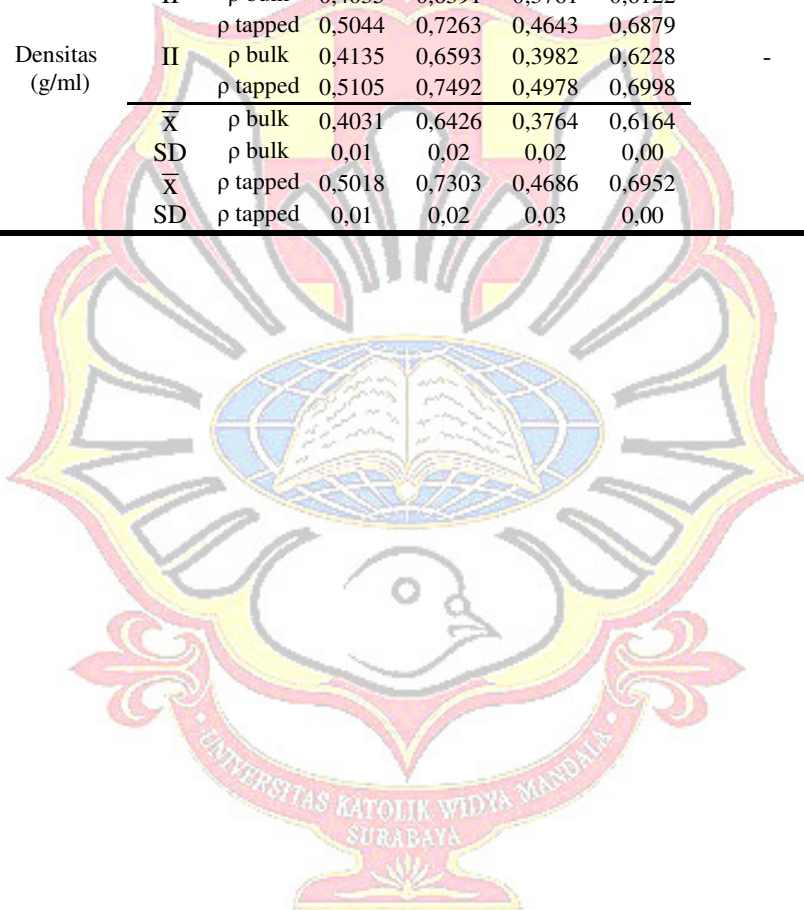


**LAMPIRAN A**  
**HASIL UJI MUTU FISIK SERBUK**

| Mutu Fisik yang Diuji      | Rep.      | Uji | Formula Tablet Ibuprofen |       |       |       | Persyaratan                             |
|----------------------------|-----------|-----|--------------------------|-------|-------|-------|---|
|                            |           |     | F I                      | F II  | F III | F IV  |   |
| Kelembaban (%)             | I         | -   | 3,26                     | 2,17  | 3,35  | 2,20  | 3 - 5 %<br>(Voigt, 1995)                |
|                            | II        | -   | 2,23                     | 2,37  | 2,59  | 1,49  |   |
|                            | III       | -   | 4,21                     | 1,77  | 4,38  | 2,85  |   |
|                            | $\bar{X}$ |     | 3,23                     | 2,10  | 3,44  | 2,18  |   |
|                            | SD        |     | 0,99                     | 0,31  | 0,90  | 0,68  |   |
| Sudut Diam (°)             | I         | 1   | 34,31                    | 28,20 | 35,25 | 30,06 | 30 - 40°<br>Cukup Baik<br>(Wells, 1988) |
|                            |           | 2   | 33,78                    | 29,11 | 35,39 | 30,03 |   |
|                            |           | 3   | 34,90                    | 28,20 | 35,95 | 30,08 |   |
|                            | II        | 1   | 33,32                    | 29,92 | 35,61 | 30,47 |   |
|                            |           | 2   | 33,01                    | 29,27 | 35,28 | 29,55 |   |
|                            |           | 3   | 33,41                    | 30,28 | 35,65 | 30,66 |   |
|                            | III       | 1   | 32,73                    | 29,93 | 33,35 | 29,08 |   |
|                            |           | 2   | 33,13                    | 30,18 | 34,78 | 29,04 |   |
|                            |           | 3   | 32,89                    | 30,01 | 33,82 | 28,83 |   |
|                            | $\bar{X}$ |     | 33,50                    | 29,46 | 35,01 | 29,76 |   |
|                            | SD        |     | 0,71                     | 0,81  | 0,88  | 0,66  |   |
| Indeks Kompresibilitas (%) | I         | -   | 20                       | 12    | 20    | 12    | 5 - 15 %                                |
|                            | II        | -   | 20                       | 12    | 19    | 11    | Sangat baik                             |
|                            | III       | -   | 19                       | 12    | 20    | 11    | 18 - 21%                                |
|                            | $\bar{X}$ |     | 19,67                    | 12,00 | 19,67 | 11,33 | Cukup baik<br>(Wells, 1988)             |
|                            | SD        |     | 0,58                     | 0,00  | 0,58  | 0,58  |   |
| Hausner Ratio              | I         | -   | 1,25                     | 1,14  | 1,25  | 1,14  | < 1,25<br>Baik<br>(Wells, 1988)         |
|                            | II        | -   | 1,25                     | 1,14  | 1,23  | 1,12  |   |
|                            | III       | -   | 1,23                     | 1,14  | 1,25  | 1,12  |   |
|                            | $\bar{X}$ |     | 1,24                     | 1,14  | 1,24  | 1,13  |   |
|                            | SD        |     | 0,01                     | 0,00  | 0,01  | 0,01  |   |

### HASIL UJI DENSITAS SERBUK

| Mutu Fisik yang Diuji | Rep.      | Uji           | Formula Tablet Ibuprofen |        |        |        | Persyaratan |
|-----------------------|-----------|---------------|--------------------------|--------|--------|--------|-------------|
|                       |           |               | F I                      | F II   | F III  | F IV   |             |
| Densitas (g/ml)       | I         | $\rho$ bulk   | 0,3924                   | 0,6295 | 0,3550 | 0,6141 | -           |
|                       |           | $\rho$ tapped | 0,4905                   | 0,7153 | 0,4438 | 0,6978 |             |
|                       | II        | $\rho$ bulk   | 0,4035                   | 0,6391 | 0,3761 | 0,6122 |             |
|                       |           | $\rho$ tapped | 0,5044                   | 0,7263 | 0,4643 | 0,6879 |             |
|                       | II        | $\rho$ bulk   | 0,4135                   | 0,6593 | 0,3982 | 0,6228 |             |
|                       |           | $\rho$ tapped | 0,5105                   | 0,7492 | 0,4978 | 0,6998 |             |
|                       | $\bar{x}$ | $\rho$ bulk   | 0,4031                   | 0,6426 | 0,3764 | 0,6164 |             |
|                       | SD        | $\rho$ bulk   | 0,01                     | 0,02   | 0,02   | 0,00   |             |
|                       | $\bar{x}$ | $\rho$ tapped | 0,5018                   | 0,7303 | 0,4686 | 0,6952 |             |
|                       | SD        | $\rho$ tapped | 0,01                     | 0,02   | 0,03   | 0,00   |             |



**LAMPIRAN B**  
**HASIL UJI KESERAGAMAN BOBOT TABLET IBUPROFEN**

Replikasi I

| No.       | Bobot Tablet Ibuprofen (mg) |        |        |        |
|-----------|-----------------------------|--------|--------|--------|
|           | F I                         | F II   | F III  | F IV   |
| 1.        | 803,3                       | 804,2  | 771,3  | 791,8  |
| 2.        | 802,8                       | 800,4  | 771,9  | 785,3  |
| 3.        | 809,3                       | 802,7  | 772,0  | 791,0  |
| 4.        | 808,0                       | 805,8  | 775,7  | 789,8  |
| 5.        | 797,1                       | 803,8  | 779,5  | 783,9  |
| 6.        | 805,7                       | 802,6  | 781,7  | 795,2  |
| 7.        | 803,1                       | 800,5  | 774,6  | 794,2  |
| 8.        | 799,3                       | 804,3  | 776,0  | 802,0  |
| 9.        | 799,6                       | 805,9  | 773,5  | 794,2  |
| 10.       | 801,2                       | 803,3  | 788,0  | 783,5  |
| 11.       | 806,8                       | 804,7  | 771,3  | 782,6  |
| 12.       | 797,4                       | 801,8  | 776,4  | 786,3  |
| 13.       | 791,6                       | 803,6  | 774,5  | 794,9  |
| 14.       | 803,9                       | 803,4  | 786,5  | 800,7  |
| 15.       | 798,2                       | 801,9  | 774,3  | 786,5  |
| 16.       | 795,2                       | 799,6  | 776,5  | 788,6  |
| 17.       | 808,0                       | 803,4  | 771,3  | 784,5  |
| 18.       | 794,5                       | 800,8  | 782,3  | 794,4  |
| 19.       | 801,2                       | 803,9  | 783,6  | 795,3  |
| 20.       | 797,5                       | 803,0  | 779,1  | 791,4  |
| $\bar{x}$ | 801,19                      | 802,98 | 777,00 | 790,81 |
| SD        | 4,92                        | 1,73   | 5,12   | 5,62   |
| KV (%)    | 0,61                        | 0,22   | 0,66   | 0,71   |

Replikasi II

| No.       | Bobot Tablet Ibuprofen (mg) |        |        |        |
|-----------|-----------------------------|--------|--------|--------|
|           | F I                         | F II   | F III  | F IV   |
| 1.        | 807,0                       | 807,8  | 771,5  | 792,8  |
| 2.        | 808,3                       | 806,0  | 783,9  | 796,7  |
| 3.        | 801,6                       | 807,7  | 770,0  | 793,0  |
| 4.        | 802,4                       | 809,5  | 771,7  | 797,3  |
| 5.        | 807,6                       | 810,4  | 776,4  | 795,0  |
| 6.        | 806,7                       | 808,4  | 789,9  | 794,3  |
| 7.        | 805,1                       | 807,0  | 771,2  | 793,0  |
| 8.        | 800,3                       | 811,3  | 771,8  | 790,0  |
| 9.        | 800,5                       | 812,6  | 771,5  | 800,5  |
| 10.       | 805,5                       | 810,4  | 777,9  | 794,4  |
| 11.       | 802,7                       | 811,1  | 772,1  | 801,1  |
| 12.       | 804,5                       | 809,9  | 776,3  | 795,1  |
| 13.       | 803,0                       | 808,1  | 776,9  | 795,4  |
| 14.       | 806,6                       | 806,6  | 773,6  | 800,9  |
| 15.       | 802,7                       | 810,7  | 770,5  | 794,6  |
| 16.       | 805,1                       | 811,6  | 787,0  | 796,2  |
| 17.       | 801,3                       | 807,6  | 775,7  | 796,4  |
| 18.       | 804,0                       | 809,9  | 778,0  | 800,2  |
| 19.       | 803,7                       | 810,7  | 773,1  | 796,8  |
| 20.       | 804,7                       | 811,0  | 771,1  | 800,9  |
| $\bar{x}$ | 804,17                      | 809,42 | 775,51 | 796,23 |
| SD        | 2,36                        | 1,87   | 5,62   | 3,14   |
| KV        | 0,29                        | 0,23   | 0,72   | 0,39   |

Replikasi III

| No.       | Bobot Tablet Ibuprofen (mg) |        |        |        |
|-----------|-----------------------------|--------|--------|--------|
|           | F I                         | F II   | F III  | F IV   |
| 1.        | 800,8                       | 800,1  | 795,9  | 797,4  |
| 2.        | 805,1                       | 796,9  | 779,9  | 797,7  |
| 3.        | 798,6                       | 799,6  | 788,3  | 795,6  |
| 4.        | 796,6                       | 793,0  | 791,8  | 794,8  |
| 5.        | 803,1                       | 803,0  | 793,9  | 799,2  |
| 6.        | 805,3                       | 797,8  | 787,5  | 793,3  |
| 7.        | 789,5                       | 793,8  | 786,5  | 798,3  |
| 8.        | 791,4                       | 801,2  | 794,5  | 801,9  |
| 9.        | 793,4                       | 796,8  | 787,3  | 799,1  |
| 10.       | 800,7                       | 799,5  | 789,6  | 800,5  |
| 11.       | 799,1                       | 793,0  | 788,9  | 799,6  |
| 12.       | 800,3                       | 802,8  | 800,1  | 798,2  |
| 13.       | 798,8                       | 800,7  | 791,7  | 797,8  |
| 14.       | 798,2                       | 800,0  | 790,4  | 800,0  |
| 15.       | 800,7                       | 792,0  | 788,1  | 797,5  |
| 16.       | 803,4                       | 795,4  | 794,0  | 798,1  |
| 17.       | 794,9                       | 803,6  | 800,2  | 799,1  |
| 18.       | 802,9                       | 804,6  | 790,4  | 798,6  |
| 19.       | 795,3                       | 797,1  | 794,8  | 795,9  |
| 20.       | 793,0                       | 795,0  | 778,1  | 794,2  |
| $\bar{x}$ | 798,56                      | 798,30 | 790,60 | 797,84 |
| SD        | 4,52                        | 3,80   | 5,58   | 2,17   |
| KV (%)    | 0,57                        | 0,48   | 0,71   | 0,27   |



**LAMPIRAN C**  
**HASIL UJI KEKERASAN TABLET IBUPROFEN**

Replikasi I

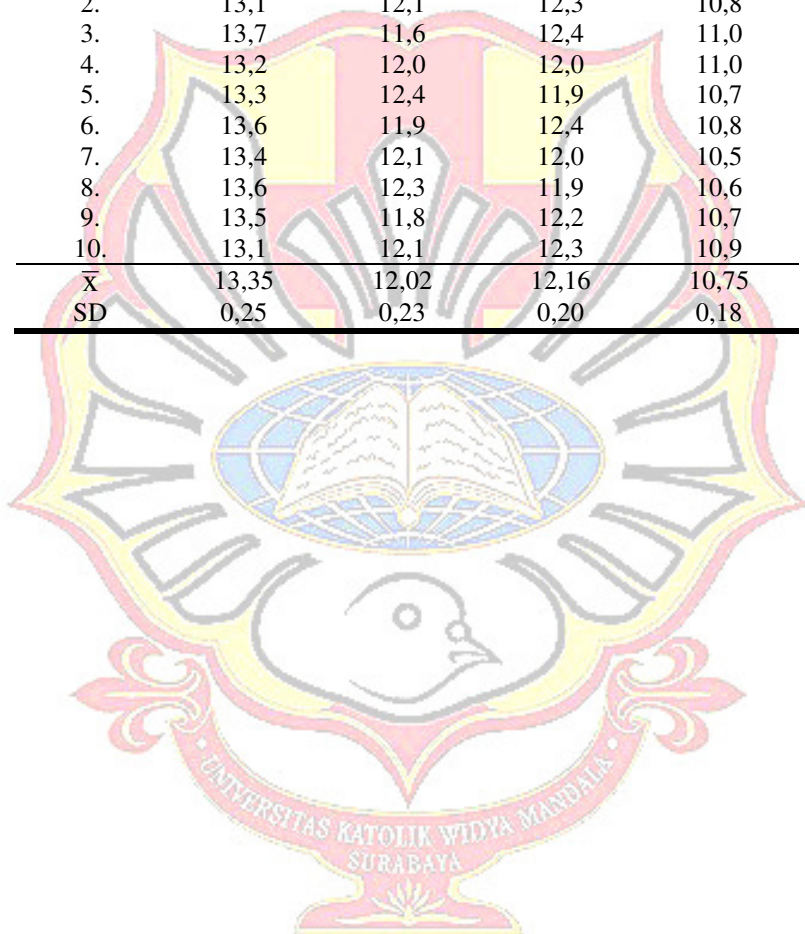
| No.       | Kekerasan Tablet Ibuprofen (Kgf) |       |       |      |
|-----------|----------------------------------|-------|-------|------|
|           | F I                              | F II  | F III | F IV |
| 1.        | 15,2                             | 11,4  | 13,2  | 9,1  |
| 2.        | 15,2                             | 11,6  | 12,9  | 9,0  |
| 3.        | 15,1                             | 11,4  | 13,0  | 9,1  |
| 4.        | 14,8                             | 12,1  | 13,3  | 8,9  |
| 5.        | 15,0                             | 11,6  | 13,0  | 9,4  |
| 6.        | 14,7                             | 11,3  | 12,9  | 9,1  |
| 7.        | 14,6                             | 11,6  | 12,7  | 9,3  |
| 8.        | 15,5                             | 11,8  | 13,3  | 9,1  |
| 9.        | 15,0                             | 11,6  | 13,2  | 8,9  |
| 10.       | 15,2                             | 11,7  | 12,9  | 9,2  |
| $\bar{x}$ | 15,03                            | 11,61 | 13,04 | 9,11 |
| SD        | 0,27                             | 0,23  | 0,20  | 0,16 |

Replikasi II

| No.       | Kekerasan Tablet Ibuprofen (Kgf) |       |       |       |
|-----------|----------------------------------|-------|-------|-------|
|           | F I                              | F II  | F III | F IV  |
| 1.        | 14,9                             | 11,5  | 12,5  | 11,2  |
| 2.        | 15,1                             | 11,2  | 12,4  | 10,9  |
| 3.        | 15,0                             | 11,4  | 12,6  | 11,0  |
| 4.        | 15,2                             | 11,6  | 12,8  | 11,0  |
| 5.        | 14,9                             | 11,0  | 12,7  | 11,3  |
| 6.        | 15,2                             | 11,1  | 12,8  | 11,4  |
| 7.        | 14,8                             | 11,2  | 12,9  | 10,8  |
| 8.        | 14,9                             | 11,1  | 12,8  | 11,3  |
| 9.        | 15,1                             | 11,3  | 12,4  | 11,1  |
| 10.       | 15,1                             | 11,4  | 12,7  | 11,1  |
| $\bar{x}$ | 15,02                            | 11,28 | 12,66 | 11,11 |
| SD        | 0,14                             | 0,19  | 0,18  | 0,19  |

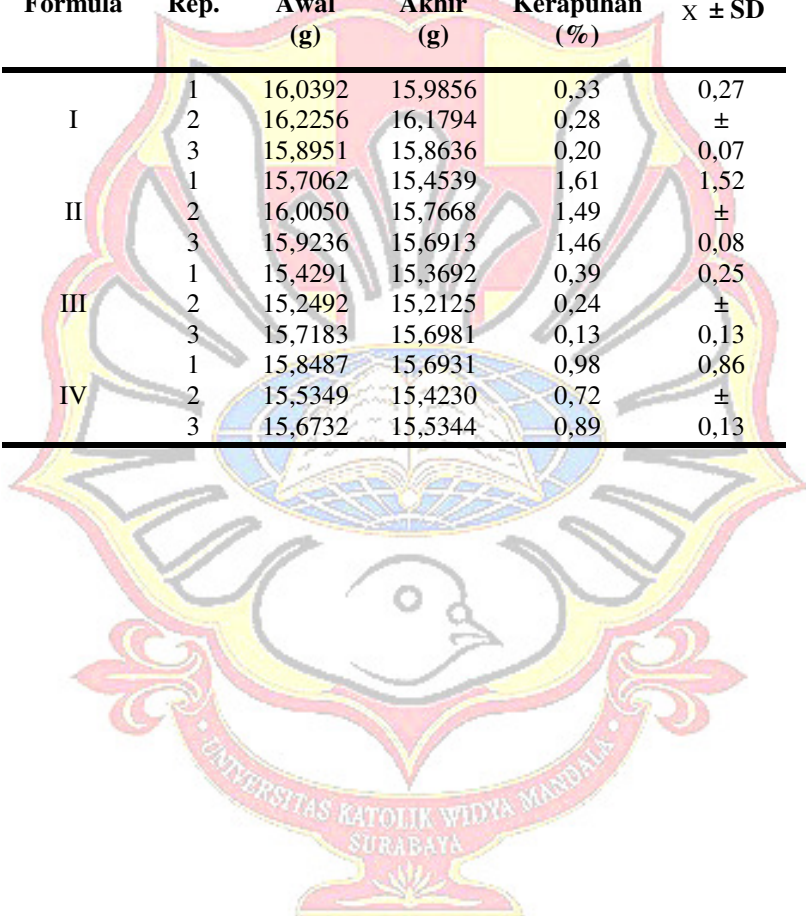
Replikasi III

| No.       | Kekerasan Tablet Ibuprofen (Kgf) |       |       |       |
|-----------|----------------------------------|-------|-------|-------|
|           | F I                              | F II  | F III | F IV  |
| 1.        | 13,0                             | 11,9  | 12,2  | 10,5  |
| 2.        | 13,1                             | 12,1  | 12,3  | 10,8  |
| 3.        | 13,7                             | 11,6  | 12,4  | 11,0  |
| 4.        | 13,2                             | 12,0  | 12,0  | 11,0  |
| 5.        | 13,3                             | 12,4  | 11,9  | 10,7  |
| 6.        | 13,6                             | 11,9  | 12,4  | 10,8  |
| 7.        | 13,4                             | 12,1  | 12,0  | 10,5  |
| 8.        | 13,6                             | 12,3  | 11,9  | 10,6  |
| 9.        | 13,5                             | 11,8  | 12,2  | 10,7  |
| 10.       | 13,1                             | 12,1  | 12,3  | 10,9  |
| $\bar{x}$ | 13,35                            | 12,02 | 12,16 | 10,75 |
| SD        | 0,25                             | 0,23  | 0,20  | 0,18  |



**LAMPIRAN D**  
**HASIL UJI KERAPUHAN TABLET IBUPROFEN**

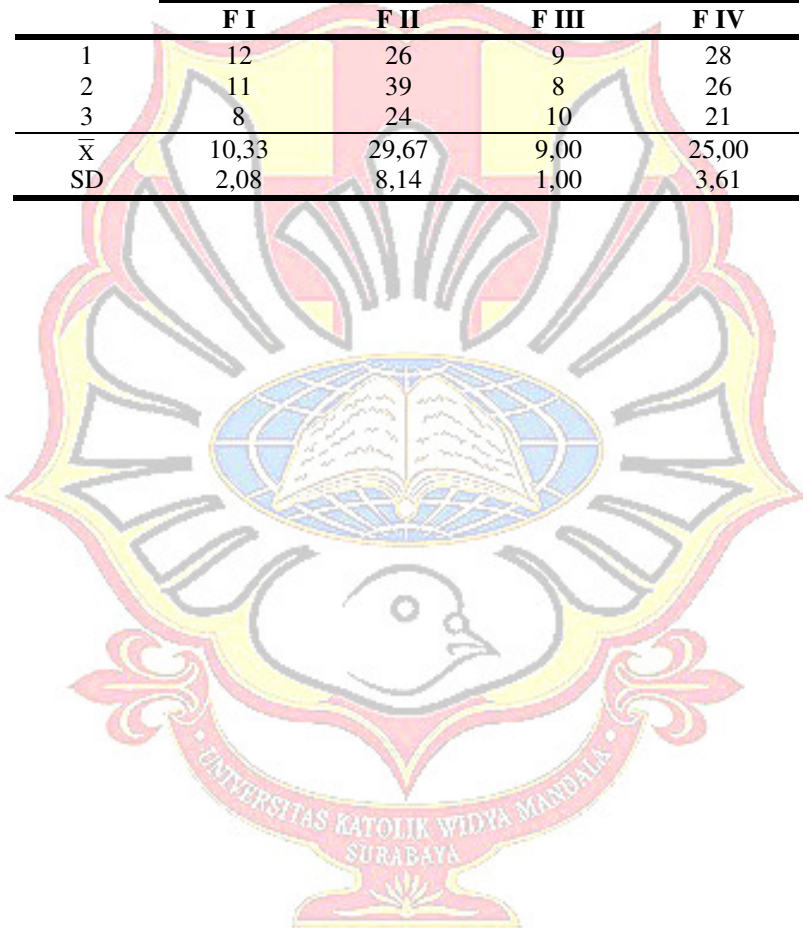
| Formula | Rep. | Berat Awal (g) | Berat Akhir (g) | Kerapuhan (%) | $\bar{X} \pm SD$ |
|---------|------|----------------|-----------------|---------------|------------------|
| I       | 1    | 16,0392        | 15,9856         | 0,33          | 0,27             |
|         | 2    | 16,2256        | 16,1794         | 0,28          | ±                |
|         | 3    | 15,8951        | 15,8636         | 0,20          | 0,07             |
| II      | 1    | 15,7062        | 15,4539         | 1,61          | 1,52             |
|         | 2    | 16,0050        | 15,7668         | 1,49          | ±                |
|         | 3    | 15,9236        | 15,6913         | 1,46          | 0,08             |
| III     | 1    | 15,4291        | 15,3692         | 0,39          | 0,25             |
|         | 2    | 15,2492        | 15,2125         | 0,24          | ±                |
|         | 3    | 15,7183        | 15,6981         | 0,13          | 0,13             |
| IV      | 1    | 15,8487        | 15,6931         | 0,98          | 0,86             |
|         | 2    | 15,5349        | 15,4230         | 0,72          | ±                |
|         | 3    | 15,6732        | 15,5344         | 0,89          | 0,13             |





**LAMPIRAN E**  
**HASIL UJI WAKTU HANCUR TABLET IBUPROFEN**

| Replikasi | Waktu Hancur (detik) |       |       |       |
|-----------|----------------------|-------|-------|-------|
|           | F I                  | F II  | F III | F IV  |
| 1         | 12                   | 26    | 9     | 28    |
| 2         | 11                   | 39    | 8     | 26    |
| 3         | 8                    | 24    | 10    | 21    |
| $\bar{X}$ | 10,33                | 29,67 | 9,00  | 25,00 |
| SD        | 2,08                 | 8,14  | 1,00  | 3,61  |



**LAMPIRAN F**  
**HASIL UJI PENETAPAN KADAR TABLET IBUPROFEN**

| Formula | Rep. | Abs.  | Csampil<br>( $\mu\text{g/ml}$ ) | W<br>tablet<br>(g) | W<br>teoritis<br>(g) | Cteoritis<br>( $\mu\text{g/ml}$ ) | Kadar<br>(%) | $\bar{X}$ | SD   | KV<br>(%) |
|---------|------|-------|---------------------------------|--------------------|----------------------|-----------------------------------|--------------|-----------|------|-----------|
| I       | 1    | 0,838 | 500,2012                        | 0,8000             | 0,40000              | 500,0000                          | 100,04       | 100,65    | 0,70 | 0,69      |
|         | 2    | 0,850 | 507,3846                        | 0,8005             | 0,40025              | 500,3125                          | 101,41       |           |      |           |
|         | 3    | 0,842 | 502,5957                        | 0,8002             | 0,40010              | 500,1250                          | 100,49       |           |      |           |
| II      | 1    | 0,838 | 500,2012                        | 0,8002             | 0,40010              | 500,1250                          | 100,02       | 100,01    | 0,83 | 0,82      |
|         | 2    | 0,831 | 496,0109                        | 0,8002             | 0,40010              | 500,1250                          | 99,18        |           |      |           |
|         | 3    | 0,845 | 504,3915                        | 0,8004             | 0,40020              | 500,2500                          | 100,83       |           |      |           |
| III     | 1    | 0,832 | 496,6096                        | 0,8002             | 0,40010              | 500,1250                          | 99,30        | 99,18     | 0,41 | 0,41      |
|         | 2    | 0,827 | 493,6165                        | 0,8000             | 0,40000              | 500,0000                          | 98,72        |           |      |           |
|         | 3    | 0,834 | 497,8068                        | 0,8004             | 0,40020              | 500,2500                          | 99,51        |           |      |           |
| IV      | 1    | 0,839 | 500,7998                        | 0,8000             | 0,40000              | 500,0000                          | 100,16       | 100,62    | 0,45 | 0,44      |
|         | 2    | 0,847 | 505,5888                        | 0,8001             | 0,40005              | 500,0625                          | 101,05       |           |      |           |
|         | 3    | 0,843 | 503,1943                        | 0,8000             | 0,40000              | 500,0000                          | 100,64       |           |      |           |

**LAMPIRAN G**  
**HASIL UJI DISOLUSI TABLET IBUPROFEN PADA t = 30 MENIT**

| Formula | Rep. | Abs.  | Csampil<br>( $\mu\text{g/ml}$ ) | Wt<br>(mg) | W tablet<br>(mg) | Wt teoritis<br>(mg) | % obat<br>terlarut | $\bar{x}$ | SD   | KV<br>(%) |
|---------|------|-------|---------------------------------|------------|------------------|---------------------|--------------------|-----------|------|-----------|
| I       | 1    | 0,809 | 444,4300                        | 399,9870   | 808,2            | 404,10              | 98,98              | 99,13     | 0,23 | 0,23      |
|         | 2    | 0,814 | 447,1676                        | 402,4508   | 809,8            | 404,90              | 99,40              |           |      |           |
|         | 3    | 0,810 | 444,9775                        | 400,4798   | 808,9            | 404,45              | 99,02              |           |      |           |
| II      | 1    | 0,772 | 424,1723                        | 381,7551   | 804,1            | 401,05              | 94,95              | 94,90     | 0,47 | 0,50      |
|         | 2    | 0,768 | 421,9822                        | 379,7840   | 804,6            | 402,30              | 94,40              |           |      |           |
|         | 3    | 0,775 | 425,8148                        | 383,2333   | 803,9            | 401,95              | 95,34              |           |      |           |
| III     | 1    | 0,788 | 432,9324                        | 389,6392   | 788,0            | 394,00              | 98,89              | 98,67     | 0,21 | 0,21      |
|         | 2    | 0,788 | 432,9324                        | 389,6392   | 789,9            | 394,95              | 98,66              |           |      |           |
|         | 3    | 0,787 | 432,3849                        | 389,1464   | 790,4            | 395,20              | 98,47              |           |      |           |
| IV      | 1    | 0,756 | 415,4121                        | 373,8709   | 798,7            | 399,35              | 93,62              | 93,76     | 0,13 | 0,13      |
|         | 2    | 0,758 | 416,5071                        | 374,8564   | 799,5            | 399,75              | 93,77              |           |      |           |
|         | 3    | 0,759 | 417,0547                        | 375,3492   | 799,7            | 399,85              | 93,87              |           |      |           |

## LAMPIRAN H

### CONTOH PERHITUNGAN SUDUT DIAM

Formula I:

$$W \text{ persegi panjang} = 4,44 \text{ gram}$$

$$W \text{ lingkaran} = 1,15 \text{ gram}$$

$$\text{Luas persegi panjang} = 21,1 \times 29,7 = 626,67 \text{ cm}^2$$

$$\text{Luas lingkaran} = \frac{1,15 \times 626,67}{4,44} = 162,31 \text{ cm}^2$$

$$r^2 = \frac{A}{\pi} = \frac{162,31}{3,14} = 51,69$$

$$r = 7,19 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{4,81}{7,19} = 0,669$$

$$\alpha = 33,78^\circ$$

### CONTOH PERHITUNGAN INDEKS KOMPRESIBILITAS

Formula I :

$$\text{Berat gelas} = 116,28 \text{ g } (W_1)$$

$$\text{Berat gelas + granul} = 155,52 \text{ g } (W_2)$$

$$V_1 = 100 \text{ ml}, V_2 = 80 \text{ ml}$$

$$\text{Bj nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{(155,52 - 116,28)}{100} = 0,3924 \text{ g/ml}$$

$$\text{Bj mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{(155,52 - 116,28)}{80} = 0,4905 \text{ g/ml}$$

$$\% \text{ kompresibilitas} = \left( 1 - \frac{\text{Bj.nyata}}{\text{Bj.mampat}} \right) \times 100\% = 20\%$$

## CONTOH PERHITUNGAN AKURASI DAN PRESISI

| Rep.      | Kons. | Abs.  | Kons.<br>(µg/ml) | Wteo<br>(g) | Kons.<br>Teoritis<br>(µg/ml) | Perolehan<br>Kembali<br>(%) | SD   | KV<br>(%) |
|-----------|-------|-------|------------------|-------------|------------------------------|-----------------------------|------|-----------|
| I         | 80%   | 0,680 | 405,6203         | 0,3200      | 400,000                      | 101,41                      | 0,21 | 0,21      |
|           | 80%   | 0,679 | 405,0217         | 0,3205      | 400,625                      | 101,10                      |      |           |
|           | 80%   | 0,682 | 406,8176         | 0,3206      | 400,750                      | 101,51                      |      |           |
| II        | 100%  | 0,854 | 509,7790         | 0,4004      | 500,500                      | 101,85                      | 0,36 | 0,35      |
|           | 100%  | 0,848 | 506,1874         | 0,4001      | 500,125                      | 101,21                      |      |           |
|           | 100%  | 0,848 | 506,1874         | 0,3999      | 499,875                      | 101,26                      |      |           |
| III       | 120%  | 1,005 | 600,1696         | 0,4798      | 599,750                      | 100,07                      | 0,63 | 0,62      |
|           | 120%  | 1,008 | 601,9655         | 0,4803      | 600,375                      | 100,26                      |      |           |
|           | 120%  | 1,018 | 607,9516         | 0,4804      | 600,500                      | 101,24                      |      |           |
| $\bar{X}$ |       |       |                  |             |                              | 101,10                      | 0,40 | 0,39      |

Formula I replikasi 1

Absorbansi = 0,680 →  $y = 0,0017x + 0,0024$

Konsentrasi Sampel (x) = 405,6203 µg/ml

Berat teoritis = 0,3200 gram

Konsentrasi teoritis =  $\frac{0,3200 \times 10^6}{100} \times \frac{1,25}{10} = 400 \mu\text{g/ml}$

% perolehan kembali =  $\frac{\text{konsentrasi sampel}}{\text{konsentrasi teoritis}} \times 100 \%$   
 $= \frac{405,6203}{400} \times 100 \%$   
 $= 101,41 \%$

Untuk menghitung % KV =  $\frac{SD}{\bar{X}} \times 100\%$   
 $= \frac{0,21}{101,34} \times 100\%$   
 $= 0,21 \%$



## CONTOH PERHITUNGAN UJI PENETAPAN KADAR

| Fo. | Abs.  | Csampel<br>(µg/ml) | Wtab<br>(g) | Cteoritis<br>(µg/ml) | Kadar<br>(%) | $\bar{x} \pm SD$ | KV<br>(%) |
|-----|-------|--------------------|-------------|----------------------|--------------|------------------|-----------|
| I   | 0,838 | 500,2012           | 0,8000      | 500,0000             | 100,04       | 100,65           | 0,69      |
|     | 0,850 | 507,3846           | 0,8005      | 500,3125             | 101,41       | ±                |           |
|     | 0,842 | 502,5957           | 0,8002      | 500,1250             | 100,49       | 0,70             |           |
| II  | 0,838 | 500,2012           | 0,8002      | 500,1250             | 100,02       | 100,01           | 0,82      |
|     | 0,831 | 496,0109           | 0,8002      | 500,1250             | 99,18        | ±                |           |
|     | 0,845 | 504,3915           | 0,8004      | 500,2500             | 100,83       | 0,83             |           |
| III | 0,832 | 496,6096           | 0,8002      | 500,1250             | 99,30        | 99,18            | 0,41      |
|     | 0,827 | 493,6165           | 0,8000      | 500,0000             | 98,72        | ±                |           |
|     | 0,834 | 497,8068           | 0,8004      | 500,2500             | 99,51        | 0,41             |           |
| IV  | 0,839 | 500,7998           | 0,8000      | 500,0000             | 100,16       | 100,62           | 0,44      |
|     | 0,847 | 505,5888           | 0,8001      | 500,0625             | 101,05       | ±                |           |
|     | 0,843 | 503,1943           | 0,8000      | 500,0000             | 100,64       | 0,45             |           |

Formula I replikasi 1

$$\text{Absorbansi} = 0,838 \rightarrow y = 0,0017x + 0,0024$$

$$\text{Konsentrasi sampel (x)} = 500,2012 \mu\text{g/ml}$$

$$\text{Berat tablet} = 0,8000 \text{ gram}$$

$$\text{Berat teoritis} = \frac{0,8000}{0,8} \times 0,4 = 0,4000 \text{ gram}$$

$$\text{Konsentrasi teoritis} = \frac{0,4000 \times 10^6}{100} \times \frac{1,25}{10} = 500 \mu\text{g/ml}$$

$$\begin{aligned} \% \text{ perolehan kembali} &= \frac{\text{konsentrasi sampel}}{\text{konsentrasi teoritis}} \times 100 \% \\ &= \frac{500,2012}{500} \times 100 \% \\ &= 100,04 \% \end{aligned}$$

$$\begin{aligned} \text{Untuk menghitung \% KV} &= \frac{SD}{X} \times 100\% \\ &= \frac{0,70}{100,65} \times 100\% \\ &= 0,69 \% \end{aligned}$$

## CONTOH PERHITUNGAN PERSEN OBAT TERLEPAS

| Fo. | Abs.  | Csampel<br>( $\mu\text{g/ml}$ ) | Wt<br>(mg) | W tab<br>(mg) | Wt teo<br>(mg) | % obat<br>terlarut | $\bar{x} \pm \text{SD}$ | KV<br>(%) |
|-----|-------|---------------------------------|------------|---------------|----------------|--------------------|-------------------------|-----------|
| I   | 0,809 | 444,4300                        | 399,9870   | 808,2         | 404,10         | 98,98              | 99,13                   | 0,23      |
|     | 0,814 | 447,1676                        | 402,4508   | 809,8         | 404,90         | 99,40              | $\pm$                   |           |
|     | 0,810 | 444,9775                        | 400,4798   | 808,9         | 404,45         | 99,02              | 0,23                    |           |
| II  | 0,772 | 424,1723                        | 381,7551   | 804,1         | 401,05         | 94,95              | 94,90                   | 0,50      |
|     | 0,768 | 421,9822                        | 379,7840   | 804,6         | 402,30         | 94,40              | $\pm$                   |           |
|     | 0,775 | 425,8148                        | 383,2333   | 803,9         | 401,95         | 95,34              | 0,47                    |           |
| III | 0,788 | 432,9324                        | 389,6392   | 788,0         | 394,00         | 98,89              | 98,67                   | 0,21      |
|     | 0,788 | 432,9324                        | 389,6392   | 789,9         | 394,95         | 98,66              | $\pm$                   |           |
|     | 0,787 | 432,3849                        | 389,1464   | 790,4         | 395,20         | 98,47              | 0,21                    |           |
| IV  | 0,756 | 415,4121                        | 373,8709   | 798,7         | 399,35         | 93,62              | 93,76                   | 0,13      |
|     | 0,758 | 416,5071                        | 374,8564   | 799,5         | 399,75         | 93,77              | $\pm$                   |           |
|     | 0,759 | 417,0547                        | 375,3492   | 799,7         | 399,85         | 93,87              | 0,13                    |           |

Formula I replikasi 1

$$\text{Absorbansi} = 0,809 \rightarrow y = 0,0018x - 0,0027$$

$$\text{Csampel (x)} = 444,4300 \mu\text{g/ml}$$

$$\begin{aligned} \text{Wt} &= (900/1000 \times \text{konsentrasi sampel}) \\ &= (900/1000 \times 444,4300) \\ &= 399,9870 \text{ mg} \end{aligned}$$

$$\text{Wtablet} = 808,2 \text{ mg}$$

$$\text{Wt teoritis} = 808,2 \times 400 = 404,1 \text{ mg}$$

$$\frac{800}{800}$$

$$\% \text{ obat terlarut} = \frac{\text{Wt}}{\text{Wteoritis}} 100\% = \frac{399,9870}{404,1} 100\% = 98,98\%$$

$$\begin{aligned} \text{Untuk menghitung \% KV} &= \frac{\text{SD}}{X} \times 100\% \\ &= \frac{0,23}{99,13} \times 100\% \\ &= 0,23 \% \end{aligned}$$

# LAMPIRAN I

## SERTIFIKAT ANALISIS BAHAN

### IBUPROFEN



**Shasun Chemicals And Drugs Ltd.**

**IBUPROFEN BP/Ph.Eur. (SN Grade)  
CERTIFICATE OF ANALYSIS**

| Nature of Packing : Sea Worthy Fibre Drum |  | Analytical Report No. : FPIB U0607674                                 |   |
|---|--|---|---|
| Sample Taken By : S.Sivakumar             |  | Batch Number : IB U0607674  |   |
| Date of Manufacture : July 2006           |  | Date of Analysis : 25-07-2006   |   |
| Expiry Date : June 2011                   |  | Date of Report : 25-07-2006   |   |
| Batch Volume(Qty) : 3000 Kg.              |  | Manufactured By : Shasun Chemicals<br>And Drugs Limited, Pondicherry. |   |
| S.No                                      | TESTS  | RESULTS   | LIMITS  |
| 1.  | Appearance   | White crystalline powder  | White, crystalline powder or colourless crystals  |
| 2.  | Solubility   | Complies  | Freely soluble in acetone, in methanol and in methylene chloride. Dissolves in dilute solutions of alkali hydroxides and carbonates. Practically insoluble in water.  |
| 3.  | Clarity and colour of solution                         | Complies  | 10 % w/v solution (5g in 50 mL of the solution) in methanol should be clear and colourless  |
| 4.  | Identification<br>a) By IR                             | Conforms  | The IR spectrum of sample should be concordant with the spectrum of Ibuprofen RS  |
|   | b) By UV   | 1.24<br><br>1.03  | The ratio of absorbance at the max. at 264 nm to that at 258 nm is 1.20 to 1.30<br><br>The ratio of absorbance at the max at 272 nm to that at 258 nm is 1.00 to 1.10 |
|   | c) By TLC  | Complies  | Principal spot should be similar in position, colour and size compared to Ibuprofen RS  |
|   | d) Melting point                                       | 76.1 °C   | 75.0°C to 78.0 °C   |
| 5.  | Optical rotation                                       | 0.00 °  | - 0.05° to +0.05°   |
| 6.  | Heavy metals   | LT 10 PPM   | NMT 10 PPM  |
| 7.  | Related substances (by HPLC)                           |   |   |
|   | a) 2-(4-Isobutyl-1-Phenyl) Propanoic Acid (Impurity J) | 0.06 % (Area %)   | NMT 0.20 % (Area %)   |
|   | b) 2-(4-Butyl phenyl)propanoic acid (Impurity B)       | Not Detected  | NMT 0.30 % (w/w)  |
|   | c) 4-Isobutylacetophenone (Impurity E)                 | Not Detected  | NMT 0.30 % (Area %)   |
|   | d) Any unidentified impurity (Apart from impurity B)   | 0.04 % (Area %)<br>0.14 % (Area %)                                    | NMT 0.10 % (Area %)<br>NMT 0.50 % (Area %)  |
| 8.  | Sulphated ash  | 0.04 % (w/w)  | NMT 0.10 % (w/w)  |
| 9.  | Loss on drying   | 0.10 % (w/w)  | NMT 0.50 % (w/w)  |
| 10.                                       | Assay (dry basis)                                      | 99.8 % (w/w)  | 98.5 % -101.0 % (w/w)   |

Page 1/2

Shasun Road, Periyakalpet, Pondicherry - 605 014, India  
 Ph : 91-413-2655202, 2655156, 2655157, 2655441, 2655442  
 2655827, 2655828, 2655829, 2655830  
 Fax : 091 - 413 - 2655154, e-mail : shapondy@md4.vsnl.net.in  
 shapdy@shasun.com

# AVICEL PH 102

## ASAHI KASEI CHEMICALS CORPORATION

Date: 21-JUN-2010

Issued by manufacturer

1-105 Kanda Jinbocho, Chiyoda-ku, TOKYO 101-8101, JAPAN  
 TEL +81-03-3298-3381 FAX +81-03-3298-3467  
 Manufacturing site: 304, Mizushiri-machi, Nobeoka-city, Miyazaki 882-0015, Japan

1699 / B5 / VII / 10  
 1670 / B5 / VII / 10

YOUR NO.: 87ME-10-5298-0060

### CERTIFICATE OF ANALYSIS

Compendial name: Microcrystalline Cellulose, NF, Ph. Eur., JP

Trade name : CEOLUS®

Grade : PH-102 Lot No. 2045 (230bags)

Manufacturing Date: 26-APR-2010

Re-evaluation Date: 26-APR-2013

Organic Solvent: not used in our process

#### Compendial Standards

| Description                                   | Specifications | Lot Analysis |
|---|----------------|--------------|
| Identification                                | Passes         | Passes       |
| Degree of polymerization                      | 100 - 300      | Passes       |
| Loss on drying (%)                            | 2.0 - 5.0      | 3.2          |
| Water-soluble substances (mg)                 | NMT 12.5       | 5.9          |
| Ether-soluble substances (mg)                 | NMT 5.0        | 0.5          |
| Conductivity (μS/cm)                          | NMT 75         | 22           |
| Heavy metals (ppm)                            | NMT 10         | NMT 10       |
| Solubility                                    | Passes         | Passes       |
| Residue on ignition (%)                       | NMT 0.1        | 0.02         |
| Bulk density (g/cm <sup>3</sup> )             | 0.28 - 0.33    | 0.302        |
| pH  | 5.0 - 7.5      | 6.2          |
| Total aerobic microbial count (cfu/g)         | NMT 1000       | Passes       |
| Total combined molds and yeasts count (cfu/g) | NMT 100        | Passes       |
| <i>Escherichia coli</i>                       | None Present   | None Present |
| <i>Salmonella</i> species                     | None Present   | None Present |
| <i>Pseudomonas Aeruginosa</i>                 | None Present   | None Present |
| <i>Staphylococcus Aureus</i>                  | None Present   | None Present |

#### ASAHI Standards

|   |         |     |
|---|---------|-----|
| Particle size, wt. % >250 μm (60 mesh)  | LT 8.0  | 1.2 |
| Particle size, wt. % >150 μm (100 mesh) | 20 - 40 | 28  |

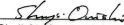
NMT --Not More Than; LT --Less Than

We certify that the product complies with the standards of the NF, Ph. Eur., JP.

**Storage conditions:** Store at ambient conditions. Keep containers sealed; material is hygroscopic.

**Re-evaluation Date:** Three years after manufacturing, if stored as recommended.

Asahi Kasei Chemicals recommends that the customer's quality control unit may re-evaluate the quality of this material at the given time e.g. for loss on drying and extend the shelf life of this lot on its own responsibility.

  
 Manager  
 Quality Assurance Section  
 CEOLUS Production Department

# EMCOMPRESS



**Emcompress®**  
 Dibasic Calcium Phosphate Dihydrate, USP, Calcium Hydrogen Phosphate Dihydrate, Ph. Eur.  
**CERTIFICATE OF ANALYSIS**

Batch No.: 9003

Manufacturing Site: Chicago Heights, IL., USA

Re-evaluation date: **January 2012**  
 Manufacturing date: **January 2010**

| Description |  |
|-------------|--|
| Appearance  | White or almost white, crystalline powder  |
| Solubility  | practically insoluble in cold water and in ethanol. It dissolves in dilute hydrochloric acid and in dilute nitric acid |

| Characteristics                          | Specification  | Lot Result         | Test Reference                 |
|--|--|--------------------|--------------------------------|
| Identification I                         | White precipitate is formed  | Conforms           | USP, Ph. Eur.                  |
| Identification II                        | Yellow precipitate is formed   | Conforms           | USP, Ph. Eur.                  |
| Loss on ignition                         | 24.5 – 26.5 %  | 25.9 %             | USP, Ph. Eur.                  |
| Carbonate*<br>(Chloride*)                | No effervescence occurs  | Passes             | USP, Ph. Eur.                  |
| Sulfate*<br>(Arsenic*)                   | Not more than 0.25 %   | < 0.25 %           | USP, Ph. Eur.                  |
|  | Not more than 0.5 %  | < 0.5 %            | USP, Ph. Eur.                  |
|  | Not more than 3 ppm  | < 3 ppm            | USP, Ph. Eur.                  |
| Barium*)                                 | No turbidity is produced within 10 minutes   | Passes             | USP, Ph. Eur.                  |
| Heavy metals*)                           | Not more than 0.003 %  | < 0.003 %          | USP, Ph. Eur.                  |
| Acid insoluble substances<br>(Fluoride*) | Not more than 0.2%<br>Not more than 0.005 %  | 0.0 %<br>< 0.005 % | USP, Ph. Eur.<br>USP, Ph. Eur. |
| Assay                                    | 98.0 – 105.0 %   | 102.7 %            | USP, Ph. Eur.                  |
| Lead*)                                   | Not more than 0.25 ppm   | < 0.25 ppm         | T273F                          |
| Iron                                     | Not more than 400 ppm  | < 400 ppm          | Ph. Eur.                       |
| Particle Size<br>by Ro-Tab®              | Not more than 2 % retained on #40 mesh sieve (425 µm)<br>Not more than 15 % passes through #200 mesh sieve (75 µm) | 0.1 %<br>9.2 %     | T271F                          |

Identification I/II tests: Results reported are expected results based on historical data.

The raw materials, manufacturing process and product do not contain any of the solvents listed in Residual Solvents (USP <467>, Ph.Eur. <5.4>).  
 \*) reduced testing schedule

2010-02-16  
 Ref: 21131065

*S. Hertwig*  
 Susan Hertwig  
 QUALITY ASSURANCE  
 Pharmaceutical and Food Excipients

Zemessy02b

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certificates/02b



## YUNG ZIP CHEMICAL IND. CO., LTD.

59, Yu Shih Road  
Youth Industrial District  
Tachia, Taitwan, 437  
R. O. C.

TEL: 886-4-26818780, 26811344

FAX: 886-4-26812911

## CERTIFICATE OF ANALYSIS

**D S T**

(Sodium Starch Glycolate)

Lot No.: SSGC01921

Mfg. Date: Nov. 12, 2009

Analysis Following: BP2007/EP 6.0

Retest Date: Nov. 11, 2012

| ITEMS                     | SPECIFICATIONS   | RESULTS                     |
|---------------------------|--|-----------------------------|
| Appearance                | A white or almost white, fine, free-flowing powder, very hygroscopic           | A white free-flowing powder |
| Examined under microscope | Conformed to the test  | Conformed                   |
| Solubility                | Practically insoluble in methylene chloride. A translucent suspension in water | Conformed                   |
| Identification            |  |                             |
| A. pH                     | Between 5.5 and 7.5  | 6.0                         |
| B. Suspension test        | Suspension forms settles after standing.                                       | Conformed                   |
| C. Iodine test            | The solution becomes blue to violet.   | Conformed                   |
| D. Sodium test            | A dense white precipitate is formed.   | Conformed                   |
| Appearance of solution S1 |  |                             |
| Clear                     | The opalescence is not more pronounced than reference suspension I.            | Conformed                   |
| Colorless                 | Not more intensely colored than reference solution B <sub>9</sub> .            | Conformed                   |
| Sodium chloride           | Not more than 7.0 %  | 3.9 %                       |
| Sodium glycolate          | Not more than 2.0 %  | 1.9 %                       |
| Iron                      | Not more than 20 ppm   | < 0.002 %                   |
| Heavy metals              | Not more than 20 ppm   | < 0.002 %                   |
| Loss on drying            | Not more than 10.0 %   | 2.7 %                       |
| Microbial contamination   | Absence of <i>Salmonella</i> species and <i>Escherichia Coli</i>               | Negative                    |
| Assay                     | 2.8 % ~ 4.2 % of sodium  | 3.1 %                       |

**Conclusion : Passed**(Dra. Sianita Gunawan MS.)  
Quality Control Manager

# CROSPROVIDONE

**BASF**  
The Chemical Company

Certificate of Analysis  
BASF South East Asia Pte Ltd

Please note that the certificates of analysis are also conveniently available online and around the clock at [www.worldscount.basf.com](http://www.worldscount.basf.com)

Fax No 0062000218452306

PT MEGASETIA AGUNG KIMIA  
SUNTER AGUNG PODOMORO TANJUNGPRIOK  
14350 JAKARTA UTARA  
Indonesia

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Certificate No 889  
Page 1 of 4

Certificate of Analysis according to DIN 55350-18-4.2.2

|                                  |          |                   |
|----------------------------------|----------|-------------------|
| Kollidon® CL                     | Material | 60000895          |
| 40KG PE-Drum, removable head     | Order    | 1327808490 000020 |
| Purchase Order/Customer Product# | Delivery | 8027112236 600002 |
| 1421019078                       | Lot/No   | 1061337710        |
| 60000895                         | Lot/City | 200.000 KG        |
|                                  | Total    | 200.000 KG        |

| Test Parameter                            | Requirements                    | DoM    | Results  |
|---|---------------------------------|--------|----------|
| Identification (IR)<br>(Ph. Sur., test A) | must conform                    |        | conforms |
| Identification (Ph. Sur.,<br>test B)      | must conform                    |        | conforms |
| Identification (Ph. Sur.,<br>test C)      | must conform                    |        | conforms |
| Identification (Typ A)                    | must conform                    |        | conforms |
| Peroxides                                 | Max.: 400                       | mg/kg  | 46       |
| pH-value (1 % suspension in<br>water)     | MIn.: 5.0<br>Max.: 7.5          |        | 6.2      |
| Water soluble substances                  | Max.: 1.00                      | g/100g | 0.25     |
| N-Vinylpyrrolidone (GC)                   | Max.: 10                        | mg/kg  | <2       |
| Arsenic *                                 | must conform (max.: 2<br>mg/kg) |        | conforms |

The aforementioned data shall constitute the agreed contractual quality of the product at the time of passing of risk. The data are controlled at regular intervals as part of our assurance program. Neither these data nor the properties of product specimens shall imply any legally binding guarantee of certain properties or of fitness for a specific purpose. No liability of ours can be derived therefrom.

megAsetia  
PT. MEGASETIA AGUNG KIMIA

# MAGNESIUM STEARAT



## QUALITÄTSMANAGEMENT

### CERTIFICATE OF ANALYSIS

customer: PT BRATACO  
 contact person:  
 FAX:  
 your order-number: PTB0735V1104      our order-number: 4011746  
 delivered on: 04.08.2004      quantity: 9000  
 brand: LIGA MAGNESIUM STEARATE MF-2-V VEGETABLE      charge-no. C447176  
 manufacturing date: 2004-07-19      expiry date: 2006-07-19

product is in accordance with the USP27/NF22/BP2003/Ph.Eur 4rd ed./DAB10/JP. 14th. ed./ FCC 5th. ed.

| parameter                               | unit              | method    | result           |
|---|-------------------|-----------|------------------|
| identification A                        | Ph.Eur            |           | 59               |
| identification A                        | metal reaction    | USP/NF    | passes test      |
| identification B                        | retention time GC | USP/NF    | retentions match |
| identity or                             | ml 0,01N HCl      | Ph.Eur    | <0,5             |
| acidity                                 | ml 0,01 N NaOH    | Ph.Eur    | <0,5             |
| heavy metals as Pb                      | ppm               | JP        | <20              |
| lead                                    | ppm               | BAE 300-B | <1               |
| cadmium                                 | ppm               | BAE 300-B | <1               |
| nickel                                  | ppm               | BAE 300-B | <1               |
| chloride                                | %                 | Ph.Eur    | <0,1             |
| sulfate                                 | %                 | Ph.Eur    | <0,5             |
| acid value of the fatty acid            | mg KOH/g          | Ph.Eur    | 204,8            |
| relative content of stearic acid        | %                 | USP/NF    | 65,1             |
| rel. cont. of stearic and palmitic acid | %                 | USP/NF    | 98,9             |
| microbial count                         | cfu/g             | USP/NF    | <10              |
| Bacteria & Yeasts                       | cfu/g             | USP/NF    | 105              |
| Escherichia coli                        | cfu/g             | USP/NF    | absent           |
| Salmonella Species                      | cfu/g             | USP/NF    | absent           |
| organic volatile impurities             |                   | USP/NF    | meets USP/NF     |
| loss on drying                          | %                 | BAE 600   | 3,9              |
| magnesium content                       | %                 | BAE 200 o | 4,7              |
| free fatty acid                         | %                 | BAE 400   | 0,6              |
| residue at 200 mesh                     | %                 | BAE 605   | 0,2              |
| bulk density tapped                     | g/ml              | BAE 611a  | 0,32             |
| specific surface area BET               | qm/g              | USP/NF    | 10,0             |
| contamination                           |                   | BAE 601   | in accordance    |

Venlo, 27.08.04

data of the above mentioned delivery are based upon careful test according to the guidelines of our quality assurance system. They do not release the customer from entry control. Besides we do not guarantee special properties for concrete applications.  
 This certificate was issued by EDV and does not bear a signature.



**BRATACO**  
 REGISTERED  
 MANUFACTURER  
 OF PESTICIDES



# NATRIUM HIDROKSIDA

## Certificate

|                          |   |
|--------------------------|---|
| <b>Product Name</b>      | Sodium hydroxide,<br>puriss. p.a., ACS reagent, reag. Ph. Eur., (K ≤0.02%), ≥99%, pellets |
| <b>Product Number</b>    | 30620   |
| <b>Product Brand</b>     | Riedel-de Haën  |
| <b>CAS Number</b>        | 1310-73-2   |
| <b>Molecular Formula</b> | NaOH  |
| <b>Molecular Weight</b>  | 40.00   |

|  |                           |
|--|---------------------------|
|  | Reag. ACS, Reag. Ph. Eur. |
| <b>assay</b>                                 | 99.1 %                    |
| <b>assay of Na<sub>2</sub>CO<sub>3</sub></b> | < 1 %                     |
| <b>aluminium (Al)</b>                        | < 0.0005 %                |
| <b>arsenic (As)</b>                          | < 0.0001 %                |
| <b>calcium (Ca)</b>                          | < 0.0005 %                |
| <b>copper (Cu)</b>                           | < 0.0005 %                |
| <b>iron (Fe)</b>                             | < 0.0005 %                |
| <b>mercury (Hg)</b>                          | < 0.000005 %              |
| <b>potassium (K)</b>                         | < 0.02 %                  |
| <b>magnesium (Mg)</b>                        | < 0.0005 %                |
| <b>nickel (Ni)</b>                           | < 0.0005 %                |
| <b>lead (Pb)</b>                             | < 0.0002 %                |
| <b>zinc (Zn)</b>                             | < 0.0005 %                |
| <b>heavy metals (as Pb)</b>                  | < 0.0005 %                |
| <b>heavy metals (as Ag)</b>                  | < 0.002 %                 |
| <b>chloride (Cl)</b>                         | < 0.0005 %                |
| <b>phosphate (PO<sub>4</sub>)</b>            | < 0.0005 %                |
| <b>silicate (as SiO<sub>2</sub>)</b>         | < 0.001 %                 |
| <b>sulfate (SO<sub>4</sub>)</b>              | < 0.0005 %                |
| <b>total N</b>                               | < 0.0003 %                |
| <b>appearance of the solution</b>            | complying                 |

Identity, assay and impurities are complying to the monographs of the above mentioned pharmacopelias/codices.

|                         |           |
|-------------------------|-----------|
| <b>QC-Releasedate</b>   | 15.May.07 |
| <b>rec. Retest Date</b> | 01.Sep.10 |



Andreas Tomczek  
Quality Manager  
Seelze Germany

# KALIUM DIHIDROGEN FOSFAT

## Certificate

|                          |   |
|--------------------------|---|
| <b>Product Name</b>      | Potassium phosphate monobasic, puriss. p.a., reag. ISO, reag. Ph. Eur., anhydrous, buffer substance, 99.5-100.5% (calc. on dry substance) |
| <b>Product Number</b>    | 30407   |
| <b>Product Brand</b>     | Riedel-de Haën  |
| <b>CAS Number</b>        | 7778-77-0   |
| <b>Molecular Formula</b> | $\text{KH}_2\text{PO}_4$  |
| <b>Molecular Weight</b>  | 136.09  |

|   |  |
|---|--|
|   | Reag. ISO, Reag. Ph. Eur.  |
| <b>assay (calc. to the dried substance)</b> | ) 99.7 %   |
| <b>water insoluble matter</b>               | < 0.005 %  |
| <b>loss on drying (130°C)</b>               | 0.01 %   |
| <b>pH (5 %, 20°C)</b>                       | 4.3  |
| <b>arsenic (As)</b>                         | < 0.00005 %  |
| <b>iron (Fe)</b>                            | < 0.0005 %   |
| <b>sodium (Na)</b>                          | 0.002 %  |
| <b>heavy metals (as Pb)</b>                 | < 0.0005 %   |
| <b>KMnO4 red. matter (as O)</b>             | complying  |
| <b>chloride (Cl)</b>                        | < 0.0005 %   |
| <b>sulphate (SO4)</b>                       | < 0.003 %  |
| <b>total N</b>                              | < 0.001 %  |
| <b>appearance of the solution</b>           | complying  |
|   | Identity, assay and impurities are complying to the monographs of the above mentioned pharmacopeias/codices. |
| <b>QC-Releasedate</b>                       | 18.Sep.06  |
| <b>rec. Retest Date</b>                     | 25.Feb.10  |



Andreas Tomczak  
Quality Manager  
Seelze Germany





**LAMPIRAN J**  
**TABEL UJI F**

**TABEL DISTRIBUSI F UNTUK 5% DAN 1%**

Baris atas untuk taraf signifikansi 5%  
Baris bawah untuk taraf signifikansi 1%

| $V_2 = dk$<br>penyebut | $V_1 = dk$ pembilang |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
|------------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                        | 1                    | 2              | 3              | 4              | 5              | 6              | 7              | 8              | 9              | 10             | 11             | 12             | 14             | 16             | 20             | 24             | 30             | 40             | 50             | 75             | 100            | 200            | 500            | $\infty$       |
| 1                      | 161<br>4052          | 200<br>4999    | 216<br>5403    | 225<br>5825    | 230<br>5764    | 234<br>5859    | 237<br>5928    | 239<br>5961    | 241<br>6022    | 242<br>6056    | 243<br>6082    | 244<br>6106    | 245<br>6142    | 246<br>6169    | 248<br>6208    | 249<br>6234    | 250<br>6258    | 251<br>6286    | 252<br>6302    | 253<br>6323    | 253<br>6334    | 254<br>6352    | 254<br>6361    | 254<br>6366    |
| 2                      | 18,51<br>98,49       | 19,00<br>99,01 | 19,16<br>99,17 | 19,25<br>99,25 | 19,30<br>99,30 | 19,33<br>99,33 | 19,36<br>99,34 | 19,37<br>99,36 | 19,38<br>97,38 | 19,39<br>99,40 | 19,40<br>99,41 | 19,41<br>99,42 | 19,42<br>99,43 | 19,43<br>99,44 | 19,44<br>99,45 | 19,45<br>99,46 | 19,46<br>99,47 | 19,47<br>99,48 | 19,47<br>99,48 | 19,48<br>99,49 | 19,49<br>99,49 | 19,49<br>99,49 | 19,50<br>99,50 | 19,50<br>99,50 |
| 3                      | 10,13<br>34,12       | 9,55<br>30,81  | 9,28<br>29,46  | 9,12<br>28,71  | 9,01<br>28,24  | 8,94<br>27,91  | 8,88<br>27,67  | 8,84<br>27,49  | 8,81<br>27,34  | 8,78<br>27,23  | 8,76<br>27,13  | 8,74<br>27,05  | 8,71<br>26,92  | 8,69<br>26,83  | 8,66<br>26,69  | 8,64<br>26,60  | 8,62<br>26,50  | 8,60<br>26,41  | 8,58<br>26,30  | 8,57<br>26,27  | 8,56<br>26,23  | 8,54<br>26,18  | 8,54<br>26,14  | 8,53<br>26,12  |
| 4                      | 7,71<br>21,20        | 6,94<br>18,00  | 6,59<br>16,69  | 6,39<br>15,98  | 6,26<br>15,52  | 6,16<br>15,21  | 6,09<br>14,98  | 6,04<br>14,80  | 6,00<br>14,66  | 5,96<br>14,54  | 5,93<br>14,45  | 5,91<br>14,37  | 5,87<br>14,24  | 5,84<br>14,15  | 5,80<br>14,02  | 5,77<br>13,93  | 5,74<br>13,83  | 5,71<br>13,74  | 5,70<br>13,69  | 5,68<br>13,61  | 5,66<br>13,57  | 5,65<br>13,52  | 5,64<br>13,48  | 5,63<br>13,46  |
| 5                      | 6,61<br>16,26        | 5,79<br>13,27  | 5,41<br>12,06  | 5,19<br>11,39  | 5,05<br>10,97  | 4,95<br>10,67  | 4,88<br>10,45  | 4,82<br>10,27  | 4,78<br>10,15  | 4,74<br>10,05  | 4,70<br>9,96   | 4,68<br>9,89   | 4,64<br>9,77   | 4,60<br>9,68   | 4,56<br>9,55   | 4,53<br>9,47   | 4,50<br>9,38   | 4,46<br>9,29   | 4,44<br>9,24   | 4,42<br>9,17   | 4,40<br>9,13   | 4,38<br>9,07   | 4,37<br>9,04   | 4,36<br>9,02   |
| 6                      | 5,99<br>13,74        | 5,14<br>10,92  | 4,76<br>9,78   | 4,53<br>9,15   | 4,39<br>8,75   | 4,28<br>8,47   | 4,21<br>8,26   | 4,15<br>8,10   | 4,10<br>7,98   | 4,06<br>7,87   | 4,03<br>7,79   | 4,00<br>7,72   | 3,96<br>7,60   | 3,92<br>7,52   | 3,87<br>7,39   | 3,84<br>7,31   | 3,81<br>7,23   | 3,77<br>7,14   | 3,75<br>7,09   | 3,72<br>7,02   | 3,71<br>6,99   | 3,69<br>6,94   | 3,68<br>6,90   | 3,67<br>6,88   |
| 7                      | 5,59<br>12,25        | 4,74<br>9,55   | 4,35<br>8,45   | 4,12<br>7,85   | 3,97<br>7,46   | 3,87<br>7,19   | 3,79<br>7,00   | 3,73<br>6,84   | 3,68<br>6,71   | 3,63<br>6,62   | 3,60<br>6,54   | 3,57<br>6,47   | 3,52<br>6,35   | 3,49<br>6,27   | 3,44<br>6,15   | 3,41<br>6,07   | 3,38<br>5,98   | 3,34<br>5,90   | 3,32<br>5,85   | 3,29<br>5,78   | 3,28<br>5,75   | 3,25<br>5,70   | 3,24<br>5,67   | 3,23<br>5,65   |
| 8                      | 5,32<br>11,26        | 4,46<br>8,65   | 4,07<br>7,59   | 3,84<br>7,01   | 3,69<br>6,63   | 3,58<br>6,37   | 3,50<br>6,19   | 3,44<br>6,03   | 3,39<br>5,91   | 3,34<br>5,82   | 3,31<br>5,74   | 3,28<br>5,67   | 3,23<br>5,56   | 3,20<br>5,48   | 3,15<br>5,36   | 3,12<br>5,28   | 3,08<br>5,20   | 3,05<br>5,11   | 3,03<br>5,06   | 3,00<br>5,00   | 2,98<br>4,96   | 2,96<br>4,91   | 2,94<br>4,88   | 2,93<br>4,86   |
| 9                      | 5,12<br>10,56        | 4,26<br>8,02   | 3,86<br>6,99   | 3,63<br>6,42   | 3,48<br>6,06   | 3,37<br>5,80   | 3,29<br>5,62   | 3,23<br>5,47   | 3,18<br>5,35   | 3,13<br>5,26   | 3,10<br>5,18   | 3,07<br>5,11   | 3,02<br>5,00   | 2,98<br>4,92   | 2,93<br>4,80   | 2,90<br>4,73   | 2,86<br>4,61   | 2,82<br>4,56   | 2,80<br>4,51   | 2,77<br>4,45   | 2,76<br>4,41   | 2,73<br>4,36   | 2,72<br>4,33   | 2,71<br>4,34   |

| $V_2 = dk$<br>penyebut | $V_1 = dk$ pembilang |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                        | 1                    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 14   | 16   | 20   | 24   | 30   | 40   | 50   | 75   | 100  | 200  | 500  | $\bar{x}$ |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 10                     | 4,96                 | 4,10 | 3,71 | 3,48 | 3,33 | 3,22 | 3,14 | 3,07 | 3,02 | 2,97 | 2,94 | 2,91 | 2,86 | 2,82 | 2,77 | 2,74 | 2,70 | 2,67 | 2,64 | 2,61 | 2,59 | 2,56 | 2,55 | 2,54      | 10,04 | 7,56 | 6,55 | 5,99 | 5,64 | 5,39 | 5,21 | 5,06 | 4,95 | 4,85 | 4,78 | 4,71 | 4,60 | 4,52 | 4,41 | 4,33 | 4,25 | 4,17 | 4,12 | 4,05 | 4,01 | 3,96 | 3,93 | 3,91 |
| 11                     | 4,84                 | 3,98 | 3,59 | 3,36 | 3,20 | 3,09 | 3,01 | 2,95 | 2,90 | 2,86 | 2,82 | 2,79 | 2,74 | 2,70 | 2,65 | 2,61 | 2,57 | 2,53 | 2,50 | 2,47 | 2,45 | 2,42 | 2,41 | 2,40      | 9,45  | 7,20 | 6,22 | 5,67 | 5,32 | 5,07 | 4,88 | 4,74 | 4,63 | 4,54 | 4,46 | 4,40 | 4,29 | 4,21 | 4,10 | 4,02 | 3,94 | 3,86 | 3,80 | 3,74 | 3,70 | 3,66 | 3,62 | 3,60 |
| 12                     | 4,75                 | 3,88 | 3,49 | 3,26 | 3,11 | 3,00 | 2,92 | 2,85 | 2,80 | 2,76 | 2,72 | 2,69 | 2,64 | 2,60 | 2,54 | 2,50 | 2,46 | 2,42 | 2,40 | 2,36 | 2,35 | 2,32 | 2,31 | 2,30      | 9,33  | 6,93 | 5,95 | 5,41 | 5,06 | 4,82 | 4,65 | 4,50 | 4,39 | 4,30 | 4,22 | 4,16 | 4,05 | 3,98 | 3,86 | 3,78 | 3,70 | 3,61 | 3,56 | 3,49 | 3,46 | 3,41 | 3,38 | 3,36 |
| 13                     | 4,67                 | 3,80 | 3,41 | 3,18 | 3,02 | 2,92 | 2,84 | 2,77 | 2,72 | 2,67 | 2,63 | 2,60 | 2,55 | 2,51 | 2,46 | 2,42 | 2,38 | 2,34 | 2,32 | 2,28 | 2,26 | 2,24 | 2,22 | 2,21      | 9,01  | 6,70 | 5,74 | 5,20 | 4,86 | 4,62 | 4,44 | 4,30 | 4,19 | 4,10 | 4,02 | 3,96 | 3,85 | 3,78 | 3,67 | 3,59 | 3,51 | 3,42 | 3,37 | 3,30 | 3,27 | 3,21 | 3,18 | 3,16 |
| 14                     | 4,60                 | 3,74 | 3,34 | 3,11 | 2,96 | 2,85 | 2,77 | 2,70 | 2,65 | 2,60 | 2,56 | 2,53 | 2,48 | 2,44 | 2,39 | 2,35 | 2,31 | 2,27 | 2,24 | 2,21 | 2,19 | 2,16 | 2,14 | 2,13      | 8,86  | 6,51 | 5,56 | 5,03 | 4,69 | 4,46 | 4,28 | 4,14 | 4,03 | 3,94 | 3,86 | 3,80 | 3,70 | 3,62 | 3,51 | 3,43 | 3,34 | 3,26 | 3,21 | 3,14 | 3,11 | 3,06 | 3,02 | 3,00 |
| 15                     | 4,54                 | 3,68 | 3,29 | 3,06 | 2,90 | 2,79 | 2,70 | 2,64 | 2,59 | 2,55 | 2,51 | 2,48 | 2,43 | 2,39 | 2,33 | 2,29 | 2,25 | 2,21 | 2,18 | 2,15 | 2,12 | 2,10 | 2,08 | 2,07      | 8,68  | 6,36 | 5,42 | 4,89 | 4,56 | 4,32 | 4,14 | 4,00 | 3,89 | 3,80 | 3,73 | 3,67 | 3,56 | 3,48 | 3,36 | 3,29 | 3,20 | 3,12 | 3,07 | 3,00 | 2,97 | 2,92 | 2,89 | 2,87 |
| 16                     | 4,49                 | 3,63 | 3,24 | 3,01 | 2,85 | 2,74 | 2,66 | 2,59 | 2,54 | 2,49 | 2,45 | 2,42 | 2,37 | 2,33 | 2,28 | 2,24 | 2,20 | 2,16 | 2,13 | 2,09 | 2,07 | 2,04 | 2,02 | 2,01      | 8,50  | 6,23 | 5,29 | 4,77 | 4,44 | 4,20 | 4,03 | 3,89 | 3,78 | 3,69 | 3,61 | 3,55 | 3,45 | 3,37 | 3,25 | 3,18 | 3,10 | 3,01 | 2,96 | 2,89 | 2,86 | 2,80 | 2,77 | 2,75 |
| 17                     | 4,45                 | 3,59 | 3,20 | 2,96 | 2,81 | 2,70 | 2,62 | 2,55 | 2,50 | 2,45 | 2,41 | 2,38 | 2,33 | 2,29 | 2,23 | 2,19 | 2,15 | 2,11 | 2,08 | 2,04 | 2,02 | 1,99 | 1,97 | 1,96      | 8,43  | 6,11 | 5,18 | 4,67 | 4,34 | 4,10 | 3,93 | 3,79 | 3,68 | 3,59 | 3,52 | 3,45 | 3,35 | 3,27 | 3,16 | 3,08 | 3,00 | 2,92 | 2,86 | 2,79 | 2,76 | 2,70 | 2,67 | 2,65 |
| 18                     | 4,41                 | 3,55 | 3,16 | 2,93 | 2,77 | 2,66 | 2,58 | 2,51 | 2,46 | 2,41 | 2,37 | 2,34 | 2,29 | 2,25 | 2,19 | 2,15 | 2,11 | 2,07 | 2,04 | 2,00 | 1,98 | 1,95 | 1,93 | 1,92      | 8,28  | 6,00 | 5,09 | 4,58 | 4,25 | 4,01 | 3,85 | 3,71 | 3,60 | 3,51 | 3,44 | 3,37 | 3,27 | 3,19 | 3,07 | 3,00 | 2,91 | 2,83 | 2,78 | 2,71 | 2,68 | 2,62 | 2,59 | 2,57 |
| 19                     | 4,38                 | 3,52 | 3,13 | 2,90 | 2,74 | 2,63 | 2,55 | 2,48 | 2,43 | 2,38 | 2,34 | 2,31 | 2,26 | 2,21 | 2,15 | 2,11 | 2,07 | 2,02 | 2,00 | 1,96 | 1,94 | 1,91 | 1,90 | 1,88      | 8,18  | 5,93 | 5,01 | 4,50 | 4,17 | 3,94 | 3,77 | 3,63 | 3,52 | 3,43 | 3,36 | 3,30 | 3,19 | 3,12 | 3,00 | 2,92 | 2,84 | 2,76 | 2,70 | 2,63 | 2,60 | 2,54 | 2,51 | 2,49 |
| 20                     | 4,35                 | 3,49 | 3,10 | 2,87 | 2,71 | 2,60 | 2,52 | 2,45 | 2,40 | 2,35 | 2,31 | 2,26 | 2,23 | 2,18 | 2,12 | 2,08 | 2,04 | 1,99 | 1,96 | 1,92 | 1,90 | 1,87 | 1,85 | 1,84      | 8,10  | 5,85 | 4,94 | 4,43 | 4,10 | 3,87 | 3,71 | 3,56 | 3,45 | 3,37 | 3,30 | 3,23 | 3,13 | 3,05 | 2,94 | 2,86 | 2,77 | 2,69 | 2,63 | 2,56 | 2,53 | 2,47 | 2,44 | 2,42 |
| 21                     | 4,32                 | 3,47 | 3,07 | 2,84 | 2,68 | 2,57 | 2,49 | 2,42 | 2,37 | 2,32 | 2,28 | 2,25 | 2,20 | 2,15 | 2,09 | 2,05 | 2,00 | 1,96 | 1,93 | 1,89 | 1,87 | 1,84 | 1,82 | 1,81      | 8,02  | 5,78 | 4,87 | 4,37 | 4,04 | 3,81 | 3,65 | 3,51 | 3,40 | 3,31 | 3,24 | 3,17 | 3,07 | 2,99 | 2,88 | 2,80 | 2,72 | 2,63 | 2,58 | 2,51 | 2,47 | 2,42 | 2,38 | 2,36 |
| 22                     | 4,30                 | 3,44 | 3,05 | 2,82 | 2,66 | 2,55 | 2,47 | 2,40 | 2,35 | 2,30 | 2,26 | 2,23 | 2,18 | 2,13 | 2,07 | 2,03 | 1,98 | 1,93 | 1,91 | 1,87 | 1,84 | 1,81 | 1,80 | 1,78      | 7,94  | 5,72 | 4,82 | 4,31 | 3,99 | 3,76 | 3,59 | 3,45 | 3,35 | 3,26 | 3,18 | 3,12 | 3,02 | 2,94 | 2,83 | 2,75 | 2,67 | 2,58 | 2,53 | 2,46 | 2,42 | 2,37 | 2,33 | 2,31 |
| 23                     | 4,28                 | 3,42 | 3,03 | 2,80 | 2,64 | 2,53 | 2,45 | 2,38 | 2,32 | 2,28 | 2,24 | 2,20 | 2,14 | 2,10 | 2,04 | 2,00 | 1,96 | 1,91 | 1,88 | 1,84 | 1,82 | 1,79 | 1,77 | 1,76      | 7,88  | 5,66 | 4,76 | 4,26 | 3,94 | 3,71 | 3,54 | 3,41 | 3,30 | 3,21 | 3,14 | 3,07 | 2,97 | 2,89 | 2,78 | 2,70 | 2,62 | 2,53 | 2,48 | 2,41 | 2,37 | 2,32 | 2,28 | 2,26 |

LAMPIRAN K  
TABEL UJI r

| DEGREES OF FREEDOM (DF) | 5 PERCENT | 1 PERCENT | DEGREES OF FREEDOM (DF) | 5 PERCENT | 1 PERCENT |
|-------------------------|-----------|-----------|-------------------------|-----------|-----------|
| 1                       | .997      | 1.000     | 24                      | .388      | .496      |
| 2                       | .950      | .990      | 25                      | .381      | .487      |
| 3                       | .878      | .959      | 26                      | .374      | .478      |
| 4                       | .811      | .917      | 27                      | .367      | .470      |
| 5                       | .754      | .874      | 28                      | .361      | .463      |
| 6                       | .707      | .834      | 29                      | .355      | .456      |
| 7                       | .666      | .798      | 30                      | .349      | .449      |
| 8                       | .632      | .765      | 35                      | .325      | .418      |
| 9                       | .602      | .735      | 40                      | .304      | .393      |
| 10                      | .576      | .708      | 48                      | .288      | .372      |
| 11                      | .553      | .684      | 50                      | .273      | .354      |
| 12                      | .532      | .661      | 60                      | .250      | .325      |
| 13                      | .514      | .641      | 70                      | .232      | .302      |
| 14                      | .497      | .623      | 80                      | .217      | .283      |
| 15                      | .482      | .606      | 90                      | .205      | .267      |
| 16                      | .468      | .590      | 100                     | .195      | .254      |
| 17                      | .456      | .575      | 125                     | .174      | .228      |
| 18                      | .444      | .561      | 150                     | .159      | .208      |
| 19                      | .433      | .549      | 200                     | .138      | .181      |
| 20                      | .423      | .537      | 300                     | .113      | .148      |
| 21                      | .413      | .526      | 400                     | .098      | .128      |
| 22                      | .404      | .515      | 500                     | .088      | .115      |
| 23                      | .396      | .505      | 1000                    | .062      | .081      |

Dikutip dari: Soedigdo & Soedigdo (1977)



LAMPIRAN L  
TABEL UJI HSD (0,05)

| k<br>d. k. | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   |
|------------|------|------|------|------|------|------|------|------|------|------|
| 5          | 3.64 | 4.60 | 5.22 | 5.67 | 6.03 | 6.33 | 6.58 | 6.80 | 6.99 | 7.17 |
| 6          | 3.46 | 4.34 | 4.90 | 5.30 | 5.63 | 5.90 | 6.12 | 6.32 | 6.49 | 6.65 |
| 7          | 3.34 | 4.16 | 4.68 | 5.06 | 5.36 | 5.61 | 5.82 | 6.00 | 6.16 | 6.30 |
| 8          | 3.26 | 4.01 | 4.53 | 4.89 | 5.17 | 5.40 | 5.60 | 5.77 | 5.92 | 6.05 |
| 9          | 3.20 | 3.95 | 4.41 | 4.76 | 5.02 | 5.24 | 5.43 | 5.59 | 5.74 | 5.87 |
| 10         | 3.15 | 3.88 | 4.33 | 4.65 | 4.91 | 5.12 | 5.30 | 5.46 | 5.60 | 5.72 |
| 11         | 3.11 | 3.82 | 4.26 | 4.57 | 4.82 | 5.03 | 5.20 | 5.35 | 5.49 | 5.61 |
| 12         | 3.08 | 3.77 | 4.20 | 4.51 | 4.75 | 4.95 | 5.12 | 5.27 | 5.39 | 5.51 |
| 13         | 3.06 | 3.73 | 4.15 | 4.45 | 4.69 | 4.88 | 5.05 | 5.19 | 5.32 | 5.43 |
| 14         | 3.03 | 3.70 | 4.11 | 4.41 | 4.64 | 4.83 | 4.99 | 5.13 | 5.25 | 5.36 |
| 15         | 3.01 | 3.67 | 4.08 | 4.37 | 4.59 | 4.78 | 4.94 | 5.08 | 5.20 | 5.31 |
| 16         | 3.00 | 3.65 | 4.05 | 4.33 | 4.56 | 4.74 | 4.90 | 5.03 | 5.15 | 5.26 |
| 17         | 2.98 | 3.63 | 4.02 | 4.30 | 4.52 | 4.71 | 4.86 | 4.99 | 5.11 | 5.21 |
| 18         | 2.97 | 3.61 | 4.00 | 4.28 | 4.49 | 4.67 | 4.82 | 4.96 | 5.07 | 5.17 |
| 19         | 2.96 | 3.59 | 3.98 | 4.25 | 4.47 | 4.65 | 4.79 | 4.92 | 5.04 | 5.14 |
| 20         | 2.95 | 3.58 | 3.96 | 4.23 | 4.45 | 4.62 | 4.77 | 4.90 | 5.01 | 5.11 |
| 24         | 2.92 | 3.53 | 3.90 | 4.17 | 4.37 | 4.54 | 4.68 | 4.81 | 4.92 | 5.01 |
| 30         | 2.89 | 3.49 | 3.85 | 4.10 | 4.30 | 4.46 | 4.60 | 4.72 | 4.82 | 4.92 |
| 40         | 2.86 | 3.44 | 3.79 | 4.04 | 4.23 | 4.39 | 4.52 | 4.63 | 4.73 | 4.82 |
| 60         | 2.83 | 3.40 | 3.74 | 3.98 | 4.16 | 4.31 | 4.44 | 4.55 | 4.65 | 4.73 |
| 120        | 2.80 | 3.36 | 3.68 | 3.92 | 4.10 | 4.24 | 4.36 | 4.47 | 4.56 | 4.64 |
| ∞          | 2.77 | 3.31 | 3.63 | 3.86 | 4.03 | 4.17 | 4.29 | 4.39 | 4.47 | 4.55 |

Catatan kaki: Dari *Annals of mathematical statistics*. Diulang cetak seizin penerbit, The Institute of Mathematical Statistics.

Sumber: Scheffler (1987).





**LAMPIRAN M**  
**TABEL UJI T**

| v    | $\alpha$ |       |        |        |        |
|------|----------|-------|--------|--------|--------|
|      | 0.10     | 0.05  | 0.025  | 0.01   | 0.005  |
| 1    | 3.078    | 6.314 | 12.706 | 31.821 | 63.657 |
| 2    | 1.886    | 2.920 | 4.303  | 6.965  | 9.925  |
| 3    | 1.638    | 2.353 | 3.182  | 4.451  | 5.841  |
| 4    | 1.533    | 2.132 | 2.776  | 3.747  | 4.604  |
| 5    | 1.476    | 2.015 | 2.561  | 3.365  | 4.012  |
| 6    | 1.440    | 1.943 | 2.447  | 3.143  | 3.707  |
| 7    | 1.415    | 1.895 | 2.365  | 2.998  | 3.499  |
| 8    | 1.397    | 1.860 | 2.306  | 2.896  | 3.355  |
| 9    | 1.383    | 1.833 | 2.262  | 2.821  | 3.250  |
| 10   | 1.372    | 1.812 | 2.228  | 2.764  | 3.169  |
| 11   | 1.363    | 1.796 | 2.201  | 2.718  | 3.106  |
| 12   | 1.356    | 1.782 | 2.179  | 2.681  | 3.055  |
| 13   | 1.350    | 1.771 | 2.160  | 2.650  | 3.012  |
| 14   | 1.345    | 1.761 | 2.145  | 2.624  | 2.977  |
| 15   | 1.341    | 1.753 | 2.131  | 2.602  | 2.947  |
| 16   | 1.337    | 1.746 | 2.120  | 2.583  | 2.921  |
| 17   | 1.333    | 1.740 | 2.110  | 2.567  | 2.898  |
| 18   | 1.330    | 1.734 | 2.101  | 2.552  | 2.878  |
| 19   | 1.328    | 1.729 | 2.093  | 2.539  | 2.861  |
| 20   | 1.325    | 1.725 | 2.086  | 2.528  | 2.845  |
| 21   | 1.323    | 1.721 | 2.080  | 2.518  | 2.831  |
| 22   | 1.321    | 1.717 | 2.074  | 2.508  | 2.819  |
| 23   | 1.319    | 1.714 | 2.069  | 2.500  | 2.807  |
| 24   | 1.318    | 1.711 | 2.064  | 2.492  | 2.797  |
| 25   | 1.316    | 1.708 | 2.060  | 2.485  | 2.787  |
| 26   | 1.315    | 1.706 | 2.056  | 2.479  | 2.779  |
| 27   | 1.314    | 1.703 | 2.052  | 2.473  | 2.771  |
| 28   | 1.313    | 1.701 | 2.048  | 2.467  | 2.763  |
| 29   | 1.311    | 1.699 | 2.045  | 2.462  | 2.756  |
| inf. | 1.282    | 1.645 | 1.960  | 2.326  | 2.576  |

Sumber : Ronald E. Walpole (1995) : Pengantar Statistika.

**LAMPIRAN N**  
**HASIL UJI STATISTIK KEKERASAN TABLET IBUPROFEN**  
**ANTAR FORMULA**

**Descriptives**

Kekerasan tablet

|          | N  | Mean    | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Min   | Max   |
|----------|----|---------|----------------|------------|----------------------------------|-------------|-------|-------|
|          |    |         |                |            | Lower Bound                      | Upper Bound |       |       |
| Formula1 | 3  | 14,4667 | 0,96707        | 0,55834    | 12,0643                          | 16,8690     | 13,35 | 15,03 |
| Formula2 | 3  | 11,6367 | 0,37072        | 0,21404    | 10,7157                          | 12,5576     | 11,28 | 12,02 |
| Formula3 | 3  | 12,6200 | 0,44136        | 0,25482    | 11,5236                          | 13,7164     | 12,16 | 13,04 |
| Formula4 | 3  | 10,3233 | 1,06608        | 0,61550    | 7,6750                           | 12,9716     | 9,11  | 11,11 |
| Total    | 12 | 12,2617 | 1,71153        | 0,49408    | 11,1742                          | 13,3491     | 9,11  | 15,03 |

**Test of Homogeneity of Variances**

Kekerasan tablet

| Levene Statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 2,827            | 3   | 8   | 0,107 |

**ANOVA**

Kekerasan tablet

|                | Sum of Squares | df | Mean Square | F      | Sig.  |
|----------------|----------------|----|-------------|--------|-------|
| Between Groups | 27,415         | 3  | 9,138       | 15,205 | 0,001 |
| Within Groups  | 4,808          | 8  | 0,601       |        |       |
| Total          | 32,223         | 11 |             |        |       |

Keterangan:

Ho ditolak jika  $F_{hitung} (15,205) > F_{tabel 0,05 (3,8)} (4,07)$ , berarti rata-rata kekerasan tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula.



### Multiple Comparisons

Kekerasan tablet  
HSD

| (I) Formula | (J) Formula | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|-------------|-------------|-----------------------|------------|-------|-------------------------|-------------|
|             |             |                       |            |       | Lower Bound             | Upper Bound |
| Formula1    | Formula2    | 2,83000*              | 0,63298    | 0,002 | 1,3703                  | 4,2897      |
|             | Formula3    | 1,84667*              | 0,63298    | 0,019 | 0,3870                  | 3,3063      |
|             | Formula4    | 4,14333*              | 0,63298    | 0,000 | 2,6837                  | 5,6030      |
| Formula2    | Formula1    | -2,83000*             | 0,63298    | 0,002 | -4,2897                 | -1,3703     |
|             | Formula3    | -0,98333              | 0,63298    | 0,159 | -2,4430                 | 0,4763      |
|             | Formula4    | 1,31333               | 0,63298    | 0,072 | -0,1463                 | 2,7730      |
| Formula3    | Formula1    | -1,84667*             | 0,63298    | 0,019 | -3,3063                 | -0,3870     |
|             | Formula2    | 0,98333               | 0,63298    | 0,159 | -0,4763                 | 2,4430      |
|             | Formula4    | 2,29667*              | 0,63298    | 0,007 | 0,8370                  | 3,7563      |
| Formula4    | Formula1    | -4,14333*             | 0,63298    | 0,000 | -5,6030                 | -2,6837     |
|             | Formula2    | -1,31333              | 0,63298    | 0,072 | -2,7730                 | 0,1463      |
|             | Formula3    | -2,29667*             | 0,63298    | 0,007 | -3,7563                 | -0,8370     |

\* The mean difference is significant at the 0,05 level.

Keterangan:

Hasil uji HSD dari keempat formula, diperoleh nilai sig.  $< \alpha (0,05)$  sehingga  $H_0$  ditolak (\*), berarti rata-rata kekerasan tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula yaitu formula I menunjukkan perbedaan yang signifikan terhadap formula II, formula III, dan formula IV; formula III menunjukkan perbedaan yang signifikan terhadap formula IV, sedangkan untuk formula II tidak menunjukkan perbedaan yang signifikan terhadap formula III dan formula IV.

**LAMPIRAN O**  
**HASIL UJI STATISTIK KERAPUHAN TABLET IBUPROFEN**  
**ANTAR FORMULA**

**Descriptives**

Kerapuhan tablet

|          | N  | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Min  | Max  |
|----------|----|--------|----------------|------------|----------------------------------|-------------|------|------|
|          |    |        |                |            | Lower Bound                      | Upper Bound |      |      |
| Formula1 | 3  | 0,2700 | 0,06557        | 0,03786    | 0,1071                           | 0,4329      | 0,20 | 0,33 |
| Formula2 | 3  | 1,5200 | 0,07937        | 0,04583    | 1,3228                           | 1,7172      | 1,46 | 1,61 |
| Formula3 | 3  | 0,2533 | 0,13051        | 0,07535    | -0,0709                          | 0,5775      | 0,13 | 0,39 |
| Formula4 | 3  | 0,8633 | 0,13204        | 0,07623    | 0,5353                           | 1,1913      | 0,72 | 0,98 |
| Total    | 12 | 0,7267 | 0,55038        | 0,15888    | 0,3770                           | 1,0764      | 0,13 | 1,61 |

**Test of Homogeneity of Variances**

Kerapuhan Tablet

| Levene Statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 0,663            | 3   | 8   | 0,598 |

**ANOVA**

Kerapuhan Tablet

|                | Sum of Squares | df | Mean Square | F      | Sig.  |
|----------------|----------------|----|-------------|--------|-------|
| Between Groups | 3,242          | 3  | 1,081       | 95,915 | 0,000 |
| Within Groups  | 0,090          | 8  | 0,011       |        |       |
| Total          | 3,332          | 11 |             |        |       |

Keterangan:

Ho ditolak jika  $F_{hitung} (95,915) > F_{tabel 0,05 (3,8)} (4,07)$ , berarti rata-rata kerapuhan tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula.

### Multiple Comparisons

Kerapuhan tablet  
HSD

| (I) Formula | (J) Formula | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|-------------|-------------|-----------------------|------------|-------|-------------------------|-------------|
|             |             |                       |            |       | Lower Bound             | Upper Bound |
| Formula1    | Formula2    | -1,25000*             | 0,08667    | 0,000 | -1,4499                 | -1,0501     |
|             | Formula3    | 0,01667               | 0,08667    | 0,852 | -0,1832                 | ,2165       |
|             | Formula4    | -0,59333*             | 0,08667    | 0,000 | -0,7932                 | -0,3935     |
| Formula2    | Formula1    | 1,25000*              | 0,08667    | 0,000 | 1,0501                  | 1,4499      |
|             | Formula3    | 1,26667*              | 0,08667    | 0,000 | 1,0668                  | 1,4665      |
|             | Formula4    | 0,65667*              | 0,08667    | 0,000 | 0,4568                  | 0,8565      |
| Formula3    | Formula1    | -0,01667              | 0,08667    | 0,852 | -0,2165                 | 0,1832      |
|             | Formula2    | -1,26667*             | 0,08667    | 0,000 | -1,4665                 | -1,0668     |
|             | Formula4    | -0,61000*             | 0,08667    | 0,000 | -0,8099                 | -0,4101     |
| Formula4    | Formula1    | 0,59333*              | 0,08667    | 0,000 | 0,3935                  | 0,7932      |
|             | Formula2    | -0,65667*             | 0,08667    | 0,000 | -0,8565                 | -0,4568     |
|             | Formula3    | 0,61000*              | 0,08667    | 0,000 | 0,4101                  | 0,8099      |

\*. The mean difference is significant at the 0.05 level.

Keterangan:

Hasil uji HSD dari keempat formula, diperoleh nilai sig. <  $\alpha$  (0,05) sehingga  $H_0$  ditolak (\*), berarti rata-rata kerapuhan tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula yaitu formula I menunjukkan perbedaan yang signifikan terhadap formula II dan formula IV; formula II menunjukkan perbedaan yang signifikan terhadap formula III dan formula IV; dan formula III menunjukkan perbedaan yang signifikan terhadap formula IV, hanya formula I yang tidak menunjukkan perbedaan yang signifikan terhadap formula III.

## LAMPIRAN P

### HASIL UJI STATISTIK WAKTU HANCUR TABLET IBUPROFEN ANTAR FORMULA

#### Descriptives

Waktu hancur tablet

|          | N  | Mean    | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Min   | Max   |
|----------|----|---------|----------------|------------|----------------------------------|-------------|-------|-------|
|          |    |         |                |            | Lower Bound                      | Upper Bound |       |       |
| Formula1 | 3  | 10,3333 | 2,08167        | 1,20185    | 5,1622                           | 15,5045     | 8,00  | 12,00 |
| Formula2 | 3  | 29,6667 | 8,14453        | 4,70225    | 9,4345                           | 49,8988     | 24,00 | 39,00 |
| Formula3 | 3  | 9,0000  | 1,00000        | 0,57735    | 6,5159                           | 11,4841     | 8,00  | 10,00 |
| Formula4 | 3  | 25,0000 | 3,60555        | 2,08167    | 16,0433                          | 33,9567     | 21,00 | 28,00 |
| Total    | 12 | 18,5000 | 10,18466       | 2,94006    | 12,0290                          | 24,9710     | 8,00  | 39,00 |

#### Test of Homogeneity of Variances

Waktu hancur tablet

| Levene Statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 6,132            | 3   | 8   | 0,018 |

#### ANOVA

Waktu hancur tablet

|                | Sum of Squares | df | Mean Square | F      | Sig.  |
|----------------|----------------|----|-------------|--------|-------|
| Between Groups | 971,667        | 3  | 323,889     | 15,302 | 0,001 |
| Within Groups  | 169,333        | 8  | 21,167      |        |       |
| Total          | 1141,000       | 11 |             |        |       |

Keterangan:

Ho ditolak jika  $F_{hitung} (15,302) > F_{tabel\ 0,05\ (3,8)} (4,07)$ , berarti rata-rata waktu hancur tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula.

## Multiple Comparisons

Waktu hancur tablet  
HSD

| (I) Formula | (J) Formula | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|-------------|-------------|-----------------------|------------|-------|-------------------------|-------------|
|             |             |                       |            |       | Lower Bound             | Upper Bound |
| Formula1    | Formula2    | -19,33333*            | 3,75648    | 0,001 | -27,9958                | -10,6709    |
|             | Formula3    | 1,33333               | 3,75648    | 0,732 | -7,3291                 | 9,9958      |
|             | Formula4    | -14,66667*            | 3,75648    | 0,005 | -23,3291                | -6,0042     |
| Formula2    | Formula1    | 19,33333*             | 3,75648    | 0,001 | 10,6709                 | 27,9958     |
|             | Formula3    | 20,66667*             | 3,75648    | 0,001 | 12,0042                 | 29,3291     |
|             | Formula4    | 4,66667               | 3,75648    | 0,249 | -3,9958                 | 13,3291     |
| Formula3    | Formula1    | -1,33333              | 3,75648    | 0,732 | -9,9958                 | 7,3291      |
|             | Formula2    | -20,66667*            | 3,75648    | 0,001 | -29,3291                | -12,0042    |
|             | Formula4    | -16,00000*            | 3,75648    | 0,003 | -24,6624                | -7,3376     |
| Formula4    | Formula1    | 14,66667*             | 3,75648    | 0,005 | 6,0042                  | 23,3291     |
|             | Formula2    | -4,66667              | 3,75648    | 0,249 | -13,3291                | 3,9958      |
|             | Formula3    | 16,00000*             | 3,75648    | 0,003 | 7,3376                  | 24,6624     |

\*. The mean difference is significant at the 0.05 level.

Keterangan:

Hasil uji HSD dari keempat formula, diperoleh nilai sig. <  $\alpha$  (0,05) sehingga  $H_0$  ditolak (\*), berarti rata-rata waktu hancur tablet dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula yaitu formula I menunjukkan perbedaan yang signifikan terhadap formula II dan formula IV; formula II menunjukkan perbedaan yang signifikan terhadap formula III; dan formula III menunjukkan perbedaan yang signifikan terhadap formula IV, sedangkan formula I tidak menunjukkan perbedaan yang signifikan terhadap formula III; dan formula II juga tidak menunjukkan perbedaan yang signifikan terhadap formula IV.

**LAMPIRAN Q**  
**HASIL UJI STATISTIK DISOLUSI TABLET IBUPROFEN**  
**ANTAR FORMULA**

**Descriptives**

Persen obat terlarut

|          | N  | Mean    | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Min   | Max   |
|----------|----|---------|----------------|------------|----------------------------------|-------------|-------|-------|
|          |    |         |                |            | Lower Bound                      | Upper Bound |       |       |
| Formula1 | 3  | 99,1267 | 0,17616        | 0,10171    | 98,6891                          | 99,5643     | 99,02 | 99,33 |
| Formula2 | 3  | 94,8800 | 0,43509        | 0,25120    | 93,7992                          | 95,9608     | 94,44 | 95,31 |
| Formula3 | 3  | 98,6600 | 0,19079        | 0,11015    | 98,1861                          | 99,1339     | 98,46 | 98,84 |
| Formula4 | 3  | 93,7500 | 0,15716        | 0,09074    | 93,3596                          | 94,1404     | 93,57 | 93,86 |
| Total    | 12 | 96,6042 | 2,44370        | 0,70544    | 95,0515                          | 98,1568     | 93,57 | 99,33 |

**Test of Homogeneity of Variances**

Persen obat terlarut

| Levene Statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 1.058            | 3   | 8   | 0,419 |

**ANOVA**

Persen obat terlarut

|                | Sum of Squares | df | Mean Square | F       | Sig.  |
|----------------|----------------|----|-------------|---------|-------|
| Between Groups | 65,125         | 3  | 21,708      | 308,542 | 0,000 |
| Within Groups  | 0,563          | 8  | 0,070       |         |       |
| Total          | 65,688         | 11 |             |         |       |

Keterangan:

Ho ditolak jika  $F_{hitung} (308,542) > F_{tabel 0,05 (3,8)} (4,07)$ , berarti rata-rata persen obat terlarut pada  $t = 30$  menit dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula.



## Multiple Comparisons

Persen obat terlarut  
HSD

| (I) Formula | (J) Formula | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|-------------|-------------|-----------------------|------------|-------|-------------------------|-------------|
|             |             |                       |            |       | Lower Bound             | Upper Bound |
| Formula1    | Formula2    | 4,24667*              | 0,21658    | 0,000 | 3,7472                  | 4,7461      |
|             | Formula3    | 0,46667               | 0,21658    | 0,063 | -0,0328                 | 0,9661      |
|             | Formula4    | 5,37667*              | 0,21658    | 0,000 | 4,8772                  | 5,8761      |
| Formula2    | Formula1    | -4,24667*             | 0,21658    | 0,000 | -4,7461                 | -3,7472     |
|             | Formula3    | -3,78000*             | 0,21658    | 0,000 | -4,2794                 | -3,2806     |
|             | Formula4    | 1,13000*              | 0,21658    | 0,001 | 0,6306                  | 1,6294      |
| Formula3    | Formula1    | -0,46667              | 0,21658    | 0,063 | -0,9661                 | 0,0328      |
|             | Formula2    | 3,78000*              | 0,21658    | 0,000 | 3,2806                  | 4,2794      |
|             | Formula4    | 4,91000*              | 0,21658    | 0,000 | 4,4106                  | 5,4094      |
| Formula4    | Formula1    | -5,37667*             | 0,21658    | 0,000 | -5,8761                 | -4,8772     |
|             | Formula2    | -1,13000*             | 0,21658    | 0,001 | -1,6294                 | -0,6306     |
|             | Formula3    | -4,91000*             | 0,21658    | 0,000 | -5,4094                 | -4,4106     |

\*. The mean difference is significant at the 0.05 level.

Keterangan:

Hasil uji HSD dari keempat formula, diperoleh nilai sig.  $< \alpha$  (0,05) sehingga  $H_0$  ditolak (\*), berarti rata-rata persen obat terlarut pada  $t = 30$  menit dari keempat formula menunjukkan bahwa ada perbedaan yang signifikan antar formula yaitu formula I menunjukkan perbedaan yang signifikan terhadap formula II dan formula IV; formula II menunjukkan perbedaan yang signifikan terhadap formula III dan formula IV; dan formula III menunjukkan perbedaan yang signifikan terhadap formula IV, hanya formula I yang tidak menunjukkan perbedaan yang signifikan terhadap formula III.

**LAMPIRAN R**  
**HASIL UJI STATISTIK PENETAPAN KADAR TABLET**  
**IBUPROFEN ANTAR FORMULA**

**Descriptives**

Kadar tablet  
ibuprofen

|          | N  | Mean     | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Min    | Max    |
|----------|----|----------|----------------|------------|----------------------------------|-------------|--------|--------|
|          |    |          |                |            | Lower Bound                      | Upper Bound |        |        |
| Formula1 | 3  | 1,0065E2 | 0,69831        | 0,69831    | 98,9120                          | 102,3814    | 100,04 | 101,41 |
| Formula2 | 3  | 1,0001E2 | 0,82505        | 0,82505    | 97,9605                          | 102,0595    | 99,18  | 100,83 |
| Formula3 | 3  | 99,1767  | 0,40919        | 0,40919    | 98,1602                          | 100,1931    | 98,72  | 99,51  |
| Formula4 | 3  | 1,0062E2 | 0,44546        | 0,44546    | 99,5101                          | 101,7232    | 100,16 | 101,05 |
| Total    | 12 | 1,0011E2 | 0,81719        | 0,81719    | 99,5933                          | 100,6317    | 98,72  | 101,41 |

**Test of Homogeneity of Variances**

Kadar tablet ibuprofen

| Levene Statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 0,513            | 3   | 8   | 0,685 |

**ANOVA**

Kadar tablet ibuprofen

|                | Sum of Squares | df | Mean Square | F     | Sig.  |
|----------------|----------------|----|-------------|-------|-------|
| Between Groups | 4,277          | 3  | 1,426       | 3,717 | 0,061 |
| Within Groups  | 3,068          | 8  | 0,384       |       |       |
| Total          | 7,346          | 11 |             |       |       |

Keterangan:

Ho ditolak jika  $F_{hitung} (3,717) < F_{tabel\ 0,05\ (3,8)} (4,07)$ , berarti rata-rata kadar ibuprofen dalam tablet dari keempat formula menunjukkan bahwa tidak ada perbedaan yang signifikan antar formula.

## LAMPIRAN S

### UJI F KURVA BAKU DENGAN NaOH 0,1N UNTUK UJI PENETAPAN KADAR TABLET IBUPROFEN

| Rep.     | Konsentrasi<br>(ppm) (x) | Absorbansi<br>(y) | $x^2$     | $y^2$    | xy       |
|----------|--------------------------|-------------------|-----------|----------|----------|
| 1        | 99,8                     | 0,176             | 9960,04   | 0,030976 | 17,5648  |
|          | 199,6                    | 0,357             | 39840,16  | 0,127449 | 71,2572  |
|          | 299,4                    | 0,505             | 89640,36  | 0,255025 | 151,197  |
|          | 399,2                    | 0,655             | 159360,64 | 0,429025 | 261,476  |
|          | 499,0                    | 0,849             | 249001,00 | 0,720801 | 423,651  |
|          | 598,8                    | 1,000             | 358561,44 | 1,000000 | 598,800  |
| $\Sigma$ | 2095,8                   | 3,542             | 906363,64 | 2,563276 | 1523,946 |

Persamaan Regresi pada replikasi 1  $\rightarrow y = 0,0016x + 0,0157$

$r_{hitung}/r_{tabel} : ,9993/0,811$

| Rep.     | Konsentrasi<br>(ppm) (x) | Absorbansi<br>(y) | $x^2$     | $y^2$    | xy        |
|----------|--------------------------|-------------------|-----------|----------|-----------|
| 2        | 100,1                    | 0,166             | 10020,01  | 0,027556 | 16,6166   |
|          | 200,2                    | 0,330             | 40080,04  | 0,108900 | 66,0660   |
|          | 300,3                    | 0,525             | 90180,09  | 0,275625 | 157,6575  |
|          | 400,4                    | 0,682             | 160320,16 | 0,465124 | 273,0728  |
|          | 500,5                    | 0,838             | 250500,25 | 0,702244 | 419,4190  |
|          | 600,6                    | 0,993             | 360720,36 | 0,986049 | 596,3958  |
| $\Sigma$ | 2102,1                   | 3,534             | 911820,91 | 2,565498 | 1529,2277 |

Persamaan Regresi pada replikasi 2  $\rightarrow y = 0,0017x + 0,0074$

$r_{hitung}/r_{tabel} : 0,9992/0,811$

| Rep. | Konsentrasi (ppm) (x) | Absorbansi (y) | x <sup>2</sup> | y <sup>2</sup> | xy        |
|------|-----------------------|----------------|----------------|----------------|-----------|
| 3    | 99,9                  | 0,158          | 9980,01        | 0,024964       | 15,7842   |
|      | 199,8                 | 0,344          | 39920,04       | 0,118336       | 68,7312   |
|      | 299,7                 | 0,506          | 89820,09       | 0,256036       | 151,6482  |
|      | 399,6                 | 0,678          | 159680,16      | 0,459684       | 270,9288  |
|      | 499,5                 | 0,837          | 249500,25      | 0,700569       | 418,0815  |
|      | 599,4                 | 0,996          | 359280,36      | 0,992016       | 597,0024  |
| Σ    | 2097,9                | 3,519          | 908180,91      | 2,551605       | 1522,1763 |

Persamaan Regresi pada replikasi 3 →  $y = 0,0017x + 0,0024$

$$r_{\text{hitung}}/r_{\text{tabel}}: 0,9997/0,811$$

|                          | Σ x <sup>2</sup> | Σ xy      | Σ y <sup>2</sup> | n | Residual SS | RDF |
|--------------------------|------------------|-----------|------------------|---|-------------|-----|
| Persamaan regresi 1      | 906363,64        | 1523,9460 | 2,563276         | 6 | 0,000936440 | 4   |
| Persamaan regresi 2      | 911820,91        | 1529,2277 | 2,565498         | 6 | 0,000808670 | 4   |
| Persamaan regresi 3      | 908180,91        | 1522,1763 | 2,551605         | 6 | 0,000328418 | 4   |
| <i>Pooled regression</i> |                  |           |                  |   | 0,002073527 | 12  |
| <i>Common regression</i> | 2726365,46       | 4575,3500 | 7,680379         |   | 0,002087909 | 15  |

$$F_{\text{hitung}} = 0,027742993$$

$$F_{\text{tabel } 0,05 (3,12)} = 3,49$$

$F_{\text{hitung}} = 0,027742993 < F_{\text{tabel } 0,05 (3,12)} = 3,49$ , yang berarti tidak ada perbedaan bermakna antar replikasi pada pembuatan kurva baku untuk uji penetapan tablet ibuprofen.

## LAMPIRAN T

### UJI F KURVA BAKU DENGAN DAPAR FOSFAT 0,2 M pH 7,2 UNTUK UJI DISOLUSI TABLET IBUPROFEN

| Rep.     | Konsentrasi<br>(ppm) (x) | Absorbansi<br>(y) | $x^2$     | $y^2$    | xy        |
|----------|--------------------------|-------------------|-----------|----------|-----------|
| 1        | 100,1                    | 0,174             | 10020,01  | 0,030276 | 17,4174   |
|          | 200,2                    | 0,357             | 40080,04  | 0,127449 | 71,4714   |
|          | 300,3                    | 0,531             | 90180,09  | 0,281961 | 159,4593  |
|          | 400,4                    | 0,720             | 160320,16 | 0,518400 | 288,2880  |
|          | 500,5                    | 0,909             | 250500,25 | 0,826281 | 454,9545  |
|          | 600,6                    | 1,014             | 360720,36 | 1,028196 | 609,0084  |
| $\Sigma$ | 2102,1                   | 3,705             | 911820,91 | 2,812563 | 1600,5990 |

Persamaan Regresi pada replikasi 1  $\rightarrow y = 0,0017x + 0,0130$

$$r_{hitung}/r_{tabel}: 0,9974/0,811$$

| Rep.     | Konsentrasi<br>(ppm) (x) | Absorbansi<br>(y) | $x^2$     | $y^2$    | xy        |
|----------|--------------------------|-------------------|-----------|----------|-----------|
| 2        | 100,1                    | 0,181             | 10020,01  | 0,032761 | 18,1181   |
|          | 200,2                    | 0,363             | 40080,04  | 0,131769 | 72,6726   |
|          | 300,3                    | 0,546             | 90180,09  | 0,298116 | 163,9638  |
|          | 400,4                    | 0,722             | 160320,16 | 0,521284 | 289,0888  |
|          | 500,5                    | 0,919             | 250500,25 | 0,844561 | 459,9595  |
|          | 600,6                    | 1,092             | 360720,36 | 1,192464 | 655,8552  |
| $\Sigma$ | 2102,1                   | 3,823             | 911820,91 | 3,020955 | 1659,6580 |

Persamaan Regresi pada replikasi 2  $\rightarrow y = 0,0018x - 0,0027$

$$r_{hitung}/r_{tabel}: 0,999909/0,811$$

| Rep.     | Konsentrasi (ppm) (x) | Absorbansi (y) | $x^2$     | $y^2$    | xy        |
|----------|-----------------------|----------------|-----------|----------|-----------|
| 3        | 100,2                 | 0,176          | 10040,04  | 0,030976 | 17,6352   |
|          | 200,4                 | 0,367          | 40160,16  | 0,134689 | 73,5468   |
|          | 300,6                 | 0,550          | 90360,36  | 0,302500 | 165,3300  |
|          | 400,8                 | 0,721          | 160640,64 | 0,519841 | 288,9768  |
|          | 501,0                 | 0,912          | 251001,00 | 0,831744 | 456,9120  |
|          | 601,2                 | 1,090          | 361441,44 | 1,188100 | 655,3080  |
| $\Sigma$ | 2104,2                | 3,816          | 913643,64 | 3,007850 | 1657,7088 |

Persamaan Regresi pada replikasi 3  $\rightarrow y = 0,0018x - 0,0016$

$$r_{hitung}/r_{tabel}: 0,999904/0,811$$

|                          | $\Sigma x^2$ | $\Sigma xy$ | $\Sigma y^2$ | n | Residual SS | RDF |
|--------------------------|--------------|-------------|--------------|---|-------------|-----|
| Persamaan regresi 1      | 911820,91    | 1600,5990   | 2,812563     | 6 | 0,002891571 | 4   |
| Persamaan regresi 2      | 911820,91    | 1659,6580   | 3,020955     | 6 | 0,000115440 | 4   |
| Persamaan regresi 3      | 913643,64    | 1657,7088   | 3,007850     | 6 | 0,000114440 | 4   |
| <i>Pooled regression</i> |              |             |              |   | 0,003121451 | 12  |
| <i>Common regression</i> | 2737285,46   | 4917,9658   | 8,841368     |   | 0,005465438 | 15  |

$$F_{hitung} = 3,003715147$$

$$F_{tabel\ 0,05\ (3,12)} = 3,49$$

$F_{hitung} = 3,003715147 < F_{tabel\ 0,05\ (3,12)} = 3,49$ , yang berarti tidak ada perbedaan bermakna antar replikasi pada pembuatan kurva baku untuk uji disolusi tablet ibuprofen.



**LAMPIRAN U**  
**HASIL UJI ANAVA KEKERASAN TABLET IBUPROFEN DENGAN *DESIGN EXPERT***

Use your mouse to right click on individual cells for definitions.

**Response 1 Kekerasan**  
**ANOVA for selected factorial model**  
**Analysis of variance table [Partial sum of squares - Type III]**

| Source                           | Sum of Squares | df | Mean Square | F Value | p-value<br>Prop > F |             |
|----------------------------------|----------------|----|-------------|---------|---------------------|-------------|
| Model                            | 27.41          | 3  | 9.14        | 15.20   | 0.0011              | significant |
| <i>A-Macam filler-binder</i>     | 19.71          | 1  | 19.71       | 32.80   | 0.0004              |             |
| <i>B-Macam superdisintegrant</i> | 7.49           | 1  | 7.49        | 12.46   | 0.0077              |             |
| <i>AB</i>                        | 0.21           | 1  | 0.21        | 0.35    | 0.5678              |             |
| Pure Error                       | 4.81           | 8  | 0.60        |         |                     |             |
| Cor Total                        | 32.22          | 11 |             |         |                     |             |

The Model F-value of 15.20 implies the model is significant. There is only a 0.11% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant. In this case A, B are significant model terms. Values greater than 0.1000 indicate the model terms are not significant. If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

|           |       |                |        |       |
|-----------|-------|----------------|--------|-------|
| Std. Dev. | 0.78  | R-Squared      | 0.8508 |       |
| Mean      | 12.26 | Adj R-Squared  | 0.7948 |       |
| C.V. %    | 6.32  | Pred R-Squared | 0.6643 |       |
| PRESS     | 10.82 | Adeq Precision |        | 9.257 |

The "Pred R-Squared" of 0.6643 is in reasonable agreement with the "Adj R-Squared" of 0.7948.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 9.257 indicates an adequate signal. This model can be used to navigate the design space.

| Factor                    | Coefficient Estimate | df | Standard Error | 95% CI Low | 95% CI High | VIF  |
|---------------------------|----------------------|----|----------------|------------|-------------|------|
| Intercept                 | 12.26                | 1  | 0.22           | 11.75      | 12.78       |      |
| A-Macam filler-binder     | -1.28                | 1  | 0.22           | -1.80      | -0.27       | 1.00 |
| B-Macam superdisintegrant | -0.79                | 1  | 0.22           | -1.31      | -0.27       | 1.00 |
| AB                        | 0.13                 | 1  | 0.22           | -0.38      | 0.65        | 1.00 |

### Final Equation in Terms of Coded Factors:

Kekerasan =  
 +12.26  
 -1.28 \* A  
 -0.79 \* B  
 +0.13 \* A \* B

### Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ &+12.26167 \\ &-1.28167 && * \text{Macam filler-binder} \\ &-0.79000 && * \text{Macam superdisintegrant} \\ &+0.13333 && * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.  
In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

**LAMPIRAN V**  
**HASIL UJI ANAVA KERAPUHAN TABLET IBUPROFEN DENGAN *DESIGN EXPERT***

Use your mouse to right click on individual cells for definitions.

**Response 2 Kerapuhan**  
**ANOVA for selected factorial model**  
**Analysis of variance table [Partial sum of squares - Type III]**

| Source                    | Sum of Squares | df | Mean Square | F Value | p-value<br>Prop > F |
|---------------------------|----------------|----|-------------|---------|---------------------|
| Model                     | 3.24           | 3  | 1.08        | 95.92   | < 0.0001            |
| A-Macam filler-binder     | 2.59           | 1  | 2.59        | 230.30  | < 0.0001            |
| B-Macam superdisintegrant | 0.34           | 1  | 0.34        | 30.18   | 0.0006              |
| AB                        | 0.31           | 1  | 0.31        | 27.27   | 0.0008              |
| Pure Error                | 0.090          | 8  | 0.011       |         |                     |
| Cor Total                 | 3.33           | 11 |             |         |                     |

significant

The Model F-value of 95.92 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant.

In this case A, B, AB are significant model terms.

Values greater than 0.1000 indicate the model terms are not significant.

If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

|           |       |                |        |
|-----------|-------|----------------|--------|
| Std. Dev. | 0.11  | R-Squared      | 0.9729 |
| Mean      | 0.73  | Adj R-Squared  | 0.9628 |
| C.V. %    | 14.61 | Pred R-Squared | 0.9391 |
| PRESS     | 0.20  | Adeq Precision | 20.669 |

The "Pred R-Squared" of 0.9391 is in reasonable agreement with the "Adj R-Squared" of 0.9628.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 20.669 indicates an adequate signal. This model can be used to navigate the design space.

| Factor                    | Coefficient Estimate | df | Standard Error | 95% CI Low | 95% CI High | VIF  |
|---------------------------|----------------------|----|----------------|------------|-------------|------|
| Intercept                 | 0.73                 | 1  | 0.031          | 0.66       | 0.80        |      |
| A-Macam filler-binder     | 0.47                 | 1  | 0.031          | 0.39       | 0.54        | 1.00 |
| B-Macam superdisintegrant | -0.17                | 1  | 0.031          | -0.24      | -0.098      | 1.00 |
| AB                        | -0.16                | 1  | 0.031          | -0.23      | -0.089      | 1.00 |

### Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{Kerapuhan} &= \\
 &+0.73 \\
 &+0.47 * A \\
 &-0.17 * B \\
 &-0.16 * A * B
 \end{aligned}$$



### Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kerapuhan} &= \\ &+0.72667 \\ &+0.46500 \quad * \text{Macam filler-binder} \\ &-0.16833 \quad * \text{Macam superdisintegrant} \\ &-0.16000 \quad * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node. In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.



## LAMPIRAN W

### HASIL UJI ANAVA WAKTU HANCUR TABLET IBUPROFEN DENGAN *DESIGN EXPERT*

Use your mouse to right click on individual cells for definitions.

**Response 3 Waktu hancur**

**ANOVA for selected factorial model**

**Analysis of variance table [Partial sum of squares - Type III]**

| Source                           | Sum of Squares | Df | Mean Square | F Value | p-value<br>Prop > F |
|----------------------------------|----------------|----|-------------|---------|---------------------|
| Model                            | 971.67         | 3  | 323.89      | 15.30   | 0.0011              |
| <i>A-Macam filler-binder</i>     | 936.33         | 1  | 936.33      | 44.24   | 0.0002              |
| <i>B-Macam superdisintegrant</i> | 27.00          | 1  | 27.00       | 1.28    | 0.2914              |
| <i>AB</i>                        | 8.33           | 1  | 8.33        | 0.39    | 0.5478              |
| Pure Error                       | 169.33         | 8  | 21.17       |         |                     |
| Cor Total                        | 1141.00        | 11 |             |         |                     |

significant

The Model F-value of 15.30 implies the model is significant. There is only a 0.11% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant.

In this case A are significant model terms.

Values greater than 0.1000 indicate the model terms are not significant.

If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

|           |        |                |        |
|-----------|--------|----------------|--------|
| Std. Dev. | 4.60   | R-Squared      | 0.8516 |
| Mean      | 18.50  | Adj R-Squared  | 0.7959 |
| C.V. %    | 24.87  | Pred R-Squared | 0.6661 |
| PRESS     | 381.00 | Adeq Precision | 7.780  |

The "Pred R-Squared" of 0.6661 is in reasonable agreement with the "Adj R-Squared" of 0.7959.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 7.780 indicates an adequate signal. This model can be used to navigate the design space.

| Factor                    | Coefficient Estimate | df | Standard Error | 95% CI |       | VIF  |
|---------------------------|----------------------|----|----------------|--------|-------|------|
|                           |                      |    |                | Low    | High  |      |
| Intercept                 | 18.50                | 1  | 1.33           | 15.44  | 21.56 |      |
| A-Macam filler-binder     | 8.83                 | 1  | 1.33           | 5.77   | 11.90 | 1.00 |
| B-Macam superdisintegrant | -1.50                | 1  | 1.33           | -4.56  | 1.56  | 1.00 |
| AB                        | -0.83                | 1  | 1.33           | -0.39  | 2.23  | 1.00 |

### Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 &\text{Waktu hancur} \\
 &= +18.50 \\
 &+ 8.83 * A \\
 &- 1.50 * B \\
 &- 0.83 * A * B
 \end{aligned}$$

### Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Waktu hancur} &= \\ +18.50000 & \\ +8.83333 & * \text{Macam filler-binder} \\ -1.50000 & * \text{Macam superdisintegrant} \\ -0.83333 & * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.  
In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

## LAMPIRAN X

### HASIL UJI ANAVA DISOLUSI TABLET IBUPROFEN DENGAN *DESIGN EXPERT*

Use your mouse to right click on individual cells for definitions.

**Response 4 Persen obat terlarut**

**ANOVA for selected factorial model**

**Analysis of variance table [Partial sum of squares - Type III]**

| Source                           | Sum of Squares | df | Mean Square | F Value    | p-value<br>Prop > F |             |
|----------------------------------|----------------|----|-------------|------------|---------------------|-------------|
| Model                            | 57.90          | 3  | 19.30       | 49.02      | < 0.0001            | significant |
| <i>A-Macam filler-binder</i>     | 54.06          | 1  | 54.06       | 137.32     | < 0.0001            |             |
| <i>B-Macam superdisintegrant</i> | 3.84           | 1  | 3.84        | 9.76       | 0.0141              |             |
| <i>AB</i>                        | 8.333E-006     | 1  | 8.333E-006  | 2.117E-005 | 0.9964              |             |
| Pure Error                       | 3.15           | 8  | 0.39        |            |                     |             |
| Cor Total                        | 61.05          | 11 |             |            |                     |             |

The Model F-value of 49.02 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise.

Values of "Prob > F" less than 0.0500 indicate model terms are significant.

In this case A, B are significant model terms.

Values greater than 0.1000 indicate the model terms are not significant.

If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

|           |       |                |        |
|-----------|-------|----------------|--------|
| Std. Dev. | 0.63  | R-Squared      | 0.9484 |
| Mean      | 96.44 | Adj R-Squared  | 0.9291 |
| C.V. %    | 0.65  | Pred R-Squared | 0.8839 |
| PRESS     | 7.09  | Adeq Precision | 14.842 |

The "Pred R-Squared" of 0.8839 is in reasonable agreement with the "Adj R-Squared" of 0.9291. "Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 14.842 indicates an adequate signal. This model can be used to navigate the design space.

| Factor                    | Coefficient Estimate | df | Standard Error | 95% CI Low | 95% CI High | VIF  |
|---------------------------|----------------------|----|----------------|------------|-------------|------|
| Intercept                 | 96.44                | 1  | 0.18           | 96.02      | 96.86       |      |
| A-Macam filler-binder     | -2.12                | 1  | 0.18           | -2.54      | -1.70       | 1.00 |
| B-Macam superdisintegrant | -0.57                | 1  | 0.18           | -0.98      | -0.15       | 1.00 |
| AB                        | 8.333E-004           | 1  | 0.18           | -0.42      | 0.42        | 1.00 |

### Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{Persen obat terlarut} &= \\
 &+96.44 \\
 &-2.12 * A \\
 &-0.57 * B \\
 &+8.333E-004 * A * B
 \end{aligned}$$



### Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Persen obat terlarut} &= \\ +96.43750 & \\ -2.12250 & \quad * \text{Macam filler-binder} \\ -0.56583 & \quad * \text{Macam superdisintegrant} \\ +8.33333\text{E-004} & \quad * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.  
In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.



## LAMPIRAN Y

### HASIL UJI STATISTIK HASIL PERCOBAAN DAN HASIL TEORITIS PADA UJI KEKERASAN TABLET IBUPROFEN

#### Paired Samples Statistics

|        |                                    | Mean    | N | Std. Deviation | Std. Error Mean |
|--------|------------------------------------|---------|---|----------------|-----------------|
| Pair 1 | Hasil Percobaan pada Uji Kekerasan | 12.2625 | 4 | 1.74754        | .87377          |
|        | Hasil Teoritis pada Uji Kekerasan  | 12.2600 | 4 | 1.74333        | .87167          |

#### Paired Samples Correlations

|        |  | N | Correlation | Sig. |
|--------|--|---|-------------|------|
| Pair 1 | Hasil Percobaan pada Uji Kekerasan & Hasil Teoritis pada Uji Kekerasan | 4 | 1.000       | .000 |

#### Paired Samples Test

|   | Paired Differences |           |                 |   |        | t     | df | Sig. (2-tailed) |
|---|--------------------|-----------|-----------------|---|--------|-------|----|-----------------|
|   | Mean               | Std. Dev. | Std. Error Mean | 95% Confidence Interval of the Difference |        |       |    |                 |
|   |                    |           |                 | Lower                                     | Upper  |       |    |                 |
| Pair 1 Hasil Percobaan pada Uji Kekerasan - Hasil Teoritis pada Uji Kekerasan | .00250             | .00500    | .00250          | -.00546                                   | .01046 | 1.000 | 3  | .391            |

Hipotesa Pengujian :

Ho diterima jika  $T_{hitung} (1,000) < T_{0,025 (3)} (3,182)$ , berarti hasil percobaan dan hasil teoritis pada uji kekerasan tidak berbeda bermakna antar formula.

## LAMPIRAN Z

### HASIL UJI STATISTIK HASIL PERCOBAAN DAN HASIL TEORITIS PADA UJI KERAPUHAN TABLET IBUPROFEN

#### Paired Samples Statistics

|        |                                    | Mean  | N | Std. Deviation | Std. Error Mean |
|--------|------------------------------------|-------|---|----------------|-----------------|
| Pair 1 | Hasil Percobaan pada Uji Kerapuhan | .7250 | 4 | .60081         | .30040          |
|        | Hasil Teoritis pada Uji Kerapuhan  | .7300 | 4 | .60597         | .30299          |

#### Paired Samples Correlations

|        |  | N | Correlation | Sig. |
|--------|--|---|-------------|------|
| Pair 1 | Hasil Percobaan pada Uji Kerapuhan & Hasil Teoritis pada Uji Kerapuhan | 4 | 1.000       | .000 |

#### Paired Samples Test

|        | Paired Differences   |           |                 |   |         | t      | df     | Sig. (2-tailed) |      |
|--------|--|-----------|-----------------|---|---------|--------|--------|-----------------|------|
|        | Mean   | Std. Dev. | Std. Error Mean | 95% Confidence Interval of the Difference |         |        |        |                 |      |
|        |  |           |                 | Lower                                     | Upper   |        |        |                 |      |
| Pair 1 | Hasil Percobaan pada Uji Kerapuhan - Hasil Teoritis pada Uji Kerapuhan | -.00500   | .00577          | .00289                                    | -.01419 | .00419 | -1.732 | 3               | .182 |

Hipotesa Pengujian :

Ho diterima jika  $T_{hitung} (-1,732) < T_{0,025 (3)} (3,182)$ , berarti hasil percobaan dan hasil teoritis pada uji kerapuhan tidak berbeda bermakna antar formula.

## LAMPIRAN AA

### HASIL UJI STATISTIK HASIL PERCOBAAN DAN HASIL TEORITIS PADA UJI WAKTU HANCUR TABLET IBUPROFEN

#### Paired Samples Statistics

|        |                                       | Mean    | N | Std. Deviation | Std. Error Mean |
|--------|---------------------------------------|---------|---|----------------|-----------------|
| Pair 1 | Hasil Percobaan pada Uji Waktu Hancur | 18.5000 | 4 | 10.39259       | 5.19630         |
|        | Hasil Teoritis pada Uji Waktu Hancur  | 18.5000 | 4 | 10.38639       | 5.19319         |

#### Paired Samples Correlations

|        |  | N | Correlation | Sig. |
|--------|--|---|-------------|------|
| Pair 1 | Hasil Percobaan pada Uji Waktu Hancur & Hasil Teoritis pada Uji Waktu Hancur | 4 | 1.000       | .000 |

#### Paired Samples Test

|        | Paired Differences |           |                 |   |        | t    | df | Sig. (2-tailed) |
|--------|--------------------|-----------|-----------------|---|--------|------|----|-----------------|
|        | Mean               | Std. Dev. | Std. Error Mean | 95% Confidence Interval of the Difference |        |      |    |                 |
|        |                    |           |                 | Lower                                     | Upper  |      |    |                 |
| Pair 1 | .00000             | .00816    | .00408          | -.01299                                   | .01299 | .000 | 3  | 1.000           |

Hipotesa Pengujian :

Ho diterima jika  $T_{hitung} (0,000) < T_{0,025 (3)} (3,182)$ , berarti hasil percobaan dan hasil teoritis pada uji waktu hancur tidak berbeda bermakna antar formula.

## LAMPIRAN AB

### HASIL UJI STATISTIK HASIL PERCOBAAN DAN HASIL TEORITIS PADA UJI DISOLUSI TABLET IBUPROFEN

#### Paired Samples Statistics

|        |                                   | Mean    | N | Std. Deviation | Std. Error Mean |
|--------|-----------------------------------|---------|---|----------------|-----------------|
| Pair 1 | Hasil Percobaan pada Uji Disolusi | 96.6150 | 4 | 2.68580        | 1.34290         |
|        | Hasil Teoritis pada Uji Disolusi  | 96.4400 | 4 | 2.53490        | 1.26745         |

#### Paired Samples Correlations

|        |  | N | Correlation | Sig. |
|--------|--|---|-------------|------|
| Pair 1 | Hasil Percobaan pada Uji Disolusi & Hasil Teoritis pada Uji Disolusi | 4 | .993        | .007 |

#### Paired Samples Test

|  | Paired Differences |           |                 |   |        | T     | df | Sig. (2-tailed) |
|--|--------------------|-----------|-----------------|---|--------|-------|----|-----------------|
|  | Mean               | Std. Dev. | Std. Error Mean | 95% Confidence Interval of the Difference |        |       |    |                 |
|  |                    |           |                 | Lower                                     | Upper  |       |    |                 |
| Pair 1<br>Hasil Percobaan pada Uji Disolusi - Hasil Teoritis pada Uji Disolusi | .17500             | .33670    | .16835          | -.36076                                   | .71076 | 1.040 | 3  | .375            |

Hipotesa Pengujian :

Ho diterima jika  $T_{hitung} (1,040) < T_{0,025 (3)} (3,182)$ , berarti hasil percobaan dan hasil teoritis pada uji disolusi tidak berbeda bermakna antar formula