



C3.5.1 POTENTIOMETRIC AND ACID-BASE TITRATIONS

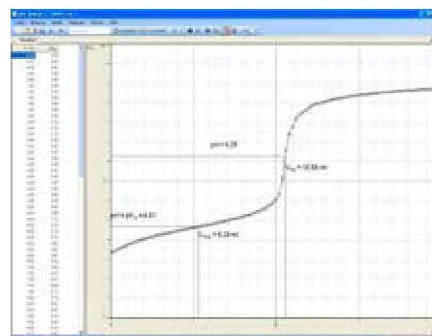
C3.5.1.1
Determination of acid
concentration by titration
with drop counter

Determination of acid concentration by titration with drop counter (C3.5.1.1)

Cat. No.	Description	C3.5.1.1
524 013	Sensor-CASSY 2	1
524 220	CASSY Lab 2	1
524 0672	pH adapter S	1
667 4172	pH sensor with plastic shaft, BNC	1
524 074	Timer S	1
337 4681	Drop counter	1
607 105	Magnetic stirrer mini	1
604 592	Stirring magnet, PTFE, oval, l = 40 mm, 20 mm diam.	1
664 103	Beaker, DURAN, 250 ml, squat	2
665 997	Graduated pipette 10 ml	1
666 003	Pipetting ball (Peleus ball)	1
665 845	Burette, clear glass, 25 ml	1
665 816	Burette filling funnel plastic, 35 mm Ø	1
666 559	Burette clamp for 1 burette, roller clamp	1
300 02	Stand base, V-shaped, small	1
300 42	Stand rod, 47 cm, 12 mm diam.	1
300 11	Saddle base	1
300 41	Stand rod, 25 cm, 12 mm Ø	1
666 543	Double, crossed boss head, 0...16 mm	2
666 555	Universal clamp 0...80 mm	2
673 8420	Sodium hydroxide solution, 1 mol/l, 500 ml	1
674 4640	Buffer solution pH 4.00, 250 ml	1
674 4670	Buffer solution pH 7.00, 250 ml	1
	additionally required: balsamic vinegar or other dark coloured vinegar	1

The classic technique for determining the exact quantity of a substance in solution (quantitative analysis) is titration. Here a reagent is slowly added in drops with a burette until the equivalence point is reached, i.e. the point at which the substance under investigation has reacted completely. In manual titrations, that point is made visible by means of a detection reagent, but it can also be measured by means of instrumentation.

In experiment C3.5.1.1, the acid concentration of balsamic vinegar is determined. Due to the dark colour, coloured indicators cannot be used here. Rather, the pH is measured continuously. This is done with a pH electrode. pH electrodes are potentiometric electrodes which respond ion-selectively only to changes in the potential of protons. The measured potential is then converted to a pH value. In the experiment, a complete titration curve of the titration of balsamic vinegar with sodium hydroxide is recorded using a drop counter.



Titration curve of vinegar