

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

Mutu fisik yg di uji		Formula Tablet Ibuprofen				Persyaratan
		FI	FII	FIII	FIV	
Kelembaban (%)	I	2,99	3,24	3,37	4,47	3-5% (Voigt, 1995)
	II	3,61	4,01	3,88	3,70	
	III	2,91	4,51	4,51	3,31	
	$\bar{X}$	3,71	3,92	3,92	3,83	
	SD	0,3831	0,6398	0,5711	0,5903	
Sudut diam ( $^{\circ}$ )	I	33,43	26,15	35,01	31,06	25-30 baik 30-40 cukup baik (Wells, 1988)
	II	36,27	32,05	32,44	30,07	
	III	31,25	27,01	30,46	29,88	
	$\bar{X}$	33,65	28,40	32,64	30,34	
	SD	2,6753	3,1569	2,7423	1,9606	
Indeks kompresibilitas (%)	I	19,00	19,00	17,00	17,00	12-16 baik 18-21 cukup baik (Wells, 1988)
	II	15,00	16,00	16,00	20,00	
	III	15,00	16,00	17,00	20,00	
	$\bar{X}$	16,00	17,00	17,00	19,00	
	SD	0,0231	0,0017	0,0057	0,0173	
<i>Hausner ratio</i>	I	1,23	1,23	1,23	1,21	< 1,25 Baik (Wells, 1988)
	II	1,18	1,19	1,19	1,25	
	III	1,18	1,19	1,19	1,25	
	$\bar{X}$	1,20	1,20	1,20	1,24	
	SD	0,0289	0,0289	0,0058	0,0231	

## LAMPIRAN B

### HASIL UJI KEKERASAN TABLET IBUPROFEN

Hasil Uji Kekerasan Tablet Formula I

No	Replikasi I Kekerasan Tablet (Kgf)	Replikasi II Kekerasan Tablet (Kgf)	Replikasi III Kekerasan Tablet (Kgf)
1	11,23	14,10	11,40
2	11,60	14,70	11,60
3	12,90	12,30	11,50
4	12,90	13,90	12,80
5	13,50	14,70	13,90
6	15,00	13,70	13,20
7	12,90	14,10	14,00
8	12,90	14,20	14,00
9	13,60	13,40	12,90
10	12,99	12,30	13,40
$\bar{x} \pm$ SD	$12,99 \pm 1,0016$	$13,74 \pm 0,8566$	12,87

Hasil Uji Kekerasan Tablet Formula II

No	Replikasi I Kekerasan Tablet (kgf)	Replikasi II Kekerasan Tablet (kgf)	Replikasi III Kekerasan Tablet (kgf)
1	6,90	4,40	4,40
2	7,40	4,70	4,90
3	8,10	5,50	4,20
4	6,80	4,90	4,20
5	7,40	4,50	4,90
6	6,80	5,40	4,40
7	6,80	5,30	4,50
8	6,60	4,40	4,50
9	6,40	4,80	4,90
10	6,40	4,90	4,10
$\bar{x} \pm$ SD	$6,96 \pm 0,5296$	$4,88 \pm 0,4050$	$4,50 \pm 0,3055$

Hasil Uji Kekerasan Tablet Formula III

No	Replikasi I Kekerasan Tablet (kgf)	Replikasi II Kekerasan Tablet (kgf)	Replikasi III Kekerasan Tablet (kgf)
1	11,60	15,80	11,80
2	11,70	12,10	10,00
3	11,10	13,80	10,00
4	10,90	15,60	13,20
5	10,00	15,20	13,20
6	11,60	14,50	13,60
7	10,10	14,80	13,10
8	11,70	14,10	14,00
9	11,60	15,80	13,30
10	11,10	15,60	12,10
$\bar{X} \pm$ SD	11,14 $\pm$ 0,6415	14,73 $\pm$ 1,1672	12,47 $\pm$ 1,4885

Hasil Uji Kekerasan Tablet Formula IV

No	Replikasi I Kekerasan Tablet (kgf)	Replikasi II Kekerasan Tablet (kgf)	Replikasi III Kekerasan Tablet (kgf)
1	5,80	4,10	4,60
2	5,70	4,80	4,80
3	6,00	4,30	4,70
4	7,40	4,50	4,40
5	5,80	4,60	4,20
6	6,40	4,80	4,40
7	6,70	5,00	4,40
8	6,30	4,70	4,80
9	6,60	4,40	4,50
10	6,80	4,40	4,30
$\bar{X} \pm$ SD	6,35 $\pm$ 0,54211	4,56 $\pm$ 0,2716	4,51 $\pm$ 0,2079

**LAMPIRAN C**  
**HASIL UJI KERAPUHAN TABLET IBUPROFEN**

<b>Formula</b>	<b>Replikasi</b>	<b>Berat awal (gram)</b>	<b>Berat akhir (gram)</b>	<b>Kerapuhan (%)</b>	$\bar{X} \pm SD$
I	1	15,9070	15,8229	0,53	0,40 ±
	2	15,9660	15,9227	0,27	0,13
	3	16,0807	16,0137	0,40	
II	1	16,3235	15,8905	2,56	2,51 ±
	2	15,9454	15,3326	3,48	1,0417
	3	15,6856	15,4656	1,41	
III	1	15,8400	15,7742	0,42	0,25 ±
	2	15,7536	15,7380	0,10	0,1617
	3	15,1832	15,1502	0,22	
IV	1	16,037	15,7204	1,97	3,09 ±
	2	16,5520	16,1802	4,56	1,3287
	3	16,0311	15,5906	2,75	

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

Replikasi	Waktu Hancur (detik)			
	Formula I	Formula II	Formula III	Formula IV
1	10	360	12	300
2	10	300	22	300
3	12	240	12	240
$\bar{x} \pm SD$	10,67 $\pm$ 1,1547	300 $\pm$ 60,0000	15,33 $\pm$ 5,7735	280 $\pm$ 34,6410

## LAMPIRAN E

### HASIL UJI KESERAGAMAN BOBOT TABLET IBUPROFEN

Hasil Uji Keseragaman Bobot Tablet Formula I

No	Replikasi I Bobot Tablet (mg)	Replikasi II Bobot Tablet (mg)	Replikasi III Bobot Tablet (mg)
1	794,9	806,7	798,2
2	783,9	800,9	805,7
3	795,5	802,3	802,1
4	796,6	803,4	795,3
5	801,1	795,9	803,9
6	796,6	801,9	807,2
7	798,8	794,0	803,9
8	798,5	809,1	806,5
9	793,3	806,2	803,1
10	793,3	804,5	803,7
11	796,0	795,4	805,2
12	799,6	802,2	801,6
13	788,8	805,6	800,3
14	787,9	799,3	800,3
15	797,7	802,2	804,4
16	800,6	800,6	806,6
17	795,9	806,8	800,3
18	795,2	803,5	806,7
19	798,8	806,5	806,5
20	792,4	804,7	790,5
$\bar{X} \pm SD$	795,3 ± 4,404	791,6 ± 4,0569	802,6 ± 7,6049

Hasil Uji Keseragaman Bobot Tablet Formula II

No	Replikasi I Bobot Tablet (mg)	Replikasi II Bobot Tablet (mg)	Replikasi III Bobot Tablet (mg)
1	816,0	806,7	795,3
2	817,1	800,9	787,2
3	817,5	802,3	802,1
4	817,5	803,4	803,8
5	813,8	795,9	800,5
6	818,8	801,9	795,4
7	815,8	749,0	800,0
8	814,0	809,1	798,0
9	818,6	806,2	800,8
10	815,4	804,5	799,0
11	814,4	795,4	786,0
12	814,6	802,2	803,2
13	812,0	805,6	786,0
14	815,8	799,5	794,1
15	821,5	802,2	797,5
16	814,2	800,6	795,8
17	802,8	806,8	794,2
18	819,9	803,5	802,7
19	802,4	806,5	794,0
20	818,6	804,7	802,8
$\bar{X} \pm SD$	815,0 ± 4,8460	802,6 ± 4,0486	796,9 ± 5,5562

Hasil Uji Keseragaman Bobot Tablet Formula III

No	Replikasi I Bobot Tablet (mg)	Replikasi II Bobot Tablet (mg)	Replikasi III Bobot Tablet (mg)
1	780,3	786,9	798,2
2	789,0	794,8	805,7
3	781,8	785,0	807,2
4	793,5	787,5	802,1
5	780,5	799,7	795,3
6	784,6	786,2	803,9
7	791,9	782,8	803,9
8	791,2	790,6	806,5
9	782,6	794,9	803,1
10	782,6	803,8	803,7
11	789,6	785,3	805,2
12	801,7	790,8	801,6
13	790,3	797,3	800,3
14	800,2	786,3	800,3
15	792,6	800,5	804,4
16	788,7	786,6	806,6
17	798,3	804,9	800,3
18	791,8	794,2	806,7
19	795,1	786,2	806,5
20	799,0	788,2	790,5
$\bar{X} \pm SD$	790,3 ± 6,6633	791,6 ± 6,7090	802,6 ± 4,261



Hasil Uji Keseragaman Bobot Tablet Formula IV

No	Replikasi I Bobot Tablet (mg)	Replikasi II Bobot Tablet (mg)	Replikasi III Bobot Tablet (mg)
1	805,3	816,6	809,0
2	804,1	810,0	807,6
3	801,8	816,6	793,0
4	806,9	814,2	798,1
5	809,8	817,4	808,2
6	795,3	817,6	810,9
7	803,5	809,9	801,3
8	806,9	798,6	798,6
9	809,4	816,6	797,7
10	804,9	811,7	798,8
11	800,4	814,2	805,0
12	806,5	814,6	803,5
13	810,1	811,7	795,0
14	804,8	819,1	807,0
15	802,1	817,4	793,1
16	796,5	818,4	793,0
17	795,3	819,3	800,6
18	793,2	820,4	795,8
19	794,2	814,1	793,0
20	803,9	815,1	800,1
$\bar{X} \pm SD$	802,8 ± 5,3115	814,8 ± 4,896	800,5 ± 5,886

## LAMPIRAN F

### HASIL UJI AKURASI DAN PRESISI PENETAPAN KADAR IBUPROFEN DALAM TABLET

Hasil Uji Akurasi dan Presisi Formula I

Konsentrasi	Absorbansi	W ibuprofen (gram)	C sampel ( $\mu\text{g/ml}$ )	C teoritis ( $\mu\text{g/ml}$ )	Perolehan kembali (%)	$\bar{X} \pm \text{SD}$	KV (%)
80%	0,697	0,3199	416,6634	399,88	104,20	$103,04 \pm 1,07$	1,04
	0,689	0,3204	411,8645	400,50	102,84		
	0,684	0,3204	408,8652	501,00	102,09		
100%	0,849	0,4008	507,8423	501,00	101,37	$101,90 \pm 1,04$	1,02
	0,862	0,4001	515,6405	501,00	103,10		
	0,848	0,4008	507,2424	501,00	101,25		
120%	0,999	0,4803	597,8214	600,38	99,57	$100,82 \pm 1,08$	1,07
	1,017	0,4803	608,6189	600,38	101,37		
	1,018	0,4801	609,2188	600,13	101,52		

Hasil Uji Akurasi dan Presisi Formula II

Konsentrasi	Absorbansi	W ibuprofen (gram)	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,665	0,3202	397,4679	400,25	99,30	99,16 ± 0,44	0,44
	0,661	0,3203	395,0684	400,38	98,67		
	0,667	0,3205	398,6676	400,63	99,51		
100%	0,822	0,4003	491,6460	500,38	98,26	98,19 ± 0,56	0,57
	0,817	0,4005	488,6467	500,63	97,61		
	0,825	0,3999	493,4456	499,88	98,71		
120%	1,000	0,4806	598,4213	600,75	99,61	99,81 ± 0,17	0,17
	1,003	0,4806	600,2209	600,75	99,91		
	1,002	0,4802	599,6210	600,25	99,90		

Hasil Uji Akurasi dan Presisi Formula III

Konsentrasi	Absorbansi	W ibuprofen (gram)	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,666	0,3200	389,0788	400,00	99,52	99,89 ± 1,23	1,23
	0,678	0,3202	405,2773	400,25	101,26		
	0,662	0,3201	395,6793	400,13	98,89		
100%	0,822	0,4000	491,6597	500,00	98,33	98,96 ± 0,56	0,56
	0,829	0,4000	495,8588	500,00	99,17		
	0,831	0,4001	497,0586	500,13	99,39		
120%	0,999	0,4799	597,8380	599,88	99,66	99,93 ± 0,51	0,51
	1,008	0,4801	603,2369	600,13	100,52		
	0,999	0,4801	597,8380	600,13	99,62		

Hasil Uji Akurasi dan Presisi Formula IV

Konsentrasi	Absorbansi	W ibuprofen (gram)	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,677	0,3203	404,6662	400,38	101,07	100,94 ± 0,18	0,18
	0,676	0,3200	404,0663	400,00	101,02		
	0,675	0,3204	403,4665	400,50	100,74		
100%	0,822	0,4003	491,6460	500,38	98,26	98,24 ± 0,10	0,10
	0,821	0,4003	491,0462	500,38	98,14		
	0,823	0,4003	492,2459	500,63	98,33		
120%	0,999	0,4805	597,8214	600,63	99,53	98,80 ± 0,66	0,67
	0,989	0,4801	591,8228	600,13	98,62		
	0,985	0,4799	589,4234	599,88	98,26		

**LAMPIRAN G**  
**HASIL UJI PENETAPAN KADAR IBUPROFEN DALAM TABLET**

Formula	Replikasi	Absorbansi	C sampel (µg/ml)	C teoritis (µg.ml)	Kadar (%)	$\bar{X} \pm SD$	KV (%)
I	1	0,839	501,8437	500,125	100,34	100,10 ±	0,42
	2	0,833	498,2445	500,125	99,62	0,4155	
	3	0,839	501,8437	500,125	100,34		
II	1	0,832	497,6447	500	99,53	94,58 ±	4,53
	2	0,769	459,8534	499,875	91,99	4,2892	
	3	0,771	461,0531	500	92,21		
III	1	0,835	499,4442	500	99,89	99,79 ±	0,11
	2	0,834	498,8444	499,875	99,79	0,1076	
	3	0,833	498,2445	499,875	99,67		
IV	1	0,830	496,4449	500	99,29	95,83 ±	3,47
	2	0,799	477,8492	500,25	95,52	3,3213	
	3	0,775	463,4526	500	92,67		

## LAMPIRAN H

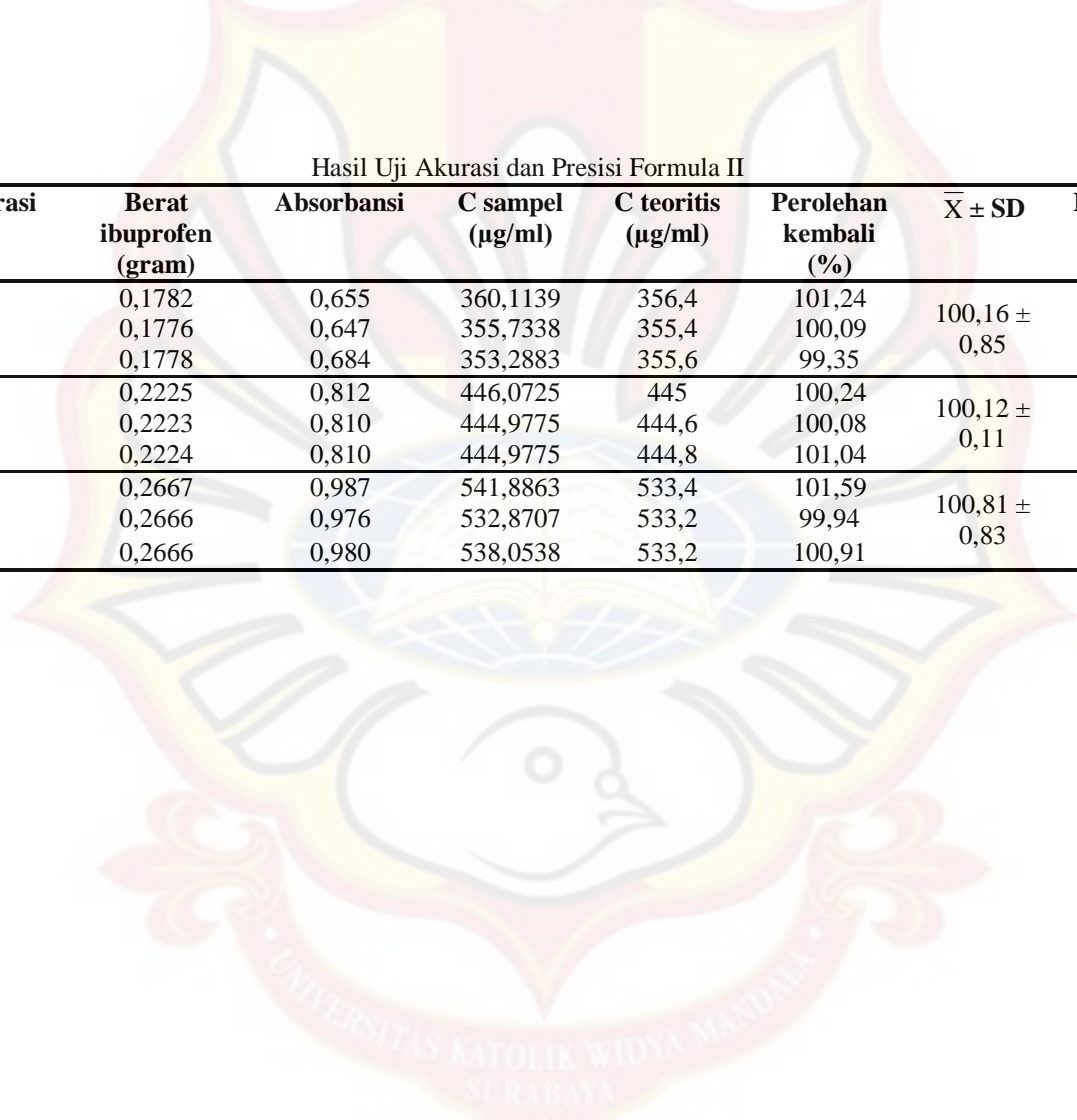
### HASIL UJI AKURASI DAN PRESISI DISOLUSI IBUPROFEN PADA $t = 30$ MENIT

Hasil Uji Akurasi dan Presisi Formula I

Konsentrasi	Berat ibuprofen (gram)	Absorbansi	C sampel ( $\mu\text{g/ml}$ )	C teoritis ( $\mu\text{g/ml}$ )	Perolehan kembali (%)	$\bar{X} \pm \text{SD}$	KV (%)
80%	0,1778	0,649	356,8288	355,6	100,35	$100,35 \pm 1,44$	1,44
	0,1777	0,658	361,7564	355,4	101,79		
	0,1779	0,640	351,9013	355,8	98,90		
100%	0,2222	0,802	440,5975	444,4	99,14	$98,99 \pm 0,26$	0,26
	0,2224	0,799	438,9550	444,8	98,69		
	0,2225	0,803	441,1450	445	99,13		
120%	0,2668	0,985	540,7913	533,6	101,35	$100,56 \pm 0,86$	0,86
	0,2666	0,978	536,9588	533,2	100,70		
	0,2667	0,968	531,4837	533,4	99,64		

Hasil Uji Akurasi dan Presisi Formula II

Konsentrasi	Berat ibuprofen (gram)	Absorbansi	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,1782	0,655	360,1139	356,4	101,24	100,16 ± 0,85	0,85
	0,1776	0,647	355,7338	355,4	100,09		
	0,1778	0,684	353,2883	355,6	99,35		
100%	0,2225	0,812	446,0725	445	100,24	100,12 ± 0,11	0,11
	0,2223	0,810	444,9775	444,6	100,08		
	0,2224	0,810	444,9775	444,8	101,04		
120%	0,2667	0,987	541,8863	533,4	101,59	100,81 ± 0,83	0,83
	0,2666	0,976	532,8707	533,2	99,94		
	0,2666	0,980	538,0538	533,2	100,91		





Hasil Uji Akurasi dan Presisi Formula III

Konsentrasi	Berat ibuprofen (gram)	Absorbansi	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,1779	0,648	356,2813	355,8	100,14	99,88 ± 0,77	0,77
	0,1778	0,650	357,3763	355,6	100,50		
	0,1777	0,640	351,9013	355,4	99,02		
100%	0,2223	0,813	446,6201	444,6	100,45	99,46 ± 0,95	0,96
	0,2227	0,799	438,9550	445,4	98,55		
	0,2225	0,805	442,2400	445	99,38		
120%	0,2667	0,975	535,3163	533,4	100,36	100,38 ± 0,69	0,68
	0,2668	0,969	532,0312	533,6	99,71		
	0,2667	0,982	539,1488	533,4	101,08		

Hasil Uji Akurasi dan Presisi Formula IV

Konsentrasi	Berat ibuprofen (gram)	Absorbansi	C sampel (µg/ml)	C teoritis (µg/ml)	Perolehan kembali (%)	$\bar{X} \pm SD$	KV (%)
80%	0,1779	0,649	356,8288	355,8	100,29	101,01 ± 0,63	0,62
	0,1778	0,656	360,6614	355,6	101,42		
	0,1777	0,655	360,1139	355,4	101,33		
100%	0,2223	0,801	440,0500	444,6	98,98	98,76 ± 0,21	0,21
	0,2227	0,799	438,9550	445,4	98,55		
	0,2225	0,800	439,5025	445	98,76		
120%	0,2666	0,995	546,2664	533,4	102,41	101,21 ± 1,07	1,06
	0,2667	0,975	535,3163	533,4	100,36		
	0,2667	0,980	538,0538	533,4	100,87		

LAMPIRAN I

HASIL UJI DISOLUSI TABLET IBUPROFEN PADA t = 30 MENIT

Formula	Absorbansi	C sampel (µg/ml)	Wt (mg)	Berat tablet (mg)	Wt teoritis (mg)	% obat terlarut	$\bar{X} \pm SD$	KV (%)
I	0,809	444,4301	399,9871	808,2	404,1	98,98	99,13 ± 0,2287	0,23
	0,814	447,1676	402,4508	809,8	404,9	99,40		
	0,81	444,9776	400,4798	808,9	404,45	99,02		
II	0,784	430,7424	387,6681	806,9	403,45	96,09	96,53 ± 5,0952	5,28
	0,749	411,5796	370,4217	808,2	404,1	91,67		
	0,825	453,1902	407,8712	801,1	400,55	101,83		
III	0,825	421,9823	379,7840	803,1	401,55	94,58	94,78 ± 1,0495	1,11
	0,768	419,2447	377,3203	804,2	402,1	93,84		
	0,763	428,5524	385,6971	804,3	402,15	95,91		
IV	0,749	411,5796	370,4217	802,0	401	92,37	91,70 ± 0,8472	0,92
	0,734	403,3670	363,0303	800,1	400,05	90,75		
	0,744	408,8421	367,9579	800,2	400,1	91,97		

**LAMPIRAN J**  
**CONTOH PERHITUNGAN**

Contoh perhitungan sudut diam:

Formula (-1):

$$W \text{ persegi panjang} = 4,74 \text{ gram}$$

$$W \text{ lingkaran} = 1,37 \text{ gram}$$

$$\begin{aligned} \text{Luas persegi panjang} &= 21,5 \times 27,9 \\ &= 599,85 \text{ cm}^2 \end{aligned}$$

$$\text{Luas lingkaran} = \frac{1,37}{4,74} \times 599,85 = 173,37$$

$$A = \pi \cdot r^2$$

$$r^2 = \frac{A}{\pi}$$

$$= \frac{173,37}{3,14} = 55,21$$

$$r = 7,43 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{4,43}{7,43} = 0,5962$$

$$\alpha = 30,80^\circ$$

Contoh perhitungan indeks kompresibilitas

Formula (-1):

$$\text{Berat Gelas} = 134,92 \text{ g}(W1)$$

$$\text{Berat Gelas} + \text{granul} = 167,93 \text{ g}(W2)$$

$$V1 = 100 \text{ ml}$$

$$V2 = 87 \text{ ml}$$

$$Bj \text{ nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{(200,24 - 167,23)}{100} = 0,3301$$

$$Bj \text{ mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{(200,24 - 167,23)}{87} = 0,3794$$

$$\% \text{ kompresibilitas} = \left(1 - \frac{Bj.nyata}{Bj.mampat}\right) \times 100\% = 12,99\%$$

### Contoh perhitungan akurasi & presisi:

%	Bahan aktif (mg)	Matriks (mg)	+ dapar fosfat pH 7,2 sampai (ml)	Konsentrasi (ppm)
100	200	100	900	222,22

$$\text{Absorbansi} = 0,520 \rightarrow y = 0,0018x + 0,0264$$

$$\text{Konsentrasi sebenarnya} = 270,6326 \text{ ppm}$$

$$\text{Konsentrasi teoritis} = 268,750 \text{ ppm}$$

$$\% \text{ perolehan kembali} = (\text{konsentrasi sebenarnya} / \text{konsentrasi teoritis}) \times 100\%$$

$$= (270,6326 / 268,750) \times 100\%$$

$$= 100,70 \%$$

$$\text{Untuk menghitung \% KV} = \frac{SD}{\bar{X}} \times 100\%$$

$$= 0,85 \%$$

**LAMPIRAN K**  
**HASIL UJI STATISTIK KEKERASAN TABLET ANTAR FORMULA**  
**Descriptives**

Kekerasan Tablet antar Formula

	N	Mean	SD	SE	95% Confidence		Min.	Max.
					Interval for Mean			
					Lower Bound	Upper Bound		
FI	3	13,2000	,47149	,27221	12,0288	14,3712	12,87	13,74
FII	3	5,4467	1,32429	,76458	2,1570	8,7364	4,50	6,96
FIII	3	12,8433	1,76217	1,01739	8,4659	17,2208	11,24	14,73
FIV	3	5,1400	1,04819	,60517	2,5362	7,7438	4,51	6,35
Total	12	9,1575	4,17648	1,20565	6,5039	11,8111	4,50	14,73

**ANOVA**

Kekerasan Tablet antar Formula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	179,513	3	59,838	38,730	,000
Within Groups	12,360	8	1,545		
Total	191,873	11			

Keterangan :  $F_{hitung} > F_{tabel}$  sehingga  $H_0$  ditolak maka ada perbedaan yang bermakna antar formula

### Multiple Comparisons

Dependent Variable: kekerasan tablet antar formula  
LSD

(I) formula	(J) formula	Mean Different (I-J)	SE	Sig	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	7,75333(*)	1,01489	,000	5,4130	10,0937
	formula 3	,35667	1,01489	,734	-1,9837	2,6970
	formula 4	8,06000(*)	1,01489	,000	5,7197	10,4003
formula 2	formula 1	-7,75333(*)	1,01489	,000	-10,0937	-5,4130
	formula 3	-7,39667(*)	1,01489	0,00	-9,7370	-5,0563
	formula 4	,30667	1,01489	,770	-2,0337	2,6470
formula 3	formula 1	-,35667	1,01489	,734	-2,6970	1,9837
	formula 2	7,39667(*)	1,01489	,000	5,0563	9,7370
	formula 4	7,70333(*)	1,01489	,000	5,3630	10,0437
formula 4	formula 1	-8,06000(*)	1,01489	,000	-10,4003	-5,7197
	formula 2	-,30667	1,01489	,770	-2,6470	2,0337
	formula 3	-7,70333(*)	1,01489	,000	-10,0437	-5,3630

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

**LAMPIRAN L**  
**HASIL UJI STATISTIK KERAPUHAN TABLET**

**Descriptives**

	N	Mean	SD	SE	95% Confidence interval		Min.	Max.
					Mean			
					Lower Bound	Upper Bound		
FI	3	,4067	,13051	,07535	,0825	,7309	,27	,53
FII	3	2,5133	1,04175	,60145	-,0745	5,1012	1,41	3,48
FIII	3	,2467	,16166	,09333	-,1549	,6482	,10	,42
FIV	3	2,8100	,87155	,50319	,6449	4,9751	1,97	3,71
Total	12	1,4942	1,35858	,39219	,6310	2,3574	,10	3,71

**ANOVA**

Kerapuhan Tablet antar formula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16,527	3	5,509	11,672	,003
Within Groups	3,776	8	,472		
Total	20,303	11			

Keterangan :  $F_{hitung} > F_{tabel}$  maka  $H_0$  ditolak dan ada perbedaan bermakna antar formula



### Multiple Comparisons

Dependent Variable: Kerapuhan Tablet antar Formula

LSD

(I) formula	(J) formula	Mean Difference (I-J)	SE	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-2,10667(*)	,56095	,006	-3,4002	-,8131
	formula 3	,16000	,56095	,783	-1,1336	1,4536
	formula 4	-2,40333(*)	,56095	,003	-3,6969	-3,6969
formula 2	formula 1	2,10667(*)	,56095	,006	,8131	3,4002
	formula 3	2,26667(*)	,56095	,004	,9731	3,5602
	formula 4	-,29667	,56095	,611	-1,5902	,9969
formula 3	formula 1	-,16000	,56095	,783	-1,4536	1,1336
	formula 2	-2,26667(*)	,56095	,004	-3,5602	-,9731
	formula 4	-2,56333(*)	,56095	,002	-3,8569	-1,2698
formula 4	formula 1	2,40333(*)	,56095	,003	1,1098	3,6969
	formula 2	,29667	,56095	,611	,9969	1,5902
	formula 3	2,56333(*)	,56095	,002	1,2698	3,8569

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

**LAMPIRAN M**  
**HASIL UJI STATISTIK WAKTU HANCUR ANTAR FORMULA**

**Descriptives**

Waktu Hancur Tablet antar Formula

	N	Mean	SD	SE	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
					FI	3		
FII	3	300,00	60,000	34,641	150,95	449,05	240	360
FIII	3	15,33	5,774	3,333	,99	29,68	12	22
FIV	3	280,00	34,641	20,000	193,95	366,05	240	300
Total	12	151,50	147,860	42,684	57,55	245,45	10	360

**ANOVA**

Waktu Hancur antar Formula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	230819,667	3	76939,889	63,657	,000
Within Groups	9669,333	8	1208,667		
Total	240489,000	11			

Keterangan :  $F_{hitung} > F_{tabel}$  sehingga  $H_0$  ditolak maka ada perbedaan bermakna antar formula

### Multiple Comparisons

Dependent Variable: waktu hancur  
LSD

(I) formula	(J) formula	Mean Difference (I- J)	SE	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-289,333(*)		,000	-354,79	-223,87
	formula 3	-4,667	28,386	,873	-70,13	60,79
	formula 4	-269,333(*)	28,386	,000	-334,79	-203,87
formula 2	formula 1	289,333(*)	28,386	,000	223,87	354,79
	formula 3	284,667(*)	28,386	,000	219,21	350,13
	formula 4	20,000	28,386	,501	-45,46	85,46
formula 3	formula 1	4,667	28,386	,873	-60,79	70,13
	formula 2	-284,667(*)	28,386	,000	-350,13	-219,21
	formula 4	-264,667(*)	28,386	,000	-330,13	-199,21
formula 4	formula 1	269,333(*)	28,386	,000	203,87	334,79
	formula 2	-20,000	28,386	,501	-85,46	45,46
	formula 3	264,667(*)	28,386	0,00	199,21	330,13

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

## LAMPIRAN N

### HASIL UJI STATISTIK PENETAPAN KADAR TABLET IBUPROFEN ANTAR FORMULA

#### Descriptives

##### Penetapan Kadar Ibuprofen

	N	Mean	SD	SE	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
FI	3	100,1000	,41569	,24000	99,0674	101,1326	99,62	100,34
FII	3	94,5767	4,29112	2,47748	83,9169	105,2364	91,99	99,53
FIII	3	99,7833	,11015	,06360	99,5097	100,0570	99,67	99,89
FIV	3	95,8267	3,32064	1,91717	87,5777	104,0756	92,67	99,29
Total	12	97,5717	3,42647	,98914	95,3946	99,7487	91,99	100,34

#### ANOVA

##### Penetapan Kadar Ibuprofen antar Formula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	69,897	3	23,299	3,146	,087
Within Groups	59,251	8	7,406		
Total	129,148	11			

Keterangan :  $F_{hitung} < F_{tabel}$  sehingga  $H_0$  diterima dan tidak ada perbedaan bermakna antar formula

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

**Descriptives**

Persen Obat Terlarut

	N	Mean	SD	SE	95% Confidence Interval for		Min.	Max.
					Mean			
					Lower Bound	Upper Bound		
FI	3	99,1333	,23180	,13383	98,5575	99,7092	98,98	99,40
FII	3	96,5300	5,09427	2,94118	83,8751	109,1849	91,67	101,83
FIII	3	94,7767	1,04892	,60559	92,1710	97,3823	93,84	95,91
FIV	3	91,6967	,84388	,48721	89,6004	93,7930	90,75	92,37
Total	12	95,5342	3,61025	1,04219	93,2403	97,8280	90,75	101,83

**ANOVA**

Persen Obat Terlarut

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	87,738	3	29,246	4,205	,046
Within Groups	55,635	8	6,954		
Total	143,373	11			

Keterangan :  $F_{hitung} > F_{tabel}$  sehingga  $H_0$  ditolak dan ada perbedaan bermakna antar formula

### Multiple Comparisons

Dependent Variable: persen obat terlarut  
LSD

(I) formula	(J) formula	Mean Difference (I- J)	SE	Sig	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	2,60333	2,15320	,261	-2,3620	7,5686
	formula 3	4,35667	2,15320	,078	-,6086	9,3220
	formula 4	7,43667(*)	2,15320	,009	2,4714	12,4020
fomula 2	formula 1	-2,60333	2,15320	,261	-7,5686	2,3620
	formula 3	1,75333	2,15320	,439	-3,2120	6,7186
	formula 4	4,83333	2,15320	,055	-,1320	9,7986
formula 3	formula 1	-4,35667	2,15320	,078	-9,3220	,6086
	formula 2	-1,75333	2,15320	,439	-6,7186	3,21208
	formula 4	3,08000	2,15320	,190	-1,8853	,0453
formula 4	formula 1	-7,43667(*)	2,15320	,009	-12,4020	-2,4714
	formula 2	-4,83333	2,15320	,055	-9,7986	,1320
	formula 3	-3,08000	2,15320	,190	-8,0453	1,8853

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

LAMPIRAN P

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

## LAMPIRAN Q

### TABEL F

d.k. \ 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	4.04	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
$\infty$	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 R

## SERTIFIKAT 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. : FPBU0607674	
Sample Taken By : S. Sivakumar		Batch Number : 1010607674	
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 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 emulsifying solvents. 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		
	a) By IR	Conforms	The IR spectrum of sample should be concordant with the spectrum of Ibuprofen BS
	b) By UV	1.24	The ratio of absorbance at the max at 264 nm to that at 258 nm is 1.20 to 1.30
		1.03	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 BS
	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) Phenyl Propanoic Acid (Impurity A)	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 D)	Not Detected	NMT 0.30 % (Area %)
	d) Any unidentified impurity (Apart from impurity B)	0.04 % (Area %)	NMT 0.10 % (Area %)
	e) Total impurities	0.14 % (Area %)	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, 2655930  
 Fax : 091 - 413 - 2655154, e-mail : shapondy@mdl4.versel.net.in  
 shapdy@shasun.com

# Avicel PH 102

**ASAHI KASEI CHEMICALS CORPORATION** Date: 21-JUN-2010  
 Issued by manufacturer

1-105 Kanda 3-chome, Chiyoda-ku, TOKYO 101-8101, JAPAN  
 TEL: +81-03-3298-0381 FAX: +81-03-3298-3467  
 Manufacturing site: 304, Mizushima-machi, Nobesaki-city, Miyazaki 882-0015, Japan

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

1699 / 15/5 / VII / 10  
 1670 / 15/5 / VII / 10

**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	Specifications	Lot Analysis
	Passes	Passes
Description	Passes	Passes
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
<b>ASAHI Standards</b>		
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.

*Shuji Onishi*  
 Shuji Onishi  
 Manager  
 Quality Assurance Section  
 CEOLUS Production Department



Certificate of Analysis

Product Name: STARCH 1500 PARTIALLY PREGELATINIZED MAIZE STARCH  
 Product Number: 2001  
 Material Description: White Powder  
 Lot No: S0305809  
 VBN: IN517686  
 Quantity Supplied: 3500 KG  
 Ship To: PT Manjangan Sakti ID  
 Bill To: PT Manjangan Sakti ID  
 Sales Order No: CCSP618103  
 Customer PO NO: PH-4685

Compliance Statement: This Product meets all agreed upon specifications

Test	Method	Specifications		Result	Analyst
		Minimum	Maximum		
COLD WATER SOLUBLES AVERAGE, %	INDY-QAC-TM-5382	10.0	20.0	12.6 %	JH
IDENTIFICATION PH EUR	PH EUR	POSITIVE		POSITIVE	NC
IDENTIFICATION USP/NF	USP/NF	POSITIVE		POSITIVE	JH
IRON, %	USP/NF	NMT 0.001		NMT 0.001 %	JH
LOSS ON DRYING AVERAGE, %	INDY-QAC-TM-5364	0.00	14.00	7.40 %	JH
FOREIGN MATTER	PH EUR	CONFORMS		CONFORMS	NC
MICRO AEROBIC TPC, CFU	INDY-QAC-TM-6374	0	100	30 CFU	NC
MICRO E. COLI	INDY-QAC-TM-6373	ABSENT		ABSENT	NC
MICRO M.Y. CFU	INDY-QAC-TM-6374	0	100	<10 CFU	NC
MICRO SALMONELLA	INDY-QAC-TM-6371	ABSENT		ABSENT	NC
OXIDIZING SUBSTANCES	USP/NF	NEGATIVE		NEGATIVE	JH
PH	USP/NF	4.5	7.0	5.5	JH
PROTEIN, %	FCC	< 0.5		< 0.5 %	EM
PARTICLE SIZE RETAINED ON 8 MESH, %	INDY-QAC-TM-5389	0.0	0.0	0.0 %	JH
PARTICLE SIZE RETAINED ON 40 MESH, %	INDY-QAC-TM-5389	0.0	0.5	0.0 %	JH
PARTICLE SIZE THROUGH 100 MESH, %	INDY-QAC-TM-5389	90.0	100.0	93.9 %	JH
PARTICLE SIZE THROUGH 270 MESH, %	INDY-QAC-TM-5389	25.0	100.0	49.1 %	JH

This Product was manufactured in a facility that is registered with the United States FDA under the provisions of the Bioterroresism Preparedness and Response Act.

The information contained in this document is proprietary to Colorcon, Inc. and may not be used or disseminated inappropriately.

Manufactured By: COLORCON Date Of Manufacture: 22-NOV-2009 ✓  
 Manufacturing Site: Indianapolis, IN, USA Re-evaluation Date: 21-NOV-2013  
 Approved By: \_\_\_\_\_ Date: 02-MAR-2010

Title: Customer Service Mgr

# Sodium Starch Glycolat

**YUNG ZIP CHEMICAL IND. CO., LTD.**  
 59, Yu Shih Road  
 Youth Industrial District  
 Tainan, Taiwan, 407  
 R. O. C.

TEL: 886-4-26818760, 26811344      FAX: 886-4-26812911

**CERTIFICATE OF ANALYSIS**  
***DST***  
 (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>s</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. Siantia Gunawan MS.)  
Quality Manager



LEADING  
THE WORLD  
IN EXCIPIENTS  
A member of the BASF group

**VIVASOL®**  
Croscarmellose Sodium Ph. Eur. NF, JP  
**CERTIFICATE OF ANALYSIS**

Batch-no 3201093156 Manufacturing site Pirna Germany  
Re-evaluation date August 2013  
Manufacturing date August 2009

**Description** Almost white, very hygroscopic powder, practically insoluble in acetone, ethanol, ether and toluene

Standards	Specification	Batch Result	Reference
Particle size (retained on air jet sieve)			T226F (MCW)
> 75 µm	max 2 %	< 2 % *	
> 45 µm	max. 10 %	< 10 % *	
Pharmacopoeial test items	Specification	Batch Result	Reference
Identification (A, B, C), (1, 2, 3)	passes	passes *	Ph. Eur., NF, JP
Degree of Substitution	0.60 - 0.85	0.75 *	Ph. Eur., NF, JP
Loss on drying	max 10.0 %	5.2 %	Ph. Eur., NF, JP
pH	5.0 - 7.0	6.1	Ph. Eur., USP, JP
Content of water-soluble material	1.0 - 10.0 %	6.1 %	Ph. Eur., NF, JP
Sulphated ash	14.0 - 28.0 %	passes *	Ph. Eur., NF, JP
Settling volume	10.0 - 30.0 ml	16.0 ml	Ph. Eur., NF, JP
Sodium chloride and Sodium glycolate	max 0.5 %	< 0.5 % *	I CC 013 (CHP)
Heavy metals	max 10 ppm	< 10 ppm *	T CC 043 (CHP)
Arsenic	max 2 ppm	< 2 ppm *	T CC 043 (CHP)
Residue of Methanol	max 1.0 %	< 1.0 % *	T CC 019 (CHP)
Total aerobic microbial count	< 100 CFU / g	< 100 CFU / g *	Ph. Eur., USP
Fungi / molds and yeasts	< 20 CFU / g	< 20 CFU / g *	Ph. Eur., USP
E. coli, Pseudomonas aeruginosa	absent in 10 g	absent *	Ph. Eur., USP
Staph. aureus, Salmonella spec.†	absent in 10 g	absent *	Ph. Eur., USP

\* Results reported are expected results based on periodic testing

The batch described by this certificate meets the requirements of Ph. Eur., NF and JP monographs for Croscarmellose Sodium\* current edition. It complies with E 469 monograph and all current EU Food regulations. It is released on the basis of the results ascertained.

The raw materials, manufacturing process, and product do not contain any of the solvents listed in Organic Volatile Impurities (USP<467>) and Residual Solvents (Ph. Eur. <5.4>) except for Methanol limited to max. 1.0 %.

**Storage recommendation:** Protect from excessive heat and moisture.  
Keep containers closed.

September 30, 2009  
AB 21127059  
vso: mbe

Mathias Winkelmann  
QUALITY CONTROL  
CHP Carbohydrate Pirna

Worldwide Headquarters  
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Customer Service: +1 866 878 3414

# Magnesium Stearat



SUN PLAN DEVELOPMENT LTD.

## CERTIFICATE OF ANALYSIS

INVOICE NO. 1514

TO: PT BRATACO JL. KELENTENG NO. 8  
BANDUNG QQ PT BRATACO JL. MANGGA  
BESAR V/S JAKARTA, INDONESIA  
NPWP01.130.689.1-032.001

RE: 48 MT TALC POWDER HAICHEN SHIPPED PER V.SL "HUANDAO" N3192 FROM BAYU QIAN,  
CHINA SEAPORT TO TG. PRIOK PORT, JAKARTA, INDONESIA ON ABOUT 18 OCT 2023  
DRAWN UNDER IRREVOCABLE DC NO.0203U0615 DD 19SEP2023 OF BANK NISP PT (SWIFT  
ADDRESS: NISP01JA)

COMMODITY: TALC POWDER HAICHEN  
QUANTITY : 48 MT

SiO <sub>2</sub> :	60.1%
MgO:	30.8%
WHITENESS:	92.8%
CaO:	0.4%
Fe <sub>2</sub> O <sub>3</sub> :	0.26%
Al <sub>2</sub> O <sub>3</sub> :	0.3%
LOI:	6.0%
FINENESS:	98.5% PASSING THROUGH 325 MESH
PH:	7-9
MOISTURE:	0.38%
ASBESTOS:	FREE

**BRATACO**  
IMPORTER  
MANUFACTURER  
DISTRIBUTOR

PT. SUN PLAN DEVELOPMENT LTD.  
JL. MANGGA BESAR V/S JAKARTA  
KOTA DEPOK, JAWA BARAT  
INDONESIA  
MANUFACTURER  
DISTRIBUTOR

UNIVERSITAS KATOLIK WIDYA MANDALIA  
SURABAYA

**LAMPIRAN S**  
**UJI F KURVA BAKU PENETAPAN KADAR**

Uji Persamaan Regresi (NaOH)

**REPLIKASI I**

<b>Konsentrasi</b>	<b>Absorbansi</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
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	0,720801	423,651
598,8	1,000	358561,44	1,0000	598,8
2095,8	3,542	906363,64	2,563276	1523,946

**REPLIKASI II**

<b>Konsentrasi</b>	<b>Absorbansi</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
100,1	0,166	10020,01	0,27556	16,6166
200,2	0,330	40080,04	0,1089	66,066
300,3	0,525	90180,09	0,275625	157,6575
400,4	0,682	160320,16	0,456124	273,0728
500,5	0,838	250500,25	0,702244	419,419
600,6	0,993	360720,36	0,986049	596,3958
2102,1	3,534	911820,91	2,56498	1529,2277

**REPLIKASI III**

<b>Konsentrasi</b>	<b>Absorbansi</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
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	0,4596684	270,9288
499,5	0,837	249500,25	0,700569	418,0815
599,4	0,996	359280,36	0,992016	597,0024
2097,9	3,519	908180,91	2,551605	1522,1763

	$\Sigma X^2$	$\Sigma XY$	$\Sigma Y^2$	N	SSi	RDF
Regresi I	906363,64	2,563276	1523,946	6	0,00093544	4
Regresi II	911820,91	2,56498	1529,2277	6	0,00080867	4
Regresi III	908180,91	2,551605	1522,1763	6	0,000328418	4
Pooled regression					0,002073527	12
Common regression	2726365,4	4575,35	7,680379		0,002087909	

Fhitung = 0,0027742993 < Ftabel 0,05 (3;12) 3,49



## LAMPIRAN T

### UJI F KURVA BAKU DISOLUSI

Uji Persamaan Regresi (Dapar Fosfat pH 7,2)

#### REPLIKASI I

Konsentrasi	Absorbansi	X <sup>2</sup>	Y <sup>2</sup>	XY
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	0,5184	288,288
500,5	0,909	250500,25	0,826281	454,9545
600,6	1,014	360720,36	1,028196	609,0084
<b>Σ 2102,1</b>	<b>3,705</b>	<b>911820,91</b>	<b>2,812563</b>	<b>1600,599</b>

#### REPLIKASI II

Konsentrasi	Absorbansi	X <sup>2</sup>	Y <sup>2</sup>	XY
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	16320,16	0,521284	289,0888
500,5	0,919	250500,25	0,844561	459,9595
600,6	1,092	360720,36	1,192464	655,8552
<b>Σ 2102,1</b>	<b>3,823</b>	<b>911820,91</b>	<b>3,020955</b>	<b>1659,685</b>

#### REPLIKASI III

Konsentrasi	Absorbansi	X <sup>2</sup>	Y <sup>2</sup>	XY
100,2	0,176	10040,04	0,030976	17,6352
200,4	0,367	40160,16	0,3025	73,5468
300,6	0,550	90360,36	0,519841	165,33
400,8	0,721	160640,64	0,519841	288,9768
501	0,912	251001	0,831744	456,912
601,2	1,090	361441,44	1,1881	655,308
<b>Σ 2104,2</b>	<b>3,816</b>	<b>913643,64</b>	<b>3,00785</b>	<b>1657,7088</b>

	$\Sigma X^2$	$\Sigma XY$	$\Sigma Y^2$	N	SSi	RD F
Regresi I	911820,91	1600,599	2,81256 3	6	0,00289157 1	4
Regresi II	911820,91	1659,658	3,02095 5	6	0,00011544	4
Regresi III	913643,64	1657,708 8	3,00785	6	0,00011444	4
Pooled regressio n					0,00312145 1	12
Common regressio n	2737285,4 6	4917,965 8	8,84136 8		0,00546543 8	

Fhitung = 3,003715147 < Ftabel 0,05 (3;12) 3,49

**LAMPIRAN U**  
**HASIL UJI ANAVA KEKERASAN TABLET 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
Model	179.51	3	59.84	38.73	<b>Prob &gt; F</b> < 0.0001 significant
<i>A-Macam filler-binder</i>	179.18	1	179.18	115.98	< 0.0001
<i>B-Macam superdisintegrant</i>	0.33	1	0.33	0.21	0.6563
<i>AB</i>	1.875E-003	1	1.875E-003	1.214E-003	0.9731
Pure Error		12.36	8	1.54	
Cor Total		191.87	11		

The Model F-value of 38.73 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 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. 1.24  
 Mean 9.16  
 C.V. % 13.57  
 PRESS 27.81

R-Squared 0.9356  
 Adj R-Squared 0.9114  
 Pred R-Squared 0.8551  
 Adeq Precision 11.231

The "Pred R-Squared" of 0.8551 is in reasonable agreement with the "Adj R-Squared" of 0.9114. "Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 11.231 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient	Standard Estimate	95% CI df	95% CI Error	Low High	VIF
Intercept	9.98		9.16	1	0.36	8.33
A-Macam <i>filler-binder</i>	-3.041.00		-3.86	1	0.36	-4.69
B-Macam <i>superdisintegrant</i>	0.661.00		-0.17	1	0.36	-0.99
AB	0.841.00		0.013	1	0.36	-0.81

**Final Equation in Terms of Coded Factors:**

$$\begin{aligned} \text{Kekerasan} &= \\ &+9.16 \\ &-3.86 * A \\ &-0.17 * B \\ &+0.013 * A * B \end{aligned}$$



**Final Equation in Terms of Actual Factors:**

$$\begin{aligned} &\text{Kekerasan} = \\ &+9.15750 \\ &-3.86417 \quad * \text{Macam filler-binder} \\ &-0.16583 \quad * \text{Macam superdisintegrant} \\ &+0.012500 \quad * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

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 V

### HASIL UJI ANAVA KERAPUHAN TABLET 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
<b>Prob &gt; F</b>					
Model	17.34	3	5.78	10.14	0.0042
Model significant					
<i>A-Macam filler-binder</i>	17.26	1	17.26	30.29	0.0006
<i>B-Macam superdisintegrant</i>	4.083E-004	1	4.083E-004	7.167E-004	0.9793
<i>AB</i>	0.082	1	0.082	0.14	0.7148
Pure Error	4.56	8	0.57		
Cor Total	21.90	11			

The Model F-value of 10.14 implies the model is significant. There is only a 0.42% 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.	0.75		R-Squared	0.7918
Mean1.52		Adj R-Squared	0.7138	
C.V. %	49.58		Pred R-Squared	0.5316
PRESS	10.26		Adeq Precision	5.882

The "Pred R-Squared" of 0.5316 is in reasonable agreement with the "Adj R-Squared" of 0.7138.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 5.882 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient	Standard Estimate	95% CI df	95% CI Error	Low
HighVIF					
Intercept		1.52	1	0.22	1.02
2.02					
A-Macam <i>filler-binder</i>		1.20	1	0.22	0.70
1.701.00					
B-Macam <i>superdisintegrant</i>		5.833E-003	1	0.22	-0.50
0.511.00					
AB		0.083	1	0.22	-0.42
0.581.00					

**Final Equation in Terms of Coded Factors:**

$$\begin{aligned} \text{Kerapuhan} &= \\ &+1.52 \\ &+1.20 \quad * A \\ &+5.833E-003 \quad * B \\ &+0.083 \quad * A * B \end{aligned}$$



**Final Equation in Terms of Actual Factors:**

$$\begin{aligned} & \text{Kerapuhan} = \\ & +1.52250 \\ & +1.19917 \quad * \text{Macam } \textit{filler-binder} \\ & +5.83333\text{E-}003 \quad * \text{Macam } \textit{superdisintegrant} \\ & +0.082500 \quad * \text{Macam } \textit{filler-binder} \quad * \text{Macam } \textit{superdisintegrant} \end{aligned}$$

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 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 Prob > F
Model significant	2.308E+005	3	76939.89	63.66	< 0.0001
<i>A-Macam filler-binder</i>	2.302E+005	1	2.302E+005	190.4	< 0.0001
<i>B-Macam superdisintegrant</i>	176.33	1	176.33	0.15	0.7124
<i>AB</i>	456.33	1	456.33	0.38	0.5560
Pure Error	9669.33	8	1208.67		
Cor Total	2.405E+005	11			

The Model F-value of 63.66 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 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.	34.77		R-Squared	0.9598
Mean	151.50	Adj R-Squared	0.9447	
C.V. %	22.95		Pred R-Squared	0.9095
PRESS	21756.00		Adeq Precision	14.415

The "Pred R-Squared" of 0.9095 is in reasonable agreement with the "Adj R-Squared" of 0.9447. "Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 14.415 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient	Standard Estimate	95% CI df	95% CI Error	Low
High VIF					
Intercept		151.50	1	10.04	128.36
174.64					
A-Macam <i>filler-binder</i>		138.50	1	10.04	115.36
161.64	1.00				
B-Macam <i>superdisintegrant</i>		-3.83	1	10.04	-26.98
19.311.00					
AB		-6.17	1	10.04	-29.31
16.981.00					

**Final Equation in Terms of Coded Factors:**

$$\begin{aligned}
 &\text{Waktu hancur} = \\
 &+151.50 \\
 &+138.50 \quad * A \\
 &-3.83 \quad * B \\
 &-6.17 \quad * A * B
 \end{aligned}$$



### Final Equation in Terms of Actual Factors:

$$\begin{aligned} & \text{Waktu hancur} = \\ & +151.50000 \\ & +138.50000 * \text{Macam filler-binder} \\ & -3.83333 * \text{Macam superdisintegrant} \\ & -6.16667 * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

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 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 Prob > F
Model	87.74	3	29.25	4.21	0.0463
significant					
<i>A-Macam filler-binder</i>	24.23	1	24.23	3.48	0.0990
<i>B-Macam superdisintegrant</i>	63.34	1	63.34	9.11	0.0166
<i>AB</i>	0.17	1	0.17	0.025	0.8795
Pure Error	55.64	8	6.95		
Cor Total	143.37	11			

The Model F-value of 4.21 implies the model is significant. There is only a 4.63% 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 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.	2.64		R-Squared	0.6120
Mean	95.53		Adj R-Squared	0.4664
C.V. %	2.76		Pred R-Squared	0.1269

PRESS 125.18 Adeq Precision 4.884

The "Pred R-Squared" of 0.1269 is not as close to the "Adj R-Squared" of 0.4664 as one might normally expect. This may indicate a large block effect or a possible problem with your model and/or data. Things to consider are model reduction, response tranformation, outliers, etc.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 4.884 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient	Standard Estimate	95% CI df	95% CI Error	Low
HighVIF					
Intercept		95.53	1	0.76	93.78
A-Macam <i>filler-binder</i>		-1.42	1	0.76	-3.18
0.331.00					
B-Macam <i>superdisintegrant</i>		-2.30	1	0.76	-4.05
-0.541.00					
AB		-0.12	1	0.76	-1.87
1.641.00					

**Final Equation in Terms of Coded Factors:**

Persen obat terlarut =  
 +95.53  
 -1.42 \* A  
 -2.30 \* B  
 -0.12 \* A \* B



**Final Equation in Terms of Actual Factors:**

$$\begin{aligned} & \text{Persen obat terlarut} = \\ & +95.53417 \\ & -1.42083 \quad * \text{Macam filler-binder} \\ & -2.29750 \quad * \text{Macam superdisintegrant} \\ & -0.11917 \quad * \text{Macam filler-binder} * \text{Macam superdisintegrant} \end{aligned}$$

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

### UJI T HASIL PERCOBAAN DAN HASIL TEORITIS KEKERASAN

#### TABLET

Hasil Uji T Kekerasan Tablet

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	percobaan	9,3100	4	4,25529	2,12765
	teoritis	9,1475	4	4,44643	2,22322

#### Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	percobaan & teoritis	4	,998	,002

#### Paired Samples Test

	Paired Differences				t	df	Sig.	
	Mean	SD	SE Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1	,16250	,34131	,17065	-,38060	,70560	,952	3	,411

Keterangan :  $T_{hitung} (0,952) < T_{tabel} (3,182)$  maka  $H_0$  diterima sehingga tidak ada perbedaan yang bermakna antara hasil percobaan dan teoritis.

## LAMPIRAN Z

### UJI T HASIL PERCOBAAN DAN HASIL TEORITIS KERAPUHAN TABLET

Hasil uji T Kerapuhan Tablet

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	percobaan	1,5650	4	1,44705	,72353
	teoritis	1,6075	4	1,44922	,72461

#### Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	percobaan & teoritis	4	,947	,053

#### Paired Samples Test

	Paired Differences				t	df	Sig.	
	Mean	SD	SE Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1	-,04250	,47324	,23662	-,79553	,71053	-,180	3	,869

Keterangan :  $T_{hitung} < T_{tabel} (3,182)$  maka  $H_0$  diterima sehingga tidak ada perbedaan yang bermakna antara hasil percobaan dan teoritis.



**LAMPIRAN AA**  
**UJI T HASIL PERCOBAAN DAN HASIL TEORITIS WAKTU**  
**HANCUR TABLET**

Hasil uji T Waktu Hancur Tablet

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	percobaan	151,5000	4	160,14562	80,07281
	teoritis	151,5000	4	160,14572	80,07286

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	percobaan & teoritis	4	1,000	,000

**Paired Samples Test**

	Paired Differences				t	df	Sig.	
	Mean	SD	SE Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1	,00000	,00816	,00408	-,01299	,01299	,000	3	1,000

Keterangan :  $T_{hitung} (0,000) < T_{tabel} (3,182)$  maka  $H_0$  diterima sehingga tidak ada perbedaan yang bermakna antara hasil percobaan dan teoritis.

**LAMPIRAN AB**  
**UJI T HASIL PERCOBAAN DAN HASIL TEORITIS PERSEN**  
**OBAT TERLARUT**

Hasil uji T Persen Obat Terlarut

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	percobaan	95,5350	4	3,11936	1,55968
	teoritis	95,5300	4	3,12427	1,56214

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	percobaan & teoritis	4	1,000	,000

**Paired Samples Test**

	Paired Differences				t	df	Sig.
	Mean	SD	SE Mean	95% Confidence Interval of the Difference			
				Lower			
Pair 1	,00500	,00577	,00289	-,00419	,01419	1,732	3 ,182

Keterangan : T hitung (1,732) < T tabel (3,182) maka  $H_0$  sehingga tidak ada perbedaan yang bermakna antara hasil percobaan dan teoritis.

## LAMPIRAN AC

### 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