



SEALING PONDS & DAMS WITH *BENTONITE*



Technical Advice & Costings

Supply & Delivery

Installation



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Advice

We offer a comprehensive advisory and installation service for the use of Transform Rheogel L Bentonite for sealing ponds and dams. The services range from a purely consulting role to a complete material installation contact.

Consulting and advisory work is performed on an hourly charge and expenses basis, although normal preliminary advice and quoting is free. Where a full supply contract is arranged, no charge is made for the associated consulting services.

Supply

Transform can arrange supply and delivery of Transform Bentonite from our Coalgate plant – charged as a dollar rate per tonne transported to site.

Installation

Ground treatment and Bentonite placement can be performed by Transform subcontractors. Alternatively, this work can be completed by clients, under Transform supervision if desired.

Product Data

Technical data sheets & MSDS for Rheogel L are contained in the Appendix.

Disclaimer: The information in this data sheet is, to the best of our knowledge, representative of average production. The customer determines fitness for purpose based on customer evaluation of a representative sample. These figures are approximations for guidance only. The customer must verify the information is current and correct and assumes full responsibility for the use of this material. Specifications may change without notice, so the figures are subject to confirmation by the purchaser. Transform Minerals makes no representations or warranties, either express or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. As conditions of use are beyond our control, no liability is implied or accepted for any loss, damage or physical injury, loss of income, sustained arising from the use of this information or any of our products.

Sealing with Rheogel Bentonite

Use Rheogel Bentonite to seal:

- Dams
- Ditches (for water supply)
- Sewerage treatment
- Drainage

The ideal method to use for sealing dams will depend on the environmental conditions, the size of the dam and soil type.

<i>Dam Type</i>	<i>Suggested Sealing method</i>
Dry Pond (or ditch)	Mixed Blanket
Large Reservoir	Grouting, Trenching
Under Water	Slurry, Sprinkle

NB: For ditches, dry pond methods apply and it is very important to ensure that all vegetation is removed before treatment.

Note: Whatever method is used, never use less than 7 kg of Rheogel L per square metre.

1. Dry Pond Method (by the Mixed Blanket Method)

1. This method can be used when the dam can be drained and dried.
NB: If at all possible it is preferable to use this method.
2. All vegetation should be removed before commencing.
3. To ensure accuracy, divide the area into 2.0 metre squares and use one 25kg bag of Rheogel L per square. If the bed consists of loose sand, more Rheogel L will be required. 1.4 metre squares would double the Rheogel L concentration.
4. In all cases where gravel or porous soil is found, local clay should be used to cover and compact the surface before adding Rheogel L and then harrowing.

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Mixed Blanket Method

1.	If possible, lightly offset disc or harrow the area to a depth of about 75 mm.
	<i>Note:</i> Sometimes it is not practical to disc or harrow a dam. In this case extra compaction of local clay and Rheogel L is required.
	<i>Note:</i> The soil is best treated when slightly moist – but not too wet to work. If available, use a sprinkling system if the ground has dried out. Otherwise select a time a day or so after the rain has fallen.
2.	Mark off the area into squares and spread one bag of milled Rheogel L Bentonite per square). Mix by lightly harrowing.
4.	Roll with a smooth roller (preferably rubber tyred). Suggest batters less than 1:3 to allow the same compaction to above the proposed water level.
5.	To protect against penetration by plants or animals it is recommended to cover the area of Rheogel L with a 45 cm layer of compacted local soil.
6.	Filling can now proceed. It is better to lightly sprinkle the whole area with water for approximately a day and if ground conditions permit to roll again with a smooth roller then immediately fill with water. Alternatively, the pond should be immediately filled with water.

This method is suitable if the dam periodically dries – but whenever possible, it is best to keep the dam full.

Considerable water losses can occur around the sides of dams therefore it is best the sides are gentle batters that can be worked and treated the same as the bottom.

If this is not possible, spread the bentonite as evenly as possible on the sides or if the batters are too steep for this, wait until the dam is filled with water then tip Rheogel L around the edges (either finely milled Rheogel or if the water is deep, heavier Rheogel LX pellets).

It is usual for some minor initial losses to occur up to six weeks after the first pond fill.

The cost of using the method described above can be as little as one quarter the cost of other sealing alternatives (after calculating material and construction). The method has been used successfully by NZ Forest Service in an area with considerable seepage problems. The pond was built on non-compacted river gravel with a mixed blanket of local clay and Rheogel L.

Sealing with Rheogel Bentonite

2. Large Reservoir Method

If the dam is very large, a complete bottom sealing may be uneconomical. In this instance grouting and trenching methods may be used but it is essential to first determine the leakage zones and advisable to seek professional advice.

Briefly, the grouting and trenching methods are described below.

Grouting

1.	Drill a series of holes along the seepage zone to a depth below the bottom of the dam and/or seepage area.
2.	Prepare a 6.4% Rheogel L suspension in water (weight to volume) by slowly adding milled Rheogel L with a high speed mixer to a tank of water.
3.	Pump the suspension down the drill holes. Pressure forces the suspension to fill the voids and it forms a barrier against seepage.

Trenching

1.	Prepare a 6.4% Rheogel L Bentonite suspension as for grouting.
2.	When digging a trench along the seepage zone, fill it with the Rheogel L suspension as you dig. This will stop the sides caving in.
3.	Back-fill the trench with the excavated material to make a Rheogel L soil mixture.



Sealing with Rheogel Bentonite

3. Under-Water Methods

There are two under-water methods – Slurry and Sprinkle. These methods can be used without draining the dam but a better result can be expected if the water is shallow enough to allow discing or harrowing of the bottom.

Note: If vegetation is not removed before applying either the under-water or dry pond applications high seepage zones can occur.

Slurry (preferred method)

1.	Prepare a Rheogel L Bentonite suspension as for grouting.
2.	Let the slurry flow into the water. Being heavy it will tend to spread out over the bottom – but if possible direct it towards the bottom.
3.	A minimum slurry application would be 7 kg of Rheogel L per square metre.
4.	Pull a set of harrows or a dragline over the bottom.
5.	Keep the dam filled with water for at least two months.

Sprinkle

If mixing equipment is not available, Rheogel LX pellets can be sprinkled over the area from a boat.

1.	Follow a pattern to ensure the whole area is sprinkled evenly. Because pellets have a much smaller surface area than milled Rheogel L, a greater quantity will be required – a probable minimum being 12 kg of Rheogel L pellets per square metre.
2.	Use a harrow or a dragline to spread the pellets on the bottom.
3.	Keep the dam filled with water for at least two months.
4.	The sprinkle method can also be used to supplement the slurry, mixed blanket or pure blanket methods if seepage areas are detected at a later date.