Stemwize

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NEWSLETTER

TOP PRIMING VS. BOTTOM PRIMING. WHICH WORKS BEST IN WET CONDITIONS?

CHOOSING THE RIGHT METHOD AND LEVERAGING AIR DECKING SOLUTIONS

Selecting the right priming technique is crucial for optimizing the performance of your blasts. While both top and bottom priming have their place, leveraging air decking with products like Paraplug® and Helixplug® can significantly enhance results, especially in wet or flooded blastholes.

Top Priming and Air Decking: A Flexible Approach

Top priming, where the booster / primer is placed at the top of the explosive column, can be highly effective when paired with air decking. This method is particularly useful in waterlogged or flooded boreholes, where the explosives at the bottom are exposed to water and mud. In wet holes the boosters must be pulled up at least 1m or there is a high risk that the explosive will not detonate and leave hard digging. This can be prevented by top priming as the booster will always fall through the water and touch the explosive when doing top priming.

Air Decking Benefits:

- Paraplug® and Helixplug® create an air gap within the blasthole, allowing more of the blast energy to be directed into the rock rather than dissipating through the top of the hole. This “air cushion” effect minimizes explosive waste and enhances fragmentation.
- **Flooded Blastholes:** Both the Paraplug® and Helixplug® are designed to perform exceptionally well in wet conditions, and they can be deployed in flooded blastholes (unlike gasbags that pop up when the inflate) to prevent explosives from being compromised by water.

Top Priming Advantages with Air Decking:

- **Minimizing Explosive Usage:** The air gap/ water gap created by Paraplug® and Helixplug® allows for more effective energy transfer, meaning you can use less explosive to achieve the same, or even better, results.
- **Reduced Fly-Rock:** By placing the primer at the top and using air decking, more of the detonation energy is forced downward and into the rock, reducing fly-rock and improving overall safety.

Bottom Priming: Maximize Energy and Efficiency

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Bottom priming remains the most efficient method in many cases, as it ensures the full energy of the blast is directed upward, using the entire explosive column effectively. When paired with air decking, the benefits of bottom priming are amplified:

Air Decking in Bottom Priming:

- When using Helixplug®, you can create air decks at various points along the blasthole, (Normally the soft sections) which allows for even greater control over the energy distribution. This leads to more consistent fragmentation and further reduces the need for additional explosives.
- **Flooded Conditions:** Even in wet or flooded holes, the Helixplug® can isolate the explosive column from the water, preserving explosive efficiency and ensuring predictable detonation outcomes.

Cost and Efficiency Benefits:

- By maintaining an air deck / water deck with a plug like Helixplug®, you can reduce explosive consumption by up to 10% or more, depending on site conditions.
- Helixplug® also helps reduce the number of drilling meters needed, machinery movement, and the overall environmental impact of the blast by lowering vibration, dust, and gas emissions.

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REAL-WORLD RESULTS: AIR DECKING IN ACTION

When air decking is applied using Paraplug® or Helixplug®, mines often see a range of benefits, including:

- **Improved Fragmentation:** Air decking channels more energy into breaking the rock instead of dissipating it, leading to finer fragmentation, which reduces the need for secondary breakage.
- **Cost Savings:** The reduction in explosive usage, combined with fewer drilling requirements and lower machinery wear and tear, leads to significant cost savings.
- **Versatility:** Both Paraplug® and Helixplug® are versatile, designed to work at various depths and in different borehole conditions, making them highly adaptable across multiple mining environments.

Paraplug® vs. Helixplug®: Which Should You Use?

- **Paraplug®:** Ideal for creating air decks in open-pit mining operations which use blastholes sized between 171mm and 312mm.
- **Helixplug®:** Best suited for open-pit operations using blastholes sized between 76mm and 165mm.

Both solutions can be deployed without specialized tools and are designed for easy retrieval if mispositioned, ensuring flexibility and accuracy in all blasting conditions.

The Best of Both Worlds: Combining Priming and Air Decking for Maximum Impact

Using air decking with Paraplug® or Helixplug® can transform both top and bottom priming methods, allowing you to get more out of each blast. Whether you're facing flooded blastholes, complex rock formations, or simply looking to reduce costs and improve efficiency, air decking is a proven solution that delivers results.

What You Should Know:

If your blast holes are severely waterlogged, top priming might offer a quick fix and will ensure that every hole will detonate, but it may not give you the best results in all conditions. Bottom priming, especially with water-resistant explosives, is often the more conventional choice, providing that Booster weights are used, and boosters are pulled up after charging.

Thank you for your continued support and dedication to excellence in mining.

Stemwize Team

Best Regards,
Stemwize Team