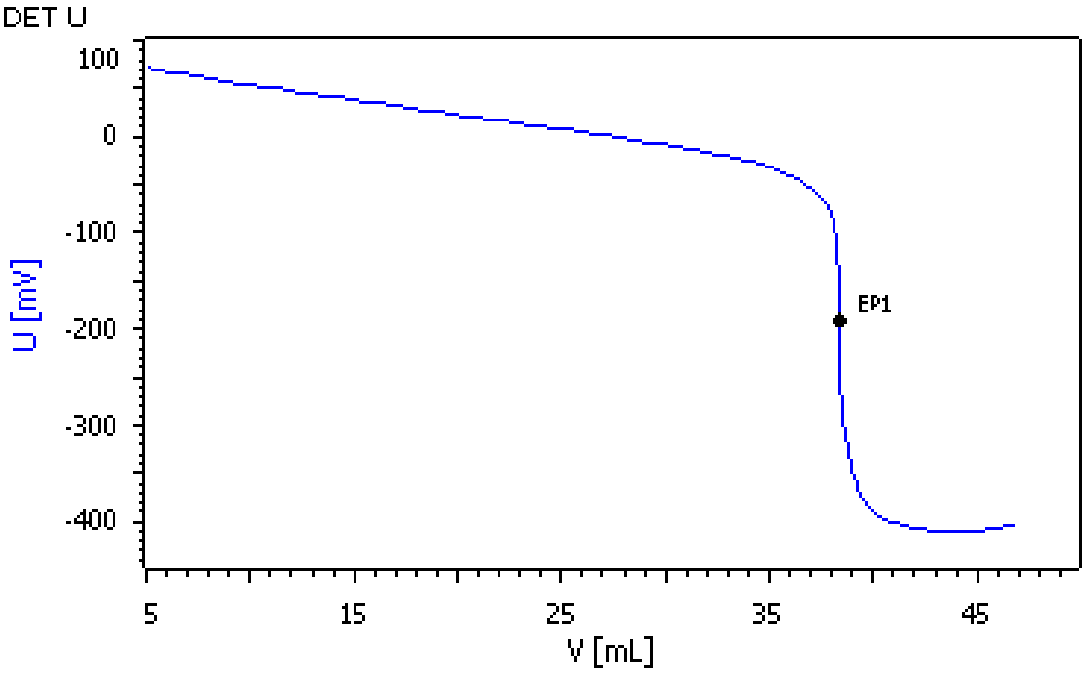
Titration Application Note T-165

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



The total acid number (TAN) indicates the amount of potassium hydroxide required for neutralizing all carboxyl-terminated groups and free acids plus the free anhydride groups in an unsaturated polyester resin (UPR). In this Application Note the TAN determination using automated, potentiometric titration according to EN ISO 2114 using KOH in ethanol as titrant is described.

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	6.3032.250
Dosing unit 20 mL	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

Solutions

Titrant	c(KOH) = 1.0 mol/L in ethanol, if possible this solution should be bought from a supplier.
Solvent mixture	MEK / Pyridine / Water, v/v/v(7.5 / 4.0 / 0.5)

Analysis

Approx. 5.0 g UPR is weighed into a sample beaker and placed on the rack. Just before the titration 60 mL solvent mixture is automatically added to the sample. After a reaction time of 20 minutes, 15 mL acetone is automatically added and the solution is titrated with c(KOH) = 1.0 mol/L until after the equivalence point.

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

Parameters

Mode	DET U
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

Total acid number / (n = 5)	s(rel)
23.79 mg KOH / g	0.9%