Thermo. Titr. Application Note No. H-028

Title:	**Standardization of 0.1 mol/L KOH in propan-2-ol**

***Scope*:**	Standardization of 0.1 mol/L in propan-2-ol for use in applications for the determination of weakly acidic species in non-aqueous media.

***Principle*:**	A range of volumes of a standard solution of benzoic acid in propan-2-ol are titrated with ~0.1 mol/L KOH in propan-2-ol to a catalytically determined thermometric endpoint. Reference: 1. M. J. D. Carneiro, M. A. Feres Júnior, and O. E. S. Godinho. Determination of the acidity of oils using paraformaldehyde as a thermometric end-point indicator. *J. Braz. Chem. Soc.* **13** (5) 692-694 (2002)

Reagents:	~0.1 mol/L KOH in propan-2-ol Paraformaldehyde Standard benzoic acid. Weigh accurately ~0.5g benzoic acid (e.g., Sigma-Aldrich cat. No. B-3250, minimum 99.5% purity, F.W. = 122.1), and transfer to a 200mL dry volumetric flask. Dissolve in and make to volume with A.R. propan-2-ol. A.R. propan-2-ol

Method:	Basic Experimental Parameters:
	Titrant delivery rate (mL/min.) 2
	No. of exothermic endpoints 1
	Data smoothing factor 40
	Stirring speed (802 stirrer) 5
	Delay before start (secs.) 3
	Procedure: Prepare and titrate solutions of standard benzoic acid according to the following:

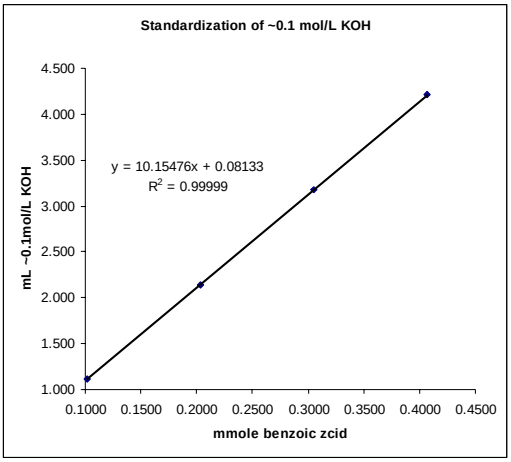
mL benzoic acid soln.	mL propan-2-ol
20	10
15	15
10	20
5	25

Prior to titrating, add ~0.5g of paraformaldehyde to each solution, and titrate to a thermometric endpoint with ~0.1 mol/L KOH in propan-2-ol. Calculate the amount of benzoic acid in each aliquot as mmole, and plot mmole benzoic acid (x-axis) against mL ~0.1mol/L KOH (y-axis). Determine the gradient of the calibration curve. The strength of the KOH solution is computed from the reciprocal of the gradient.

Example:

Mmole benzoic acid	Titre, mL ~0.1 mol/L KOH
0.4064	4.212
0.3048	3.173
0.2032	2.141
0.1016	1.117
Gradient = 10.15476	
Molarity = 1/10.15476 = 0.09848 mol/L	

Calibration Plot:



Thermometric Titration Plot: