

Accepted Manuscript

Volumetric and acoustical behaviour of sodium saccharin in aqueous system over Temperature Range (20.0 - 45.0)^oC

Muhammad Asghar Jamal, Muhammad Rashad, Muhammad Kaleem Khosa, Haq Nawaz Bhatti

PII: S0308-8146(14)01609-4

DOI: <http://dx.doi.org/10.1016/j.foodchem.2014.10.047>

Reference: FOCH 16574

To appear in: *Food Chemistry*

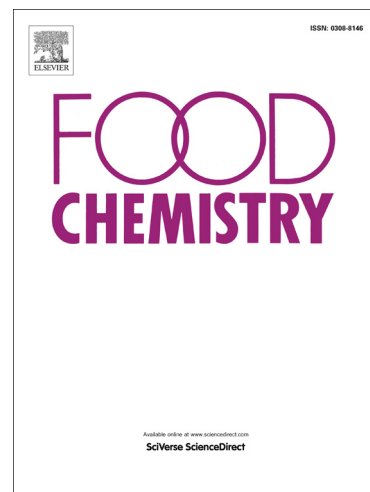
Received Date: 3 August 2014

Revised Date: 4 October 2014

Accepted Date: 8 October 2014

Please cite this article as: Jamal, M.A., Rashad, M., Khosa, M.K., Bhatti, H.N., Volumetric and acoustical behaviour of sodium saccharin in aqueous system over Temperature Range (20.0 - 45.0)^oC, *Food Chemistry* (2014), doi: <http://dx.doi.org/10.1016/j.foodchem.2014.10.047>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 **Volumetric and acoustical behaviour of sodium saccharin in aqueous system over**
2 **Temperature Range** (20.0 - 45.0)⁰C

3

4 Muhammad Asghar Jamal^{a*}, Muhammad Rashad^{a*}, Muhammad Kaleem Khosa^a and Haq
5 Nawaz Bhatti^b

6 ^aDepartment of Chemistry, Government College University, Faisalabad, 38000, Pakistan

7

8 ^bDepartment of Chemistry and Biochemistry, University of Agriculture, Faisalabad, 38040,
9 Pakistan

10 Corresponding author-1: Muhammad Asghar Jamal (email: m.asgharjamal@gmail.com)

11 Cell #+92-321-4792074

12 Corresponding author-2: Muhammad Rashad (email: muhammadrashad76@gmail.com)

13 Cell #+92-333-6594683

14 **ABSTRACT**

15 Densities and ultrasonic velocity values for aqueous solutions of sodium saccharin (SS) has
16 been measured as a function of concentration at 20.0 - 45.0⁰C and atmospheric pressure using
17 DSA-5000M. The density and ultrasonic velocity values have been further used to calculate
18 apparent molar volume, apparent specific volume, isentropic apparent molar compressibility
19 and compressibility hydration numbers and reported. The values for apparent molar volume
20 obtained at given temperatures showed negative deviations from Debye-Huckel limiting law
21 and used as a direct measure of the ion-ion and ion-solvent interactions. The apparent
22 specific volumes of the solute were calculated and it was found that these values of the
23 investigated solutions lie on the borderline between the values reported for sweet substances.
24 The sweetness response of the sweeteners is then explained in terms of their solution
25 behaviors. Furthermore, the Partial molar expansibility, its second derivative, ($\partial^2 V^0 / \partial T^2$) as
26 Hepler's constant and thermal expansion coefficient have been estimated.

27 **Keywords:** density, sound velocity, partial molar volume, apparent specific volume, Sodium
28 Saccharin

29 **1. Introduction**

Download English Version:

<https://daneshyari.com/en/article/7594035>

Download Persian Version:

<https://daneshyari.com/article/7594035>

[Daneshyari.com](https://daneshyari.com)