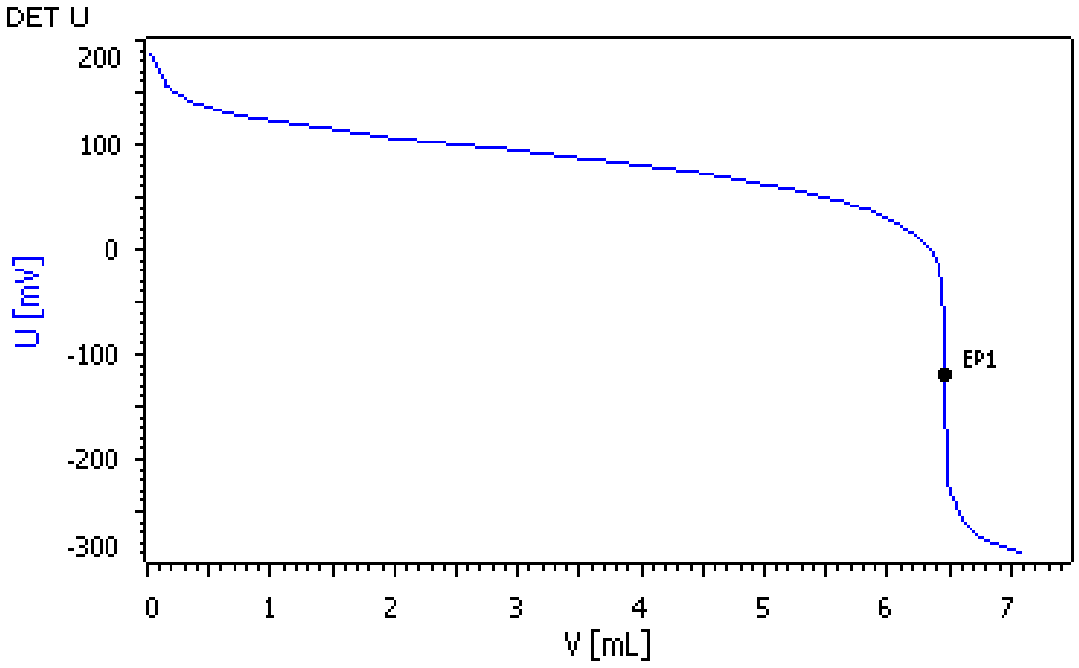
Titration Application Note T-164

Partial acid number in unsaturated polyester resin according to EN ISO 2114



The partial acid number (also partial acid value) describes the quantity of potassium hydroxide that is required for neutralizing all carboxyl-terminated groups and free acids plus half the anhydride groups in an unsaturated polyester resin (UPR). This Application Note describes the determination of the partial acid value by automatic, potentiometric titration according to EN ISO 2114 using KOH in ethanol as titrant.

Metrohm

Method description

Sample

Unsaturated polyester resin (UPR)

Sample preparation

No sample preparation is required.

Configuration

907 Titrando	2.907.0010
800 Dosino, 3x	2.800.0010
814 USB Sample Processor (2T/0P)	2.814.0130
Dosing unit 50 mL, 2x (solvent mixture, acetone)	6.3032.250
Dosing unit 20 mL, (titrant)	6.3032.220
741 Magnetic stirrer, 2x	2.741.0010
843 Pump station (peristaltic)	2.843.0150
Sample rack, PP, 22 x 120 mL	6.2041.470
Titration head, 3x NS 14	6.1458.040
Sample beaker, PP, 22 x 120 mL	6.1459.300
Titration head with DIS-Cover	6.9914.158
DIS-Cover lids for 120 mL PP beakers	6.9914.164
Solvotrode *easyClean*, LiCl sat. in EtOH	6.0229.020
tiamo™ 2.5	6.6056.252

Solutions

Titrant	c(KOH) = 0.1 mol/L in ethanol, if possible this solution should be bought from a supplier.
Solvent mixture	Toluene / ethanol, Φ(toluene) = 66.6% (v/v)

Analysis

Blank

The blank is determined the same way as the sample, just without UPR.

Sample

Approx. 3.0 g UPR is weighed into the titration vessel and placed on the rack. Just before the titration 50 mL solvent mixture and 25 mL acetone are automatically added to the sample. After a reaction time of 2 minutes, the solution is titrated with c(KOH) = 0.1 mol/L until after the equivalence point.

Parameters

Mode	DET U
Pause	30 s
Signal drift	20 mV/min
Stirrer speed	8
Max. waiting time	38 s
Meas. point density	4
Min. increment	50 µL
Max. increment	off
EP criterion	5
EP recognition	all

Results

Partial acid number / (n = 5)	s(rel)
19.93 mg KOH / g	0.1 %