TERRASYSTEM®
Flood-defence, embankment

Climate friendly and CO2-reduced
ecologically harmless, economically

Due to increasingly frequent weather capers, such as heavy rain, typhoons, monsoons, which lead to rapid increases in the amount of water in a very short time, it is essential to take protective measures for the population or for belongings in the affected areas.

Stabilized earthen dams are ideal because they blend into the landscape, can be built quickly and inexpensively with the earth material on site, exactly for this application the **TERRA**SYSTEM® is, as you can see from the test, ideally suited - the dam crests could as paved roads, rail or cycle paths be used ,and thus protective- or control system against the enormous amounts of water are used.

The use of **TERRA**SYSTEM® results in the following advantages compared to conventional earth dams :

* A greatly improved kf value (water permeability value) up to 10^{-12} m/sec

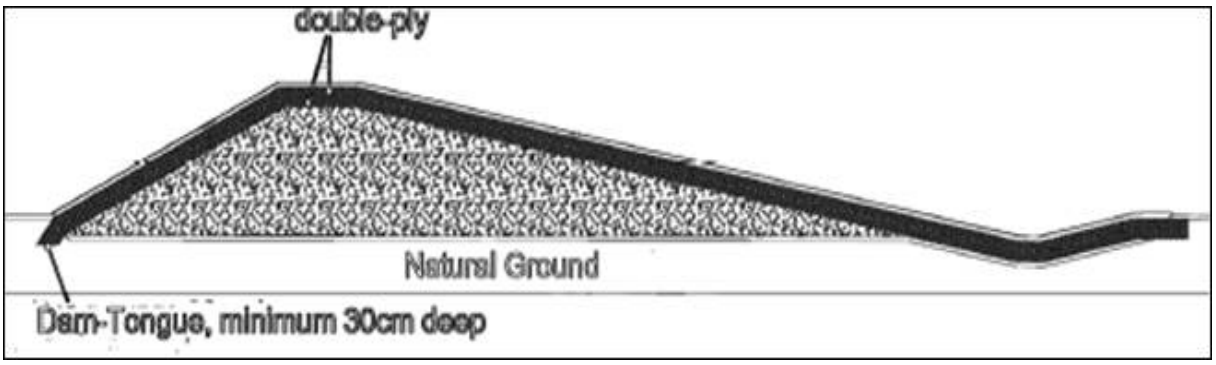
* Greatly improved compression >98% - reduction in capillary action

* Improved carrying capacity

* Longer service life

A central-mixing-process is an advantage for the dyke- and dam buildings and the edge sealing's of landfills, where the local soil material is not optimally composed for soil stabilization with **TERRA-3000®.**
Most of the soil fractions which are close to the coast, can be very salty and those are hygroscopic.

Let's stick to the topic of dyke construction and its aspects in environmental technology:



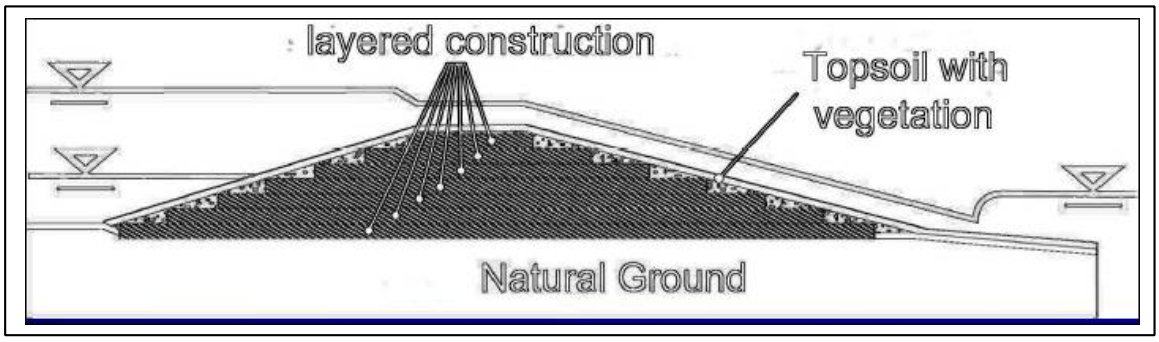
Example of a dam sealant after **TERRA-3000®**

Global warming leads worldwide to more and more low-pressure systems and the numbers of storms will escalate in the future!
A race between man and the weather has begun. A change of views about coastal protection, flood embankments as well as the dykes is needed urgently!
A dam break is unfolding by hydrostatic pressure and the softening of the soil material. The shear stress pushes the softened material away horizontally.
TERRA-3000® prevents the erosion of the dam body and so makes it fairly stable and insensitive to water!
Most floodings remain only a certain time before they flow back again.
If we increase the stability of a dam to hold just about double the existing flooding time the environment is spared a catastrophe!
Moreover **TERRA-3000®** is able to prevent from cracking of the dam face material in severe drought which is the most common traditional problem of enormous impact.

Through a higher stability of dams treated with TERRA-3000® damage to the dambody is prevented and therefore persist over a longer period.
The soil stabilization with **TERRA-3000®** for the dyke and dam construction is interesting because of the relatively simple, time-saving, costefficient and reliable results!
A softening of the dam body during flooding is largely eliminated by the disruption of the capillary action and a reached Kf value of 10^{-10}!

Conclusion:

Dams and dykes which are attached or built with **TERRA-3000®** resisting floods better!
Treatment with **TERRA-3000®** and the high compaction ensures a higher relative impermeability of the earthworks.



Layered Construction with **TERRA-3000®**

A rapid softening is delayed or prevented.
The dams and dykes are stable and withstand the flood for longer period of time
An enormous environmental damage in local economy can be prevented!

TERRA-3000® - contaminated soils

Another aspect in many projects is that contaminated toxic local soils must be deposed in special landfills. To assure pollutants will not be washed out into ground water. This appears to be very expensive!

By treating the soil with **TERRA-3000®** the soil layer becomes agglomerated (made into one piece).
This assures that pollutants are not washed out and remain in the layer without detriment to the environment, fixed and immobile!

TERRA-3000® - Water storage test:

2 test specimens - one treated with the **TERRA-3000®**, one untreated - were subjected to the same pressure pressed and then placed in the water together.

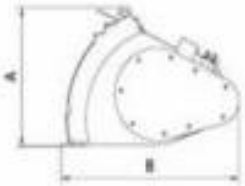
Start

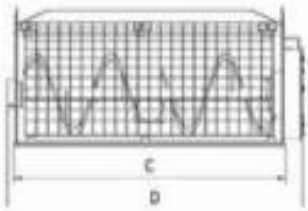
After 3 hour

After 1 week

As can be seen from the pictures, the treated specimen is still stable after 1 week while the untreated specimen is after 3 hours dissolved.

Hydraulic add-on mixing bucket





Weights may vary depending on the type of attachment and optional equipment used
Depending on the classification, the specific weight of the soil is approx. 1,900 kg/m³ up to 2,200kg/m³.

TECHNICAL SPECIFICATIONS

The Hydraulic Mixing Bucket is the ideal piece of equipment to mix soil and transport it wherever it is needed.
The mix is made quickly and under the best conditions: it takes 3-10 minutes to mix the soil components perfectly.
The range includes buckets with a capacity of 100 liters to 2000 liters.

The mixer buckets are suitable for all types of earthmoving machines: skid steer loaders, backhoe loaders, wheel loaders, telehandlers, excavators and tractors with front loaders.

STANDARD EQUIPMENT. As standard, each model is equipped with a Danfoss hydraulic motor, hard-wearing Hardox 500 steel mixing propellers, a hot-dip galvanized grille, a Bosch Rexroth device for opening the drain, hydraulic hoses, an electrical connection kit for attachment to the machine and a rubber spiral drain hose

In order to improve the performance of the mixer bucket and make the mixing more practical, indicates several options such as the grille with hydraulic or gas spring opening, double bottom in Hardox 500 Tuf wear-resistant steel, pressure control valves and a multi-fastening system to expand the possibilities of use to increase.

Mixing Bucket S30

Prepare 0.3 m³ of mix at once with the S30
The S30 mixing bucket is 10cm wider than the S25 and c
an therefore hold up to 350l of mixed material. Due to the reinforced chain drive, powerful mixing and a circulation of approx. 6 minutes per mixing process is still possible. Carrier vehicles should already be able to lift over a ton to operate the S30 efficiently.

TERRASYSTEM®

is trend-setting for soil stabilization or soil consolidation !

The properties of the floors treated according to the **TERRA**SYSTEM® show higher stability, load-bearing capacity and improved kf values (permeability values) than floors treated with a lime-cement mixture or without stabilization.

A 25 to 30cm clay/loam-sand-gravel soil layer, according to the **TERRA**SYSTEM®, achieves a load capacity of ≥ 100 MN/m².

The capillary effect of the soil is largely interrupted and is therefore relatively and waterproof. Softening and freezing is therefore no longer possible. The optimal and correctly treated soil with **TERRA-3000®**, becomes agglomerated and remains irreversible in this condition.
In addition, the stabilized soil has a water permeability value (kf value) of 10^{-12} m/sec and is therefore largely impermeable to liquids.

TERRA-3000® - Co2 reduction

In the construction sector, are climate-related and environmental aspects such as reduction of CO2 emissions and saving of natural and monetary resources increasingly important !
Reducing truck transport and the use of construction machinery and the associated fuel and time savings lead to an enormous reduction in CO2 emissions.

TERRA-3000® is environmentally compliant.

The determination of the biodegradability of the product sample "**TERRA-3000®**" was according to the OECD Guidelines for Testing of Chemicals "Inherent Biodegradability:
Zahn-Wellens/EMPATest 302 B", Adopted 17th July 1992 and according to the German standard methods for water, waste water and sludge analysis, test methods with aquatic organisms (group L), determination of biological degradability, static Test carried out according to DIN EN 29888 (L25).