Description
The Fortan™ Advantage Bulk System heavy ANFO blends is specifically designed for difficult blasting applications found in open cut hard rock mining.

Application
Fortan™ Advantage is designed to increase explosive energy in dry blastholes, however the higher density emulsion blend Fortan™ Advantage 13 can be used in dewatered blast holes. It is not suitable for ground containing reactive sulphide. Incorrect application of this product may result in elevated levels of undesirable post blast fume.

Key Benefits
- **Fortan™ Advantage** is reliable in dry and dewatered blastholes.
- High densities of **Fortan™ Advantage** maximises fragmentation and muckpile displacement to improve mine to mill productivity.
- The integrated product and delivery systems of the **Fortan™ Advantage** Bulk System ensures accuracy, productivity and dependability of supply.
- **Fortan™ Advantage** can be loaded at varying energies and densities within individual blastholes.
- The high bulk strength of **Fortan™ Advantage** enables blast pattern expansion and reduced cost of drill and blast.
- Manufacturing rates of **Fortan™ Advantage** up to 750kg/min delivers high on-bench productivity

Recommendations for Use

**Blasthole Charge Length**
Fortan™ Advantage is suitable for use in holes of up to 30 metres in length, depending on hole diameter, inclination and presence of water. Please contact Orica Technical Services Representative for further information.

**Priming and Initiation**
Fortan™ Advantage must be initiated using a Pentex™ PPP booster in conjunction with an Exel™ detonator. Use of detonating cord with Fortan™ Advantage is not recommended.

Technical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Fortan™ Advantage System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density (g/cm³) (1)</td>
<td>1.00         1.10         1.20         1.28</td>
</tr>
<tr>
<td>Minimum Blasthole Diameter (mm)</td>
<td>115          115          127          150</td>
</tr>
<tr>
<td>Maximum Blasthole Depth (m)</td>
<td>30           30           30           30</td>
</tr>
<tr>
<td>Maximum Charge Length (m)</td>
<td>25           25           25           25</td>
</tr>
<tr>
<td>Hole Type</td>
<td>Dry          Dewatered</td>
</tr>
<tr>
<td>Recommended Pentex™ booster for minimum hole diameter</td>
<td>PPP</td>
</tr>
<tr>
<td>Typical VOD (km/s) (2)</td>
<td>2.5-5.8      2.5-5.8     2.8-6.1      3.1-6.3</td>
</tr>
<tr>
<td>Relative Effective Energy (REE) (3)</td>
<td>107          112          117          120</td>
</tr>
<tr>
<td>Relative Weight Strength</td>
<td>134          154          175          192</td>
</tr>
<tr>
<td>Relative Bulk Strength</td>
<td>CO₂ Output (kg/tonne) (4)</td>
</tr>
<tr>
<td>Sleep Time (5)</td>
<td>21 Days</td>
</tr>
</tbody>
</table>

**Charging**
The Fortan™ Advantage Bulk System is part of the range of bulk products delivered by Orica’s Mobile Manufacturing Units (MMU®). Fortan™ Advantage is manufactured on the MMU® and augured into blastholes on demand.

**Sleep-Time Within Blastholes**
The recommended maximum sleep time in Dry Blastholes is 21 days for all Fortan Advantage Bulk Systems. In Dewatered Blastholes the use of Fortan 10, 11 and 12 is not recommended. The recommended maximum sleep time in Dewatered Blastholes for Fortan Advantage 13 is 5 days or less. Sleep time is dependent on factors such as hole diameter, density, ground water conditions and initiation system. Orica Technical Services Representative should be consulted if special conditions exist.

**Ground Temperature**
These products are available for use in ground temperatures 0° to a maximum of 55°C. If your application requires you to
operate outside this temperature range please contact your Orica Technical Services Representative.

Storage and Handling
Product Classification
Authorised Name: Fortan™ Advantage System
Correct Shipping Name: Explosive, Blasting, Type E
UN No: 0241
Classification: 1.1D

Product Quality
Orica’s bulk emulsion explosives are manufactured and loaded using an ISO9001 accredited quality process. Fortan™ Advantage System emulsion explosives have been developed by Orica Australia specifically for the mining industry using ISO9001 accredited research and engineering processes.

Disposal
Disposal of explosive materials can be hazardous. Methods of safe disposal of explosives may vary depending on the user’s situation. Please contact an Orica Technical Services Representative for information on safe practices.

Safety
Fortan™ Advantage is relatively insensitive to accidental initiation by shock, friction or mechanical impact under normal conditions of use. Detonation may occur from heavy impact or excessive heating particularly under conditions of confinement.

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

More detailed information can be found in the product Material Safety Data Sheet.

Trademarks
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Within Australia: 1800 033 111
Outside Australia: 61 3 9663 2130

Notes:
1. Nominal Density Only.
2. The actual VOD depends on the conditions of use including the diameter of the hole and the degree of confinement.
3. REE is the Effective Energy relative to ANFO at a density of 0.8 g/cm³. ANFO has an effective energy of 2.30 MJ/kg. Energies quoted are based on ideal detonation calculations with a 100MPa cut off pressure. Non-ideal detonation energies are also available on request. These take account of blasthole diameter, rock type and explosive reaction behaviour.
4. Carbon dioxide is the main greenhouse gas produced. The output is calculated assuming ideal detonation.
5. Please contact your Orica Mining Services representative if longer sleep times are required.