



TECHNICAL BULLETIN CP-11

EXTERIOR USE OF DRY SHAKE HARDENERS

BACKGROUND:

For manufacturing and warehouse facilities, the flooring area occasionally extends beyond the confines of the building's roof. Tow-motors and other heavy, hard-wheeled transporting machines carry goods out of the buildings to outside storage areas and delivery vehicles. The concrete outside of these buildings is subjected to the same abuse as the floor inside, if not more. Most dry shake (non-metallic) application guides focus on the use of these products for interior uses only; but what of the exterior concrete.

SOLUTION:

ACI Guideline 302.1 addresses the use of mineral-aggregate shake hardeners on all types of floors. For interior floors, manufacturers of dry shakes require the total air content of the concrete to be 3% or less. However, 3% air is insufficient for exterior concrete subject to freeze-thaw conditions.

Natural dry shakes such as Euclid Chemical's Non-Slip Aggregate, Surfex, Surfex E, Surfex TR or Diamond Plate can be used on exterior concrete with air content greater than 3% provided the following conditions are met:

1. In order to properly embed the dry shake into the fresh concrete, sufficient bleed water must be present to "wet-out" the shake so it can be floated into the surface, thus becoming a permanent component of the concrete. Do not exceed the recommended water-cement ratio for the mix to attain the necessary bleed water.
2. Due to the air content required by exterior concrete subject to freeze-thaw conditions, the surface must remain "open". Broom or float finishing of the dry shake surface is a necessity for quality external concrete. Hard troweling of external concrete that contains higher air content with dry shake hardeners will lead to blistering and delaminations.



For further placement recommendations, please view Euclid Chemical's Dry Shake Floor Hardeners Application Guide or the above referenced ACI Guideline.

With proper placement procedures and routine maintenance, there is no reason why a facility's exterior concrete, under constant heavy use, shouldn't perform just as well as the engineered floor inside.