Kurkutch Variety of Salt

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Methods for the manufacture of Kurkutch variety of salt have been described. For the manufacture of Kurkutch variety of salt it is necessary to maintain salt layer during the manufacturing season, assure constant supply of saturated brine to the pans and discharge bitterns occasionally.

Pure grade of Kurkutch variety of salt, which is more or less exclusively manufactured on the West coast, of the minimum purity of 98 percent NaCl content on dry basis can be obtained following the process developed at Wadala with 13 years working. This purity of salt can be achieved easily in Gujarat marine salt works, with better climatic and other factors governing salt manufacture as compared with Bombay. The salt of this purity can meet the demand for human consumption and for export. Further by treating in a washery, salt of 99.5 percent NaCl content quite acceptable to chemical industry can be obtained.

The foremost necessities for the manufacture of Kurkutch variety of salt are (i) preparation of hard and impervious bed, (ii) maintenance of 2-3 cm. of salt bed permanently during entire manufacturing season, (iii) constant supply of saturated brine to the crystallizer, (iv) discharge of bittern at regular intervals, and (v) safety from natural hazards.

A brief discussion on each of these aspects is given below:

Preparation of pan beds.

The first necessity is to prepare hard and impervious pan beds. The precautions required to be taken for this purpose are (a) the pan-beds should not be exposed to atmosphere for any longer period, otherwise deep cracks will form which are very difficult to patch up, (b) tamping of the pan beds should be done very systematically and in all directions till such time that the clay of the pan bed become plastic and on walking over the bed no impressions of the feet are left; (c) saturated brine should be used for sprinkling over the bed before tamping. Weak brine should not be used for this purpose. Preferably the pan beds should
be charged to shallow depth of saturated brine. On drying, small grains of salt will be formed on the entire pan beds, which if tampered systematically will consolidate the pan beds to the desired extent; and (d) the edges of the pans should be fully protected either by lining with brick, bamboo chips of similar such material for avoiding collapsing of the ridges and spoiling the quality of salt.

Maintenance of permanent salt layer

Maintenance of about 2 – 3 cm. salt layer permanently throughout the salt manufacturing season, is very essential for protecting the contamination of salt crystals with mud particles at the time of extraction of the salt crop. The salt layer is laid in the beginning of the season and needs to be protected throughout the manufacturing season. Better way of protecting the salt bed is to keep the salt crop in loose condition over it by raking and spading on alternate days. By doing so the heaps can be formed simply with the help of wooden ‘pawadies’, and the salt bed remains intact. Permitting another layer of salt over this and digging the crop with a sharp edged “pawada” (spade), is certainly disadvantageous; in that whatever care is exercised, the permanent salt layer is damaged, which ultimately tells very adversely on the quality of salt. However, for any reason this system can not be followed, then at least the use of sharp edged implements for cutting the crop should be totally stopped. Care should be exercised while cutting the layer and great skill is needed for this operation.

It is a common sight in the Saurashtra region that hundreds of workers with dirty feet enter the pan beds for extracting and lifting salt crop. This practice should be avoided. Only minimum number of workers with cleaned feet should enter the pans, so that the pan beds are not spoiled.

Constant supply of saturated brine to the pans

At no stage weaker brine should be permitted into the crystallizers. It is equally important that the crop in pans remains covered with the brine and is not exposed at any time. This will mean a continuous supply of saturated brine to all the crystallizers at all times. This can only be achieved by maintaining a constant area for the reservoir and the condensors. In other words, a fixed ratio between the crystallizer and reservoir-cum-condensor is very essential.

The reservoir need not be unduly loaded with the sea brine at the time of high tide. Permitting the desired quantity of brine at the time of high tide and pumping in brine whenever needed will save useful area of the reservoir and there will be better control on the manufacturing operations. Continously the brine should be flown through the various compartment of the condensors, in as much zig-zag
path as possible, to obtain better rate of evaporation. Admixing brine of different concentration should be avoided, as it is detrimental to the quality of salt manufactured.

Discharge of bitterns

Discharge of bitterns becomes essential when the percentage of sodium chloride in the brine falls below 50 percent of the total solid contents. If the brine is retained any longer in the crystallizer, a good percentage of magnesium salts will co-precipitate with salt and the quality of salt will be adversely affected. It is a mis-apprehension on the part of salt manufacturers that the salt crystallization may be continued till 29°Be'. Every time the fresh saturated brine is fed into the pans, the density of the brine in the pan will be reduced, thus apparently the brine might be recording low density, but the stage has long reached for the discharge of bitterns. For this, occasional analysis of brine is essential in the beginning and later on, by experience, it shall be possible to judge when the bitterns are to be discharged.

With the intention of raising the density of weak brine, the bitterns available from the pans is recirculated in some salt works. This is very much harmful to the process as well as to the quality of salt produced.

Natural hazards

In Gujarat region, the natural hazards are occasional abnormally high tide and dust storms during summer days. For protection against the abnormal high tides, the external bundings of the salt works have to be raised so as to stand well in such eventualities. At the same time proper maintenance of bunds is quite essential. The nuisance of dust storms, which has a far reaching effect on the quality of salt, can be minimised to a great extent by locating the crystallizers and storage yard for salt followed by the condensers in the direction of dust storms, so that the flying dust settles in the condensers and the quality of salt in the crystallizers and storage yard is saved from contamination with dust.

The above described improvements if carried out, there is no doubt that better quality of salt to the desired extent shall be made available economically from the marine salt works.