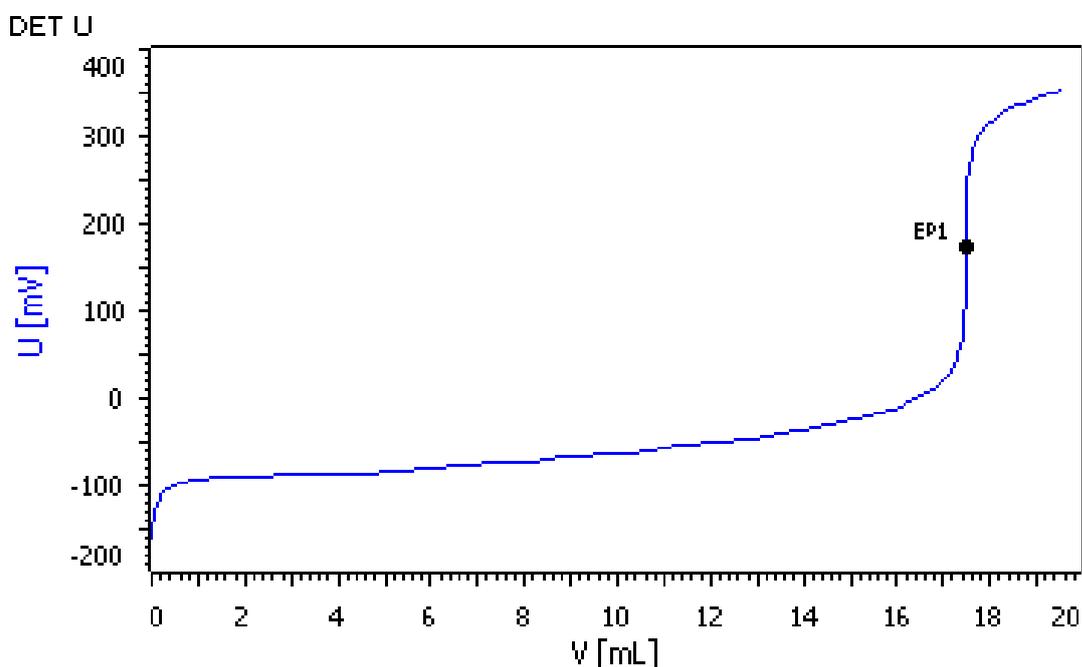


Titration Application Note T-167

Isocyanates (NCO) in unsaturated polyester resin and polyurethane resin according to EN ISO 14896



The isocyanate content in resins is given in g of isocyanate per 100 g of sample. In this Application Note, the determination of the isocyanates in unsaturated polyester resin (UPR) and polyurethane resin (PUR) by automated, potentiometric titration according to EN ISO 14896 using hydrochloric acid as titrant is described.

Method description

Sample

Unsaturated polyester resin (UPR)

Polyurethane resin (PUR)

Sample preparation

No sample preparation is required.

Configuration

907 Titrand	2.907.0010
800 Dosino, 4x	2.800.0010
814 USB Sample Processor (2T/0P)	2.814.0130
Dosing unit 50 mL, 2x	6.3032.250
Dosing unit 20 mL, 2x	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

Titration solution	c(HCl) = 1.0 mol/L, if possible this solution should be bought from a supplier.
Reaction solution	c(dibutylamine) = 1.0 mol/L in toluene, if possible this solution should be bought from a supplier.

Analysis

Approx. 2 g UPR or PUR is weighed into a sample beaker and placed on the rack. 30 mL toluene and 18 mL reaction solution are automatically added to the sample. After a reaction time of 10 minutes 30 mL methanol is automatically added and the solution is titrated with c(HCl) = 1.0 mol/L until after the equivalence point.

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

Parameters

Mode	DET U
Signal drift	20 mV/min
Stirrer speed	8
Max. waiting time	38 s
Meas. point density	4
Min. increment	10 µL
Max. increment	off
EP criterion	5
EP recognition	all

Results

Sample	Result / %, (n = 5)	s(rel) / %
UPR	0.83	1.9
PUR	2.34	0.9