

## Unpaved Mining Roads

When considering the use of DirtGlue™ polymer emulsion on roads, there are two distinctly different types of applications. One is a penetration type application to create a very dense, tough, driving surface, the other is a surface application to control dust during dry periods and sediment during rainy periods. This document explains the best solution to the problems typically encountered in gravel pits, quarries, and mining operations. The amount of product to use per square foot of area to be covered will be discussed so that you can begin to analyze your needs. You can determine the size of your area that requires our solution.

Initially the idea of creating a “driving surface” using a *heavy duty DirtGlue™* application seems to make sense. Understanding the quarry and mining operations will lead one to realize that wind-borne dust and water-borne sediment are the real problems of quarry and mining roads. Typically, mining roads have very heavy equipment passing over them on a regular basis. This causes the soil/aggregate to become extremely compacted, affording a very solid road base. Dust on the surface during dry times and sediment run-off during rains are the typical problem in these situations. Sediment run-off contributes to increased dust in the future because the water run-off carries the fine particles of soil out of the top centimeter or two of aggregate. This leads to a looser, rougher surface. This poorer surface (a surface devoid of fines to help hold it tightly knit together) accelerates the production of dust because the larger, loose aggregate particles grind against one another and grind against the base that they sit on. To minimize this situation an ongoing dust control program is the best solution environmentally and in terms of cost. The cost considerations are several and varied.

One alternative, obviously, is asphalt or concrete paving to eliminate dust and sediment. Typically this is not practical due to much higher costs but also because quarry and/or mining roads must be moved over time and the heavy equipment used in mining damages the pavement relatively quickly. No dust control leads very quickly to rutted roads but more importantly the dust is a health hazard to workers and shortens the life of equipment while creating more maintenance costs, more frequent filter replacements, oil changes, wear and tear to moving parts, etc.

An application to create a heavy duty driving surface would, in a very short time, be covered with dirt and dust from the mining operation, and the heavy equipment and trucks passing over it. It would require constant sweeping just as would pavement if the roads were paved. Spray applying *DirtGlue™* would be a better solution. A typical amount of DirtGlue product for this purpose is 300 gallons per surface acre with a dilution rate of water to be identified relative to your soil conditions. Not having seen the site and not having a “traffic count” makes it difficult to predict how often applications might be required but to generalize we would estimate that during the driest season two applications per week might be adequate to control the overall area in general. There may be specific areas of high use that would require more frequent applications. Areas that do not receive any vehicle traffic for a time would require no additional application. While the moderate use areas would require occasional “touch-up” applications.

A spray on application bonds all of the soil particles on the surface into one sheet. The spray on application is strong enough that all dust will be trapped in a layer that will not permit any migration of the fine particles either by wind or by water. An analogy of what would occur with this spray on application is an effect of creating a sheet of bonded soil particles that would have a texture and strength not unlike a thick potato chip. Undisturbed, the protection provided by *DirtGlue*™ will remain in place for up to a year controlling dust and sediment. Driven upon it will break up readily. When only several passes of a vehicle have occurred the now broken pieces will still be too heavy to move by wind or water. As more and more traffic pass over the same area the pieces will be broken smaller and smaller. At some point the size of the pieces and the minute particles that grind off of the pieces from abrasion will reach a size where they may become wind-borne dust or water-borne sediment. When this occurs, the areas reaching this point will need another application. In all likelihood the area requiring reapplication would be substantially less than the entire quarry/mining area.

In many construction operations it has been shown that this type of application is far more cost effective in the long run than using a water truck on a continual or regular basis. This type of application is also more effective because the areas that are undisturbed or little disturbed never create a situation of fugitive dust or sediment migration, even over long periods of time.

The capping/sealing of stockpiles (loam, sand, fine gravels, stone dust, etc.) is also a viable use of *DirtGlue*™ polymer emulsion. Application is done with a pressurized tank and hose such as a hydroseed tank truck. This type of equipment may also be used in place of a water truck to spray apply dust control on driving surfaces or open areas subject to wind or water erosion.

Controlling fugitive dust and sediment migration from a site makes for happy abutters, less problems from environmental organizations, less maintenance and longer life of trucks and heavy equipment, as well as a more healthy work environment for employees.

It is important to understand that *DirtGlue*™ is 100% environmentally safe. *DirtGlue*™ polymer emulsion type products have been EPA tested and are categorized as non-hazardous. Spills are not reportable. Shipping requires no DOT placarding. These products may be used safely within wetland buffer zones.

For specifics on the rate of application, the proper dilution of the *DirtGlue*™ polymer emulsion, or the best type of equipment please allow us to supply the details to ensure a successful application.