

Senatel™ Pyrosplit™

Description

Packaged *Senatel™ Pyrosplit™* is a detonator sensitive emulsion explosive internally traced with 10g/m detonating cord. The emulsion is white in colour with a putty-like consistency. It is packaged in continuous plastic film and double clipped at 400 mm intervals.

Application

Senatel™ Pyrosplit™ is designed for surface mining operations where a continuous length of decoupled explosive charge is required. *Senatel™ Powersplit™* suits perimeter blasting applications such as smooth wall blasting, trimming and pre-splitting.

Senatel™ Pyrosplit™ is specifically designed for blasting in hot and reactive ground.

Key Benefits

- Ability to blast safely in hot and reactive ground conditions.
- The small diameter, high velocity of detonation, and low decoupled energy of *Senatel™ Pyrosplit™* minimises blast damage to the walls leaving behind a smooth profile with minimal overbreak.
- *Senatel™ Pyrosplit™* is water resistant and can be used in wet and dry blastholes.
- The centre traced detonating cord in *Senatel™ Pyrosplit™* ensures reliable detonation of the decoupled charge.
- *Senatel™ Pyrosplit™* is fast to load into blastholes due to the internally traced high strength detonating cord.

Packaging

Senatel™ Pyrosplit™ is packaged in continuous film and double clipped every 400mm. *Senatel™ Pyrosplit™* packaging cases and film are colour highlighted in lime green. Standard cartridge size is as follows:

Diameter (mm)	Length (m)
32	30

Technical Properties

Nominal Density: 1.18 g/cc	
Relative Effective Energy ¹	
Relative Weight Strength	104%
Relative Bulk Strength (to ANFO @ 0.8 g/cc)	153%
Minimum Velocity of Detonation ²	
6.5 km/s	
CO₂ ³	
168 kg/t	

Recommendations For Use

Blasthole Depth

Senatel™ Pyrosplit™ is suitable for use in holes of any practical depth.

Priming and Initiation

Hole temp (°C)	<70	71 - 100
Sleep Time	See Note ⁴	8 hours max. ⁵
In-hole Surface initiation	<i>Exel™ MS</i> & <i>Exel™ Enduradet™</i> <i>Cordtex™</i> detonating cord (5g/m or more)	<i>Cordtex™</i> <i>Pyrocord</i> 40 RDX LS detonating cord
Trunk Line Connection	<i>Cordtex™</i> detonating cord (5g/m or more)	<i>Cordtex™</i> <i>Pyrocord</i>

***Senatel™ Pyrosplit™* must not be used at hole temperatures greater than 100°C.**

In wet blastholes, sleeping of the explosive is not recommended due to seepage of water into any exposed ends of the detonating cord. If in doubt when using *Senatel™ Pyrosplit™*, contact your local Orica sales office.

Cutting to Length

If length adjustment is required for *Senatel™ Pyrosplit™*, it should only be cut using a single bladed cutter or a sharp knife on a non-ferrous block.

Reactive Ground Testing

Orica can assist in the assessment of risk, establish procedures and recommend suitable explosive systems - consult an Orica sales or technical representative for further information.



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Charging

Initial recommendations are to use 32mm *Senatel™ Pyrosplit™* in 76 mm-100 mm diameter blastholes. When blastholes are greater than 100mm in diameter two or more lengths of *Senatel™ Pyrosplit™* may be taped together.

NOTE: *These are only initial recommendations. The user must take into account the fact that successful perimeter blasting results are dependent upon selecting the correct combination of blasthole diameter, spacing and in-hole explosive energy to match the rock type being blasted.*

If two short lengths of *Senatel™ Pyrosplit™* are required to make up a longer single charge, a safe and reliable joint can be obtained by using a length of detonating cord (5 g/m or more) and connecting the detonating cord with a two half hitches followed by a securing reef knot to each end of the *Senatel™ Pyrosplit™*. Care should be taken when charging to ensure that *Senatel™ Pyrosplit™* charges reach to the bottom of each blasthole and do not become twisted and “hung up” in the hole. When connecting *Senatel™ Pyrosplit™* to a surface trunk line the extra detonating cord must be connected to the *Senatel™ Pyrosplit™* cord with a reef knot. In addition two half hitches must be made around the *Senatel™ Pyrosplit™* before the cord is secured at the collar of the hole. Connection to the trunk line must be made by either a double wrap clove hitch or double wrap half hitch. Ideally *Senatel™ Pyrosplit™* should be supported in the hole by a supporting rope.

Note: *Between 70°C to 100°C Cordtex™ Pyrocord must be used for connecting short lengths in-hole and to trunk line.*

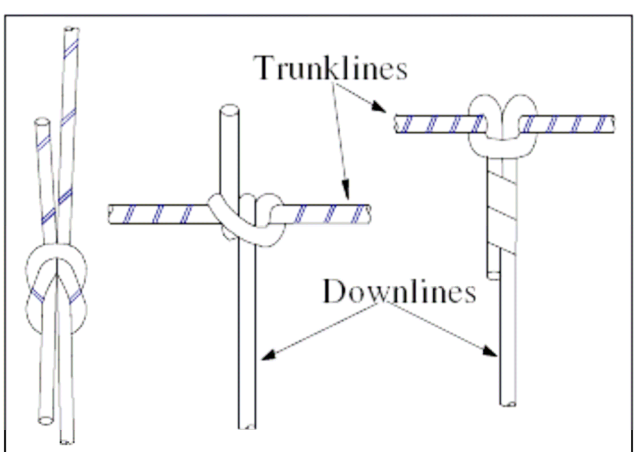


Figure 1. Approved knots, from left to right: Reef knot, Doublewrap

clove hitch, Double half hitch.

Cordtex™ Pyrocord surface trunklines should be laid out with no loops, kinks, tight bends or excessive slack. A closed loop of cord is recommended to provide insurance against poor connections.

Re-entry period after firing

When using packaged explosive and detonating cord systems in pre-split applications, consideration must be given to increasing the routine re-entry period after firing. In pre-split applications rare incidents of post-blast events have been observed. In most instances these events have been in the form of flaring or rumbling of the muckpile. Post blast events typically occur seconds after the blast, but events have been noted after several minutes. One event occurred nearly 30 minutes after the blast. If holes are stemmed, additional care must be taken in setting re-entry times. The use of stemming has been seen to increase the period between the shot and any post blast events. Where holes are stemmed it is also recommended that no potentially combustible materials are used, and re-entry periods must account for any post detonation fumes being trapped in the muckpile. Please consult your local Orica technical representative for advice.

Storage and Handling Explosive Classification

Authorised Name:	<i>Senatel™ Pyrosplit™</i>
Shipping Name:	Explosive, Blasting, Type E
UN No:	0241
Class Code	1.1D

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

Storage

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

Senatel™ Powersplit™ 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.

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Safety

The post detonation fume characteristics of *Senatel™ Pyrosplit™* make the product suitable for surface blasting applications. Users should ensure that adequate ventilation is provided prior to re-entry into the blast area.

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

Senatel™ Pyrosplit™ has been specifically designed for suitability in hot and reactive ground⁶ blasting. *Senatel™ Pyrosplit™* incorporates ingredients to inhibit exothermic sulphide reactions, which have been known to occur between explosives and “reactive” (pyritic ore) ground.

Where *Senatel™ Pyrosplit™* is used in hot ground, all holes must be temperature logged prior to loading to ensure adequate safety margins. Orica Mining Services can assist in the assessment of risk, establish procedures and recommend suitable explosive components. Legislation covering blasting in hot conditions must be followed.

NOTE: Hazardous conditions are associated with explosives in reactive ground.

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Disclaimer

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Orica Mining Services
Level 6, Tower A
799 Pacific Hwy
Chatswood NSW 2067
Ph: 61 2 9844 5500
Fax: 61 2 9844 4404

Emergency Telephone Numbers

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

Notes

- 1 REE is the Effective Energy relative to ANFO at a density of 0.8g/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. Non-ideal detonation energies are also available on request. These take account of blasthole diameter, rock type and explosive reaction behaviour.
- 2 VOD will depend on application including explosive density blasthole diameter, temperature and degree of confinement. The minimum VOD quoted is based on unconfined test firing data and is influenced by the presence of detonating cord and emulsion in the product.
- 3 Carbon dioxide is the main greenhouse gas produced. The output is calculated assuming ideal detonation.
- 4 Maximum sleep time to be determined by measured in-hole temperature, reactive ground testing and initiation system.
- 5 Sleep time to be determined as in Note 1 with a maximum limit set by the resistance rating of the product (8hrs at 71 – 100°C).
- 6 The degree of heat and reactivity is determined by Orica standard temperature and reactive ore tests.