ROCK ARMOUR™

Rock Armour™ is a two part Epoxy Polyurethane solution. The system combines the hardness and chemical resistance of epoxy with the flexibility and impact resistance of polyurethane to create an extremely durable protective barrier that is highly resistant to Impact, abrasion, and tampering.

1. ROCK ARMOUR™ RA1E – with 50% Expansion

Applications:

- Secondary support on underground rock sidewalls.
- Securing of electrical cables underground on side walls.
- Primary support complete grout packs if required with expansion.
- Primary support top cushion bag.
- Permanent underground ventilation seals
- Alternative to make bricks for house building.
- Various other applications

2. ROCK ARMOUR™ RA2NE – ROCK ARMOUR with 0% expansion and increased strength – Delayed Curing

Applications:

- Primary support complete grout packs which do not require a top cushion bag.
- Can be used as an alternative to plaster.

3. ROCK ARMOUR™ RA2NESL – ROCK ARMOUR with 0% expansion and increased strength and self-levelling abilities – Delayed Curing

Applications:

- Workshop and house floors.
- Alternative to second story floor construction used with rebar steel.

Key Benefits and Competitive Advantages

Is a Green Product Based on Environmentally Friendly Resources – a 2 part polyurethane resin, derived from 100% renewable resources.

Faster Application - Can cover up to 200 running meters per day for cable protection, significantly faster than competitors (30m/day for gunhide, 70m/day for grout).

Less Material Required - Due to a 50% expansion rate, less material is needed to cover the same area, leading to cost and time reduction.

Rapid Curing - Curing period is within 45 minutes, with full strength (132 MPA) achieved in less than 24 hours. This immediately reduces theft risk after application. (Competitors: gunhide 6.3 MPA at 7 days; grout 16.8 MPA at 28 days).

Increased Flexibility - Our product has a flexibility of 22.1 MPA compared to competitors (gunhide 3.2 MPA, grout 3.6 MPA).

Environmental Friendliness - 100% environmentally friendly and recyclable, reducing health, safety, and environmental risks. Competitors' methods often use environmentally unfriendly cementitious products.

No Material Redundancy - No shelf life, preventing product disposal.

Smaller Machinery and Less Labour - Requires less heavy machinery and labor for application.

Fire Protection - Tested at 400 degrees Celsius without taking fire; alternatives reduce in strength when fire breaks out.

No Fumes - Product has no dangerous fumes for the applicator.

Waterproof - 100% Waterproof

Cost Reduction - Lower overall cost due to expansion rate and application methods.

Versatility - Product can be altered to fit several different applications and to increase strength.

Recycling of Product Packaging - Packaging can be reused.

MECHANICAL STRENGTHS

FLEXURAL, COMPRESSION AND TENSILE BOND TEST

Independently tested by FST MINING & ENGINEERING

SCOPE:

Rock Armour was cast in 40mm x 40mm x 160mm Prisms to determine the flexibility strength of the product. 40mm x 40mm x 40mm cubes cut from one prism and 57mm Prisms for compression strength test, 50mm Steel screwed head attached to Granite and 57mm Prisms of Granite and Norite, attached to the rock formations. In all test case study's, Rock Armour cured for 24 hours after application, before testing at the FST Mining and Engineering Laboratory.

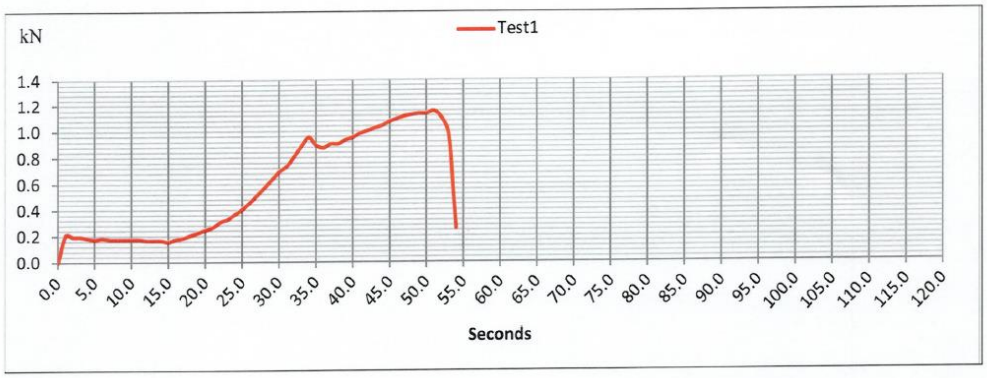
TESTING DETAIL:

Cement Bricks with Rock Armour in top to bind the two cement rocks together.	210mm x 100mm (8-9mm Rock thick on top)
Rock Armour Prism	75mm diameter x 55mm
Prism Size (Flexibility Strength)	40mm x 40mm x 160mm
Cube Size (Compression Strength)	40mm x 40mm x 40mm
Rock Armour Prism (Compression Strength)	75mm diameter x 50mm
Rock Armour Prism (Compression Strength)	50mm diameter x 50mm
Steel Screwed Head Bond Strength to Granite	50mm diameter
Granit Prism Bond Strength on Granite	57mm diameter
Norit Prism Bond Strength on Norit	57mm diameter

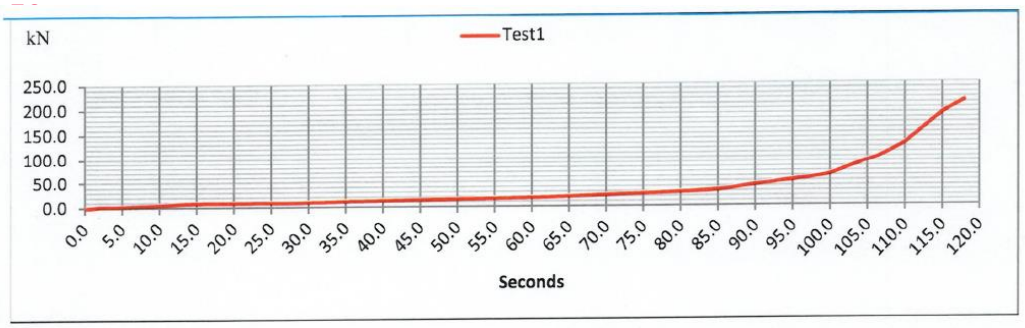
Rock Armour, Compression and Tensile strength:

Sample No.:	**Sample**	**Test Type**	**Sample Strength (kN)**	**Sample Strength (mPa)**
1	Cement Bricks with Rock Armour in top 210mm x 100mm (8-9mm Rock Thick on top)	Flexibility	1.16	2.7
2	Rock Armour Prism 75mm Diameter x 50MM	Compression	214.89	76.77
3	Rock Armour Prism (40mm x 40mm x 160mm)	Flexibility	8.4	19.7
4	Rock Armour Prism (40mm x 40mm x 160mm)	Flexibility	9.06	21.2
5	Rock Armour Cube Size (40mm x 40mm x 40mm)	Compression	175.94	109.96
6	Rock Armour Cube Size (40mm x 40mm x 40mm)	Compression	194.63	124.45
7	Rock Armour Prism 50mm Diameter x 50mm	Compression	234.0	93.00
8	Steel Screwed head Bond Strength to Granite	Tensile	2,9	11.15
9	Norit Prism Bond strength on Norite	Tensile	2,8	10.76
10	Norit Prism Bond strength on Norite	Tensile	6,5	25.00
11	Granit Prism Bond strength on Granite	Tensile	3,0	11.53

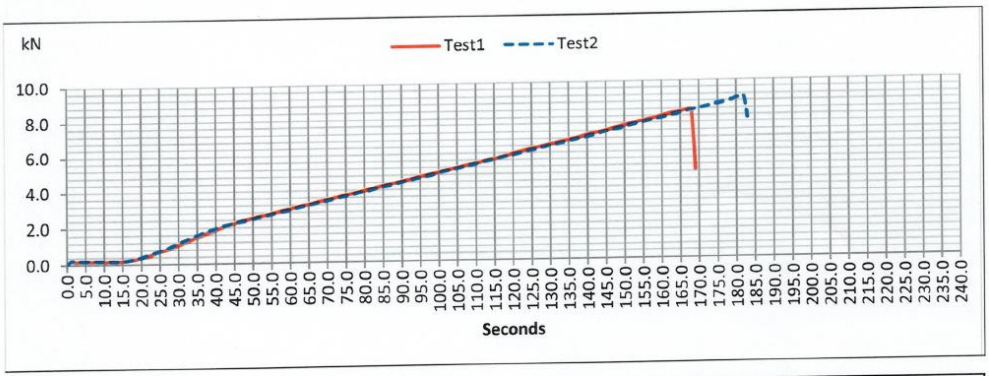
The graph showing the Tensile strength of the Cement Bricks 210mm x 100mm with Rock Armour in top (8-9mm Rock Thick):



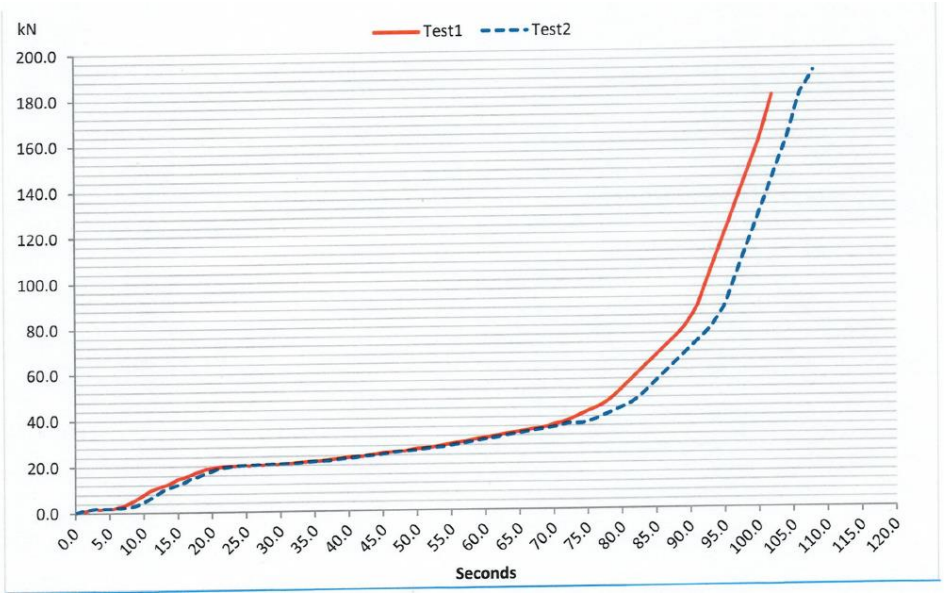
The graph showing the Compression Strength of the Rock Armour Prism 75mm Dia x



The graph showing Flexibility Strength of the Rock Armour Prism 40mm x 40mm x 160mm



The graph showing Compression Strength of Rock Armour Cube 40mm x 40mm x 40mm



The graph showing Compression Strength of the Rock Armour Prism 50mm Diameter x 50mm