TECHNICAL DATA SHEET

Senatel™ Powerfrag™
Australia

Technical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>1.21 g/cc</td>
</tr>
<tr>
<td>Relative Effective Energy</td>
<td></td>
</tr>
<tr>
<td>Relative Weight Strength</td>
<td>121%</td>
</tr>
<tr>
<td>Relative Bulk Strength</td>
<td></td>
</tr>
<tr>
<td>• to ANFO @ 0.8 g/cc</td>
<td>183%</td>
</tr>
<tr>
<td>• to ANFO @ 0.95 g/cc</td>
<td>139%</td>
</tr>
<tr>
<td>Minimum Velocity of Detonation</td>
<td>3.4km/s</td>
</tr>
</tbody>
</table>

Description
Senatel™ Powerfrag™ packaged emulsion explosive is a robust, high strength, detonator sensitive explosive. The explosive is white in colour with a firm putty-like consistency.

Application
Senatel™ Powerfrag™ is a water resistant packaged explosive designed for priming applications, and as a medium energy column explosive, in surface and underground mining and general blasting.

The high detonation velocity and the robust nature of Senatel™ Powerfrag™ make it an ideal primer for the initiation of ANFO columns.

Senatel™ Powerfrag™ cartridges readily split during tamping to maximise coupling and bulk strength within a blasthole.

Senatel™ Powerfrag™ is not suitable for ground containing reactive sulphides.

Key Benefits
- Senatel™ Powerfrag™ delivers excellent fragmentation with improved digability.
- Post-blast fumes are reduced with Senatel™ Powerfrag™, improving turnaround time in underground mines.
- Senatel™ Powerfrag™ is highly water resistant, which minimises leaching and reduces environmental impact.

Recommendations for Use

Blasthole Depth
Senatel™ Powerfrag™ is suitable for use in holes of any practical depth providing contained water does not exceed 20m depth.

Priming and Initiation
Senatel™ Powerfrag™ at temperatures higher than -20°C can be reliably initiated by an electric No.8*, Exel™ detonator (min. 8* strength) eDev™ detonator, uni tronic™ detonator, or i-kon™ system detonator.

Cordtex™ 10P may also be used to initiate Senatel™ Powerfrag™ however detonating cords of charge mass lower than 10 g/m are not recommended for initiation of Senatel™ Powerfrag™.

Charging
In small diameter blastholes the maximum energy per metre of blasthole can be achieved by tamping the explosive with a wooden tamping rod appropriate to the hole diameter.

In larger diameter blastholes, packaged product diameter should selected to be less than 85% of the minimum drill hole size to avoid unwanted jamming during charge operations.

No metal instrument should be used to tamp explosives. The primer cartridge containing a detonator must not be tamped.
Sleep-Time Within Blastholes
In dry blastholes, given the explosives packaging is undamaged, Senatel™ Powerfrag™ may be charged and fired several months later (provided the product remains within its recommended shelf life).

If the explosives packaging is damaged, the sleep-time in a blasthole is influenced by the extent of damage to the packaging and by the nature of any water present. Even with full length slitting of cartridges, the explosive will give good performance after two weeks immersion.

Reactive Ground and Ground Temperature
Reactive Ground – Senatel™ Powerfrag™ is not suitable for use in ground containing reactive sulphides.

Elevated Temperature – Senatel™ Powerfrag™ is suitable for use in ground temperatures from 0°C up to 70°C.3

However, if your application requires you to operate at elevated temperature, above 55°C please contact your Orica Technical Representative in advance for further information about product compatibility, sleep time and use.

Packaging
Senatel™ Powerfrag™ is packaged in white plastic film, colour highlighted in blue. Each box contains nominally 25kg of product with standard cartridge sizes and counts as follows:

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Nominal Length (mm)</th>
<th>Nominal Mass (g)</th>
<th>Cartridges Per Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>200</td>
<td>185</td>
<td>135</td>
</tr>
<tr>
<td>32</td>
<td>700</td>
<td>650</td>
<td>38</td>
</tr>
<tr>
<td>45</td>
<td>400</td>
<td>750</td>
<td>33</td>
</tr>
<tr>
<td>55</td>
<td>300</td>
<td>830</td>
<td>30</td>
</tr>
<tr>
<td>65</td>
<td>300</td>
<td>1175</td>
<td>21</td>
</tr>
<tr>
<td>80</td>
<td>400</td>
<td>2275</td>
<td>11</td>
</tr>
</tbody>
</table>

Product Quality
Senatel™ Powerfrag™ is manufactured using an ISO9001 accredited quality process. Senatel™ Powerfrag™ has been developed by Orica Australia specifically for the mining industry using ISO9001 accredited research and engineering processes.

Storage and Handling
Product Classification
Authorised Name: Senatel™ Powerfrag™
Proper Shipping Name: Explosive, Blasting, Type E
UN No: 0241
Classification: 1.1D

All regulations pertaining to the handling and use of such explosives apply.

Storage
Store Senatel™ Powerfrag™ in a suitably licensed magazine for Class 1.1D explosives. The cases should be stacked in the manner designated on the cases.

Senatel™ Powerfrag™ has a storage life of up to 12 months in an approved magazine; however exposure to hot or cold extremes may cause the product to deteriorate prematurely.

Senatel™ Powerfrag™ is best stored at temperatures above -20°C.

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 Representative for information on safe practices.

Safety
The post detonation fume characteristics of Senatel™ Powerfrag™ 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.

Senatel™ Powerfrag™ can be initiated by extremes of shock, friction or mechanical impact. As with all explosives, Senatel™ Powerfrag™ should be handled and stored with care. Senatel™ Powerfrag™ does not burn easily, but it must be kept clear of flame and excessive heat.

Explosives based on Ammonium Nitrate such as Senatel™ Powerfrag™ may react with sulphides 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 sulphides or other reactive material.
More detailed product safety information can be found in the product Safety Data Sheet.

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Emergency Telephone Numbers
Within Australia: 1800 033 111
Outside Australia: +61 3 9663 2130

Notes:
(1.) Nominal density only.
(2.) 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.
(3.) The actual VOD depends on the conditions of use including the diameter of the hole and the degree of confinement. The range quoted refers to unconfined minimum diameter up to calculated ideal VOD.
(4.) Carbon Dioxide is the main greenhouse gas produced. The output is calculated assuming ideal detonation.
(5.) Reactive ground and elevated temperature as defined in the Australian Explosives Industry Safety Group (AEISG) Code of Practice for Elevated Temperature and Reactive Ground.