MultiSeal

Dam Liners and Waterproofing

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MULTISEAL COMPOSITION

In MULTISEAL concrete, thermosetting resins are used as the principal polymer component due to their high thermal stability and resistance to a wide variety of chemicals. Polymer concrete can include aggregates that include silica, quartz, granite, limestone, and other high quality materials.

In simple terms, MultiSeal is a polymer modification of cement which increases the tensile and flexural strength of mortars and concrete and reduces their brittle nature. Since the polymer modified cement is a composite of two entirely different types of materials, the characteristics of the key components, cement and polymer, will be briefly described:

MultiSeal is a composite of Polymer, Cement and Non-plastic aggregates.

Cement needs no introduction. Portland cement based concrete and mortar are among the most widely used construction materials in the world. Advantages include relatively low cost, high stiffness, high compressive strength, non-flammability and ease of fabrication.

However there are some serious limitations, such as **low tensile strength and brittleness** which could affect the long term durability. Polymer modification of cement paste increases its tensile and flexural strength and reduces its brittle nature.

MultiSeal Polymer is high-tech, cost effective and easy to apply. MultiSeal is a water soluble polymer spray-on dam liner. The application of MultiSeal emulsion for earthen dams and construction areas like roofs, chimneys, retaining walls, water features and flower boxes with one coat primer and two coats MultiSeal emulsion will result in a highly elastic, non-toxic, flexible UV resistant sealant with very good crack bridging capabilities.

MultiSeal Typical Uses

- **Water storage dams**
- **Concrete reservoirs**
- **Tailing dams**
- **Waterproofing Building Industry**
- **Earth irrigation dams**
- **Effluent dams**
- **Water features**

BENEFITS OF MultiSeal

- Tensile strength – geofabric reinforced
- Quick Drying – will dry in approximately four hours
- Water soluble – applicators can be rinsed in water immediately after use
- Highly flexible – will not crack or become brittle when cured
- Adhesion promoted – will adhere firmly to the base layer of the dam
- Easy to apply – no heavy or specialized machinery required
- Environmentally friendly – cannot leach into the environment
- Acid & Alkaline resistant (pH 1.95 to 12.50) N.W University, RSA
- Easily repairable

Structural Support

MultiSeal Geoliner is a multi-layer waterproofing liner. MultiSeal's function is not to provide tensile or structural support for the dam.

There are a multitude of geofabrics available, subject to customer requirements that will provide tensile strength and support. Multiple layers of MultiSeal are then applied over the geofabric to ensure complete waterproofing.

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In simplistic terms, MultiSeal is a polymer emulsion, which includes polymer, geofabrics, cement and selects silica. The combination of these elements results in a high-tech waterproof liner with superb flexible strength. MultiSeal is designed to be highly acid & alkaline resilient.

MultiSeal Ultraviolet Protection is Three Fold

1. MultiSeal Geoliners are designed to provide protection from the harsh environment of outdoor weathering, especially the deterioration caused by UV radiation. One of the main influences on the polymer coatings performance is the amount and type of UV absorbers used in the coatings. Zinc Oxide (ZnO) nanoparticles provide long term protection from harmful UV radiation in harsh environments. Zinc Oxide is an inorganic absorber it does not degrade over time like organic UV absorbers.

2. Cementitious Additive – virtually unaffected by heat and UV.

3. Plaster Sand (siliceous sands) – is added to MultiSeal to deflect UV radiation.

MultiSeal are applied in three layers. Layer one bond to the geotextile or base surface and once dried, a second layer of MultiSeal mix is applied. Once dried a third layer of MultiSeal mix is applied. Each layer of MultiSeal mix protects the previous layer.

As each layer consists of MultiSeal (UV absorbing polymer), Cement and Silica UV reflectors.

MultiSeal Geoliners – Backing Material

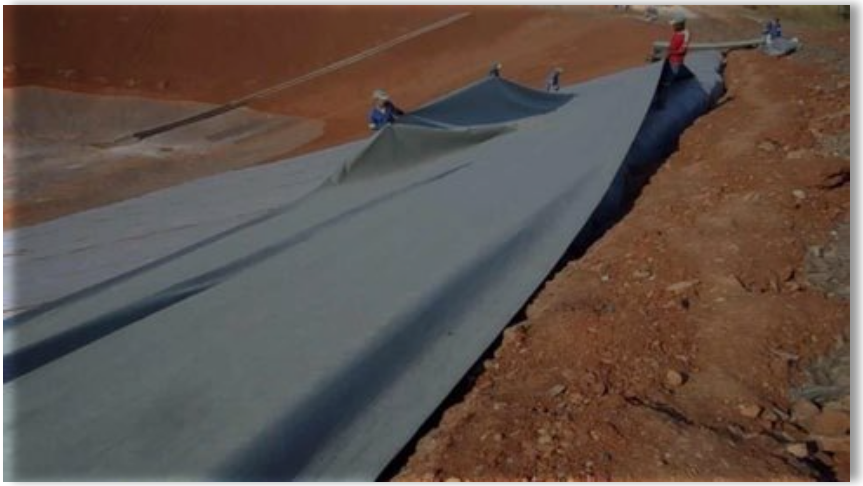
Earthen dams are lined with a geotextile prior to being sprayed with MultiSeal. For the building/construction industry no geotextile is needed unless there are gaps of 2mm and more.

MultiSeal Geotextile Backing Material

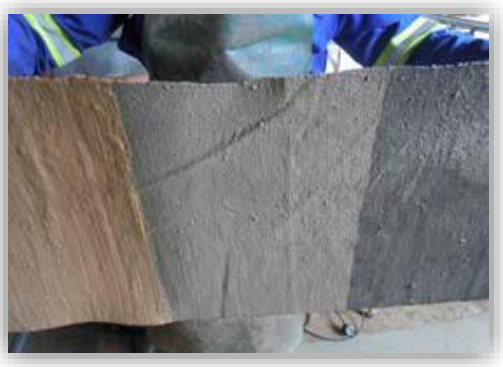
KAYTECH GEOTEXTILES

Note: There are many geotextiles, too numerous to list here

Physical Properties	Test Standard	Unit	F2	F6
Weight	SANS10221;07	gm	120	130
Thickness!at!2kPa	SANS10221;07	mm	0.7	0.8
Mechanical Properties				
Penetration Load	SANS 10221;07	kN	1.5	1.7
Elongation at Break	SANS 10221;08	%	>45	>45
Tensile Strength (longitudinal!direction)!	SANS 10221;09	kN/m	8	10
Tensile Strength (transverse!direction)!	SANS 10221;10	kN/m	8	10
Elongation at break	SANS 10221;11	%	>45	>45
Dynamic Cone drop	EN ISO 13433	mm	35	27
Trapezoid tear strength (weaker direction)	ASTM D;4533	N	220	250
Grab Tensile Strength (weaker Direction)!	ASTM D;4632	N	500	650
Standard Dimensions(				
Width (max.)!	!!	m	5.2	5.2
Length!	!!	m	100	100
Roll diameter!	!!	cm	30	30
Roll Weight at max. Standard dimension	!!	kg	63	68



MultiSeal Geoliner



SA Bureau of Standards

SANS 5099	✔
SANS 5266	✔
SANS 5300	✔

North West University

Tested with hydrochloric Acid – pH 1.95	✔
Tested with Sodium Hydroxide – pH 12.5	✔

Australian Certified for Potable Water Liners

AMS Laboratories
AS/NZS 4020: 2005

ams Laboratories
Striving for Excellence - "bringing science and commerce together"

Hydrochloric acid bubbling on galvanized table. MultiSeal liner showing no effect from the acid

MULTISEAL Guarantee

Multiseal are guaranteed for a period of ten years from any UV damage although life expectancy is expected to far exceed ten years.

The warranty includes a site inspection and general survey report of the visible MultiSeal geoliner every two years.

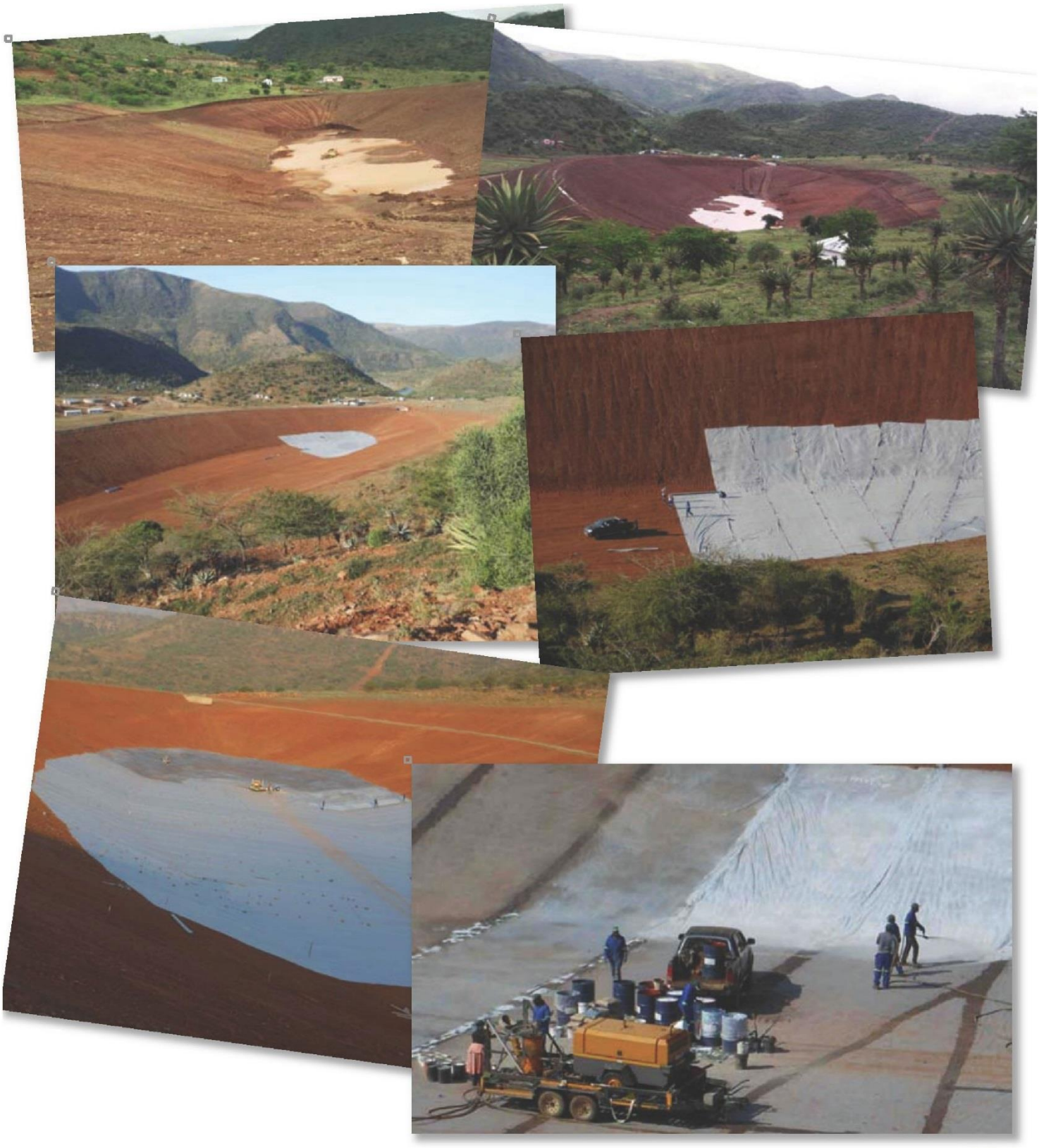
At the end of the ten year guarantee period, a survey will be completed of the visible MultiSeal geoliner and a written report with maintenance recommendations will be drafted and presented to the relevant authorities.

Possible recommendations could be a single application of MultiSeal over exposed areas, during the dry season. Costs should be very reasonable with a single application of MultiSeal (no geoliner required)

Guarantee Includes:

- Cracking of the MultiSeal geoliner
- Tearing of the MultiSeal geoliner due to weathering
- Undue weathering of the MultiSeal geoliner, causing exposure of the underlying substrate

Guarantee Excludes

- Any damage due to external factors such as, machinery, humans, trees, rocks or animals
- Damage by vegetation
- Damage due to ground settlement or movement
- Discolouring due to weather, dirt or dust

Flagstaff, E. Cape — Mzintlava