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PROCESS FOR DRYING NATURAL SODIUM CARBONATE

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My invention relates to a certain new and useful process of drying sodium carbonate dekahydrate or commonly known as sal soda, or sodium sulphate.

While it is known that sodium carbonate and sodium sulphate dekahydrates can be dried in small quantities by heating them to evaporate their moisture contents, it has not been found commercially practical to adopt such treatment. The sodium carbonates and sodium sulphates are essentially similar in characteristics, so that the efficient treatment of one will be found equally efficient with the other and in a like manner the difficulties to be overcome in drying are substantially identical.

Sodium carbonate and sodium sulphate dekahydrates have a combined water content of 66% and 56% respectively and will melt at 34 degrees centigrade at atmospheric pressure, on melting the salt an unstable modification or a heptahydrate results, which breaks down into a stable modification or a monohydrate. The monohydrate being more soluble in cold than in hot water prohibits the use of heated metallic surfaces as drying agents, since a saline scale or crust forms thereon and becomes substantially insoluble, this crust also forming a non-conductor of heat and cold so that the heat employed to heat the coated surface is incapable of being effectively used for evaporating the combined moisture from the salt. By providing a source of violent agitation the scaling may be reduced but not entirely avoided, but if small amounts of finely divided foreign substances such as colloidal mud are present, the heated surfaces again become coated and the process hampered.

By my process I take one part of dekahydrate and mix with it 8 parts of dry sodium carbonate and subject the componets to any drying process. The quantity of dekahydrate per quantity of dry sodium carbonate may be largely increased by grinding the crude dekahydrate so that the smallest particles shall not be less than 0.5 mm, in diameter and the largest not more than 2.00 mm. The subjection of either of the salts to a drying process for a suitable time will result in all but about one tenth of one per cent of combined water being driven off. Physically adhering water, if any, will also be driven off.

The value of the coating of the dekahydrate particles lies in providing them with a substance which restricts or controls the speed of evaporation of the combined moisture therefrom and prevents the rapid evaporation of moisture and melting of the salt which causes what is technically known as "balling" at the entrance of any dryer which may be used in the process.

What I claim as my invention is:

1. The process of drying a dekahydrate salt which consists of mixing with one volume thereof 8 volumes of dry salt of the same kind and of evaporating the moisture from the mass.

2. The process of drying a dekahydrate salt which consists of reducing its granules to a diameter between 0.5 mm. and 2 mm., coating the said granules with a dry salt of the same kind and of evaporating the moisture from the mass.

Dated at Vancouver, B. C., this 3rd day of April, 1929.

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