



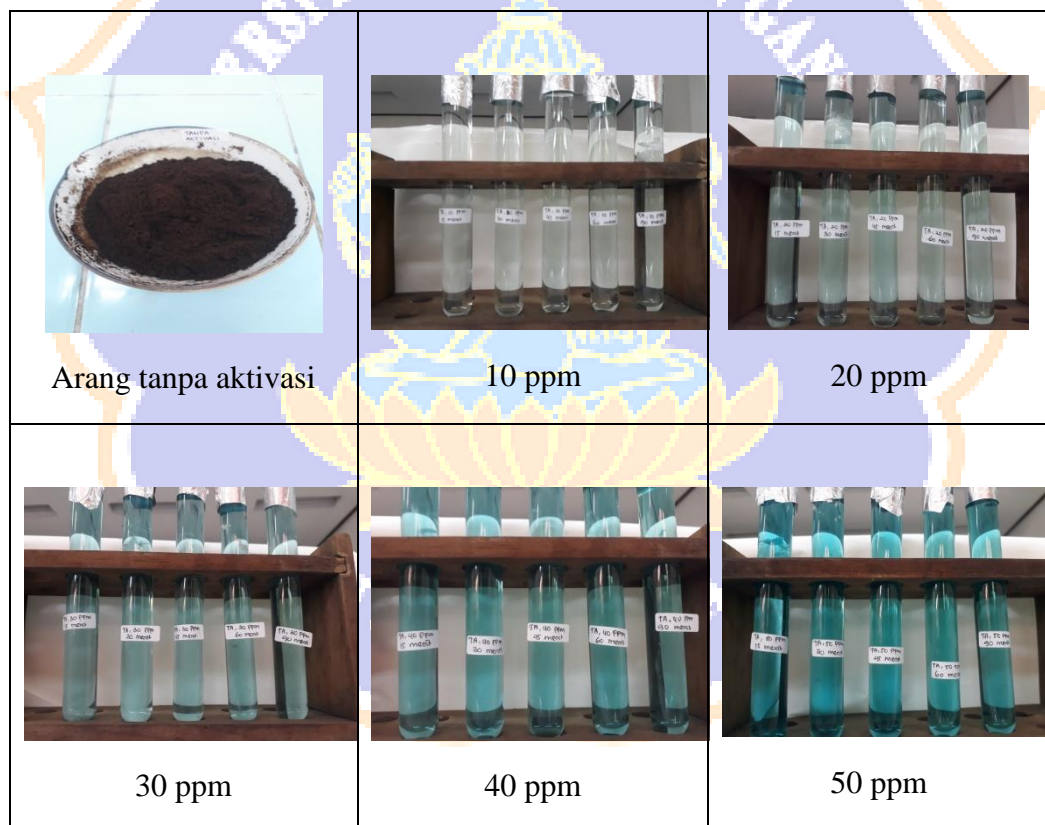
LAMPIRAN

Lampiran 1. 1 Dokumentasi Larutan Zat Warna *Remazol Blue* pada variasi waktu kontak, variasi konsentrasi, dan variasi pH

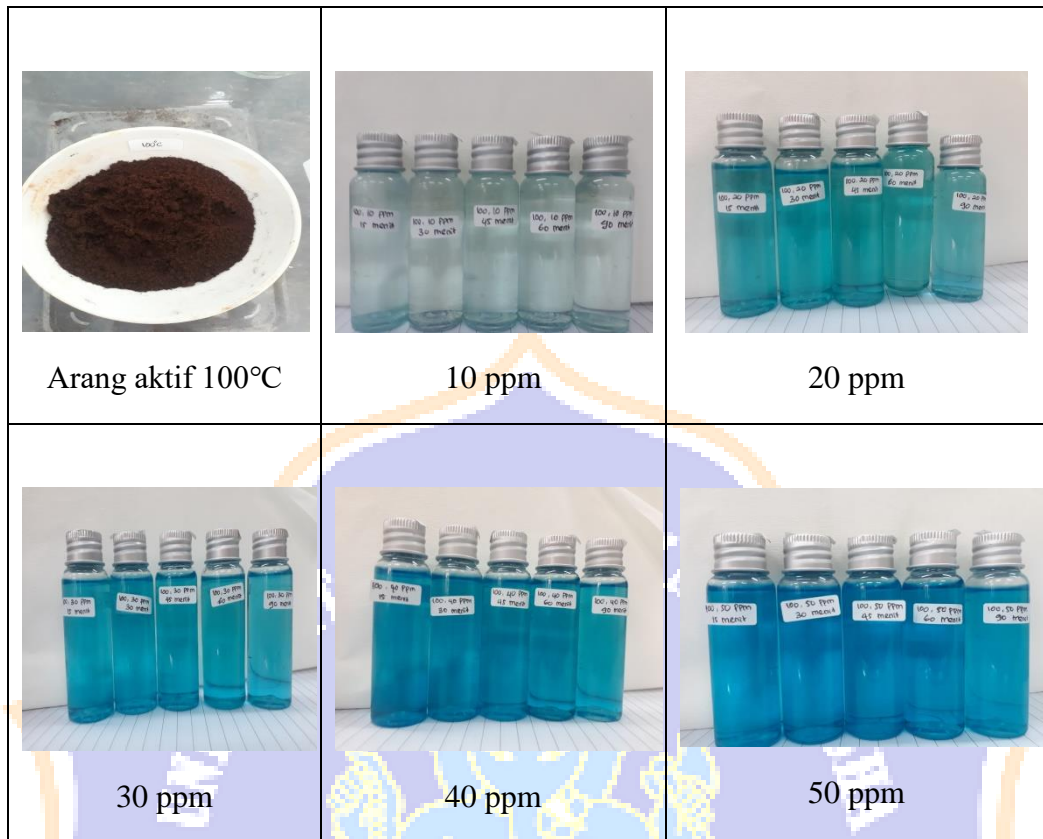
1. Larutan standar



2. Tanpa aktivasi



3. Aktivasi suhu 100°C



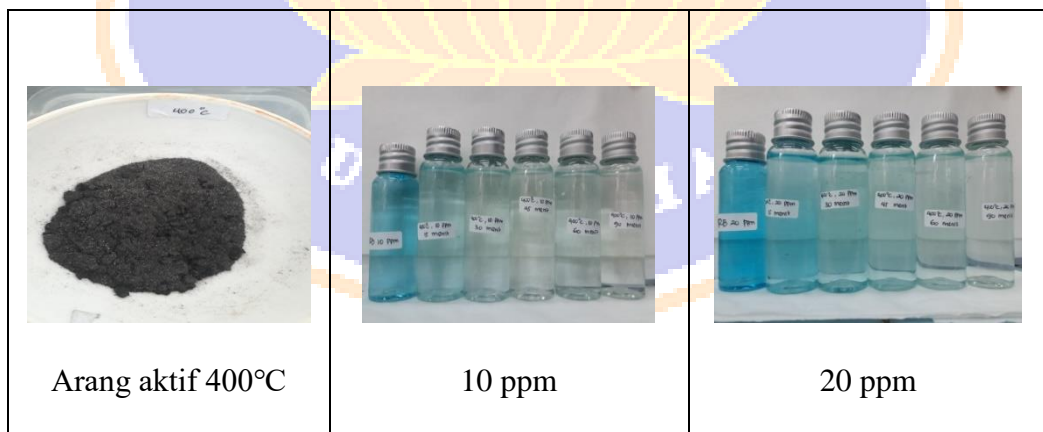
4. Aktivasi suhu 200°C



5. Aktivasi suhu 300°C



6. Aktivasi suhu 400°C





7. Variasi pH



Lampiran 1. 2 Dokumentasi kelengkapan penelitian

| | | |
|---|--|--|
|  <p>Massa <i>remazol blue</i></p> |  <p>Larutan <i>remazol blue</i> 500 ppm</p> |  <p>Larutan <i>remazol blue</i> 10 ppm</p> |
|  <p>Larutan <i>remazol blue</i> 20 ppm</p> |  <p>Larutan <i>remazol blue</i> 30 ppm</p> |  <p>Larutan <i>remazol blue</i> 40 ppm</p> |
|  <p>Larutan <i>remazol blue</i> 50 ppm</p> |  <p>Serbuk <i>remazol blue</i></p> |  <p>Spektrofotometri UV-Vis</p> |

Lampiran 1. 3 Pembuatan Larutan Zat Warna *Remazol blue*

1. Pembuatan larutan zat warna 500 ppm

$$\text{ppm} = \frac{\text{mg}}{\text{l}}$$

$$\text{ppm} = \frac{250 \text{ mg}}{0.5 \text{ l}}$$

$$\text{ppm} = 500$$

$$500 \text{ ppm} = 0.25 \text{ gram dalam } 500 \text{ ml}$$

2. Pengenceran larutan *remazol blue*

Rumus pengenceran: $V_1M_1=V_2M_2$

- a. 10 ppm

$$V_1M_1=V_2M_2$$

$$V_1.500=100.10$$

$$V_1= 2 \text{ ml}$$

- b. 20 ppm

$$V_1M_1=V_2M_2$$

$$V_1.500=100.20$$

$$V_1= 4 \text{ ml}$$

- c. 30 ppm

$$V_1M_1=V_2M_2$$

$$V_1.500=100.30$$

$$V_1= 6 \text{ ml}$$

- d. 40 ppm

$$V_1M_1=V_2M_2$$

$$V_1.500=100.40$$

$$V_1= 8 \text{ ml}$$

- e. 50 ppm

$$V_1M_1=V_2M_2$$

$$V_1.500=100.50$$

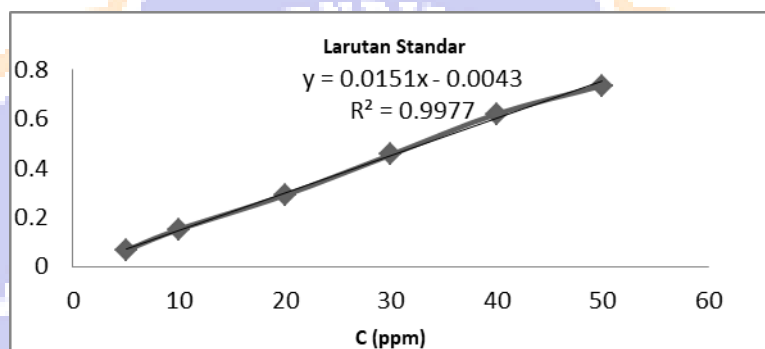


$$V_1 = 10 \text{ ml}$$

Lampiran 1. 4 Tabel perhitungan kapasitas adsorpsi zat warna *Remazol Blue*

1. Larutan standar

| No | Konsentrasi (ppm) | Absorbansi |
|----|-------------------|------------|
| 1 | 5 | 0,066 |
| 2 | 10 | 0,151 |
| 3 | 20 | 0,290 |
| 4 | 30 | 0,454 |
| 5 | 40 | 0,620 |
| 6 | 50 | 0,735 |



2. Variasi waktu kontak dan konsentrasi

a. Tanpa aktivasi

| No | t (menit) | q (mg/g) | | | | |
|----|-----------|------------|------------|------------|------------|------------|
| | | 10 ppm | 20 ppm | 30 ppm | 40 ppm | 50 ppm |
| 1 | 15 | 0,30635657 | 5,37116895 | 8,32377327 | 10,9957521 | 8,55299322 |
| 2 | 30 | 1,90589866 | 6,56385253 | 8,97014694 | 12,2176269 | 12,8213485 |
| 3 | 45 | 2,84846431 | 8,12939776 | 10,3687833 | 12,3331436 | 13,3284563 |
| 4 | 60 | 3,16192702 | 9,76952591 | 11,3669084 | 12,4464355 | 13,5682436 |
| 5 | 90 | 3,47294081 | 1,5120983 | 11,7053624 | 15,4286385 | 17,7145774 |

b. Suhu 100°C

| No | t (menit) | q (mg/g) | | | | |
|----|-----------|------------|------------|------------|------------|------------|
| | | 10 ppm | 20 ppm | 30 ppm | 40 ppm | 50 ppm |
| 1 | 15 | 0,23835906 | 0,04527111 | 0,63226782 | 1,55092532 | 1,52086863 |
| 2 | 30 | 0,36436626 | 0,43844724 | 1,27905467 | 1,60368783 | 2,60170293 |
| 3 | 45 | 0,57158625 | 1,64284436 | 1,88557763 | 1,71338364 | 2,60827289 |
| 4 | 60 | 0,95069329 | 1,85611548 | 1,96246388 | 2,53777903 | 2,67397246 |
| 5 | 90 | 1,40890793 | 2,38280743 | 2,1542356 | 3,80596818 | 3,48656019 |

c. Suhu 200°C

| No | t (menit) | q (mg/g) | | | | |
|----|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 10 ppm | 20 ppm | 30 ppm | 40 ppm | 50 ppm |
| 1 | 15 | 3,4602649 | 6,4403974 | 10,311258 | 12,033112 | 11,296909 |
| 2 | 30 | 3,4050773 | 5,4470199 | 9,3841059 | 11,105960 | 10,193157 |
| 3 | 45 | 3,8465784 | 7,3233996 | 11,105960 | 13,490066 | 10,634658 |
| 4 | 60 | 3,7362031 | 7,2130243 | 11,238410 | 16,801324 | 13,394039 |
| 5 | 90 | 3,5706402 | 6,7715232 | 12,099337 | 13,225165 | 11,903974 |

d. Suhu 300°C

| No | t (menit) | q (mg/g) | | | | |
|----|-----------|------------|------------|------------|------------|------------|
| | | 10 ppm | 20 ppm | 30 ppm | 40 ppm | 50 ppm |
| 1 | 15 | 0,75080856 | 8,12822652 | 10,1198727 | 8,12703669 | 10,0948283 |
| 2 | 30 | 3,42163355 | 8,38723754 | 10,8433893 | 9,38619321 | 10,1342612 |
| 3 | 45 | 3,5002868 | 8,55518324 | 12,3318091 | 9,63333248 | 11,6023893 |

| | | | | | | |
|---|----|------------|------------|------------|------------|------------|
| 4 | 60 | 3,86097889 | 8,58210886 | 13,380318 | 9,69260051 | 11,8342052 |
| 5 | 90 | 5,04479938 | 8,74561745 | 10,8433893 | 10,7839628 | 12,1218024 |

e. Suhu 400°C

| No | t (menit) | q (mg/g) | | | | |
|----|--------------|-----------|-----------|-----------|-----------|-----------|
| | | 10 ppm | 20 ppm | 30 ppm | 40 ppm | 50 ppm |
| 1 | 15 | 3,2251656 | 10,642384 | 14,284768 | 16,205298 | 20,576159 |
| 2 | 30 | 4,6158940 | 11,238411 | 14,417219 | 18,059603 | 20,642384 |
| 3 | 45 | 5,6092715 | 13,490066 | 17,662252 | 20,112583 | 20,774835 |
| 4 | 60 | 5,9403974 | 13,622517 | 21,635762 | 20,443709 | 24,152318 |
| 5 | 90 | 6,0728477 | 15,013245 | 21,768212 | 24,019868 | 30,311258 |

3. Variasi pH

| No | pH | Nilai q (mg/g) setiap variasi Arang | | | | |
|----|----|-------------------------------------|-------------|-------------|-------------|-------------|
| | | TA | 100°C | 200°C | 300°C | 400°C |
| 1 | 3 | 24,03269542 | 24,81503518 | 24,09787767 | 24,48622937 | 24,84742241 |
| 2 | 4 | 11,81575952 | 24,74970016 | 21,58138452 | 8,521234101 | 24,78208518 |
| 3 | 5 | 8,870822274 | 15,62050101 | 8,875470718 | 8,129397765 | 23,43503627 |
| 4 | 6 | 8,652633239 | 14,59669909 | 7,904501765 | 6,813045306 | 23,05496167 |
| 5 | 7 | 8,291131022 | 8,161277756 | 7,802315274 | 6,576343632 | 19,95129745 |
| 6 | 8 | 6,75939928 | 6,680495787 | 7,447084794 | 6,237941284 | 19,5118481 |
| 7 | 9 | 6,444420992 | 2,493106914 | 6,148552136 | 5,456489809 | 17,78976808 |

4. Model isotherm adsorpsi

a. Tanpa aktivasi

| No | C | q | C/q | Log C | Log q |
|----|---|---|-----|-------|-------|
|----|---|---|-----|-------|-------|

| | | | | | |
|---|----|----------|----------|----------|----------|
| 1 | 10 | 2,339117 | 4,275117 | 1 | 0,369052 |
| 2 | 20 | 8,269209 | 2,418611 | 1,30103 | 0,917464 |
| 3 | 30 | 10,14699 | 2,956542 | 1,477121 | 1,006337 |
| 4 | 40 | 12,68432 | 3,1535 | 1,60206 | 1,103267 |
| 5 | 50 | 13,19712 | 3,788705 | 1,69897 | 1,120479 |

b. Suhu 100°C

| No | C | q | C/q | Log C | Log q |
|----|----|----------|---------|----------|----------|
| 1 | 10 | 0,706783 | 14,1486 | 1 | -0,15071 |
| 2 | 20 | 1,273097 | 15,7097 | 1,30103 | 0,104862 |
| 3 | 30 | 1,58272 | 18,9547 | 1,477121 | 0,199404 |
| 4 | 40 | 2,242349 | 17,8384 | 1,60206 | 0,350703 |
| 5 | 50 | 2,578275 | 19,3928 | 1,69897 | 0,411329 |

c. Suhu 200°C

| No | C | q | C/q | Log C | Log q |
|----|----|----------|---------|----------|----------|
| 1 | 10 | 3,603753 | 2,77488 | 1 | 0,556755 |
| 2 | 20 | 6,639072 | 3,01247 | 1,30103 | 0,822107 |
| 3 | 30 | 10,82781 | 2,77064 | 1,477121 | 1,034541 |
| 4 | 40 | 13,33113 | 3,0005 | 1,60206 | 1,124867 |
| 5 | 50 | 11,48455 | 4,35368 | 1,69897 | 1,060114 |

d. Suhu 300°C

| No | C | q | C/q | Log C | Log q |
|----|----|----------|---------|----------|----------|
| 1 | 10 | 3,315701 | 3,01595 | 1 | 0,520575 |
| 2 | 20 | 8,479675 | 2,35858 | 1,30103 | 0,928379 |
| 3 | 30 | 11,50376 | 2,60784 | 1,477121 | 1,06084 |

| | | | | | |
|---|----|----------|---------|---------|----------|
| 4 | 40 | 9,524625 | 4,19964 | 1,60206 | 0,978848 |
| 5 | 50 | 11,1575 | 4,48129 | 1,69897 | 1,047567 |

e. Suhu 400°C

| No | C | q | C/q | Log C | Log q |
|----|----|----------|---------|----------|----------|
| 1 | 10 | 5,092715 | 1,96359 | 1 | 0,706949 |
| 2 | 20 | 12,80132 | 1,56234 | 1,30103 | 1,107255 |
| 3 | 30 | 17,95364 | 1,67097 | 1,477121 | 1,254153 |
| 4 | 40 | 19,76821 | 2,02345 | 1,60206 | 1,295967 |
| 5 | 50 | 23,29139 | 2,14672 | 1,69897 | 1,367195 |

