

KHP Test

This is the full proper method for standardization of 0.133N NaOH, done with potassium hydrogen phthalate (KHP). Note this uses an amount of KHP that will require about 10 mL of the NaOH to titrate. For a quick check, take less than 100 mg instead of the 200 mg specified so you can use one 5 mL syringe-full.

You will need to be able to weigh out accurately down to at least 1 mg (0.001 g)

1. If not already dry, prepare dried analytical-grade potassium hydrogen phthalate (KHP) by heating 2 H at 110C and cooling to room temperature in a desiccator.
2. Weigh accurately (to 0.5 mg precision) about 200mg dry KHP. Place in small beaker and add 20 mL water;
3. Using a buret or calibrated syringe titrate with the newly-prepared 0.133 N NaOH to pH 8.2 with a pH meter (or use standard phenolphthalein indicator and titrate to pink color); either end point should be stable for 40 sec before considering the assay done.
4. Repeat steps 2-3 once.
5. Calculate the concentration of NaOH as

Normality (meq/mL) of NaOH, $N = (W/204.2)/V$ where W is the weight in mg of the KHP and V is the volume in milliliters of 0.133 N NaOH required to reach the endpoint. The two results should agree within 0.004; if not, repeat as needed. Average the values. The average value should be between 0.136 and 0.130. If it is outside this range, you may want to correct your TA results accordingly or procure some fresh TA Titrant.

Cream of tartar test (use at your own risk!)

If you can't get KHP, you can follow steps 1-4 above but use pure cream of tartar (potassium acid tartrate, KHT, a.k.a. potassium bitartrate) in place of KHP and weigh out about 90 mg of it to hit a 4-5 mL titration. You can skip step 1 if you just need a ballpark figure.

The calculation is $N = (W/188.2)/V$