

TERRA-3000® - road construction Climate and environmental protection

In the construction sector and road construction, climate and environmental aspects such as the reduction of CO₂ emissions and the saving of natural and monetary resources are becoming more and more important!

Anyone who is professionally involved in road construction knows about the immense quantities of building materials processed, such as gravel, cement, concrete, geotextiles, etc.

The consumption of these materials together with the required energy and the associated CO₂ emissions play a major role in the destruction of climate and environment.

The TERRASYSTEM® process conserves natural resources through its use existing soil that is declared as a "waste product" for conventional construction or as "useless, TERRA-3000® also reduces emissions.

Cohesive materials such as loam and clay, which cannot be used for conventional road construction due to its swelling and shrinking behavior, are used with TERRA-3000® treated, an extremely stable and sustainable building material.

The grain distribution of the soil is determined by means of a soil analysis and the missing fractions (sand or clay) are the existing soil added in order to obtain an optimal grading curve for treatment with TERRA-3000®.

This eliminates the need to transport away and bring it back, as well as the excavation for the exchange of soil material with broken stones, as with conventional ones road construction using the "Macadam" method.

Reduction of truck transport and associated fuel and time savings lead to an enormous reduction in CO₂ emissions.

Supposing a road width of 7 m, an excavation of 70 cm depth and a road distance of 1.000 m you will have to dredge and carry away about 4.900 m³ of ground. Presuming the specific weight of the dredged ground is 1,8 (lower limit) this will result in about 8.820 tons of material!

A four-axle dump truck with 15 m³ of payload and a consumption of 30 liters Diesel/100Km required for the removal of excavation 327 cartloads.

The distance of 20 kilometers per load, resulting 6.540 km and a Diesel consumption of 1962 liters!
For the delivery of gravel that are 327 cartloads again!





Soil stabilization ecological footprint - comparison of CO2

<https://www.klimanko.de/co2%82-belastung-berechnen/gutertransp>
 Calculation - International Truck Freight 5 Kg CO2/100km

Construction site :

Project:	New construction of road :	length	1000 m		truck	28 To-load
		width	7 m			30 Lit./Diesel/100kr
		Ges. Fläche	7000 m ²		truck: soil, gravi	15 m ³ /load
Soil classification:	SUCS :	CL	Loamy soil			
	AASHTO:	A6	Loamy soil			

Only change or adapt green fields !!!

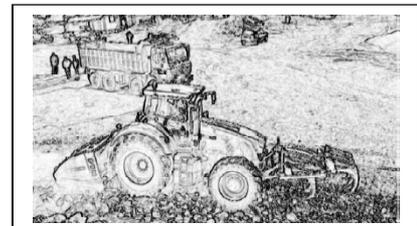
with TERRA-3000®	Hydraulic stab. - cement	Conventional - frost case / gravel
350 Lit. TRRA-3000®	40 Kg/m ² cement	70 cm Excavation
60 To CO2/1000l TERRA-3000	280 to cement - total	4900 m ³ Excavation
	10 truck-loads	4900 m ³ gravel
800 km ex werk to constr. site	120 Km/load (there / back)	327 truck-Loads
		20 km/Load
		30 km/load
clay or sand - if is necessary		
bring	0 cm/m ²	
	0 m ³	
	- truck load	
	32 km-route	
21,0 To/CO2 -TERRA-3000®	165,2 To/CO2 -cement	5 096,0 To/CO2 -Excavation - transport
14,0 To/CO2 -transport	936 To/CO2 -transport	7 644,0 To/CO2 -Gravel - transport
- To/CO2 - clayey soil or sand		
material - construction site		
Total: CO2	35,0 To CO2	1101,2 To CO2
		12 740,0 To/CO2
CO2 -tax	875,0 €	27530 €
From 2021 the CO2 tax will be € 25 per ton of CO2 rising to € 55 per ton of CO2 by 2025		318 500,0 €
		25 €/To - CO2 -tax

TERRASYSTEM(R)-2021-06

Using **TERRA-3000®** and working with local soil we are able to eliminate this gigantic complexity.
A huge saving in cost, time and emissions.

The rocks in the local existing soil themselves can be smashed into the required amount of gravel by stone-crusher equipment which is necessary for soil stabilization with **TERRA-3000®**.

This protects another natural resource, or makes locally existing resources available!



TERRA-3000® - Our partners

The successful introduction of an innovative and groundbreaking technology in a large scope depends on the serious attitude of all partners involved.

When everyone involved shows commitment to the technology and enthusiasm and professional behavior, alongside the most common goal of making it one profitable business guarantees an overall success.

We are always interested in the practical application of **TERRA-3000®**, if we receive serious suggestions so that we can ensure continuous improvement and reliable solutions!

Conclusion

Soil stabilization - **TERRA-3000®**

Climate - CO2 neutral - environmentally friendly

Soil stabilization or soil improvement are at the present time Infrastructure construction or road construction, as well as other construction projects indispensable - there are different processes depending on the use of products:

Electro-physical soil stabilization:

TERRA-3000® water soluble catalyst - no binder, ion exchanger

Mode of action: physical - by compression (static, heavy weight no vibration)

Installation: Liquid - is processed directly with a milling machine in the ground

Ecological damage: no emissions - no dust (liquid), ph neutral –

no flooding or other environmental pollution –

no dangerous goods - no protective measures required

Hydraulic soil stabilization:

Binder: cement or lime or mixtures of both,

depending on the soil composition or moisture

Mode of action: chem. Reaction - bind, glue

Installation: fine-grain powder, strong dust development during installation

Ecological damage : fine dust pollution, strongly alkaline,

mixed with water, lye with a pH value of > 10 is formed,

highly caustic, is simply applied to floors,

parts penetrate into groundwater (drinking water) -

unfortunately, no conclusive studies of consequences

of this procedure!