

Once a road is opened to traffic it starts to damage. More frequent damage can be observed especially in front of petrol stations, at bus bays and upgrades where spillage of fuel is very common. Consequently the aggregate within the fuel patch will be thrown off under the action of tires damaging the road surface.

This test was designed to find out the effect of a binder or modified binder for susceptibility of fuel and hence suitability of the binder for a particular surface dressing. The test can also be modified to assess the deterioration due to spillage of fuel on road surfaces. The deterioration is determined in terms of changes in properties of the surface caused by fuel spillage.

The macro texture of the road surface is one of the properties that change under the action of fuel. The sand patch method, which is explained in the standards, ASTM E 965-1987.

The surface dressing which was to be tested was applied on to a model that simulates a substrate of a flexible type of pavement. Texture depth of the surface is measured by using the sand patch method before applying fuel.

Final texture depth is measured in a similar way after storing the fuel-applied models for the designed time period in laboratory at room temperature. The arithmetic difference between the two values explained as a percentage gives the damage due to the fuel spillage.

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Improvements to bitumen emulsions for the better performance of surface dressing

Surface dressing can be used as a successful and economical method on any type of roads, from trunk roads to gravel roads. The main object of surface is seal the existing road pavement; thereby arresting disintegration and providing a proper road network.

However premature failures can be observed on surface dressings in many instances. Therefore a research study was carried out in order to find the causes for this unsatisfactory consistency. As the preliminary stage field investigations were carried out on existing surface dressed roads to identify the failures. On going construction sites were investigated, focusing more on the quality control measures taken at the sites as well as the quality of the material.

Database of the test results on the samples of binder collected at the sites as well as from the manufacturing plant were established. More emphasis was given to the properties, which are frequently out of the specification limits, and effect of these properties was studied. Further research was carried out for the methods to improve the quality of the binder.

Best choice of emulsifier from the chemical stand for surface dressings, optimizing the particle diameter, type and speed of the manufacturing plant, type and penetration of

bitumen used and settings of the plant such as temperature and pressure are some of the important factors which should be controlled. A modifier which is cheap and locally available in plenty could be recommended to improve the rheological properties of the binder.