U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

CERTIFICATE

for

STANDARD SAMPLE 185a
POTASSIUM HYDROGEN PHTHALATE
(pH standard)

PURITY

This lot of acid potassium phthalate ($HKC_8H_4O_4$) was prepared to insure high purity and uniformity. It meets the specifications of the American Chemical Society for reagent-grade material, but should not be considered as entirely free from impurities such as traces of occluded water, free acid or alkali, chorides, sulfur compounds, and heavy metals.

pH Values

The pH values of aqueous solutions of Standard 185a at 25° C are as follows:

Molarity	pH	Molarity	pH
0.005	4.17	0.05	4.01
.01	4.12	.1	3.95

The 0.05-molar solution is recommended for the standardization of pH equipment. The pH of this solution as a function of temperature is given below:

°C	pH	°C	pH	°C	pH
0	4.01	25	4.01	50	4.06
5	4.01	30	4.01	55	4.08
10	4.00	35	4.02	60	4.10
15	4.00	40	4.03		
20	4.00	45	4.04		

An uncertainty of ±0.01 pH unit is estimated. The pH values were derived from emf measurements of cells without liquid junction and

correspond as closely as possible to log $(1/a_H)$, where a_H is a conventional hydrogen-ion activity. Further information regarding this standard pH scale is given in Letter Circular LC993, "Standardization of pH Measurements Made With the Glass Elctrode," copies of which may be ontained from the National Bureau of Standards.

DIRECTIONS FOR USE

Preparation of 0.05-molar solution: Transfer 10.211 g of Standard 185a to a 1-liter volumetric flask, dissolve, and fill to the mark with distilled water having a pH of not less than 6.5 and not more than 7.5. Water of this quality can be obtained by boiling distilled water for fifteen minutes and cooling it under carbon-dioxide-free conditions.

For an accuracy of ±0.01 pH unit, it is unnecessary to dry the salt before use. Elaborate precautions for the exclusion of atmospheric carbon dioxide are unnecessary, although the solution should be protected against evaporation and contamination with molds. The standard buffer should be replaced when mold is apparent. The pH of this 0.05-molar solution differs by less than 0.001 unit from the pH of the 0.05-molar solution prepared by dissolving 0.05 mole of Standard 185a in 1 kg. of water.

September 19, 1952
Washington, D. C.

Signed: Edward Wichers, Chief
Division of Chemistry