

NexPand

ROCK BREAKING CHEMICAL

INSTRUCTION MANUAL



**Environmentally Friendly Expansive
Mortar for Rock & Concrete Breaking**

www.harlensupplies.co.za

Table of Contents

About Harlen Supplies & NexPand	01
Product Overview	02
NexPand Applications	03
Types of NexPand & Temperature Range	04
Storage & Shelf Life	05
Safety Precautions	06
Preparation Guidelines	07
Drilling Instructions	08
Mixing Instructions	09
Pouring Instructions	10
Reaction Times & Results	11
Blow-Outs	12
Do's and Don'ts	13
Contact Information	14



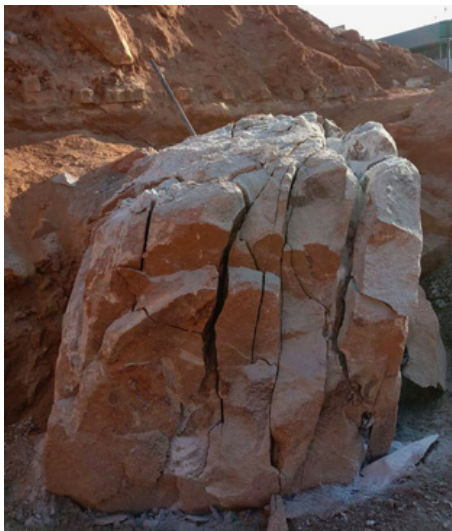
Section 1 – About Harlen Supplies & NexPand

Harlen Supplies (Pty) Ltd is a leader in rock-breaking technology across the quarrying, mining, and construction industries in Southern Africa. With a commitment to innovation, sustainability, and customer-centric solutions, Harlen Supplies introduces **NexPand** — a revolutionary non-explosive expansive mortar.

Section 2 – Product Overview

NexPand is a specially formulated rock-breaking chemical available in powder form. When mixed with water, it undergoes controlled expansion, generating up to 100 MPa (8000 MT/m²) of pressure — enough to crack and break the toughest rocks and concrete without the need for explosives.

- ✓ No vibration.
- ✓ No noise.
- ✓ No toxic gases.
- ✓ No fly rock.
- ✓ No permits required.
- ✓ Safe for unskilled labour.



Section 3 – NexPand Applications

NexPand is ideal for:

- Quarrying and dimension stone cutting.
- Breaking boulders and in-situ rock.
- Rock breaking during trenching and foundation excavation
- Rock breaking in underground mining and shaft development.
- Breaking reinforced and non-reinforced concrete during demolition.
- Breaking refractory linings and materials.
- Rock breaking for civil construction works.
- Rock breaking in sensitive or densely populated environments.



Section 4 – Types of NexPand & Temperature Range

NexPand is packaged in 20 kg cartons containing 4 individual 5 kg bags.

Always use the appropriate type for optimal performance and safety. The reaction time of **NexPand** is determined by the rock type, ambient temperature, as well as the temperature of the object to be demolished.

Type	Temperature Range	
Type 1	-5°C to 10°C	
Type 2	10°C to 25°C	
Type 3	25°C to 40°C	

Section 5 – Storage & Shelf Life

- Shelf life: 12 months from manufacturing date.
- Store in a cool, dry, well-ventilated area.
- Do not place cartons directly on floor; use pallets.
- Re-seal unused bags in airtight plastic bags immediately.
- Avoid exposure to moisture.



Section 6 – Safety Precautions

Before use, always wear:

- Always wear PROTECTIVE GLASSES, RUBBER GLOVES, DUSTPROOF MASK and HARD HATS during work.
- After holes have been filled, keep your face away from the hole during the first 2-3 hours as the product might (though highly unlikely) violently eject from the hole (“blow-out”) if instructions have not been followed correctly.
- Do not use small or narrow-mouthed containers, or glass containers such as bottles, flasks, etc., as the product is expansive.
- In the event of **NexPand** contamination to your eyes, rinse the eyes immediately with plenty of cold, clean water and consult a doctor – DO NOT RUB the eyes.
- Do not use **NexPand** for purposes other than cracking rocks or concrete as instructed in this document.
- **NexPand** generates heat once mixed with water.



Section 7 – Preparation Guidelines

- Measure rock dimensions.
- Select correct drill bit size.
- Ensure access to clean, cold water.
- Confirm ambient temperature.
- Conduct a small test if unsure of spacing/hole size.

Section 8 – Drilling Instructions



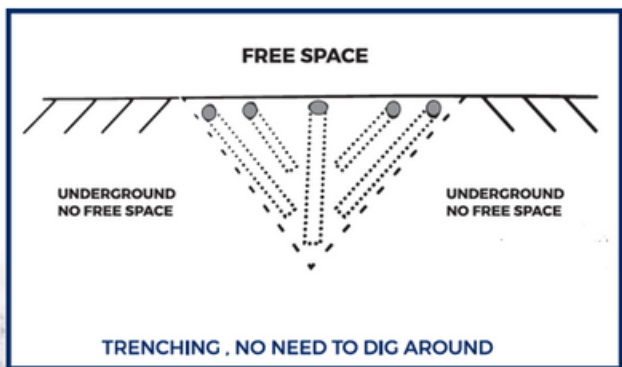
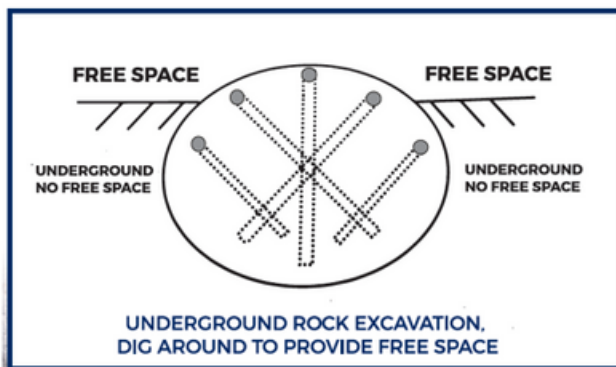
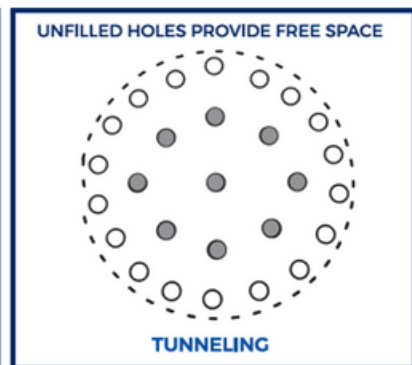
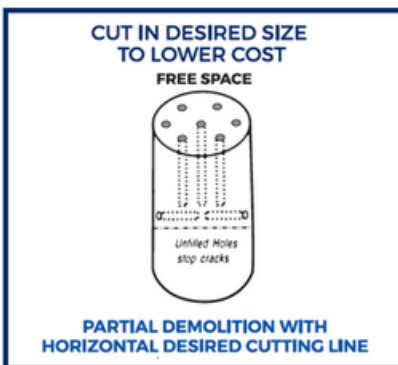
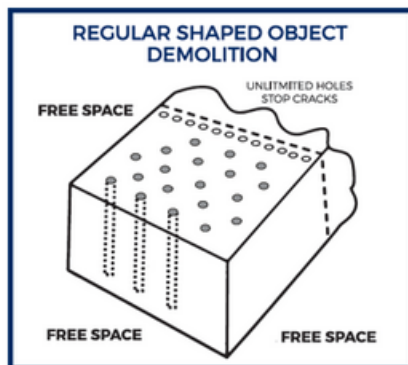
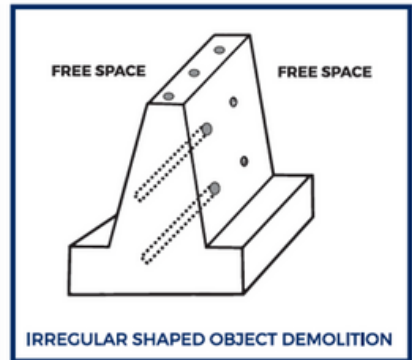
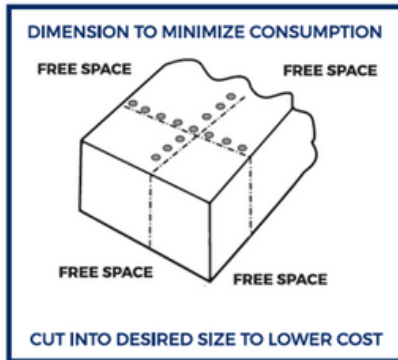
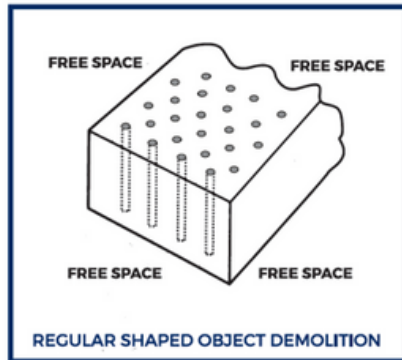
- Drill to 90% of the rock's depth - minimum depth 350–400mm.
- A certain volume of **NexPand** is needed per hole to generate the pressure required to break the rock, so the shallower the hole the bigger the diameter required.
- Use angled holes in benches to create a “free face”.
- Clean holes thoroughly with compressed air.
- Dampen holes in concrete, but ensure no standing water.

Spacing Guidelines

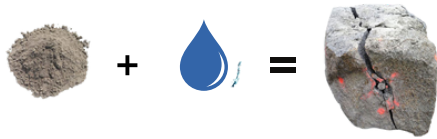
Material & Purpose	Hole Design		
	Diameter (mm)	Hole Spacing	Depth
Soft Stone quarrying	32-38	200-300mm	90% of Height
Hard Stone quarrying	32-40	200-300mm	90% of Height
Stone Cutting	32-38	200-400mm	90% of Height
Plain concrete demolition	32-40	300-500mm	90% of Height
Reinforced concrete demolition	36-40	150-300mm	90% of Height

Section 8 – Drilling Instructions

Basic Hole Design



Section 9 – Mixing Instructions



- **NexPand** is a powder that must be thoroughly mixed with **clean, cold** water.
- Mix 1 bag (5kg) with 1.5 litres of cold clean water
- Add powder gradually to water while stirring
- Stir until smooth and lump-free
- Mix only one or two bags at a time
- Rinse bucket every 3–4 mixes to avoid premature heating.

Estimate Consumption Of NexPand Powder In 1m Holes

Hole Diameter (mm)	32mm	34mm	36mm	38mm	40mm	46mm
Powder Mass kg/m	1.2	1.4	1.6	1.8	2.0	2.6

Section 10 – Pouring Instructions

- Pour mixture into holes within 5–8 minutes
- Use a bucket with a lip or a funnel for precision
- Fill hole to about 30mm from the top
- Do not plug with hard material; cover only in rain with waterproof sheeting.



Section 11 – Reaction Times & Results



- Reaction time depends on temperature and rock type.
- The reaction time varies with weather conditions, ranging from 2–3 hours up to 24 hours based on the ambient temperature.
- Expansion begins slowly, creating internal pressure.
- Full breakage visible within 24 hours.
- Large diameter holes positioned closer together accelerate breaking times.

Warning: Blow-outs may occur if holes are overfilled or not prepared correctly.

Section 12 – Blow-Outs

Blow-Out Causes:

- Wrong **NexPand** type for temperature.
- Overfilled holes.
- Narrow-mouth containers.
- Delayed pouring after mixing.

What to Do:

- Clear area immediately.
- Do not stand over filled holes for the first 2–3 hours.
- Always follow PPE requirements.



Signs of Imminent Blow-Out: Steam or smoke from holes.

Section 13 – Do's and Don'ts !



Do's

- Use the correct NexPand type for ambient temperature.
- Mix with cold, clean water only.
- Pour immediately after mixing.
- Keep holes clean and properly spaced.
- Conduct trial runs if unsure.



Don'ts:

- Use hot water or mix in small/glass containers.
- Plug holes with setting material.
- Store in direct sunlight.
- Reuse opened bags unless sealed airtight.
- Pour into glass or sealed containers.

Section 14 – Contact Information

NexPand
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