

ALIEN PROPERTY CUSTODIAN

METHOD OF PREVENTING SCALE FORMATION

Hiroshi Suzuki, Meguro-ku, Tokyo, Japan; vested
in the Alien Property Custodian

No Drawing. Application filed August 27, 1938

This invention relates to a method of preventing scale formation from sea water, brine, etc., which contain calcium compounds, removing these compounds as calcium oxalate precipitated by means of adding oxalic acid or oxalate into such water. In this invention, the precipitated calcium oxalate is decomposed by alkali carbonate into solution of alkali oxalate and precipitate of calcium carbonate; into the solution thus obtained being added soluble alkali salts such as sodium chloride or sodium sulphate and used repeatedly for precipitation of calcium oxalate from sea water, brine, etc.

The object of this invention is to provide an efficient and economical method whereby scale formation can completely be prevented from sea water, brine, etc., containing calcium compounds.

Scale prevention may be very economically effected if calcium compounds, the essential elements causing scale formation in the course of evaporation of sea water or brine, can be removed from such water simply by sodium carbonate, the scale, however, is not removed completely by this method. On the other hand, scale formation is prevented completely, by means of adding oxalic acid or oxalate into sea water or brine, but this method is so uneconomical that it cannot be practised for industrial purposes owing to the high prices of such substances.

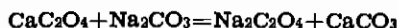
According to this invention, the prevention of scale formation from sea water, brine, etc., can be accomplished economically, by means of removing calcium salts contained in such water, employing oxalic acid or oxalate as a mediator and recovering the soluble oxalate from the precipitated calcium oxalate by sodium carbonate.

If this recovered alkali oxalate is added directly into sea water or brine, it requires long time for

precipitation of calcium oxalate and reaction is incomplete. These disadvantages can be eliminated, as in the case of the present invention, by means of adding soluble alkali salt such as sodium chloride or sodium sulphate into recovered alkali oxalate before adding it into sea water or brine, resulting in accelerated precipitation of calcium oxalate and shortening of the time required for complete reaction.

An example of this invention is explained in the following description:—

A suitable quantity of oxalic acid or sodium oxalate is to be added into sea water in a vessel, and, it is to be left until the calcium compounds contained in it is precipitated as calcium oxalate. The precipitated calcium oxalate is then to be filtered, and added into water solution of sodium carbonate of equivalent quantity and is boiled for about four hours; thus sodium oxalate and calcium carbonate being produced by the following chemical reaction.



This calcium carbonate is to be removed by means of filtration and small quantity of sodium chloride is to be added into solution of sodium oxalate thus obtained, which is then added into new sea water in order to remove the calcium compounds contained in it, and the procedure is repeated as explained above.

In this invention, the solution of alkali oxalate into which soluble alkali has been dissolved, may be used instead of oxalic acid or oxalate, in the first course of the procedure, in order to remove the calcium compounds contained in sea water, brine, etc.

HIROSHI SUZUKI.