

## 28. Preparation of a New Anion Exchange Resin

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As well known, dimethylaniline condenses with formaldehyde easily into N-N'-Tetramethyldiaminodiphenylmethane. From this fact man can directly suppose that N, N'-diphenylpiperazine (DP) would condense with formaldehyde and produce a new kind of synthetic resin and this resin would have the character as an anion exchanger. This suggestion was proved to be fact by actual experiment. The results obtained are summerised in the following table :

exp. No.	DP:CH <sub>2</sub> O (35%) (mole ratio)	catalyser	solvent	boiling hrs.	capacity of the obtained resin		Degree of swelling
					milliequiv. HCl/g resin	milliequiv. HCl/cc resin	
1	1 : 4	Sulfanilic acid	Methanol 20cc	3	—	(no resinous product)	—
2	1 : 4	conc HCl 1cc	Methanol 20cc	9	—	(tar-like resin)	—
3	1 : 10	conc HCl 10cc	Methanol 20cc	3	3.02		0.43
4	1 : 10	N H <sub>2</sub> SO <sub>4</sub> 1cc	Methanol 40cc	3	2.38		0.63
5	1 : 10	conc H <sub>2</sub> SO <sub>4</sub> 2cc	Water 8cc	1.5	2.81		0.39
6	1 : 10	◇	◇	at 50°6hrs boiling 3hrs	2.81		0.88
7	1 : 10	—	Acetic acid 40cc	3	2.38		0.50
8	1 : 10	NH <sub>4</sub> Cl 2g	—	15	3.89		0.75
9	1 : 10	◇	—	20	4.57		1.03
10	1 : 10	◇ 1g	—	10	3.89		0.88

In each case 2g DP were used.

The calculated capacity is ca. 8 milliequiv. HCl/g resin.

## 29. Syntheses of Non-ionic Surface Active Agents. (II)

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The authors prepared some non-ionic surface active agents of ethanalamides derivatives.

A) Lauric-acid-ethanalamides and their polyethyleneoxide condensation-products