Thermo. Titr. Application Note No. H-060

Title:	**Standardization of 0.1M perchloric acid in glacial acetic acid**

***Scope*:**	Standardization of 0.1mol/L perchloric acid in glacial acetic acid by catalyzed endpoint thermometric titration.

***Principle*:**	Standardization 0.1mol/L perchloric acid in perchloric acid with standard 0.1mol/L potassium hydrogen phthalate in glacial acetic acid, using hydroxyacetone (acetol) as a thermometric endpoint indicator.

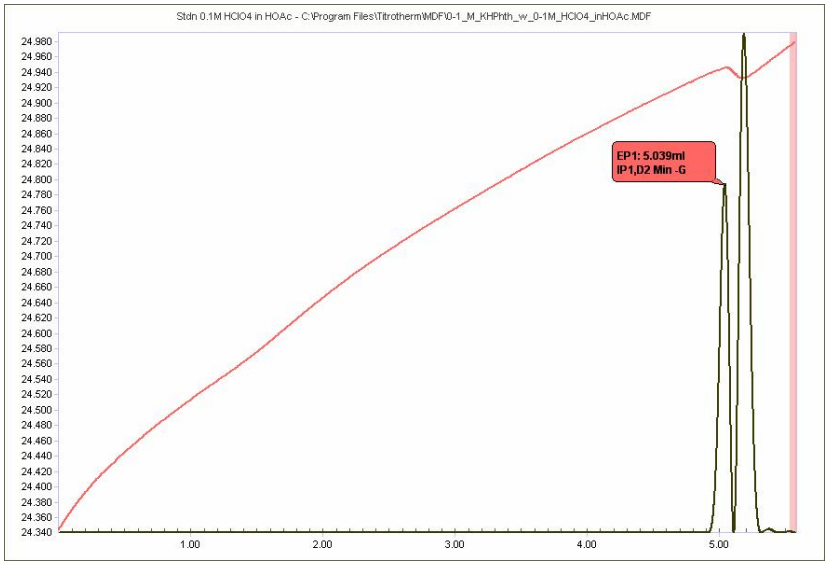
Reagents:	*Titrant:* 0.1mol/L perchloric acid in glacial acetic acid (BDH Cat. No.190934T . *Endpoint indicator:* Hydroxyacetone (acetol) - Aldrich Cat. No. 138185-100G *Solvent:* Glacial acetic acid - Ajax Univar *Standard:* Potassium hydrogen phthalate – Sigma Ultra (minimum purity 99.95%, Cat. No. P1088-100G)

Method:	Basic Experimental Parameters:	
	Titrant delivery rate (mL/min.)	2
	No. of exothermic endpoints	1
	Data smoothing factor (DSF)	60
	Stirring speed (802 stirrer)	8
	A standard solution of 0.1mol/L potassium hydrogen phthalate was prepared by accurately weighing 1.7030g of the substance into a 200mL volumetric flask, dissolving and making to volume with glacial acetic acid. For highest precision, aliquots between 1 – 5mL were dispensed with a 10mL Dosino burette into a vessel containing 30mL glacial acetic acid. A 1mL dose of acetol was added to the vessel immediately prior to the commencement of the titration.	

Example:	Titration of 0.10017mol/L potassium hydrogen phthalate solution (KHPhth)		
	mL KHPhth solution	mmole KHPhth solution	Titre $HClO_4$ solution
	5.00	0.5019	5.035
	4.00	0.4005	4.023
	3.00	0.3017	3.037
	2.00	0.2010	2.031
	1.00	0.1003	1.027

Thermometric Titration Plot:

Legend:
Red = solution temperature curve
Black =second derivative curve (for endpoints)



Titration of 5mmole potassium hydrogen phthalate

Determination of molarity:

Molarity = 1/gradient
= 1/9.98293
= 0.10017

Titration blank = 0.025mL