

Corrosion of Tin Plate by Malic Acid Containing Colourants and Sweetening Agents

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Abstract

The corrosion of tin in aqueous solution of malic acid containing various food colourants (Sunset Yellow, Carmosine, Tartazine and Poncreau 4R) and/or sweetening agents (Glyceraol, Saccharin, Glucose and Sucrose) has been studied. In general, the corrosivity of the acid containing various colourants increases with acid concentration and colourant concentration in the order: Sunset Yellow < Carmosine < Poncreau 4R. However, at constant colourant concentration with increasing acid concentration, corrosivity was in the order: Carmosine < Sunset Yellow < Poncreau 4R < Tartazine. The sweetening agents inhibit corrosion rate. Their inhibition efficiency was in the order: Glycerol < Saccharin < Glucose < Sucrose. In solution containing colourants, the corrosion rate increases in the order: Glycerol < Sucrose < Saccharin < Glucose and Glycerol < Saccharin < Glucose < Sucrose in Carmosine and Sunset Yellow respectively.

Keywords: Corrosion, sweetening, colouring agent, tin.