

Levostab 99

Natural soil stabiliser

Function

Levostab 99 is an environmentally compatible soil stabiliser and consolidator composed of selected inorganic oxides and inert polymeric fibres. Levostab 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 Levostab 99 to the soil alone is sufficient to guarantee compactness and durability of gravel roads without altering their colour or the ecological qualities of the "soil system", at a lower cost than conventional solutions (concrete – asphalt paving).

Levostab 99 can be used with ordinary equipment available on site, cutting costs and meeting technical specifications – something that cannot always be done with conventional stabilisation methods.

Fields of use

Soil stabilisation.

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

Mechanism of action

Moisture in the soil is the culprit primarily responsible for deterioration of the mechanical properties of paths and roads.

Levostab 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 microporosity of the soil system (clays, inert matter, etc.), reduce porosity, limiting swelling and making the soil more compact. 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 freezing/thawing cycles.

Levostab 99 stabilises 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 Levostab 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 Levostab 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 Levostab 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

Levostab 99 is used in the following stages:

1. distribution and mixing of stabiliser in natural soil or soil delivered to the site, which must first be milled .
2. determining the water content of the layer to be stabilised 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% (AASHTO modified in response to laboratory tests).



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If necessary, mixing may be performed mechanically (in a mixer, dumper, etc.). This will allow you to skip points 1 and 3, performing only points 2 and 4 as shown above.

Properties

Use of Levostab 99 allows you to:

- improve the geo-mechanical resistance of the mix (cohesion, internal friction angle, soil bearing capacity, resistance to water and frost)
- stabilise 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
- Levostab 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.

Environmental compatibility

Levostab 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 stabilised. The polypropylene fibres which are an integral part of the product are completely inert and make stabilised soil ductile.

This allows the soil to maintain its chemical and physical properties, guaranteeing environmental compatibility and not altering the local ecosystem.

Storage

Store product at temperatures between +5°C and +40°C.

Product is sensitive to humidity, and must be kept in a covered, dry environment.

Packaging

Levostab 99 is supplied in 25 kg sacks.

Transport

The product is not classified as hazardous for any means of transport. Avoid contact with water and dispersion of the product.

The information provided in this information sheet does not represent a guarantee or imply responsibility on our part. Preliminary tests must be conducted to ensure compliance with application conditions. Our customer service is available to reply to users' questions and requests for information. Specifications may be changed without advance notice.

Revision 12/2008. The present edition cancels and replaces all the previous ones. The information contained in the present technical data sheet is based on our knowledge and experience and should therefore not be taken as our guarantee. Neither shall we be responsible for the utilisation of the product since the conditions under which it is used are beyond our control

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