



TECHNICAL INFORMATION ECOTRAX

ABOUT ECOTRAX:

EcoTrax is a modified bitumen emulsion used as a hydrophobic binder for road base material.

Unlike many existing grades of bitumen emulsion, EcoTrax is used at room temperature and mixes readily with all water types (soft, hard, bore, salt water). It has a long shelf life and does not need continuous management when in storage.

Characteristics

The main advantage of EcoTrax modified bitumen emulsion is that the relatively high viscosity of cold bitumen is retained in a form that can be used easily at room temperature. Thus no special application equipment is required.

EcoTrax can be readily diluted with water. When applied at this dilution, the bitumen is released from the water-based emulsion in an amount that provides a water repelling and binding effect when mixed into road material.

The process whereby the bitumen is released from the emulsion is known as "breaking" and involves the formation of a film of bitumen from the individual discrete particles originally present in the water emulsion. The breaking of the EcoTrax bitumen emulsion involves the removal of water, mainly by evaporation but also by absorption through surfaces in contact, particularly those of mineral aggregates. The rate of break is affected by weather conditions and type of material being sprayed.

Following the removal of water, the bitumen film is left to adhere to the road material, particularly the fine grade material. EcoTrax emulsion provides a uniform and total coverage of the particle matter. This is difficult to achieve using standard bitumen emulsions. It is this complete coverage and adhesion that provides the water repelling and binding effect to the road material upon compaction.

APPLICATION OF ECOTRAX:

Pre mixed at Quarry

EcoTrax can be pugged or pre-mixed at a quarry and be stock piled for up to two months. When required for use, simply add water to bring to Optimum Moisture Content, deliver to site, shape and compact.

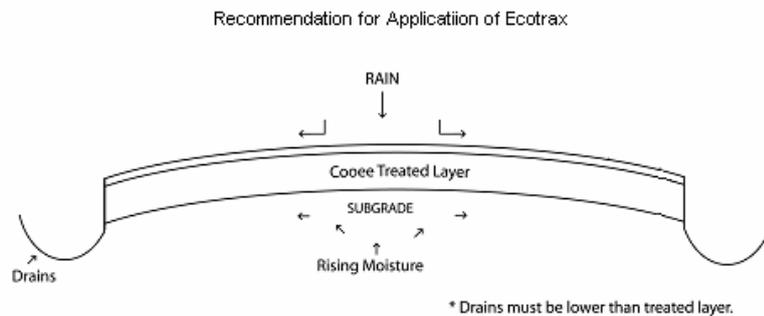
In situ

When treating in situ material on a road, driveway or yard prepare the area as you would normally. The application of EcoTrax into the blending of road material requires no extra or special equipment.



Instructions for typical material

1. Rip the road surface to 100mm minimum or the depth required.
2. Add EcoTrax to the water in the water truck at rate of 1l water : 1L EcoTrax. Add water first, then EcoTrax.
3. Use this dilution in the water truck to spray the ripped surface evenly .
4. Cooee advises using 2L of EcoTrax concentrate for treating 1 m² surface area to a depth of 100mm. Variations to this may be advised by Technical staff.
5. Bring the road material up to optimum moisture content using more water. How much is dependant on material and weather conditions. It is important that **the entire** diluted product is mixed evenly through the material to ensure the release of the correct amount of bitumen into the mix. A stabiliser is recommended to ensure a uniform mixture.
6. It is best to add the EcoTrax to the first load of water so any residue will be rinsed out as further water is applied to reach OMC.
7. The general measurement is 2L of EcoTrax concentrate treats 1 m² surface area to a depth of 100mm. Ensure that the entire amount of product is evenly spread throughout the road material mix.
8. Compact as usual.



EcoTrax

ADVANTAGES:

- High viscosity bitumen is retained in a form that may be used at room temperature.
- Storage of emulsion does not require specialised management.
- Because of the low temperature of application and of storage, the possibility of heat degradation of the bitumen is minimised.
- The temperature of application minimises hazards from fuming.
- Fire risk is eliminated.
- Cooee's emulsion, being water-based, has obvious environmental and safety advantages.
- The emulsion is designed so that it can be used easily through conventional spraying equipment.

Environmental Advantages

- The hydrophobic property of EcoTrax reduces leaching issues.
- EcoTrax emulsion contains water and is further diluted with water during use.
- EcoTrax is applied at room temperatures. Vapour which surrounds the spray equipment and the crew operating it is mainly water.
- After application the loss of volatile solvents to the atmosphere is kept to an absolute minimum since the bitumen used in EcoTrax contains only small amounts of these.



TEST RESULTS:

FT-50 modified bitumen emulsion has been added to the water being used to bring road material up to Optimum Moisture Content. This mixture was blended evenly into the road material and compacted as usual. After drying, a coating of bitumen remained on the particles in the road base material.

Nata Lab tests have shown:

- (a) Reduction of Water Ingression - a 100 fold reduction in water permeability was achieved in a Flexible Wall Permeability Test undertaken by Queensland Main Roads
- (b) Increased Strength - a 58% increase in CBR was achieved in CBR tests conducted by Queensland Main Roads. Maroochy Shire Council's Image Flats Quarry achieved similar increase in CBR of their 2.1 and 2.5 grade quarry materials.
- (c) Increased load bearing ability – low grade road material was tested by Image Flats quarry for Unconfined Compressive Strength. The material with no emulsion couldn't be tested as it didn't last the soaking. 0.5% emulsion mixed in produced a UCS of 5.4 MPa while a 1% emulsion mixture increased the UCS to 16.8 MPa

Full copies of test results are available at <http://www.cooeeproducts.com.au/>

METHOD OF USE:

EcoTrax is supplied in 20L, 200L and 1000L containers.

EcoTrax can be diluted at varied rates with water to suit the application.

The dilution should take place in the spray tanker, with water being added first.

SAFETY:

General

Cooee™ EcoTrax is a suspension of finely divided bitumen particles in water. There is no evidence to suggest serious health hazards associated with its use. However emulsifying agents are present in small quantities and frequent or prolonged skin contact should be avoided as this might cause skin sensitization.

EcoTrax is non-flammable and is applied and transported at room temperature, where there is no risk of burns.

Safe Handling

Contact with the skin should be avoided by the use of protective clothing, suitable gloves and rubber boots. If contact is made with skin, wash immediately with cold water. Solvents should not be used for the removal of residual material from the skin since they may themselves cause irritation. Medical advice should be sought at the onset of any skin irritation.



Eyes should be protected from splashes of EcoTrax droplets by the wearing of suitable safety glasses or goggles. Where the eyes are accidentally splashed with emulsion they should be irrigated thoroughly with cold water and medical advice sought.

STORAGE:

Storage Drums

It is important to control stock in storage to ensure that older drums are used first. (See Batch Number)

Drums of EcoTrax in storage do not need rolling, as do other bitumen emulsions.

Agitation is required immediately before dilution. Mixing can be effected with a suitable clean rod via the filling cap. Suitable agitation will also take place if transporting the drum to the work site before use.

Drums should be protected from frost and, if possible, from high temperatures which could cause pressure hazards when the drum is opened. Ensure bungs remain tight.

Arrangements can be made with the supplier to return undamaged used drums. Users should safely dispose of drums that are damaged. Residue in drums can be flushed out with water using suitable environmental practices for disposal.

Storage Bulk I.B.C.

Agitation is only required immediately before dilution. Mixing can be effected with a suitable clean rod via the filling cap. Suitable agitation will also take place if transporting the I.B.C. to the work site before use.

Arrangements should be made with the supplier for the return of used I.B.C.s.

CLEANING:

Spray Truck - Pumps, spray bars and jets should be flushed out with water immediately at the end of operations or where there is any delay in the progress of the work. If allowed to dry, a flush using a solvent such as kerosene will be required. Drainings should be contained as per local shire environmental regulations.

Hand-Operated Machines - Breaks in spraying should be accompanied by flushing of the spray with water to prevent blockage. At the end of the operation, it is good practice to empty completely the contents of the container, flushing with water by continuous circulation followed by draining should then take place. If allowed to dry, a flush using a solvent such as kerosene will be required. Drainings should be contained as per local shire environmental regulations.

For further information see MSDS Data Sheet available at www.cooeeproducts.com.au

