POROUS CONCRETE

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Porous concrete makes a very good floor surface for greenhouses because it allows water to pass through and avoids the puddles or standing water common to floors of regular concrete, sand or gravel. Porous concrete is made from a uniformly graded aggregate and a cement water paste. It was first used in greenhouses in England with the idea brought to the U.S. by Professor Jim Rathmell of Penn State University.

A series of tests to determine usable water/cement and cement/aggregate ratios and the effects of freeze-thaw cycles was conducted at Penn State University. Test results were used as a basis for recommendations for mixing, placing and curing porous concrete in floors, walkways, display areas, patios, etc.

The most satisfactory mix contains one cubic yard or 2800 lbs. of 3/8 inch diameter stone, free of dust and uniform in size, 5.5 sacks of standard Portland cement and 4.25 gallons of water per sack of cement. There is no sand in the mix. The mix is placed on a well drained base of sand or gravel. A 4-inch thick floor will carry personnel and light vehicle traffic. The concrete should be moved as little as possible during placing, screeded to the final grade with no tamping as it will consolidate the mix and close the pores. Use overhead concrete bucket, two-wheel concrete buggy or wheelbarrow to move concrete to the floor

location. The surface is not trowel finished. The final surface will be rough compared with regular concrete but it is comfortable for walking and vehicles maneuver easily on it. When the floor has been screeded to the final level, cover with a 4 mil polyethylene film to keep evaporation loss to a minimum and allow the concrete to cure for at least one week before using the floor. Roll on top of the PE film with a lawn roller to produce a relatively smooth surface.

The final product should have a load carrying capacity of about 600 lbs. per square inch of surface. Average Portland cement concrete (regular concrete) can carry about 2500 lbs. per square inch of surface. Therefore, the use of porous concrete should be restricted to areas where personnel or light vehicles such as garden or utility tractors operate. Porous concrete should not be used in soil mixing areas or where large quantities of small particles can fall onto the floor. The particles will clog the pores and prevent downward water movement.