

GRINPAK 90/110

Grinpak is an engineered combination of cellular lightweight concrete blocks reinforced with steel, fibres and timber for cost effective and reliable stope support.

AREA OF APPLICATION

- **Applicable for high-risk fire zones**, ensuring compliance with fire safety regulations in underground environments.
- **Engineered for high-load-bearing applications**, providing critical support in areas with significant stress concentrations.
- **Optimized for low-stope closure conditions**, maintaining stability in environments with minimal rock mass convergence.
- **Mitigates bed-separation risks**, enhancing overall strata integrity and reducing fall-of-ground incidents.
- **Supports mining layouts involving pillar extraction or size reduction**, maintaining structural stability during depillaring operations.
- **Enhances key block retention**, reducing the likelihood of rock mass loosening and potential roof falls.

EXAMINE AND MAKE SAFE EARLY ENTRY EXAMINATION

- **Ensure the designated support area is made safe** in accordance with the mine's Code of Practice (COP) and operational support standards.
- **The support installation team must enter the stope from the top of the panel**, remaining behind the last established line of permanent support to maintain safety.
- **Strict adherence to PPE requirements is mandatory**, ensuring all personnel wear the correct protective gear as per site regulations and industry best practices.

PACKAGING

- **Grinpak 90 blocks are packaged with 90 blocks per pallet**, ensuring standardized handling and transport.
- **Grinpak 110 blocks are packaged with 110 blocks per pallet**, maintaining consistency in storage and logistics.
- **Each pallet is securely wrapped in plastic to protect the blocks** from environmental exposure and ensure stability during storage and transportation.
- **Pallets must be stored side by side**, not stacked vertically, to prevent structural damage and maintain product integrity.

WHAT THE GRINPAK OFFERS YOU?

- **Efficient and Rapid Installation** – Simple pack design allows for quick and easy construction, optimizing productivity in underground operations.
- **Superior Stability** – Designed for use at height-to-width ratios of up to 2:1, ensuring structural integrity in various mining conditions.
- **High Pre-Stressing Capability** – The solid Cellular Lightweight Concrete (CLC) core provides excellent pre-stressing properties, enhancing ground support.
- **Non-Combustible Core** – The solid CLC core is inherently fire-resistant, eliminating combustion risks in underground environments.
- **Fire-Retardant Treated Timber** – Timber components are treated with fire-retardant agents, adding an extra layer of safety.
- **Prevention of Gold Fines Loss** – The solid pack structure prevents the migration of valuable gold fines, supporting efficient resource recovery.
- **Precise Stopping Width Control** – Enables better control of stopping widths, improving excavation efficiency and safety.

INSTALLATION PROCEDURE

1. **Safety First** – Reassess and ensure the surrounding area is safe before installation. Never work beyond one meter from an already supported area.
2. **Footwall Preparation** – Thoroughly clean the footwall to create a stable foundation for the support structure.
3. **Marking Support Layout** – Clearly mark the support and pack positions in a straight line to maintain uniformity.
4. **Base Layer Installation** – Position the base layer with stabs facing down-dip to enhance stability.
5. **Layering Orientation** – Construct the pack by positioning stabs at 90 degrees to the previous layer to create a robust interlocking structure.
6. **Structural Stability** – This layering technique ensures a stable support base along gullies and prevents the entrapment of fines within the packs.
7. **Interlocking Layers** – Alternate the direction of subsequent layers between dip and strike to enhance structural integrity and load distribution.
8. **Pre-Stressing Application** – Install a correctly sized pre-stressed bag or plate between the last two layers to improve load-bearing capacity.
9. **Additional Pre-Stressing for Wider Stopes** – Where stope width exceeds 1.8m, install an additional pre-stressed bag/plate in the middle of the pack, with a second one placed between the last two top layers.
10. **Gap Filling for Stability** – If gaps exist between the pack and the hanging wall, use timber off-cuts to block and secure the support structure.
11. **Final Positioning** – Ensure the completed pre-stressed Grinpak is positioned at 90 degrees to the hanging wall for optimal load-bearing efficiency.

- **Enhanced Rockburst and Rockfall Protection** – Designed to mitigate rockburst damage and reduce the likelihood of rockfalls, improving overall mine stability.
- **Immediate High-Load Support** – Provides a high pre-stressed load upon installation, offering immediate and reliable ground control.

Other sizes available on request



PERMANENT SUPPORT REPLACEMENT OF DAMAGED SUPPORT

- **Reference to Standard Undermined Pack** – Ensure all damaged packs are assessed against the standard specifications for undermined support structures.
- **Reinforcement of Damaged Areas** – Before resuming operations, install additional permanent support in the affected area to restore structural integrity and maintain a safe working environment.

OBJECTIVES

On-the-Job Training (OJT) and Continuous Evaluation (CE):

Ongoing training and assessment to ensure workers are proficient in Grinpak installation and adherence to safety standards.

Record Keeping:

Maintaining detailed logs of all support installations, inspections, and assessments for compliance and continuous improvement.

Planned Task Observation (PTO):

Regular monitoring and verification of support installations to ensure proper execution and alignment with operational safety protocols.

PRE-STRESSING

1. Ensure a Safe Working Position

Workers must position themselves securely, maintaining a stable stance and avoiding hazardous zones.

2. Pre-Stressing the Pack

Apply pre-stress using water or an approved grout mixture from a securely supported area. (NB: refer to mine operation for pre-stress of a pack with a power stress plate / grout)

QUALITY ASSURANCE

Rainbow Mining Support (Pty) Ltd production and testing programs comply with all local (ISO 9001:2015) and international testing standards.

CUSTOMER SERVICE

For additional support options available at your area, contact our local offices.
www.rainbowms.co.za
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