

# Earthbind 100



**Topical Dust Treatment**

**EnviRoad**

# Earthbind 100

EnviRoad has specifically manufactured Earthbind to exceed competitive products

Earthbind's creators have over 30 years experience using other dust products and manufactured Earthbind to provide superior:

- Dust Suppression
- Soil Stabilization
- Erosion Control
- Hydro Seeding

# Earthbind Benefits

- Superior dust cohesion and suppression
- Excellent soil erosion prevention
- Quick application without road closures
- Lasting effects when applied as directed

# Composition

Earthbind is formulated to ensure the highest level of safety to humans and the environment

Earthbind is composed of environmentally safe:

- Petroleum resins
- Emulsifiers
- Stabilizers
- Dispersants

# Safety Information

Earthbind is considered

- Non-hazardous
- Free of asphalt or organic solvents
- Non-flammable
- Non-carcinogenic
- Non-hazardous to aquatic life

# Safety Information (cont)

- Earthbind is not characteristically hazardous (TCLP)
- No carcinogenic mono-aromatic hydrocarbons (i.e., benzene, xylenes, or toluene)
- No carcinogenic poly-aromatic hydrocarbons (i.e., benzo (a) pyrene, chrysene, etc.)
- No detected EPA metals

# Safety Information (cont)

The impact of dust palliatives on the freshwater environment is measured by both the toxicity towards fish and the availability of oxygen

- The LC50 test measures the lethal concentration, in ppm, that will produce 50% mortality rate in 96 hours
- The larger the concentration (ppm) the less toxic a material is
  - Less than 100 ppm is considered toxic
  - 1,000 ppm is considered practically non-toxic
  - Greater than 10,000 ppm is considered non-toxic

# Safety Information (Cont)

## Earthbind 100 Test Results

- Low toxicity towards fish
  - 96-hour LC50 for rainbow trout (*Oncorhynchus mykiss*) = 71,048 ppm
  - 96-hour LC50 for fathead minnow (*Pimephales promelas*) = 59,354 ppm
- Low degree of acute toxicity towards aquatic benthic macro invertebrates
  - 96-hour LC50 for water flea (*Daphnia magna*) = 87,756 ppm
- Does not inhibit plant growth
  - 120-hour EC50 for buttercrunch lettuce (*Lactuca scariola*) = 121,332 ppm

# How Earthbind Works

- Earthbind is formulated to penetrate soil/road aggregate material
  - Penetration varies with the permeability of the material - the less dense a material, the deeper the penetration
  - Earthbind can be further diluted to enhance penetration in tight soil
- Emulsion breaks as Earthbind enters soil
- Water evaporates
- Resin binds soil particles together
- Soil particles are agglomerated
- Soil compaction is increased on roads under traffic

# Before and After Earthbind



# Earthbind Differentiators

- Not formulated from potentially carcinogenic petroleum oils
- Free from corrosive and environmentally detrimental salts
- Does not re-emulsify and wash off with rainfall
- Does not get slippery when wet
- Does not need humidity to work
- Easily and quickly applied – no need for road closures

# Applying Earthbind

- Sold in concentrate
- Dilute in water prior to application
- Typically diluted from 3:1 to 20:1 depending on soil types, road conditions and other environmental factors
- Some sites may require a one time application while others require several light applications
- Can be applied using water trucks, asphalt distributor trucks, or hydro seeders

# Topical Dust Control



# Topical Dust Treatment

- 0.15-gallons of concentrate required per square yard of road surface
- Applied using a 6:1 (6 parts water to 1 part product – a 18% solution) in 3, 0.33-gallons per square yard passes to achieve recommended concentration on an unpaved road surface

# Base Stabilization



Untreated

Stabilized

# Applying Earthbind for In-depth Stabilization

- Earthbind concentrate is blended with water to make a 6:1 solution
- The road is bladed or tilled to a depth of 3" to 4"
- The 6:1 solution of Earthbind is then applied to the loose soil at a rate of 0.7-gallon per square yard
- The treated soil is then bladed/windrowed, back and forth to ensure complete mixing
- Again, a 6:1 solution of Earthbind is applied, 0.7-gallon per square yard
- Again, the second application is bladed thoroughly to ensure a homogeneous mixture
- Afterwards the surface is profiled to achieve proper grade and crown
- Road is then compacted with roller and topically shot with a 6:1 solution, at 0.35-gallon per square yard

# Soil Erosion Control

Earthbind is mixed with water at varying dilutions and applied to bare soil surfaces to control erosion and aid in vegetation establishment on many soil types

As a soil erosion product Earthbind:

- Prevents water and wind erosion
- Seals/stabilizes the soil surface
- Binds soil but does not inhibit water infiltration and plant growth
- Applies quickly and easily in a complete uniform coverage
- Requires no special site preparation
- Does not introduce unwanted, noxious weeds
- Requires minimum labor
- Biodegrades and is non-toxic

# Applying Earthbind for Erosion Control

- For controlling erosion on 2:1 clay slopes, Earthbind is diluted with water to formulate at 15:1 (water to product ratio) solution and applied at a rate of ½-gallon per square yard
- On 3:1 or flatter clay slopes, we recommend a 20:1 solution applied at a rate of ½-gallon solution per square yard

# Hydro Seeding

As a tackifier or hydraulic mulch Earthbind can:

- Anchor seed to the bare soil surface to ensure vegetation establishment
- Shields seedlings from rain-drop impact, wind and water erosion
- Enhances germination by:
  - Retaining soil moisture
  - Minimizing soil desiccation from wind
  - Darkens soil
  - Increase cation exchange capacity
- Prevents the introduction of noxious weed seeds
- Easily applied in a complete uniform coverage
- Requires no special site preparation
- Applied hydraulically using standard application equipment (water cannon, hydro seeder)
- Fast application, minimum labor requirements, easy to transport, handle and apply

# Applying Earthbind for Hydro Seed

- On 2:1 sandy or clay slopes we recommend that a 15:1 dilution (water to product concentrate) is applied at a rate of ½-gallon per square yard of soil surface
- On 3:1 or flatter slopes we recommend a 20:1 dilution, applied ½-gallon square yard

# About EnviRoad

- Headquartered in Portland, Oregon
  - Manufacturing facilities in Portland and in South Bend, Indiana
- EnviRoad's founders have over 30 years experience in applying and distributing dust control products
- Privately held company
- Network of distributors in North America



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