ECMASTAB 99

Natural Soil Stabilizer

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Description

ECMASTAB 99 is an environmentally compatible Soil Stabilizer and consolidator composed of selected inorganic oxides and inert polymeric fibers. ECMASTAB 99 has negligible environmental impact compared to conventional consolidation using concrete composed of inert matter and cement or lime and sometimes involving paving with a layer of asphalt. Addition of ECMASTAB 99 to the soil alone is sufficient to guarantee compactness and durability of gravel roads without altering their color or the ecological qualities of the "soil system", at a lower cost than conventional solutions (concrete – asphalt paving).ECMASTAB 99 can be used with ordinary equipment available on site, cutting costs and meeting technical specifications – something that cannot always be done with conventional stabilization methods.

Areas of Application

Soil stabilization. Construction of gravel roads with improved durability and resistance to wear.

Advantages

- improve the geo-mechanical resistance of the mix (cohesion, internal friction angle, soil bearing capacity, resistance to water and frost)
- Stabilize the properties of the mix over time in spite of changing environmental conditions, humidity, ageing, etc.
- reduce swelling resulting from changes in water content
- improve durability in use
- increase the workability of the soil to a high percentage for very fine soil
- increase resistance to freezing and defrosting
- graduate hardening reactions
- ECMASTAB 99 is particularly effective with limey and clayey soils (that is, soils with poor geo-mechanical properties), with which it interacts
- on both the physical and the chemical levels, forming a final product capable of meeting the requirements of technical specifications.

Mechanism of Action

Moisture in the soil is the culprit primarily responsible for deterioration of the mechanical properties of paths and roads. ECMASTAB 99 uses the moisture in the soil to hydrate the oxides it is composed of. The hydration reaction of the oxides generates insoluble hydrated compounds which, distributed through the micro-porosity of the soil system (clays, inert matter, etc.), reduce porosity, limiting swelling and making the soil more compact.

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This action decreases the plasticity of the soil and improves its mechanical properties, increasing the soil's bearing capacity (CBR) and increasing durability in the face of wear and high freezing /defrosting cycles. ECMASTAB 99 stabilizes the mechanical properties of the soil, making it inert in relation to the action of temperature and moisture in the environment.

Experimental Study

Experimental study is essential to the success of the project, as it not only reveals the existing situation of the site but determines the dosage of ECMASTAB 99.
Experimental study involves two important Phases:
Phase 1:
Determination of the physical and mechanical properties of the natural soil.
Phase 2:
Determination of the physical and mechanical properties of the blend of soil and ECMASTAB 99.

Experimental Study Phase 1

Tests to be performed on natural soil:
Classification of natural soil: granulometric analysis (UNI-CNR 10006)
Atterberg limits and plasticity index (UNI 10014)
Optimal tamping conditions (density and moisture) AASHTO procedure mod. (CNR-BU 69-30/11/89) CBR index (CNR-UNI 10009)
resistance to breakage under L-shaped compression (ASTM D 2166/91)

Experimental Study Phase 2

Tests to be performed on mixture of natural soil and ECMASTAB 99:
Granulometric analysis of the mix by sieving (UNI-CNR 10006)
Atterberg limits and plasticity index at 1 and 7 days (UNI 10014)
optimal tamping conditions AASHTO procedure mod (CNR-BU 69-30/11/78)
CBR index at 1 and 7 days (CNR-UNI 10009)
Resistance to breakage under L-shaped compression (ASTM D 2166/91)
Dosage is determined after experimental study. It may vary from 3 to 5 % of soil weight, normally
corresponding to about 6 to 10 kg per m2 when treating a layer 10 cm thick.

Recommendations for use

ECMASTAB 99 is used in the following stages:
1. distribution and mixing of stabilizer in natural soil or soil delivered to the site, which must first be milled.
2. determining the water content of the layer to be stabilized on the basis of optimal moisture
levels for firming the soil (as indicated in laboratory tests). Water must be added if insufficient, or allowed to dry if moisture levels are too high.
3. final milling after verifying moisture level and shaping and forming of the road bed if necessary.
4. compacting of the soil treated using appropriate equipment, to achieve a recommended compaction density of no less than 98% (AASTHO modified in response to laboratory tests

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Environmental compatibility

ECMASTAB 99 may be defined as an environmentally compatible product in that its chemical-physical and mineralogical composition are very similar to those of the soil to be stabilized. The polypropylene fibres which are an integral part of the product are completely inert and make stabilized soil ductile This allows the soil to maintain is chemical and physical properties, guaranteeing environmental compatibility and not altering the local ecosystem.

Packaging

ECMASTAB 99 is supplied in 25 Kg Bags.

Shelf Life

06 Months in original unopened sealed condition.

Storage & Handling

Material should be stored in Cool and Dry shade. Please avoid stacking of containers and handle carefully during transport.

Safety Precautions

Wear all PPE's at the of Application like Safety boot, Safety Goggle, Hand Gloves, Mask and avoided with contact of Skin and Eyes. Any direct skin contamination with the hardeners should be washed off immediately with soap and water.

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