ideal detonation calculations with a 100 Mpa cut off pressure. Non-ideal detonation energies are also available on request. These take account of blasthole diameter, rock type and explosive reaction behaviour.
5. Carbon Dioxide is the main greenhouse gas produced. The output is calculated assuming ideal detonation.