

## Determination of 5,8-Dichloro-1-Naphthol

5,8-Dichloro-1-naphthol is determined by acid/base titration in a 1:2 acetone:water mixture with sodium hydroxide as a titrant.

<b>Sample</b>	5,8-dichloro-1-naphthol, 0.1 g	<b>Preparation and Procedures</b>  1) Weigh approx. 0.1 g of sample into a titration beaker.  2) Acetone and water are automatically added by means of burettes and pumps.  3) The sample is spiked with 1 mL 0.1 mol/L HCl. Thus, two EQPs are detected during titration: the first EQP corresponds to HCl, whereas the second EQP corresponds to the hydroxyl group of naphthol.
<b>Substance</b>	5,8-dichloro-1-naphthol, C <sub>10</sub> H <sub>5</sub> OCl <sub>2</sub> M = 213,1 g/mol , z = 1	
<b>Chemicals</b>	1:2 acetone:water, 60 mL 1 mL 0.1 mol/L hydrochloric acid	
<b>Titrant</b>	Sodium hydroxide, NaOH c(NaOH) = 0.1 mol/L	
<b>Standard</b>	Potassium hydrogenphthalate, 0.1 g (M521)	
<b>Instruments</b>	DL55, DL58, DL7x Analytical balance, printer	
<b>Accessories</b>	100 mL beaker, ME-101974 DL7x: 3 DV1010 burettes + 3 DV90 drives, Peristaltic pump DL55/DL58: 2 burettes, 2 pumps	
<b>Indication</b>	DG111-SC	
<b>Chemistry</b>	R-OH + NaOH = R-O <sup>-</sup> + Na <sup>+</sup> + H <sub>2</sub> O	
<b>Calculation</b>	R = Q2*C/m ; % C = M/(10*z)  Purity of 5,8-dichloro-1-naphthol	
<b>Waste disposal</b>	Neutralize the sample before final disposal as organic waste	
<b>Author</b>	Maria-José Schmid, MSG	<b>Remarks</b>

# Results

## METTLER DL70 Titrator

9991 5,8-Dichloro-1-naphthol      measured      09-Jul-1991 12:31  
 09-Jul-1991 10:33                      Titrator        V2.0 / 12.02.91  
 SW Version 2.0                         User             mjsl

### RESULTS

No	Identification	Weight	Results		
1/1	op	0.1027	g	97.478	% Acid content
1/2	op	0.0925	g	99.086	% Acid content
1/3	op	0.101	g	96.892	% Acid content
1/4	op	0.0908	g	96.710	% Acid content
1/5	op	0.0947	g	96.740	% Acid content
1/6	op	0.0931	g	96.728	% Acid content
1/7	op	0.0962	g	96.852	% Acid content
1/8	op	0.0914	g	96.595	% Acid content
1/9	op	0.0964	g	97.084	% Acid content
1/10	op	0.1034	g	97.247	% Acid content

### STATISTICS

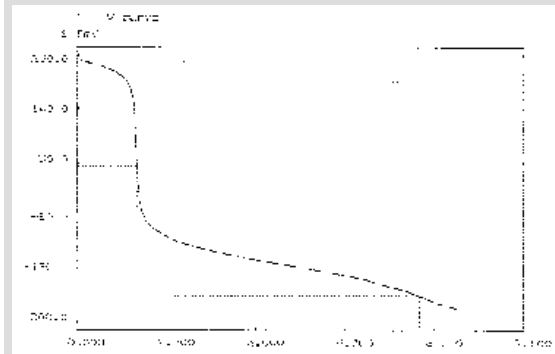
Number results      R1                      n = 10  
 Mean value                                  x = 97.141 %  
 Standard deviation                          s = 0.7358 %  
 Rel. standard deviation                      srel = 0.757 %  
 Outlier test: sample No.                      1/2

Statistics without sample No                      1/2  
 Number results      R1                      n = 9  
 Mean value                                  x = 96.925 %  
 Standard deviation                          s = 0.2893 %  
 Rel. standard deviation                      srel = 0.298 %

### Table of measured values

	Volume mL	Increment mL	Signal mV	Change mV	1st deriv. mV/mL	Time min:s
E1	0.0000		241.5			0:02
	0.0500	0.0500	240.5	-1.0	-19.3	0:05
	0.1000	0.0500	239.4	-1.1	-21.8	0:08
	0.2250	0.1250	236.0	-3.4	-27.6	0:11
	0.4250	0.2000	229.1	-6.8	-34.1	0:15
	0.6250	0.2000	218.6	-10.5	-52.6	0:20
	0.7660	0.1410	206.1	-12.5	-88.7	0:25
	0.8460	0.0800	195.4	-10.8	-134.6	0:29
	0.9010	0.0550	181.9	-13.5	-244.6	0:34
	0.9510	0.0500	156.1	-25.8	-516.6	0:41
EGP1	1.0010	0.0500	22.1	-134.0	-2679.5	1:01
	1.0510	0.0500	-57.5	-79.6	-1592.6	1:18
	1.1010	0.0500	-77.2	-19.7	-394.0	1:27
	1.1510	0.0500	-90.0	-12.7	-294.8	1:35
	1.2370	0.0860	-103.1	-13.1	-152.7	1:43
	1.4350	0.1980	-121.3	-18.2	-91.7	1:50
	1.6350	0.2000	-132.5	-11.3	-56.3	1:57
	1.8350	0.2000	-140.7	-8.2	-40.9	2:02
	2.0350	0.2000	-147.8	-7.1	-35.6	2:08
	2.2350	0.2000	-154.1	-6.3	-31.4	2:12
	2.4350	0.2000	-159.0	-4.9	-24.5	2:18
	2.6350	0.2000	-163.6	-4.6	-23.2	2:23
	2.8350	0.2000	-168.3	-4.7	-23.5	2:28
	3.0350	0.2000	-172.8	-4.5	-22.3	2:32
	3.2350	0.2000	-177.1	-4.3	-21.6	2:38
	3.4350	0.2000	-181.2	-4.1	-20.3	2:42
	3.6350	0.2000	-185.2	-4.1	-20.4	2:47
	3.8350	0.2000	-189.3	-4.1	-20.4	2:51
	4.0350	0.2000	-193.5	-4.1	-20.7	2:56
	4.2350	0.2000	-198.4	-4.9	-24.5	3:00
4.4350	0.2000	-202.3	-3.9	-19.7	3:04	
4.6350	0.2000	-207.5	-5.2	-26.1	3:10	
4.8350	0.2000	-213.2	-5.7	-28.3	3:15	
5.0350	0.2000	-219.3	-6.1	-30.7	3:20	
5.2350	0.2000	-225.9	-6.6	-32.9	3:24	
5.4350	0.2000	-233.5	-7.6	-37.9	3:29	
5.6350	0.2000	-242.5	-9.0	-45.0	3:33	
5.8270	0.1920	-251.1	-8.6	-44.6	3:38	
EGP2	6.0270	0.2000	-260.6	-9.5	-47.6	3:42
	6.2250	0.1980	-267.9	-7.3	-36.9	3:47
	6.4250	0.2000	-274.5	-6.6	-32.8	3:52

### Titration curve



## Method

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Method      9991      5,8-Dichlor-1-naphthol
Version     09-Jul-1991 10:33

Title
Method ID . . . . . 9991
Title . . . . . 5,8-Dichlor-1-naphthol
Date/time . . . . . 09-Jul-1991 10:33
Sample
Number samples . . . . . 10
Titration stand . . . . . ST20
Entry type . . . . . Weight m
  Lower limit [g] . . . . . 0.09
  Upper limit [g] . . . . . 0.13
ID 1 . . . . . op
Molar mass M . . . . . 213.1
Equivalent number z . . . . . 1
Dispense
Titrant . . . . . acetone
Concentration [mol/L] . . . . . 0.1
Volume [mL] . . . . . 20.0
Pump
Auxiliary reagent . . . . . H2O
Volume [mL] . . . . . 40.0
Stir
Speed [%] . . . . . 60
Time [s] . . . . . 20
Dispense
Titrant . . . . . HCl
Concentration [mol/L] . . . . . 0.1
Volume [mL] . . . . . 1.0
Stir
Speed [%] . . . . . 50
Time [s] . . . . . 120
Titration
Titrant . . . . . NaOH
Concentration [mol/L] . . . . . 0.1
Sensor . . . . . DG111-SC
Unit of meas. . . . . mV
Titration mode . . . . . EQP
  Titrant addition . . . . . DYN
  dE(set) [mV] . . . . . 10.0
  Limits dV . . . . . Absolute
  dV(min) [mL] . . . . . 0.05
  dV(max) [mL] . . . . . 0.2
  Measure mode . . . . . EQU
  dE [mV] . . . . . 0.5
  dt [s] . . . . . 1.0
  t(min) [s] . . . . . 2.0
  t(max) [s] . . . . . 20.0
  Threshold . . . . . 40.0
  Maximum volume [mL] . . . . . 7.0
  Termination after n EQPs . . . . . Yes
  n = . . . . . 2
  Evaluation procedure . . . . . Standard
Calculation
Result name . . . . . Acid content
Formula . . . . . R=Q2*C/m
Constant . . . . . C=M/(10*z)
Result unit . . . . . %
Decimal places . . . . . 3
Record
Output unit . . . . . Printer
Raw results last sample . . . . . Yes
Results last sample . . . . . Yes
All results . . . . . Yes
E - V curve . . . . . Yes
Rinse
Auxiliary reagent . . . . . H2O
Volume [mL] . . . . . 10.0
Conditioning
Interval . . . . . 1
Time [s] . . . . . 120
Statistics
Ri (i=index) . . . . . R1
Standard deviation s . . . . . Yes
Rel. standard deviation srel . . . . . Yes
Outlier test . . . . . Yes
Record
Output unit . . . . . Printer
All results . . . . . Yes
Table of measured values . . . . . Yes
E - V curve . . . . . Yes

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