Superplasticzers are high range water reducing admixtures used to prepare high strength concrete. Further it improves workability and reduce permeability, but above a particular dosage result in bleeding, segregation, permeable and low strength. So it is important to study the effects with various dosage and find the limits as well as solutions.

Two groups of concrete mixes, one with silica fume and the other without were produced. In each group water /cement rations varied with different superplasticizer dosages. Workability was measured using K-slump and slump cone apparatus. After 28 days curing, compressive strength and keeping the remaining specimens further one week in atmosphere permeability test were done.
Compressive strength increases with superplasticizer dosage upto 1.3 and 1.0 litres per 100kg of cement for 0.3 and 0.4 w/c ratios respectively. For 0.53 w/c ratio constant strength observed yup to 0.7 litres per 100kg of cement. Strength reduces beyond the above limits for the prescribed mixes. Only for the 0.53 w/c permeability increases with increase of superplasticzer dosage. Based on the results it can be concluded that superplasticzer can be used effectively to improve concrete properties of low water / cement ratio mixes. However beyond a particular dosage limit which depends on the water/ cement ratio affect the properties adversely. But by adding silica fume adverse

effects can be eliminated. W/c ratio of 0.4 with silica fume and superplasticizer gave increase of strength up to 50%, low permeability, with reasonable workability.