

Certificate

Standard Reference Material 185d Potassium Hydrogen Phthalate *pH* Standard

This lot of acid potassium phthalate ($\text{HKC}_8\text{H}_4\text{O}_4$) 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, chlorides, sulfur compounds, and heavy metals.

The *pH*(S) values listed below correspond to $\log(1/a_{\text{H}})$, where a_{H} is a *conventional* activity of the hydrogen (hydronium) ion referred to the standard state on the scale of molality. The values were derived from emf measurements of cells without liquid junction by the method of calculation described in the Journal of Research of the National Bureau of Standards 66A, 179 (1962). The uncertainty of the *pH*(S) of Standard Reference Material 185d is estimated not to exceed ± 0.005 unit for 0 to 60 °C and ± 0.01 unit from 70 to 95 °C.

The 0.05-molal solution is recommended for the standardization of *pH* equipment. The *pH*(S) of this solution as a function of temperature is given below:

°C	<i>pH</i> (S)	°C	<i>pH</i> (S)	°C	<i>pH</i> (S)	°C	<i>pH</i> (S)
0	4.012	25	4.008	45	4.045	70	4.12
5	4.005	30	4.014	50	4.058	80	4.16
10	4.002	35	4.023	55	4.073	90	4.20
15	4.001	40	4.033	60	4.089	95	4.22
20	4.003						

Directions for Use

Preparation of the 0.05-molal solution: Transfer 10.12 grams of Standard 185d to a 1-liter volumetric flask. Add distilled water to dissolve the salt and fill to the mark with distilled water at 25 °C. The distilled water should have a conductivity not over $2 \times 10^{-6} \Omega^{-1} \text{cm}^{-1}$. Mix thoroughly by shaking. The salt should be dried 2 hr at 110 °C before use.

The water need not be protected from atmospheric carbon dioxide, and elaborate precautions for the exclusion of air from the solution are not necessary. The solution should, however, be protected against evaporation and contamination by molds. This standard buffer solution should be replaced at frequent intervals and when mold is apparent.

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