Dr. Jenkins
Mr. Barker
Mr. Gleghorn
Mr. Ellenburg - Knight

July 25, 1947

Dr. Hardy:

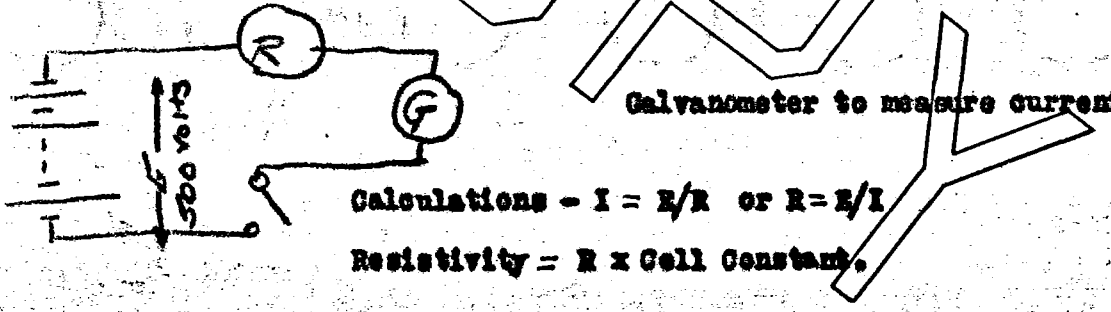
Anniston

RESISTIVITY OF AROCLORS

The purpose of this letter is to clarify the effects of the increased voltage power supply on the Type 544-B Megohm Bridge used to measure Resistivity of Aroclors.

The General Radio, Type 544B Megohm Bridge used in this measurement is essentially a Wheatstone Bridge. In a bridge of this type, measurements are made by comparing the unknown resistance with the standard resistances of the bridge. Readings are obtained directly in ohms resistance, which multiplied by the cell constant, results in the resistivity as measured in ohm centimeter.

According to the Pyranol Data Folder No. DF 65206, dated 8-30-45, G.E. uses entirely different type of test equipment. Essentially their equipment consists of a sensitive galvanometer connected as a microammeter to measure current flow through the test cell when known voltage is impressed on the cell. This type of set-up requires the use of accurately known impressed voltage and an accurately calibrated galvanometer. Actually, the current is measured and the resistance calculated by ohms law.



As will be noticed, voltage is an actual part of this calculation. Although, as results are reported in ohms, no electrical difference should exist by the use of different voltages, providing sufficient voltage is used to provide adequate galvanometer deflection.

Conceivably it is possible for different voltages to have a different physical effect on the Arocler. It is good to have the Arocler under the same electrical stress for both measurements to eleviate this factor. This condition is fulfilled by the purchase of the 500 volt power supply for our Resistivity bridge. Actual checks of Arocler 1254 using both 90 and 500 volt power supplies agree within the accuracy of the bridge. The 500 volt power supply also gives a greater sensitivity to the bridge, resulting in easier determination of small changes of resistivity.

DSW 330590

L. C. Garrett

LCG:kd

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