

Farm Structures FACTSHEET



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ANTI-SLIP FLOORS FOR DAIRY CATTLE

Concrete grooving is often viewed as the best way to make a floor slip-resistant for dairy cattle, even in new floors. Mechanical groove cutting has its place as a corrective measure for old floors but research has shown that grooving is not as effective as the incorporation of proper anti-slip compounds while concrete is being poured.

New floor construction requires a high surface strength, wear resistant and acid resistant concrete with good traction characteristics. Surface strength is accomplished by using hard aggregates anchored in high strength concrete. Next to diamonds, aluminum oxide or corundum aggregates are the hardest available. These materials, when added to the surface of a high strength concrete floor, increase its wear resistance by several times that of regular concrete.

Concrete finishers refer to the topping process as dry shaking. Techniques of application vary from manufacturer to manufacturer and are dependent on the type of material suggested. The finished surface must expose enough of the hard aggregate points for good friction contact between the cow's hoof and the floor. The size of aggregate specified is very important since anti-slip floors, with very coarse aggregates, can result in cattle with sore feet.

According to research done at the Agricultural University of Arizona, an ideal specification for a high traffic concrete floor is one with a minimum 4000 psi concrete mix, topped with an aluminum/ferric oxide anti-slip aggregate mixture, with 100% of the mixture passing a 1/8 inch sieve and 95% retained on a #50 sieve.

For livestock applications, 60-100 pounds of dry shake mix per 100 square feet of floor space is required. In a worker traffic area, a 30 pound application is enough.

The dry shake mixture must not be placed on a newly poured concrete base too soon, since much of it would be too easily covered with a thin layer of water and cement.

After the concrete has been placed, screeded and floated, and the surface or bleed water has disappeared, 1/2 to 2/3 of the dry shake mix is dusted or sprinkled by hand. Short throwing distances, at a low elevation above the concrete, give the most uniform application. After the material has darkened by water absorption, a power floater should be used to lightly imbed the aggregates. A second application includes dusting the remaining 1/3 to 1/2 of the dry shake at right angles to the previous direction of spreading. After darkening, the material is floated as before, then steel trowelled so that the aggregate is firmly imbedded and the surface is lightly textured. The final step after sufficient hardening is to spray the topping with a liquid membrane-curing compound.

The dry shake process does require careful attention to detail and costs slightly more than groove cutting, however, a superior floor will result. Furthermore, the floor's anti-slip characteristics will last for about 20 years, compared to the 7 years you could expect from a groove cut floor.

FOR FURTHER INFORMATION CONTACT

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