International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 3 Issue 5, August 2019 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

Review: Conductivity of Water (Purified and SWFI) at Different pH and Temperatures

Faiz Hashmi

M.Tech, Department of Biotechnology, IILM Academy of Higher Learning, Greater Noida, India

How to cite this paper: Faiz Hashmi "Review: Conductivity of Water (Purified and SWFI) at Different pH and Temperatures" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-3 | Issue-5, August 2019, pp.2248-2249, **https://doi.org/10.31142/ijtsrd27942**

IJTSRD27942

ABSTRACT

This paper in particular mainly concerns with the conductivity of water used in pharmaceutical preparation, i.e. purified water and SWFI (sterile water for injection). This paper is focused on the variation of conductivity of the water (purified and SWFI) with the change in pH and temperature.

KEYWORDS: *Purified water, sterile water for injection, conductivity pH, temperature.*

INTRODUCTION

Conductivity is defined as the extent to which the materials conduct the electricity. Conductivity of a material is also known as 'Specific Conductance'. Conductivity is denoted by 'σ'. The SI unit for conductivity is given as 'simens per metre'.

Conductivity varies inversely to resistivity.

$$\sigma \propto \frac{1}{\rho}$$

Where,
σ – Conductivity, and
ρ – Resistivity.

Since, Resistance $R = \rho \frac{l}{A}$

Where,
l – Length,
A – Area.

CONDUCTIVITY OF PURIFIED WATER WITH TEMPERATURE

Temperature	Conductivity of purified water
0	2.4
5	-
10	3.6
15	-
20	4.3
25	5.1
30	5.4
35	-
40	6.5
45	-
50	7.1
55	-
60	8.1
65	-
70	9.1
75	9.7
80	9.7
85	-
90	9.7
95	-
100	10.2

CONDUCTIVITY OF SWFI WITH TEMPERATURE

Temperature	Conductivity of SWFI
0	0.6
5	0.8
10	0.9
15	1.0
20	1.1
25	1.3
30	1.4
35	1.5
40	1.7
45	1.8
50	1.9
55	2.1
60	2.2
65	2.4
70	2.5
75	2.7
80	2.7
85	2.7
90	2.7
95	2.9
100	3.1

CONDUCTIVITY OF WATER ON DIFFERENT pH 5.0 to pH 7.0

pH	Conductivity
5.0	4.7
5.1	4.1
5.2	3.6
5.3	3.3
5.4	3.0
5.5	2.8
5.6	2.6
5.7	2.5
5.8	2.4
5.9	2.4
6.0	2.4
6.1	2.4
6.2	2.5
6.3	2.4
6.4	2.2
6.5	2.2
6.6	2.2
6.7	2.6
6.8	3.1
6.9	3.8
7.0	4.6

CONCLUSION

Different conductivities had been recorded in a set of experiment with different condition of pH and temperature.

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