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SUGAR-SALT TABLETS

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This invention relates to a composition of matter, namely, a new and improved composition for sugar-salt tablets which find special utility in the canning industry.

More particularly, this invention relates to an improved composition for sugar-salt tablets of the type in which stearates are combined in providing a die lubricant for the tableting operation and wherein I employ an alkali metal phosphate to prevent agglomeration of the stearates when the tablet is placed in solution.

For many years there has been a marked demand for a sugar-salt tablet by the canning industry to be used particularly, in the canning of peas and corn. However, the manufacture of such a tablet was not practical due to the fact that sugar tends to stick to the dies in forming the tablets.

More recently, it has become known that if certain fatty-acid-containing products such as, for example, stearates are added to the sugar-salt mixture, sufficient lubrication of the die is obtained so as to prevent the sticking of the tablet to the die. While this feature apparently solves the noted difficulty of tablet formation, it also gives rise to a new factor which is objectionable in the canned product because of an unsightly white residue which is formed when the tablet is dissolved in the canning liquor due primarily to the tendency of the stearates to agglomerate.

I have discovered that if certain dispersing agents are incorporated in the tablet, the agglomeration of the stearates is substantially prevented and the precipitate finely dispersed throughout the canning liquid with the result that there is no noticeable or objectionable residue in the canned product. In the improved tablet of this invention, these dispersing materials are thought to react favorably with the calcium and magnesium ions present in the water employed in the canning solution, thereby preventing the reaction of said ions with the stearate lubricant. This, then, prevents the formation of insoluble calcium and magnesium soaps which are considered to constitute the unsightly residue remaining after dissolution of such a tablet in water.

The main object of my invention, therefore, is to provide an improved sugar-salt tablet for use in flavoring canning liquids.

A further object of my invention, is to provide a new and improved sugar-salt tablet, which is formed with a built-in die lubricant and a dispersing agent effective to prevent agglomeration of said lubricant when the tablet is dissolved in water.

Another object of my invention is to employ an alkali metal phosphate in a sugar-salt tablet to act as a dispersing agent for preventing agglomeration of stearate die lubricants used in the tablet, when such a tablet is dissolved in water.

The above and further objects and features of this invention will be more apparent from the more concise description of its concepts which follows:

As mentioned, the use of a stearate die lubricant in a

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sugar-salt tablet is known to be successful in preventing sticking of the tablet to the die when forming the tablet, but such results in the formation of an objectionable precipitate or flocculent material when the tablet is placed in solution in the canning liquid. For this reason, the entire process has so far been commercially unsuccessful. Although the canning industry has eagerly recognized the economical possibilities of supplying flavor to the canning brine by inserting in each can a tabletted amount of flavoring materials, such as sugar and salt, and while the concept has been accepted as desirable due to the automatic measuring of the flavoring substances thereby, the elimination of the unsightly residue caused by the stearate lubricants has remained an insurmountable challenge. To my knowledge, I am the first to present an acceptable answer to this difficulty and as a result I am satisfied that my present improvement constitutes an inventive advancement in this art.

In approaching the problem of flavoring the canning brine with a measuring amount of sugar and salt in tabletted form, I discovered that small tablets of substantially 20 grain weight could be formed successfully without confronting too seriously the problem of the tablet sticking to the die during the formation stage. While the use of such small 20 grains tablets at first seemed to be one acceptable answer to the problem of flavoring the canning brine with the tablet insertion method, nevertheless little economical advantage was found therefrom due to the fact that more than one tablet was required to furnish the necessary flavoring to the canned product. Specifically, as many as 6 to a dozen tablets were found to be necessary to supply the required flavoring. Therefore, it is understandable that little advantage was afforded by the use of the small tablets since they, in turn, had to be inserted in the can in measured number, which, in turn, resulted in the burdensome difficulty of (1) measuring the number of tablets required and (2) insuring that the correct number of tablets were inserted in the can in a minimum amount of time according to the assembly line practice of canning the products. In fact, the difficulty of placing a number of small tablets in the cans appears to be more burdensome than the presently used process of employing granulated salt and sugar for the flavoring medium.

The obvious alternate to using many small tablets was to employ one large tablet which would require a minimum amount of time to place in the can and would give an accurate measured standard of flavoring materials. However, as mentioned hereinabove, it was found in tableting the larger tablets, for example, tablets in the range of 120-150 grains in weight, that the sugar caused sticking of the tablets to the forming dies. Thereafter, the concept of including an edible fatty-acid product such as a stearate, for example, sodium stearate, in the salt-tablet composition successfully counteracted the tendency of the sugar to stick to the die, thereby overcoming the mentioned tableting difficulties. However, as stated, lubricants such as stearates caused a commercially objectionable scum in the canned product due to the tendency of the stearates to agglomerate when placed in water solution. At that stage of development the entire concept for flavoring the canning brine by means of tablets was brought to a standstill.

Through my efforts I have discovered that a dispersing agent, exemplified by phosphates, including the alkali metal phosphates, other phosphates and a large number of other, hereinafter described materials, when combined in a desired amount with the tablet composition, effectively combats or acts to disperse the unsightly stearate precipitant. Specifically, I discovered that a tablet of substan-

tially the following representative composition successfully meets the needs of the canning industry:

- (1) Tablet size..... 120-150 grains.
- (2) Salt..... $\frac{1}{3}$ by weight.
- (3) Sugar..... $\frac{2}{3}$ by weight.
- (4) Lubricant..... 0.50% sodium stearate.
- (5) Dispersing agent..... 2.5-5% Calgon (sodium hexametaphosphate).

Placing a tablet of the above described characteristics in a can of peas, for example, definitely proved that the dispersant (Calgon, in this illustrative example) efficiently dispersed the flocculent material formed by the stearate in an even manner throughout the canning brine, giving the brine a somewhat murky appearance, but otherwise unobjectionable. Further, it was noted that where Calgon was used as the dispersant, it had a definite tenderizing effect on the peas and intensified the flavor imparted by the flavoring ingredients. This last result was most gratifying and unexpected.

The use of such a tablet in a can of corn produced a marked decrease in the amount of white deposit on the can and in the canning brine, though again the brine was somewhat cloudy, but unobjectionably so.

In searching for equivalent materials to take the place of the Calgon, extensive surveys and experiments were conducted with the result that the following materials were determined to be representative of acceptable dispersing agents and substitutes for Calgon:

Trade Name	Type
Santomerse-S.....	Alkyl Aryl Sodium Sulfonate.
Santomerse 30-X.....	Alkyl Aryl Sulfonate.
Antarox A-404.....	Alkyl Aryl Polyoxymethylene Glycol.
Atlas G1690.....	(probably—Mannitol Oleate, Sorbitan Mono-
Atlas G3002.....	Laurate, Mannitan Monopalmitate,
	Mannitan Monooleate, Sorbitan Monoole-
	ate, etc.
Prestabilt Oil V New.....	Oleic Acid based sulfonated Oil.
Monopol Brilliant Oil	A sulfonated Castor Oil.
48%.....	
Victawet 58B.....	$\text{Na}_3 \text{R}_3 (\text{P}_3\text{O}_{10})_2 (\text{R}=\text{Capryl})$.
Victawet 35B.....	$\text{Na}_3 \text{R}_3 (\text{P}_3\text{O}_{10})_2 (\text{R}=2\text{-ethylhexyl})$.
Intramaine Y.....	probably—Sodium Salt of Sulfonated Lauryl
	and Myristyl Collamide,
	probably—Sulfonated Ether.
Tensol N.....	Dibutyl Ester of Sodium Sulfosuccinic acid.
Aerosol 1B.....	Diamyl Ester of Sodium Sulfosuccinic Acid.
Aerosol A Y.....	
Naccosol A.....	Alkyl Aryl Sodium Sulfonate.

In trying out my new sugar-salt tablet in actual practice, the following observations were made which have significance in carrying out the present invention. Initially it was determined that a tablet of approximately 150 grain size apparently imparted more desirable flavor to the canned peas while a tablet in the nature of 120 grains gave corn a flavor more comparable to the flavor found in present commercially canned products. Since flavor is a matter of personal taste, it is my conclusion that tablets in the range of from 120 grains to 150 grains successfully may be employed for the canning of peas and corn, for example, with the corn being best flavored by a tablet approximately 120 grains in size.

In fabricating my tablets, both granulated and raw sugar were employed and there was found to be little or no difference in taste or appearance between brines flavored with tablets containing white granulated sugar or raw sugar. One marked deterrent to the employing of raw sugar in the packaging and canning of corn perhaps lies in the discoloration problem, since the raw sugar tablets appear to cause a darkening or discoloration of the corn kernels in contrast to the absence of such a factor when white sugar tablets are employed. However, this discoloration problem was determined to be variable according to the positioning of the tablets within the can and the amount of agitation experienced by the canned product throughout the test period.

Finally, there was found to be a slight advantage in using distilled water instead of hard water for the can-

ning brine from the standpoint of reduced amounts of flocculent material produced by the stearates and improved tenderness of the peas especially. However, the appearance of the two brines seemed to be substantially alike, and there was little difference in taste between the products canned with hard water brine and distilled water brine.

It was also found, in some instances, that the salt produced a scalding or burning of corn, particularly, immediately adjacent the tablet, but such scalding was found to disappear after a reasonable storage period and with agitation of the can, similar to that which would be experienced in normal packing and handling operations of the product.

There was also some indication that the position of the tablet might affect the product from the standpoint of discoloration of the peas and corn and the distribution of the flavoring material in the packing brine. In the case of the pea samples tested, no particular advantage or disadvantage was found attributable to the positioning of the tablet during storage except, perhaps, a more even seasoning of the product immediately after canning when the tablet was placed at the upper end of the can. In certain occasional instances discolored kernels of corn were found in the bottom of the can due to placement of the tablet in this area. However, as stated hereinabove, agitation of the can similar to that which would be experienced in normal handling operations thereof effectively counteracted such discoloration and served to evenly disperse the flavoring in the packing brine.

Based on my experimentations to date, I have found that a combination salt-sugar tablet of the type described hereinabove, that is to say having a size of approximately 120-150 grains and comprising salt and sugar mixed in a ratio of one part salt to two parts sugar by weight, 0.5% sodium stearate as a lubricant, and substantially 2.5 to 5% by weight of an alkali metal phosphate as sequestering and dispersing agent, for example the preferred agent Calgon (sodium hexametaphosphate), is a good example of one embodiment of a tablet which is particularly efficacious in the accomplishment of the intended purposes and objects of this invention. More particularly, I have concluded that the packaging of canned vegetables, especially kernel corn and peas, may be successfully carried out by employing such an improved tablet as a measured additive for imparting flavor to the packing brine without experiencing the heretofore unsightly and undesirable flocculent precipitants caused by the use of a stearate lubricant in the formation or tablet punching operation.

Therefore, I submit that I have herewith presented and described the features and components necessary to carry out the teachings of my invention and while I have disclosed the newly improved combination sugar-salt tablet as related to a preferred composition therefor, specifically the dispersing agent, numerous changes, modifications and substitutions of equivalents may be resorted to without departing from the spirit and scope of my invention. As a consequence, it is not my intention that I be limited to the particular form and features of the preferred composition of matter herein described, except as may appear in the following appended claims.

I claim:

1. A sugar-salt tablet for use in flavoring canning liquids, comprising, sugar, salt, a small percentage of sodium stearate as a die lubricant, and approximately 2.5-5% of an alkali metal phosphate as a sequestering and dispersing agent for preventing the formation of flocculent deposits of stearates precipitated when such a tablet is dissolved in water.

2. A composition for a sugar-salt tablet to be used in flavoring canning liquids, comprising, substantially 33% by weight of salt, 66% by weight of sugar, substantially 0.5% of sodium stearate as a die lubricant, and 2.5-5%

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of an alkali metal phosphate as a sequestering and dispersing agent.

3. A sugar-salt tablet, comprising, sugar, salt, a die lubricant of substantially 0.50% by weight sodium stearate, and an alkali metal phosphate as a dispersing agent designed to substantially prevent the agglomeration of flocculent stearate precipitates when the tablet is dissolved in water.

4. A sugar-salt tablet of the class described, comprising, sugar, salt, sodium stearate as a die lubricant, and a dispersing agent designed to substantially prevent the agglomeration of flocculent stearate precipitates when the tablet is dissolved in water and comprising substantially 0.5-5% by weight of sodium hexametaphosphate.

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