

Determination of the Thermal Diffusivity of Calcium Salts of Saturated Carboxylic Acids¹

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Calcium soaps are materials that serve a wide range of industrial applications such as softeners, detergents, plasticizers, greases, lubricants, cosmetics, and medicines. In addition, calcium salts of saturated carboxylic acids are of interest because of their presence in the staple food of Mexicans and other Central American people: the corn tortilla. Because of their wide use in industry, a knowledge of the thermal properties of the alkaline metal soaps is of great importance. In the present work, the thermal diffusivity of butyric-Ca, valeric-Ca, caprylic-Ca, undecanoic-Ca, palmitic-Ca, and stearic-Ca salts has been determined by photoacoustics. The thermal diffusivity of these salts shows a linear dependence on the number of carbons in the aliphatic chain, and was found within the range 2.60×10^{-3} to $1.38 \times 10^{-2} \text{ cm}^2 \cdot \text{s}^{-1}$, with the highest and lowest values corresponding to butyric-Ca and stearic-Ca, respectively.

KEY WORDS: calcium salts; carboxylic acids; open photoacoustic cell; thermal diffusivity.

1. INTRODUCTION

In the past few years, a number of studies have been devoted to clarify the mechanisms involved in the alkaline cooking (nixtamalization) of corn

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