TECHNICAL DATA SHEET

Senatel™ Pyromex™
Australia

28/07/16
1 of 3

Technical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density (g/cc)</td>
<td>1.16</td>
</tr>
<tr>
<td>Relative Effective Energy (J/kg)</td>
<td></td>
</tr>
<tr>
<td>Relative Weight Strength (%)</td>
<td>107%</td>
</tr>
<tr>
<td>Relative Bulk Strength (%)</td>
<td>155%</td>
</tr>
<tr>
<td>Minimum Velocity of Detonation</td>
<td>4.7 km/s</td>
</tr>
</tbody>
</table>

Description
Senatel™ Pyromex™ is a high strength, robust detonator sensitive emulsion explosive specifically designed for blasting in elevated temperature and reactive ground. Senatel™ Pyromex™ has high velocity of detonation and excellent water resistance.

Application
Senatel™ Pyromex™ is a water resistant packaged emulsion explosive specifically formulated to inhibit exothermic reactions, which may occur in loaded blastholes in ground containing sulphides or other reactive material.

The combination of high detonation velocity, high energy and its robust nature makes Senatel™ Pyromex™ ideal for use in priming applications with Fortis™, Vulcan™ and Simex™, or as a high-density column explosive.

Key Benefits
- Ability to blast safely in elevated temperature and reactive ground conditions.
- Senatel™ Pyromex™ is water resistant and can be used in wet and dry blastholes.

Recommendations for Use

Blasthole Depth
Senatel™ Pyromex™ is suitable for use in blast holes of any practical depth.

Priming and Initiation
Requirements for Senatel™ Pyromex™ are influenced by the temperature of the application. Refer to the table below for recommendations:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Primer Type</th>
<th>Initiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 70</td>
<td>Pentex™ or Senatel™</td>
<td>Exel™, No. 8 electric, or Orica electronic detonator.</td>
</tr>
<tr>
<td>71 - 100</td>
<td>Senatel™ Pyromex™</td>
<td>Cordtex™ Pyrocord^{(5)}</td>
</tr>
<tr>
<td>101 - 150</td>
<td>Senatel™ Pyromex™</td>
<td>40 RDX LS detonating cord</td>
</tr>
</tbody>
</table>

Cordtex™ Pyrocord and 40 RDX LS detonating cords may be used to initiate Senatel™ Pyromex™ however the use of detonating cords of charge mass lower than 8.5 g/m are not recommended for initiation of Senatel™ Pyromex™.

Senatel™ Pyromex™ must not be used at temperatures above 150°C.

Sleep-Time within Blastholes
Maximum sleep time in elevated temperature or reactive ground

The maximum indicative sleep time in elevated temperature and or reactive ground is 8 hours. However, the maximum sleep time will need to be determined based on measured in-hole temperature, reactive ground testing and initiation system. The maximum sleep time in unreactive ground < 55°C

In dry blastholes the maximum sleep time in unreactive ground is 30 days. However, sleep time is dependent on factors such as hole diameter, density, ground water conditions and initiation system.
An Orica Technical Representative should be consulted if special conditions exist.

Reactive Ground and Ground Temperature
Reactive Ground - Senatel™ Pyromex™ has been specifically designed for use in reactive ground blasting. Senatel™ Pyromex™ incorporates ingredients to inhibit exothermic sulphide reactions, which have been known to occur between explosives and ground containing sulphides or other reactive material.

Elevated Temperature - Senatel™ Pyromex™ is suitable for use in ground temperatures of 0º up to 150ºC. Where Senatel™ Pyromex™ is used in hot or high temperature ground, all holes must be temperature logged prior to loading to ensure adequate safety margins.

The degree of heat and reactivity is determined by Orica standard temperature and reactive ore tests. Hazardous conditions are associated with explosives in reactive ground. Consult your local Orica Technical Representative for further information.

Packaging
Senatel™ Pyromex™ is packaged in white plastic film and colour highlighted in orange. Each box contains nominally 25 kg 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>655</td>
<td>38</td>
</tr>
<tr>
<td>50</td>
<td>220</td>
<td>500</td>
<td>50</td>
</tr>
</tbody>
</table>

Senatel™ Pyromex™ is an extended range product, made to order. Pricing and lead time are available on request.

Product Quality
Senatel™ Pyromex™ is manufactured using an ISO9001 accredited quality process. Senatel™ Pyromex™ 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™ Pyromex™
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™ Pyromex™ in a suitably licensed magazine for Class 1.1D explosives. The cases should be stacked in the manner designated on the cases.

Senatel™ Pyromex™ has a storage life of up to 18 months in an approved magazine; however exposure to hot or cold extremes may cause the product to deteriorate prematurely.

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

Senatel™ Pyromex™ incorporates additives which inhibit exothermic reactions, which may occur between the explosive and the rock when blasting in reactive ground. The suitability of Senatel™ Pyromex™ for any particular application must be laboratory tested before use.

Additional 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/cc. 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.) Reactive ground and elevated temperature as defined in the Australian Explosives Industry Safety Group (AEISG) Code of Practice for Elevated Temperature and Reactive Ground.
(5.) Cordtex™ Pyrocord has a heat resistance rating of 8 hours at 100°C. Please refer to the Technical Data Sheet for Cordtex™ Pyrocord prior to use.
(6.) Senatel™ Pyromex™ must be encased in a suitable thermally resistant shell at temperatures between 101-150°C. Consult your local Orica sales office for advice.
(7.) Hot blastholes are defined in the Australian Explosives Industry Safety Group (AEISG) Code of Practice for Elevated Temperature and Reactive Ground as being at a temperature of more than 55°C, whereas high temperature blastholes are defined as being at temperatures above 100°C.