

The Damage and Durability of a Sport Synthetic Resin Floor: A Case Study

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Abstract : Synthetic resin floors are often used in sport infrastructure. These organic materials are often in contact with a bituminous substrate, which in turn is placed on the ground. In this work, the damage of a basket resin field surface was characterized by means of visual inspection, optical microscopy, resin thickness measurements, adhesion strength, water vapor transmission capacity, capillary water adsorption, granulometry of the bituminous conglomerate, the surface properties, and the water ground infiltration speed. The infiltration speed indicates water permeability. This was due to its composition: clean sand mixed with gravel. Relatively good adhesion was present between the synthetic resin and the bituminous layer. The adhesion resistance of the bituminous layer was relatively low. According to the required bituminous asphalt-concrete mixes AC 11 S, the placed material was more porous. Insufficient constipation was present. The spaces values were above the standard limits, while the apparent densities were lower compared to the conventional AC 11 mixtures. The microstructure outlines the high permeability and porosity of the bituminous layer. The synthetic resin was vapourproof and did not exhibit capillary adsorption. It exhibited a lower thickness as required, and no multiple placing steps were observed. Multiple cavities were detected along with the interface between the bituminous layer and the resin coating with no intermediate layers. The layer for the pore filling in the bituminous surface was not properly applied. The swelling bubbles on the synthetic pavement were caused by the humidity in the bituminous layer. Water or humidity were present prior to the application of the resin, and the effect was worsened by the upward movement of the water from the ground.

Keywords : resin, floor, damage, durability

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