

CONCLUSION

A water that will settle to a turbidity of 5 ppm. in 15 minutes after stopped the mixing shows a greater efficiency from the ferrous sulphate and mixing than a water that settles to the same turbidity in a greater length of times. To get the maximum efficiency from a coagulant, it must be properly coagulated and large flocculant precipitate must be formed in the mixing chamber.

Ferrous sulphate as a coagulant, its decomposition first produces ferrous bicarbonate, which, because of its instability and because of the lime always added with the ferrous sulphate, is quickly converted into ferrous hydroxide and calcium carbonate. The oxygen dissolved in the water rapidly oxidizes the ferrous iron to the ferric condition, and there is finally produced ferric hydroxide, or the coagulating compound desired.

Ferrous sulphate has many of characteristics of alum, with some notable advantages. Ferrous sulphate may react with the natural alkalinity in the water to form a hydrous iron oxide, but generally lime is used in advance for its softening effect and pH elevation. In many cases the combination of lime and ferrous sulphate is more advantage for coagulation than is the simple alum coagulant. To this must be also credited the softening action of the lime and the fact that the plant effluent is generally not corrosive. At high pH values, the sharper will be the floc formation. Control of lime treatment is need only to regulate alkalinity.

Coagulation is so easy to control that we sometimes overlook important factors. Alkalinity, acidity and pH influence coagulation. Stirring, mixing and temperature have definite effect on floc formation.

The following advantages have been reported as resulting from the use of ferrous sulphate as a coagulant :

1. Coagulation is effective over a much wider pH range than with alum. True hydrated ferric oxide flocs may be formed at pH 8.5-12.0 or even higher for the removal of turbidity and

residual iron.

2. Floc formation clean cut and of proper size.
3. Floc particles tough and resistant to breaking up.
4. Floc is smaller and heavier than that formed by alum.
5. The time required for floc formation, conditioning, and settling is in many cases considerably shorter than that required for alum.
6. Effluents may be produced which are exceedingly low in both turbidity and iron.

The disadvantage of ferrous sulphate as a coagulant as follows :

1. Lime must usually be added.
2. In our country today, cost of ferrous sulphate more expensive than alum.