To Determine the Cleaning Ability of Soapnut

A B. WADEKAR*[1], S. K.BAVANE[2], A. P. SHEGOKAR[3]

Department of Chemistry, Shri.D.M.Burungale science and Art's College, Shegaon,
Dist. Buldana -444203 (MS) India, Corresponding Author: ajaybwadekar29@gmail.com

Abstract

Present research work regarding to investigation cleaning ability of soap nut from surface tension determination by stalagmometer. Surface tension investigated by using stalagmometer. This work help to investigate cleaning ability of soap nut as well as their different mixture with various detergents. In present work we were observed decrease in surface tension of soup nut and their detergent mixtures at different temperatures.

Keywords: Stalagmometer, a small rubber tube with a screw pinch cork, different types of detergent, soapnut solution, burrete stand.

Introduction

Surface tension is the phenomenon in which the surface of a liquid is in a contact with gas, acts like a thin elastic sheet. The stalagmometric method is one of the most common methods used for the surface tension determination.This method was first time described by Tate in 1864. Molecules of most detergents and soaps are long chain hydrocarbon molecules with an ionic group at one end, usually carrying a negative charge, thus making it an anion. This charge is balanced by the opposite charge of a soluble cation, for example Na^+. The effect of these molecules on the water surface is to considerably weaken the forces between water molecules there, thus lowering the surface tension.

M.G. Freire[1] investigated surface tension fluorocomounds. A.Hazra[2] investigated reduction of surface tension by surface active agents.C. A. Buehler[3] investigated the surface tension-viscosity relation. W. M. Schwartzet and H.W. Moseley[4] were studied about the surface tension of liquid crystals. R. Fanelli identified the surface tension of sulphur[5]. A. J. Rosenthal investigated demonstration of surface tension[6]. E.J. Burciki determined rate of surface tension lowering and its role in foaming[7]. J. Campbell[8] Was determined the surface tension measurement by the drop weight technique. N.R. Pallas and B. Pathica investigated the surface tension of water[9]. S. Sugden studied surface tension from the maximum pressure in bubbles[10]

Experimental and Methodology:

All AR grade chemical used through this experiment. Clean the Stalagmometer with chromic acid, wash with water and dry it. Immerse the lower end of the stalgmometer in distilled water and suck the water 1-2cm above mark A. Adjust the pinch cork so that 10-15 drops fall per minute. Repeat the exercise to take three to four readings. Rinse the stalgmometer with alcohol and dry it.Similarly take the solution of detergents and soapnut and repeat above process. Now take 3-4 readings of each solution along with water at 50°c temperature by applying same process. Now mix the detergents with soapnut solution in definite 10% composition. Take the 3-4 readings of each solution at **28°C** temperature. Also take 3-4 readings of mix solutions at 50°c temperatur**e.**

Result and Discussion:

Determine Surface tension of different experimental liquid at different temperatures by using Stalagmometer. Experimental liquid solution prepared by mixing of soup nut powder at different proportional and investigation carried out at different temperatures. Observation table are given bellow

Table-1 Surface tension of liquids at 28°C temperature

Liquid	No. of drops				Surface tension
	1	2	3	Mean	
Water	85	90	95	90	73.05
Soapnut	74	80	77	77	85.38
Ghadi	138	132	134	134	49.06
Surfexel	124	129	125	126	52.17
Tide	118	124	120	117	56.18

Table-2 Surface tension of liquids at 50°C temperature

Liquid	No. of drops				Surface tension
	1	2	3	Mean	
Water	66	74	72	70	75.66
Soapnut	93	95	100	96	68.46
Ghadi	119	123	121	121	54.33
Surfexel	120	121	124	121.66	54.03
Tide	115	119	124	119	55.08

Table- 3 Surface tension of mix liquids at 28°C temperature

Liquid	No. of drops				Surface Tension
	1	2	3	Mean	
Water	85	90	95	90	73.05
Soapnut	74	80	77	77	85.38
S+Ghadi	87	90	89	88.66	74.20
S+Surfexel	123	129	130	127.33	51.66
S+Tide	66	76	72	71.33	92.22

Table-4 Surface tension of mix liquids at 50°C temperature.

Liquid	No. of drops				Surface Tension
	1	2	3	Mean	
Water	66	74	72	70	75.66
Soapnut	93	95	100	96	68.46
S+Ghadi	110	108	109	109	60.31
S+Surfexel	107	108	111	108	60.86
S+Tide	107	108	104	106	62.01

Conclusion

From the table no 1, 2, 3, and 4 it is conclude that surface tension decreases along the increasing temperature as well as on the addition of soapnut powder.

Table 1 and 2 showed that there is no large variation found in surface tension of experimental liquid while surface tension of soapnut decreases from 85.38 to 68.48.

Table 3 and 4 showed that surface tension of liquid decreases due to addition of soapnut powder. On the heating this mixture up to 50 ^{o}c surface tension decreases, in case of soapnut + Tide mixture surface tension decreases from 92.22 to 62.01. While surface tension increase slightly from 51.66 to 60.86.

Finally at last we conclude that, the addition of the detergent and soapnut on the surface tension decreases surface tension. Due to this detergents and soapnut are used for making the soft water, washing the clothes, and as a cleaning agent. Soapnuts will leave laundry fresh and clean and compared to other detergents. It can be used on all fabrics and at all temperatures.The cleaning ability of soapnut is more effective than detergents at all temperatures.

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