pH

Granular sludge can be obtained in UASB reactors over a pH range of 6.0 to 7.5. However, operational pH in the reactor be kept at 6.7 to 7.5 since, this range is considered to be an optimum for methanogen growth and provides some buffer capacity to prevent acid shock due to overload conditions. Addition of $NaHCO_3$ to the wastewater is very effective in keeping stable pH conditions.

However, it was found that pH as low as 5.0 is functionally not inhibitory to methanogens under low to medium loading rates [Bhatti *et al*., 1995]. Satisfactory treatment of wastewater is possible under low loading conditions. Although treatment is possible at lower pH, decrease in gas production by 20 % was reported by Goodwin and Stuart, [1994] when pH was reduced from 7 to 6.2.

For proteinaceous wastes pH should be kept higher than 6.5 and the proteins should be degraded as completely as possible. Otherwise, problems like foaming, protein precipitation, and microbial inhibition due to high ammonia level may occur [Hulshoff and Lettinga, 1986, Brummeler *et al*., 1985]. It is reported that intermittent operation of reactor for initial days helps in increasing the pH inside the reactors. For increasing the alkalinity, addition in the bicarbonate form reported to be more suitable than hydroxide form [Ghangrekar, 1997]