LAMPIRAN

Lampiran 1. Proses Pencelupan Menggunakan Mesin *Rapid Dyeing* Skala Lab

Lampiran 2. Zat warna yang digunakan

Lampiran 3. Tabel Hasil Pengujian Ketuaan warna (K/S) dan Kerataan Warna (Standar Deviasi) Menggunakan Mesin Spektrofotometer.

2						AIR				
3	Sampel	S1	S2	S3	S4	S5	S6	S7	S8	S9
4	NaCl	0 g/l	0 g/l	0 g/l	40 g/l	40 g/l	40 g/l	80 g/l	80 g/l	80 g/l
5	ZW	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf
6	Temb.1	8,3251	10,2952	11,9744	21,7558	24,1623	25,0882	30,5281	32,2188	34,3295
7	Temb.2	8,7263	10,1836	11,6382	22,9628	23,4182	24,7635	30,1201	31,9293	34,7714
8	Temb.3	8,9273	10,5479	11,5778	22,5904	23,3851	25,1942	30,2479	32,3102	35,0822
9	Rata2	8,65956667	10,342233	11,730133	22,4363333	23,6552	25,0153	30,2987	32,1527667	34,7277
10	λ rata2	590-610								
11										
12						AIR & MINYAK				
13	Sampel	S1	S2	S3	S4	S5	S6	S7	S8	S9
14	NaCl	0 g/l	0 g/l	0 g/l	40 g/l	40 g/l	40 g/l	80 g/l	80 g/l	80 g/l
15	ZW	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf
16	Temb.1	11,2912	14,5339	17,9644	23,8441	27,0441	30,7366	37,2831	42,1036	46,1725
17	Temb.2	12,1058	13,8809	15,9253	24,1274	26,6612	32,0817	39,0298	43,9285	45,9235
18	Temb.3	11,7293	14,6492	17,5527	24,1644	27,3956	30,9263	38,7143	42,8812	46,7295
19	Rata2	11,7087667	14,354667	17,147467	24,0453	27,0336333	31,2482	38,3424	42,9711	46,2751667
20	λ rata2	590-610								

24	SD					AIR				
25	Sampel	S1	S2	S3	S4	S5	S6	S7	S8	S9
26	NaCl	0 g/l	0 g/l	0 g/l	40 g/l	40 g/l	40 g/l	80 g/l	80 g/l	80 g/l
27	ZW	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf
28	Temb.1	0,2718	0,3073	0,3077	0,3752	0,3983	0,4219	0,4939	0,5162	0,5294
29	Temb.2	0,2699	0,2922	0,3307	0,3988	0,3992	0,4105	0,5011	0,5136	0,5455
30	Temb.3	0,2919	0,2713	0,3203	0,3729	0,4092	0,4356	0,4861	0,5301	0,5209
31	Rata2	0,2778667	0,2902667	0,3195667	0,3823	0,4022333	0,4226667	0,4937	0,5199667	0,5319333
32										
33										
34						AIR & MINYAK				
35	Sampel	S1	S2	S3	S4	S5	S6	S7	S8	S9
36	NaCl	0 g/l	0 g/l	0 g/l	40 g/l	40 g/l	40 g/l	80 g/l	80 g/l	80 g/l
37	ZW	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf	5% owf	6% owf	7% owf
38	Temb.1	0,6914	0,8077	1,0511	1,4288	1,9477	1,6232	2,2912	2,5112	2,9183
39	Temb.2	0,6132	0,7814	1,2128	1,5032	1,3933	2,0041	2,5731	2,9422	3,0099
40	Temb.3	0,6088	0,8222	1,3085	1,0222	1,2537	1,9701	2,6318	2,7401	3,2948
41	Rata2	0,6378	0,8037667	1,1908	1,31806667	1,5315667	1,8658	2,4987	2,7311667	3,0743333

Lampiran 4. Perhitungan Resep Percobaan Pencelupan Benang Rami dengan Zat Warna dan Media yang Digunakan

A. Air

1. Sample 1

BB = 3,58 g

Vlot = 3,58 x 20

= 71,6 ml

ZW = $\frac{5\ g}{100}$ x 3,58 g

= 0,18 g

NaCl = 0 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 71,6 ml

= 0,36 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 71,6 ml

= 0,14 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 71,6 ml

= 0,07 ml

Kebutuhan Air = 71,6 – (0,18 + 0,36 + 0,14 + 0,07)

= 70,85 ml

2. Sample 2

BB = 3,58 g

Vlot = 3,58 x 20

= 71,6 ml

ZW = $\frac{6\ g}{100}$ x 3,58 g

= 0,22 g

NaCl = 0 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 71,6 ml

= 0,36 g

NaOH b= $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 71,6 ml

= 0,14 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 71,6 ml

= 0,07 ml

Kebutuhan Air = 71,6 – (0,22 + 0,36 + 0,14 + 0,07)

= 70,81 ml

3. Sample 3

BB = 3,63 g

Vlot = 3,63 x 20

= 72,6 ml

ZW = $\frac{7\ g}{100}$ x 3,63 g

= 0,25 g

NaCl = 0 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 72,6 ml

= 0,36 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 72,6 ml

= 0,15 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 72,6 ml

= 0,07 ml

Kebutuhan Air = 72,6 – (0,25 + 0,36 + 0,15 + 0,07)

= 71,77 ml

4. Sample 4

BB = 3,21 g

Vlot = 3,21 x 20

= 64,2 ml

ZW = $\frac{5\ g}{100}$ x 3,58 g

= 0,18 g

NaCl = $\frac{40\ g}{1\ l}$

= $\frac{40\ g}{1000\ ml}$ X 64,2 ml

= 2,57 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 64,2 ml

= 0,32 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 64,2 ml

= 0,13 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 64,2 ml

= 0,06 ml

Kebutuhan Air = 64,2 – (0,18 + 2,57 + 0,32 + 0,13 + 0,06)

= 60,94 ml

5. Sample 5

BB = 3,69 g

Vlot = 3,69 x 20

= 73,8 ml

ZW = $\frac{6\ g}{100}$ x 3,69 g

= 0,22 g

NaCl = $\frac{40\ g}{1\ l}$

= $\frac{40\ g}{1000\ ml}$ X 73,8 ml

= 2,95 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ X 73,8 ml

= 0,37 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 73,8 ml

= 0,15 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 73,8 ml

= 0,07 ml

Kebutuhan Air = 73,8 – (0,22 + 2,95 + 0,37 + 0,15 + 0,07)

= 70,04 ml

6. Sample 6

BB = 3,16 g

Vlot = 3,16 x 20

= 63,2 ml

ZW $= \frac{7\ g}{100}$ x 3,16 g

= 0,22 g

NaCl $= \frac{40\ g}{1\ l}$

$= \frac{40\ g}{1000\ ml}$ X 63,2 ml

= 2,53 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ X 63,2 ml

= 0,32 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 63,2 ml

= 0,13 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 63,2 ml

= 0,06 ml

Kebutuhan Air = 63,2 – (0,22 + 2,53 + 0,32 + 0,13 + 0,06)

= 59,94 ml

7. Sample 7

BB = 3,82 g

Vlot = 3,82 x 20

= 76,4 ml

ZW = $\frac{5\ g}{100}$ x 3,82 g

= 0,19 g

NaCl = $\frac{80\ g}{1\ l}$

= $\frac{80\ g}{1000\ ml}$ X 76,4 ml

= 6,11 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 76,4 ml

= 0,38 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 76,4 ml

= 0,15 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 76,4 ml

= 0,07 ml

Kebutuhan Air = 76,4 – (0,19 + 6,11 + 0,38 + 0,15 + 0,07)

= 69,5 ml

8. Sample 8

BB = 3,61 g

Vlot = 3,61 x 20

= 72,2 ml

ZW = $\frac{6\ g}{100}$ x 3,61 g

= 0,22 g

NaCl $= \frac{80\ g}{1\ l}$

$= \frac{80\ g}{1000\ ml}$ x 72,2 ml

= 5,78 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ x 72,2 ml

= 0,36 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ x 72,2 ml

= 0,14 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ x 72,2 ml

= 0,07 ml

Kebutuhan Air = 72,2 – (0,22 + 5,78 + 0,36 + 0,14 + 0,07)

= 65,63 ml

9. Sample 9

BB = 3,78 g

Vlot = 3,78 x 20

= 75,6 ml

ZW $= \frac{7\ g}{100}$ x 3,78 g

= 0,27 g

NaCl $= \frac{80\ g}{1\ l}$

$= \frac{80\ g}{1000\ ml}$ x 75,6 ml

= 6,05 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ x 75,6 ml

= 0,38 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 75,6 ml

= 0,15 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 75,6 ml

= 0,08 ml

Kebutuhan Air = 75,6 – (0,27 + 6,05 + 0,38 + 0,15 + 0,08)

= 68,67 ml

B. Campuran (Air dan Minyak)

1. Sample 1

BB = 3,46 g

Vlot = 3,46 x 20

= 69,2 ml

ZW $= \frac{5\ g}{100}$ x 3,46 g

= 0,17 g

NaCl = 0 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ X 69,2 ml

= 0,35 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 69,2 ml

= 0,14 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 69,2 ml

= 0,07 ml

Kebutuhan Air = 69,2 – (0,17 + 0,35 + 0,14 + 0,07)

= 68,47 ml (34,24 ml air)

(34,24 ml minyak)

2. Sample 2

BB = 3,34 g

Vlot = 3,34 x 20

= 66,8 ml

ZW = $\frac{6\ g}{100}$ x 3,34 g

= 0,2 g

NaCl = 0 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ x 66,8 ml

= 0,33 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ x 66,8 ml

= 0,13 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ x 66,8 ml

= 0,07 ml

Kebutuhan Air = 66,8 – (0,2 + 0,33 + 0,13 + 0,07)

= 66,07 ml (33,04 ml air)

(33,04 ml minyak)

3. Sample 3

BB = 3,26 g

Vlot = 3,26 x 20

= 65,2 ml

ZW = $\frac{7\ g}{100}$ x 3,26 g

= 0,23 g

NaCl = 0 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ x 65,2 ml

= 0,33 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ x 65,2 ml

= 0,13 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ x 65,2 ml

= 0,07 ml

Kebutuhan Air = 65,2 – (0,23 + 0,33 + 0,13 + 0,07)

= 64,44 ml (32,22 ml air)

(32,22 ml minyak)

4. Sample 4

BB = 3,44 g

Vlot = 3,44 x 20

= 68,8 ml

ZW $= \frac{5\ g}{100}$ x 3,44 g

= 0,17 g

NaCl $= \frac{40\ g}{1\ l}$

$= \frac{40\ g}{1000\ ml}$ x 68,8 ml

= 2,75 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ x 68,8 ml

= 0,34 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ x 68,8 ml

= 0,14 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ x 68,8 ml

= 0,07 ml

Kebutuhan Air = 68,8 – (0,17 + 2,75 + 0,34 + 0,14 + 0,07)

= 65,33 ml (32,67 ml air)

(32,67 ml minyak)

5. Sample 5

BB = 2,49 g

Vlot = 2,49 x 20

= 49,8 ml

ZW = $\frac{6\ g}{100}$ x 2,49 g

= 0,15 g

NaCl = $\frac{40\ g}{1\ l}$

= $\frac{40\ g}{1000\ ml}$ x 49,8 ml

= 2 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ x 49,8 ml

= 0,25 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ x 49,8 ml

= 0,09 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ x 49,8 ml

= 0,05 ml

Kebutuhan Air = 49,8 – (0,15 + 2 + 0,25 + 0,09 + 0,05)

= 47,26 ml (23,63 ml air)

(23,63 ml minyak)

6. Sample 6

BB = 3,08 g

Vlot = 3,08 x 20

= 61,6 ml

ZW = $\frac{7\ g}{100}$ x 3,08 g

= 0,22 g

NaCl $= \frac{40\ g}{1\ l}$

$= \frac{40\ g}{1000\ ml}$ x 61,6 ml

= 2,46 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ x 61,6 ml

= 0,31 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ x 61,6 ml

= 0,12 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ x 61,6 ml

= 0,06 ml

Kebutuhan Air = 61,6 – (0,22 + 2,46 + 0,31 + 0,12 + 0,06)

= 58,43 ml (29,22 ml air)

(29,22 ml minyak)

7. Sample 7

BB = 3,41 g

Vlot = 3,41 x 20

= 68,2 ml

ZW $= \frac{5\ g}{100}$ x 3,41 g

= 0,17 g

NaCl $= \frac{80\ g}{1\ l}$

$= \frac{80\ g}{1000\ ml}$ x 68,2 ml

= 5,46 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ x 68,2 ml

= 0,34 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 68,2 ml

= 0,14 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 68,2 ml

= 0,07 ml

Kebutuhan Air = 68,2 – (0,17 + 5,46 + 0,34 + 0,14 + 0,07)

= 62,02 ml (31,01 ml air)

(31,01 ml minyak)

8. Sample 8

BB = 3,16 g

Vlot = 3,16 x 20

= 63,2 ml

ZW $= \frac{6\ g}{100}$ x 3,16 g

= 0,19 g

NaCl $= \frac{80\ g}{1\ l}$

$= \frac{80\ g}{1000\ ml}$ X 63,2 ml

= 5,06 g

Na_2CO_3 $= \frac{5\ g}{1\ l}$

$= \frac{5\ g}{1000\ ml}$ X 63,2 ml

= 0,32 g

NaOH $= \frac{2\ ml}{1\ l}$

$= \frac{2\ ml}{1000\ ml}$ X 63,2 ml

= 0,13 ml

Pembasah $= \frac{1\ ml}{1\ l}$

$= \frac{1\ ml}{1000\ ml}$ X 63,2 ml

= 0,06 ml

Kebutuhan Air = 63,2 – (0,19 + 5,06 + 0,32 + 0,13 + 0,06)

= 57,44 ml (28,72 ml air)

(28,72 ml minyak)

9. Sample 9

BB = 3,50 g

Vlot = 3,50 x 20

= 70 ml

ZW = $\frac{7\ g}{100}$ x 3,50 g

= 0,25 g

NaCl = $\frac{80\ g}{1\ l}$

= $\frac{80\ g}{1000\ ml}$ X 70 ml

= 5,6 g

Na_2CO_3 = $\frac{5\ g}{1\ l}$

= $\frac{5\ g}{1000\ ml}$ X 70 ml

= 0,35 g

NaOH = $\frac{2\ ml}{1\ l}$

= $\frac{2\ ml}{1000\ ml}$ X 70 ml

= 0,14 ml

Pembasah = $\frac{1\ ml}{1\ l}$

= $\frac{1\ ml}{1000\ ml}$ X 70 ml

= 0,07 ml

Kebutuhan Air = 70 – (0,25 + 5,6 + 0,35 + 0,14 + 0,07)

= 63,59 ml (31,80 ml air)

(31,80 ml minyak)

Lampiran 5. Benang Hasil Percobaan dan Pengujian.

Air (100%)

ZW / NaCl	5%	6%	7%
0 g/l			
40 g/l			
80 g/l			

Air : Minyak (50 : 50)

ZW / NaCl	5%	6%	7%
0 g/l			
40 g/l			
80 g/l			