Use of Resid Fluid Catalytic Cracking (RFCC Spent Catalyst)- a waste product from petroleum refinery as a filler in bituminous mixes

Behaviour and strength of a bituminous mixture are influenced by the flow characteristics of binder and characteristics of filler. Knowledge of the effect of filler on pavement performance is limited though their use is common. The term 'filler' may be considered to include any mineral or dust passing through mixes sieve.

The filler plays a vital role in design and performance of bituminous mixes. The filler apart from filling the voids also forms mastic by absorbing bitumen, thereby increasing the quantity of bitumen resulting in a durable mix. Various types of materials are used as filler in bituminous mixes. Resid Fluid Catalytic Cracking (RFCC Spent Catalyst), a waste product coming from petroleum refinery has been used as filler at CRRI. About 5-7 tons of RFCC Spent Catalyst is produced in each refinery every day, which is rich in carbon. This carbon content is burnt before it is thrown out. Bitumen being a hydrocarbon compound, RFCC has been tried in bituminous mixes so that the cost on its treatment for safe disposal and problem of finding out a suitable place for its disposal can be overcome.

Advantages/ Features:

RFCC has low specific gravity.

Mixes prepared with RFCC spent catalyst and lime has low resistance to permanent deformation at high temperature.

RFCC when used with lime results in increased stability.

There is a great potential to use RFCC spent catalyst in combination with lime as a filler material which is expected to increase the properties of bituminous mixes and bring about environmental benefits.

CRRI can offer this technology to the users.

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