

Petrochemical Lining

from Rawell



Pre-hydrated, High Density Bentonite

RAWMAT® HDB Membranes and
RAWSEAL® HDB Waterstops
High Density Bentonite Petrochemical Lining



Petrochemical &
Environmental Solutions

THE
SECURE
OPTION

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Providing leading-edge solutions

Rawell Environmental Limited is one of the world's premier suppliers of bentonite-based waterproofing materials for environmental lining applications.

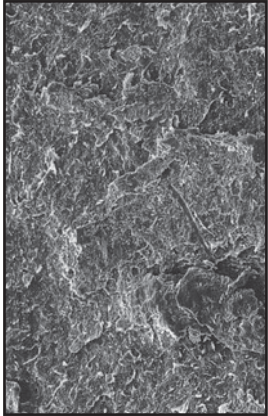
Our unique system of RAWMAT® HDB (High Density Bentonite) Membranes and RAWSEAL® HDB Waterstops delivers leading-edge solutions that offer a demonstrable range of advantages over conventional dry bentonite and other rival systems.

Founded in 1976 by current Chairman, Bryan Flynn, Rawell has built its success on years of experience in this market and a highly focused and proactive approach. Our high-quality personal service and close attention to detail have won us an enviable international reputation. Rawell's customers enjoy total reassurance that our products will function with complete reliability for the whole life of the projects for which they are specified.

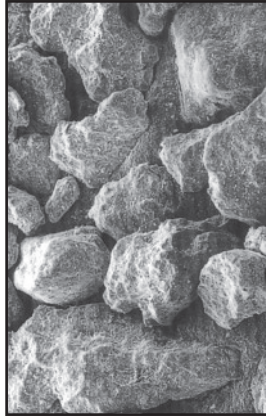
Rawell waterproofing systems have been proven internationally across a range of environmental protection and petrochemical lining applications, including electricity substations, burial pits and tank farms.

The efficiency, flexibility and resistance to contamination offered by our products have led to them being specified by oil companies, chemical manufacturers and liquid storage facilities of all sizes all over the world, with specific feature projects in China, Italy, Malaysia and Scandinavia as well as the UK.

Satellite view of Wyoming, USA



Note dense surface of Pre-hydrated High Density Bentonite



Dry Bentonite, note voids around particles

What is Bentonite?

Bentonite is a natural inert clay formed from volcanic ash and found predominantly in Wyoming, USA. It absorbs water and can swell to form an impermeable mass that prevents the passage of liquid; these swell characteristics are harnessed to provide waterproofing properties.

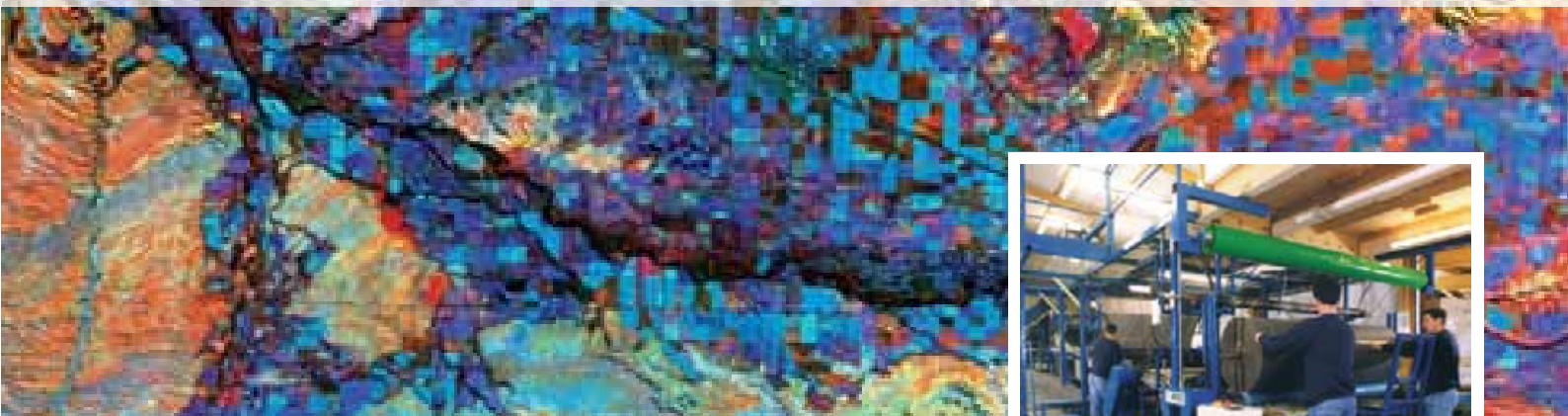
However, in-situ hydration of bentonite may leave the clay susceptible to chemical degradation.

Cracking and shrinking can be induced by ground contaminants and are well-known results of failure in dry bentonite systems.

To avoid this, Rawell has developed a revolutionary waterproofing material by using its own patented process to polymerise and pre-hydrate the bentonite. The clay is produced in rolls and lengths of waterstops.

The resulting pre-hydrated bentonite clay has extremely high density with exceptional resistance to ion exchange and chemical attack.

The plasticine-like core also ensures no movement of clay in handling and no loss of the bentonite in cutting around penetrations. It also withstands minor movement through its ability to swell and ensure the continuity of the waterproofing system. This is what makes RAWMAT® HDB unique.



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A unique range of benefits

RAWMAT® HDB has been developed through extensive research and experience over many years to overcome the difficulties experienced when using other waterproofing systems for petrochemical lining applications.

This unique product ensures long-term protection in a range of highly demanding ground conditions whilst affording simple and highly cost-effective installation.

As well as its long list of advantages over conventional dry bentonite systems, RAWMAT® HDB also affords a range of specific benefits when compared with compacted clay, thermoplastic membranes and concrete.

The natural sodium bentonite in RAWMAT® HDB membranes is pre-hydrated with a patented polymer solution which provides a permanent protection to the ionic fingerprint of the clay. This protects it from exchange and subsequent breakdown in ground contaminants and thus overcomes a major drawback widely associated with other bentonite systems.

As a result RAWMAT® HDB provides the reassurance of a long-term barrier to a wide variety of contaminants, hydrocarbons and chemicals. It is equally effective whether used to prevent contamination reaching unpolluted water or to contain contaminated materials in order to protect the surrounding environment. Because the geotextile carriers have been carefully chosen, intimate contact between the membrane and other materials in a composite lining is ensured, thus preventing the tracking of liquid.

Joints are self-sealing at the overlap, with no wicking of liquid either here or through the geotextile carrying fabrics. Tracking of liquid is also eliminated because these specialist fabrics are carefully chosen to ensure the bentonite achieves an intimate seal with the structure.

Practical and cost-effective

RAWMAT® HDB comes in rolls which are easy to handle and can be installed quickly and simply by unskilled labour and in any weather. It also offers consistent quality and is flexible and robust when faced with the conditions of day-to-day site construction.

A vital advantage is the dramatic cost saving - and lower environmental impact - it offers over clay systems through its ease of handling and transport. Thanks to the low permeability of the membrane, a single truck load of RAWMAT® HDB can replace as much as 2,800 cubic metres of clay.

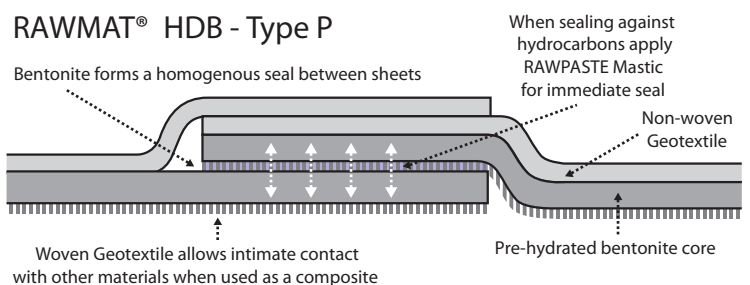
Pre-hydrating the bentonite ensures an immediate seal to hydrocarbons once joints are treated with RAWPASTE Mastic.

RAWMAT® HDB also avoids the need for sand blindings below the membrane or sand cushions above, while protective geotextiles are not required. In addition, the use of RAWPASTE Mastic and RAWSEAL® TR35 fillets ensures extremely simple sealing of vents, pipes, stanchions and sumps without the need for complex and expensive accessories.

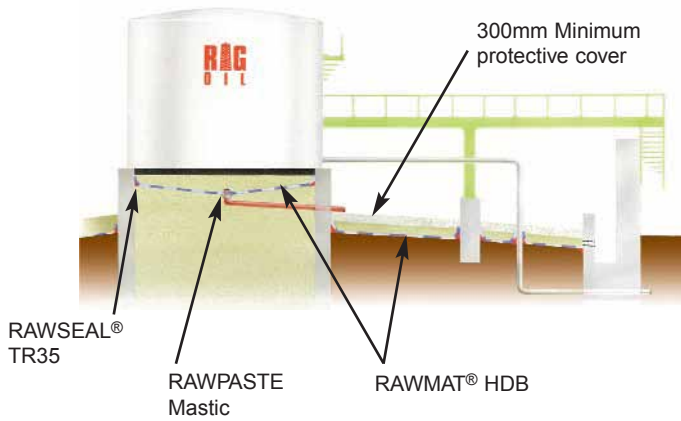
Concrete Bunds



RAWMAT® HDB - Type P



For details of Rawell products and services visit www.rawell.com where you can find more information suited to your specific needs, or call +44 (0) 151 632 5771



Advantages over concrete

- Faster to install than concrete, at a fraction of the cost
- Can be installed in most weather conditions
- Seals to supports and pipe penetrations quickly, easily and effectively
- Offers substantive cost-savings in installation and maintenance
- Is not susceptible to cracking
- Is highly resistant to chemical attack by contaminants such as sulphates
- Has ability to self-heal punctures - no need for complicated repairs

Advantages over 'plastic' materials

- Simply rolls out - watertight overlaps are easily achieved without welding
- Installed without need for specialist labour or equipment
- Can be laid in most weather conditions and unaffected by sand/dust
- Does not normally require protective geotextiles
- Has ability to self-heal punctures - no need for complicated repairs
- Simple installation to existing structures - no need to weld

Earthen Bunds



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A safe and stable product

RAWMAT® HDB membranes achieve impressive hydraulic conductivity readings even in the presence of high levels of hydrocarbons and chemicals. Contact Rawell for more information on tests carried out on RAWMAT® HDB.

The product's composite structure is very stable and can be subjected to repeated freeze/thaw and wet/dry cycles without reducing its waterproofing properties.

This factory pre-hydrated high-density bentonite system has not lost any of the benefits of high swelling smectite clay and consequently RAWMAT® HDB retains the ability to self-heal if punctured.

The products can be depended on to offer reliable petrochemical containment in a number of applications, such as concrete-bunded or earthen-bunded tank farms.

The products are non-toxic and chemically inert posing no health and safety issues

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The secure system for petrochemical lining projects

RAWMAT® HDB membranes offer unparalleled resistance to contamination and as such are suited to a wide variety of petrochemical lining applications. This unique system of pre-hydrated natural sodium bentonite gives truly long-term effectiveness and reliability, which is assured by Rawell's emphasis on rigorous, ongoing, life-time testing of its materials with a wide variety of permeants.

Tank farms are readily and securely banded with RAWMAT® HDB, which can be installed in most weather conditions. Manufactured in a Quality-Assured, controlled environment, RAWMAT® HDB's pre-hydration means that it can be installed onto a formation which has been subject to a hydrocarbon spillage, and the costly removal of contaminated material prior to the installation of the membrane is not necessary if RAWMAT® HDB is used. Furthermore, contaminated material which may have been removed from the existing formation can be used to confine the membrane. RAWMAT® HDB's pre-hydration negates the need to hydrate on-site, further reducing the time required to install.

The advantages of RAWMAT® HDB do not end with its' installation, as RAWMAT® HDB's long-term performance means that periodic flooding of the bund (required by 'dry' bentonite systems) is not required. This unique solution ensures the best of both worlds. Specifiers can rely on flexible and proven long-term solutions to range of petrochemical lining problems, while contractors value the time and money saved in transport and installation as well as the ability to self-heal minor puncturing. The ultimate winner is the client, who benefits from the highest quality solution at a competitive price - and with shorter programmes than any other system, offering huge cost advantages.