Hot L-S Process: In this process water is treated with calculated amount of lime and soda at a temperature of 90-100 ^{0}C.

Working process: Raw water, chemicals and steam are thoroughly mixed in a reaction tank maintained at ~100 ^{0}C using steam. The sludge formed after reaction is settled down in a conical *sedimentation vessel*. Then water passed through a ***sand filter*** to obtain clear and soften water with a residual hardness 15-30 ppm.

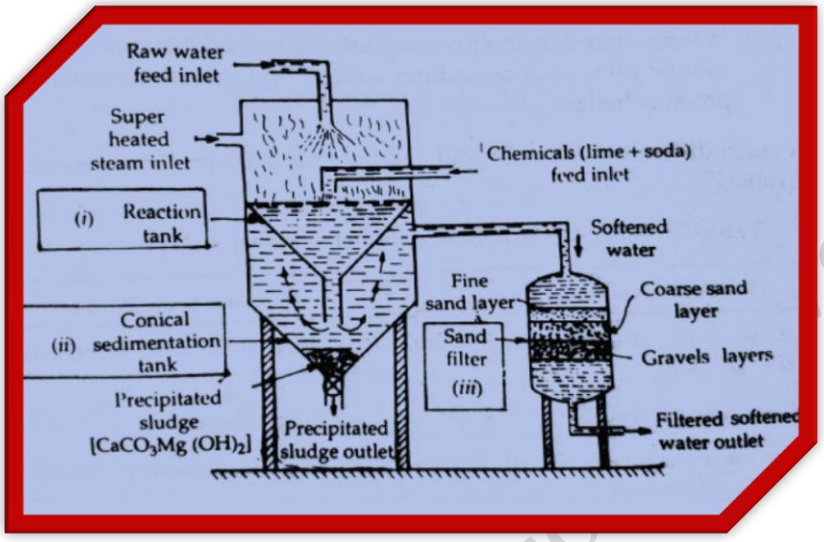

Fig. Hot L-S process

Advantages of Hot L-S process over cold process:

1. Process is faster, 2. Good softening capacity, 3. No coagulant is required, 4. Relatively less amount of chemicals are needed, 5. Dissolved gases are removed, 6. Pathogenic bacteria are killed, 7. Residual hardness is relatively low

Q. Differentiate between Cold and Hot L-S process.

Sl. No.	***Cold L-S process***	***Hot L-S process***
1	*Performed at RT*	*Performed at ~100 ^{0}C*
2	*Slow process*	*Fast process*
3	*Coagulant is needed*	*Coagulant is not needed*
4	*Filtration is not easy*	*Filtration is easy as viscosity decreases at high temperature*
5	*Residual hardness is 60 ppm*	*Residual hardness is 15-30 ppm*
6	*Dissolved gases are not removed*	*Dissolved gases are removed*
7	*Low softening capacity*	*High softening capacity*
8	*Bacteria are not killed*	*Bacteria are killed*

Q. Mention some advantages of Hot L-S process over cold process.

Ans: Some of the advantages of hot L-S process are:

1. Process is faster
2. Good softening capacity
3. No coagulant is required
4. Relatively less amount of chemicals are needed
5. Dissolved gases are also removed
6. Pathogenic bacteria are also killed
7. Residual hardness is relatively low

Q. Why is coagulant not required in hot L-S process?

Ans. The hot L-S process is carried out at a temperature of 100-110°C, resulting in the formation of coarse precipitates due to the high reaction rate.

Q. What is the use of sand filter in Hot L-S softener?

Ans. Sand filter is used to remove suspended particles present in the water.