

LAMPIRAN A
HASIL UJI MUTU FISIK MASSA TABLET

Mutu fisik yang diuji	Replikasi	Formula Tablet Likuisolid ibuprofen				Persyaratan
		F A	F B	F C	F D	
Sudut Diam (derajat)	I	31,99	28,61	28,69	29,67	25-30 = baik 30-40 = cukup baik (Wells, 1988)
	II	33,34	30,53	28,58	31,15	
	III	32,43	29,43	27,47	30,13	
	Rata-rata	32,59	29,52	28,25	30,32	
	SD	0,69	0,96	0,68	0,76	
<i>Hausner Ratio</i>	I	1,20	1,15	1,16	1,18	< 1,25 (Wells. 1988)
	II	1,22	1,16	1,15	1,15	
	III	1,24	1,18	1,12	1,16	
	Rata-rata	1,22	1,16	1,14	1,16	
	SD	0,02	0,02	0,02	0,02	
<i>Carr's Index (%)</i>	I	17	13	14	15	11-15 = baik 16-20 = cukup baik (Wells, 1988)
	II	18	14	13	13	
	III	20	15	11	14	
	Rata-rata	18,33	14,00	12,67	14,00	
	SD	1,53	1,00	1,53	1,00	

LAMPIRAN B
HASIL UJI KEKERASAN TABLET LIKUISOLID IBUPROFEN
REPLIKASI I

No	Kekerasan Tablet Likuisolid Ibuprofen (Kp)			
	Formula A	Formula B	Formula C	Formula D
1	13,1	12,8	13,0	12,9
2	13,4	12,9	13,9	13,4
3	13,6	13,2	12,8	13,4
4	13,3	12,7	12,6	12,4
5	14,2	12,9	13,8	12,5
6	14,2	12,6	13,3	12,8
7	14,2	12,7	12,9	12,9
8	14,3	13,0	12,7	13,1
9	13,6	12,5	12,9	13,5
10	13,3	12,9	13,3	13,2
Rata-rata ±	13,72 ±	12,82 ±	13,12 ±	13,01 ±
SD	0,46	0,20	0,45	0,38
KV	3,35	1,56	3,43	2,92

REPLIKASI II

No	Kekerasan Tablet Likuisolid Ibuprofen (Kp)			
	Formula A	Formula B	Formula C	Formula D
1	13,2	12,7	12,2	12,8
2	12,5	13,2	13,3	12,9
3	13,2	12,8	13,8	12,7
4	13,2	12,9	13,7	12,8
5	12,5	12,6	13,2	13,2
6	12,6	12,8	13,5	12,7
7	12,5	12,9	13,3	13,1
8	13,0	13,0	13,2	12,6
9	13,2	13,1	12,8	12,9
10	12,5	12,7	12,7	12,7
Rata-rata ±	12,84 ±	12,87 ±	13,17 ±	12,84 ±
SD	0,34	0,19	0,49	0,19
KV	2,65	1,48	3,72	1,48

REPLIKASI III

No	Kekerasan Tablet Likuisolid Ibuprofen (Kp)			
	Formula A	Formula B	Formula C	Formula D
1	13,4	12,5	13,3	12,8
2	13,0	12,8	13,8	13,3
3	13,4	12,9	13,7	13,2
4	13,0	12,7	12,8	13,0
5	13,4	12,9	12,7	12,5
6	13,2	12,7	12,6	12,9
7	13,4	12,3	13,2	12,6
8	13,2	12,8	12,6	12,8
9	12,9	12,9	13,3	12,7
10	13,0	12,6	13,5	12,9
Rata-rata ±	13,19 ±	12,71 ±	13,15 ±	12,87 ±
SD	0,2	0,20	0,39	0,25
KV	1,52	1,57	2,97	1,94

LAMPIRAN C
HASIL UJI KERAPUHAN TABLET LIKUISOLID IBUPROFEN

Formula	Replikasi	Berat awal (gram)	Berat akhir (gram)	Kerapuhan (%)	Rata-rata ± SD	KV
A	I	15,9	15,88	0,13	0,10	34,73
	II	15,94	15,93	0,06	±	
	III	15,91	15,89	0,13	0,04	
B	I	16,15	16,14	0,06	0,08	48,50
	II	16,06	16,04	0,13	±	
	III	16,20	16,19	0,06	0,04	
C	I	16,22	16,20	0,12	0,08	43,30
	II	16,26	16,25	0,06	±	
	III	15,90	15,89	0,06	0,04	
D	I	16,10	16,09	0,06	0,08	43,30
	II	16,08	16,07	0,06	±	
	III	16,26	16,24	0,12	0,04	

LAMPIRAN D
HASIL UJI WAKTU HANCUR TABLET LIKUISOLID IBUPROFEN

Replikasi	Waktu Hancur (menit)			
	Formula A	Formula B	Formula C	Formula D
I	0,32	1,29	1,47	2,19
II	0,2	1,49	2,04	2,14
III	0,18	1,47	1,56	2,20
Rata-rata ± SD	0,23 ± 0,08	1,42 ± 0,11	1,69 ± 0,31	2,18 ± 0,03
KV	32,45	7,75	18,34	1,38

LAMPIRAN E
HASIL UJI KERAGAMAN BOBOT TABLET LIKUISOLID
IBUPROFEN

Hasil Uji Keragaman Bobot Tablet Formula A

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	836,5	101,42	829,5	99,40	834,8	100,11
2	829,4	100,56	830,0	99,46	836,0	100,25
3	837,5	101,54	838,2	100,44	837,4	100,42
4	836,5	101,42	835,0	100,06	831,4	99,70
5	837,9	101,59	839,9	100,65	830,4	99,58
6	838,8	101,70	839,5	100,60	837,8	100,47
7	842,7	102,17	834,6	100,01	833,0	99,89
8	846,9	101,68	839,3	100,57	841,1	100,86
9	835,0	101,24	833,9	99,93	835,6	100,20
10	840,7	101,93	847,8	101,59	841,0	100,85
Rata-rata	838,19	101,63	837,77	100,27	835,85	100,23
PK (%)	101,63		100,27		100,23	
SD	0,57		0,65		0,44	
KV	0,56		0,64		0,44	

Hasil Uji Keragaman Bobot Tablet Formula B

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	806,9	100,69	799,5	99,54	804,3	99,16
2	804,2	100,36	809,5	100,78	813,7	100,32
3	805,3	100,49	807,3	100,51	805,0	99,25
4	810,4	101,13	809,6	100,80	805,6	99,32
5	801,2	99,98	802,8	99,95	805,3	99,29
6	804,7	100,42	806,5	100,41	804,9	99,24
7	805,7	100,54	809,1	100,73	800,4	98,68
8	811,2	101,23	808,5	100,66	811,7	100,08
9	803,6	100,28	803,3	100,01	805,0	99,25
10	808,4	100,88	807,3	100,51	803,0	99,00
Rata-rata	806,16	100,60	806,34	100,39	805,89	99,36
PK (%)	100,60		100,39		99,36	
SD	0,39		0,42		0,49	
KV	0,39		0,42		0,49	

Hasil Uji Keragaman Bobot Tablet Formula C

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	804,2	99,27	809,5	100,19	796,3	100,66
2	805,6	99,44	808,4	100,06	803,6	101,58
3	805,9	99,48	807,3	99,92	797,5	100,81
4	804,4	99,29	806,6	99,83	804,5	101,69
5	802,9	99,11	800,2	99,04	797,2	100,77
6	809,9	99,97	803,1	99,40	797,6	100,82
7	804,9	99,36	805,7	99,72	795,8	100,59
8	809,7	99,95	808,5	100,07	806,0	101,88
9	810,2	100,01	807,1	99,89	805,1	101,77
10	804,7	99,33	807,8	99,98	797,7	100,83
Rata-rata	806,24	99,52	806,42	99,81	800,13	101,14
PK(%)	99,52		99,81		101,14	
SD	0,33		0,35		0,52	
KV	0,33		0,35		0,51	

Hasil Uji Keragaman Bobot Tablet Formula D

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	802,4	100,23	809,1	101,96	801,5	100,38
2	807,6	100,88	802,6	101,14	803,8	100,67
3	809,8	101,16	803,3	101,23	805,9	100,93
4	802,7	100,27	804,3	101,36	805,5	100,88
5	807,1	100,82	811,7	102,29	806,0	100,94
6	803,4	100,36	802,5	101,13	804,8	100,79
7	808,1	100,95	808,9	101,94	804,2	100,72
8	804,2	100,46	801,9	101,05	809,5	101,38
9	795,9	99,42	813,3	102,49	806,2	100,97
10	808,1	100,95	811,9	102,31	803,5	100,63
Rata-rata	804,93	100,55	806,95	101,69	805,09	100,83
PK(%)	100,55		101,69		100,83	
SD	0,51		0,56		0,26	
KV	0,51		0,55		0,26	

LAMPIRAN F
HASIL UJI KESERAGAMAN KANDUNGAN TABLET
LIKUISOLID IBUPROFEN

Hasil Uji Keseragaman Kandungan Tablet Formula A Replikasi I

Abs	W sampel (mg)	C sampel (µg/ml)	C teoritis (µg/ml)	Kadar (%)
0,569	845,3	318,11	316,99	100,35
0,567	831,1	317,00	311,66	101,71
0,564	843,0	315,33	316,13	99,75
0,566	836,6	316,44	313,73	100,87
0,565	830,8	315,89	311,55	101,39
0,560	836,7	313,11	313,76	99,79
0,576	843,5	322,00	316,31	101,80
0,573	843,7	320,33	316,39	101,25
0,578	837,9	323,11	314,21	102,83
0,567	837,4	317,00	314,03	100,95
			Rata-rata	101,07
			SD	0,95
			KV	0,94

Hasil Uji Keseragaman Kandungan Tablet Formula A Replikasi II

Abs	W sampel (mg)	C sampel (µg/ml)	C teoritis (µg/ml)	Kadar (%)
0,583	842,1	325,89	328,42	99,23
0,572	839,6	319,78	327,44	97,66
0,584	845,1	326,44	329,59	99,05
0,578	841,9	323,11	328,34	98,41
0,591	842,1	330,33	328,42	100,58
0,568	842,7	317,56	328,65	96,62
0,585	845,2	327,00	329,63	99,20
0,587	838,9	328,11	327,17	100,29
0,574	837,8	320,89	326,74	98,21
0,583	843,4	325,89	328,93	99,08
			Rata-rata	98,83
			SD	1,17
			KV	1,19

Hasil Uji Keseragaman Kandungan Tablet Formula A Replikasi III

Abs	W sampel (mg)	C sampel (µg/ml)	C teoritis (µg/ml)	Kadar (%)
0,552	836,5	308,67	313,69	98,40
0,573	830,7	320,33	311,51	102,83
0,559	831,6	312,56	311,85	100,23
0,553	839,0	309,22	314,63	98,28
0,566	836,2	316,44	313,58	100,92
0,563	834,8	314,78	313,05	100,55
0,557	832,7	311,44	312,26	99,74
0,552	833,3	308,67	312,49	98,78
0,56	835,7	313,11	313,39	99,91
0,554	838,4	309,78	314,40	98,53
			Rata-rata	99,82
			SD	1,42
			KV	1,42

Hasil Uji Keseragaman Kandungan Tablet Formula B Replikasi I

Abs	W sampel (mg)	C sampel (µg/ml)	C teoritis (µg/ml)	Kadar (%)
0,546	805,9	305,33	302,21	101,03
0,537	802,4	300,33	300,90	99,81
0,541	806,0	302,56	302,25	100,10
0,539	802,8	301,44	301,05	100,13
0,542	806,0	303,11	302,25	100,28
0,541	807,7	302,56	302,89	99,89
0,540	804,6	302,00	301,73	100,09
0,539	804,2	301,44	301,58	99,95
0,538	802,8	300,89	301,05	99,95
0,536	803,9	299,78	301,46	99,44
			Rata-rata	100,10
			SD	0,41
			KV	0,41

Hasil Uji Keseragaman Kandungan Tablet Formula B Replikasi II

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,544	805,8	304,22	302,18	100,68
0,535	804,0	299,22	301,50	99,24
0,537	805,5	300,33	302,06	99,43
0,545	808,9	304,78	303,34	100,48
0,544	808,3	303,67	303,11	100,19
0,539	806,4	301,44	302,40	99,68
0,547	808,0	305,89	303,00	100,95
0,544	804,9	304,22	301,84	100,79
0,543	805,5	303,67	302,06	100,53
0,533	805,4	298,11	302,03	98,70
Rata-rata				100,07
SD				0,76
KV				0,76

Hasil Uji Keragaman Kandungan Tablet Formula B Replikasi III

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,544	804,2	304,22	301,58	100,88
0,547	805,3	305,89	301,99	101,29
0,539	805,6	301,44	302,10	99,78
0,542	803,8	303,11	301,43	100,56
0,548	804,8	306,44	301,80	101,54
0,545	803,5	304,78	301,31	101,15
0,536	805,9	299,78	302,21	99,20
0,533	805,2	298,11	301,95	98,73
0,543	805,4	303,67	302,03	100,54
0,537	803,7	300,33	301,39	99,65
Rata-rata				100,33
SD				0,95
KV				0,95

Hasil Uji Keseragaman Kandungan Tablet Formula C Replikasi I

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,529	801,4	295,89	300,53	98,46
0,550	809,8	307,56	303,68	101,28
0,542	801,8	303,11	300,68	100,81
0,541	805,3	302,56	301,99	100,19
0,545	806,5	304,78	302,44	100,77
0,543	805,4	303,67	302,03	100,54
0,551	807,8	308,11	302,93	100,71
0,532	801,9	297,56	300,71	98,95
0,547	808,8	305,89	303,30	100,85
0,539	808,3	301,44	303,11	99,45
			Rata-rata	100,20
			SD	0,93
			KV	0,93

Hasil Uji Keseragaman Kandungan Tablet Formula C Replikasi II

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,537	807,1	300,33	302,66	99,23
0,548	810,5	306,44	303,94	100,82
0,545	811,0	304,78	304,13	100,21
0,544	809,7	304,22	303,64	100,19
0,532	806,1	297,56	302,29	98,44
0,536	801,4	299,78	300,53	99,75
0,554	813,9	309,78	305,21	101,50
0,551	809,1	308,67	303,41	101,73
0,549	812,5	307,00	304,69	100,76
0,539	806,9	301,44	302,59	99,62
			Rata-rata	100,23
			SD	1,02
			KV	1,02

Hasil Uji Keseragaman Kandungan Tablet Formula C Replikasi III

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,539	803,0	301,44	301,13	100,10
0,544	804,7	304,22	301,76	100,82
0,540	805,1	302,00	301,91	100,03
0,536	802,3	299,78	300,86	99,64
0,546	805,7	305,33	302,14	101,06
0,542	804,4	303,11	301,65	100,48
0,537	801,6	300,33	300,60	99,91
0,545	806,6	304,78	302,48	100,76
0,547	804,9	305,89	301,84	101,34
0,538	802,8	300,89	301,05	99,95
Rata-rata				100,41
SD				0,57
KV				0,57

Hasil Uji Keseragaman Kandungan Tablet Formula D Replikasi I

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,544	804,9	304,22	301,84	100,79
0,543	806,3	303,67	302,36	100,43
0,546	808,9	305,33	303,34	100,66
0,538	806,4	300,89	302,40	99,50
0,548	808,8	306,44	303,30	101,04
0,545	807,9	304,78	302,96	100,60
0,535	803,0	299,22	301,13	99,37
0,542	804,4	303,11	301,65	100,48
0,549	805,7	307,00	302,14	101,61
0,539	805,4	301,44	302,03	99,81
Rata-rata				100,43
SD				0,70
KV				0,70

Hasil Uji Keseragaman Kandungan Tablet Formula D Replikasi II

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,537	802,7	300,33	301,01	99,77
0,542	807,3	303,11	302,74	100,12
0,539	803,4	301,44	301,28	100,05
0,547	811,9	305,89	304,46	100,47
0,541	801,9	302,56	300,71	100,62
0,550	813,3	307,56	304,99	100,84
0,538	808,9	300,89	303,34	99,19
0,532	802,5	297,56	300,94	98,88
0,543	803,3	303,67	301,24	100,81
0,536	804,6	299,78	301,73	99,35
			Rata-rata	100,01
			SD	0,70
			KV	0,70

Hasil Uji Keseragaman Kandungan Tablet Formula D Replikasi III

Abs	W sampel (mg)	C sampel ($\mu\text{g/ml}$)	C teoritis ($\mu\text{g/ml}$)	Kadar (%)
0,543	806,2	303,67	302,33	100,44
0,549	809,3	307,00	303,49	101,17
0,533	805,6	298,11	302,10	98,68
0,551	807,0	308,11	302,63	101,81
0,539	806,1	301,44	302,29	99,72
0,537	804,8	300,33	301,80	99,51
0,542	803,5	303,11	301,31	100,6
0,546	809,5	305,33	303,56	100,58
0,536	804,2	299,78	301,58	99,40
0,544	806,0	304,22	302,25	100,65
			Rata-rata	100,26
			SD	0,93
			KV	0,93

LAMPIRAN G
HASIL PENETAPAN KADAR TABLET LIKUISOLID IBUPROFEN

Formula	Replikasi	Absorbansi	Csampil ($\mu\text{g/ml}$)	Cteoritis ($\mu\text{g/ml}$)	Kadar (%)	Rata-rata \pm SD	KV
A	I	0,546	305,33	300,45	101,63	100,71	0,79
	II	0,538	300,89	300,08	100,27	\pm	
	III	0,538	300,89	300,19	100,23	0,79	
B	I	0,540	302,00	300,19	100,60	100,12	0,66
	II	0,539	301,44	300,26	100,39	\pm	
	III	0,533	298,11	300,04	99,36	0,66	
C	I	0,534	298,67	300,12	99,52	100,16	0,86
	II	0,536	299,78	300,34	99,81	\pm	
	III	0,543	303,67	300,26	101,14	0,86	
D	I	0,540	302,00	300,34	100,55	101,02	0,58
	II	0,546	305,33	300,26	101,69	\pm	
	III	0,541	302,56	300,08	100,83	0,59	

LAMPIRAN H
HASIL UJI DISOLUSI TABLET LIKUISOLID IBUPROFEN
FORMULA A

Repli kasi	t (menit)	A	C (µg/ml)	Wt (mg)	%obat terlepas	AUC (µg menit / ml)
I	10	0,263	148,11	133,30	65,53	666,50
	20	0,291	163,67	147,30	72,41	1403,00
	30	0,331	185,89	167,30	82,24	1573,00
	45	0,346	194,22	174,80	85,93	2565,75
	60	0,347	194,78	175,30	86,18	2625,75
						8834,00
II	10	0,265	149,22	134,30	66,02	671,50
	20	0,293	164,78	148,30	72,90	1413,00
	30	0,333	187,00	168,30	82,74	1583,00
	45	0,34	190,89	171,80	84,46	2550,75
	60	0,348	195,33	175,80	86,42	2607,00
						8825,25
III	10	0,265	149,22	134,30	66,02	671,50
	20	0,294	165,33	148,30	73,15	1415,50
	30	0,332	186,44	167,80	82,49	1583,00
	45	0,347	194,78	175,30	86,18	2573,25
	60	0,349	195,89	176,30	86,67	2637,00
						8880,25

**HASIL UJI DISOLUSI TABLET LIKUISOLID IBUPROFEN
FORMULA B**

Repli kasi	t (menit)	A	C (µg/ml)	Wt (mg)	%obat terlepas	AUC (µg menit / ml)
I	10	0,3215	180,61	162,55	81,18	812,75
	20	0,3223	181,06	162,95	81,38	1627,50
	30	0,3480	195,33	175,80	87,80	1693,75
	45	0,3690	207,00	186,30	93,04	2715,75
	60	0,3792	212,67	191,40	95,59	2832,75
II	10	0,3217	180,72	162,65	81,23	813,25
	20	0,3218	180,78	162,70	81,25	1626,75
	30	0,3466	194,56	175,10	87,45	1689,00
	45	0,3683	206,61	185,95	92,86	2707,88
	60	0,3789	212,50	191,25	95,51	2811,00
III	10	0,3278	184,11	165,70	82,75	828,50
	20	0,3322	186,56	167,90	83,85	1668,00
	30	0,3501	196,50	176,85	88,32	1723,75
	45	0,3693	207,17	186,45	93,11	2724,75
	60	0,3806	213,44	192,10	95,93	2839,13

**HASIL UJI DISOLUSI TABLET LIKUISOLID IBUPROFEN
FORMULA C**

Repli kasi	t (menit)	A	C (µg/ml)	Wt (mg)	%obat terlepas	AUC (µg menit / ml)
I	10	0,3562	199,89	179,90	89,81	899,50
	20	0,3634	203,89	183,50	91,60	1817,00
	30	0,3790	212,56	191,30	95,50	1874,00
	45	0,3805	213,39	192,05	95,87	2875,13
	60	0,3928	220,22	198,20	98,94	2922,38
II	10	0,3557	199,61	179,65	89,68	883,25
	20	0,3671	205,94	185,35	92,53	1825,00
	30	0,3818	214,11	192,70	96,20	1890,25
	45	0,3840	215,33	193,80	96,75	2898,75
	60	0,3926	220,11	198,10	98,89	2939,25
III	10	0,3553	199,39	179,45	89,58	897,25
	20	0,3652	204,89	184,40	92,05	1819,25
	30	0,3790	212,56	191,30	95,50	1878,50
	45	0,3806	213,44	192,10	95,90	2875,50
	60	0,3931	220,39	198,35	99,02	2928,38

**HASIL UJI DISOLUSI TABLET LIKUISOLID
IBUPROFEN FORMULA D**

Replikasi	t (menit)	A	C (µg/ml)	Wt (mg)	%obat terlepas	AUC (µg menit / ml)
I	10	0,3355	188,39	169,55	83,92	847,75
	20	0,3449	193,61	174,25	86,25	1726,50
	30	0,3624	203,33	183,00	90,58	1786,25
	45	0,3753	210,50	189,45	93,77	2793,38
	60	0,3895	218,39	196,55	97,28	2895,00
II	10	0,3343	187,72	168,95	83,62	844,75
	20	0,3414	191,67	172,50	85,38	1707,25
	30	0,3593	201,61	181,45	89,81	1769,75
	45	0,3736	209,56	188,60	93,35	2775,08
	60	0,3899	218,61	196,75	97,38	2890,13
III	10	0,3349	188,06	169,25	83,77	846,25
	20	0,3398	190,78	171,70	84,98	1704,75
	30	0,3603	202,17	181,95	90,06	1768,25
	45	0,3755	210,61	189,55	93,82	2786,25
	60	0,3889	218,06	196,25	97,13	2893,50

LAMPIRAN I
CONTOH PERHITUNGAN

Contoh perhitungan sudut diam:

Formula B1:

$$W \text{ persegi panjang} = 5,08 \text{ gram}$$

$$W \text{ lingkaran} = 1,48 \text{ gram}$$

$$\text{Luas persegi panjang} = 623,7 \text{ cm}^2$$

$$\text{Luas lingkaran} = \frac{1,48}{5,08} \times 623,7 = 181,7079 \text{ cm}^2$$

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

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

$$= \frac{181,7079}{3,14}$$

$$r = 7,6071 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{4,15}{7,6071}$$

$$= 28,61^\circ$$

Contoh perhitungan indeks kompresibilitas dan Hausner ratio:

Formula B1 :

$$\text{Berat gelas} = 128,01 \text{ g } (W_1)$$

$$\text{Berat gelas + granul} = 169,68 \text{ g } (W_2)$$

$$V_1 = 100 \text{ ml}$$

$$V_2 = 87 \text{ ml}$$

$$B_j \text{ nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{169,68 - 128,01}{100} = 0,4167$$

$$B_j \text{ mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{169,68 - 128,01}{87} = 0,4790$$

$$\% \text{ kompresibilitas} = \left(1 - \frac{B_j \text{ nyata}}{B_j \text{ mampat}} \right) \times 100\% = 13\%$$

$$HR = \frac{B_j \text{ mampat}}{B_j \text{ nyata}} = 1,15$$

Contoh perhitungan akurasi & presisi:

%	Bahan aktif (mg)	Matriks (mg)	Dapar fosfat 0,2M pH7,2 ad	Pipet	Dapar fosfat 0,2M pH7,2 ad	Konsentrasi (ppm)
100	200	600	100	1,5	10	300

$$\text{Absorbansi} = 0,540 \rightarrow y = 0,0036x - 0,0018$$

$$\text{Konsentrasi sebenarnya} = 302 \text{ ppm}$$

$$\text{Konsentrasi teoritis} = 300,45 \text{ ppm}$$

$$\begin{aligned} \% \text{ perolehan kembali} &= (\text{konsentrasi sebenarnya} / \text{konsentrasi teoritis}) \times 100\% \\ &= (302/300,45) \times 100\% \\ &= 100,52\% \end{aligned}$$

$$\begin{aligned} \text{Untuk menghitung \% KV} &= \frac{SD}{\bar{X}} \times 100\% \\ &= \frac{0,21}{100,26} \times 100\% \\ &= 0,21\% \end{aligned}$$

Contoh perhitungan % obat terlepas:

$$\% \text{ obat terlepas} = \frac{Wt}{\frac{PK}{100} \times \text{dosis}} \times 100\%$$

Formula B replikasi 1 pada t = 10 menit

$$\% \text{ obat terlepas} = \frac{162,55}{\frac{100,12}{100} \times 200} \times 100\% = 81,18\%$$

Contoh perhitungan AUC pada disolusi:

Rumus: $\frac{W_m + W_{m-1}}{2} \times (t_n - t_{n-1})$

Formula B replikasi 1

$$W_{t_{n-1}} = 162,55$$

$$W_{t_n} = 162,95$$

$$t_n = 20 \text{ menit}$$

$$t_{n-1} = 10 \text{ menit}$$

$$\begin{aligned} \text{AUC} &= \frac{162,55 + 162,95}{2} \times (20 - 10) \\ &= 1627,50 \end{aligned}$$

Luas □ = 60 x penetapan kadar x dosis

$$= 60 \times 100,12\% \times 200 \text{ mg}$$

$$= 12014,40$$

$$\begin{aligned} \% \text{ ED Formula B replikasi 1} &= \left(\frac{\sum \text{AUC}}{\text{luas } \square} \right) \times 100\% \\ &= (9682,50 / 12014,40) \times 100\% \\ &= 80,59\% \end{aligned}$$

LAMPIRAN J
HASIL UJI STATISTIK KEKERASAN TABLET LIKUISOLID
IBUPROFEN ANTAR FORMULA

Descriptives

Kekerasan

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	13.2500	.44306	.25580	12.1494	14.3506	12.84	13.72
B	3	12.8000	.08185	.04726	12.5967	13.0033	12.71	12.87
C	3	13.1467	.02517	.01453	13.0842	13.2092	13.12	13.17
D	3	12.9067	.09074	.05239	12.6813	13.1321	12.84	13.01
Total	12	13.0258	.27201	.07852	12.8530	13.1987	12.71	13.72

Test of Homogeneity of Variances

kekerasan

Levene Statistic	df1	df2	Sig.
4.181	3	8	.047

ANOVA

kekerasan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.390	3	.130	2.455	.138
Within Groups	.424	8	.053		
Total	.814	11			

F hitung = 2,455 < F tabel_{0,05(3,8)} = 4,07, maka H₀ diterima dan tidak ada perbedaan bermakna antar formula.

LAMPIRAN K
HASIL UJI STATISTIK KERAPUHAN TABLET LIKUISOLID
IBUPROFEN ANTAR FORMULA

Descriptives

Kerapuhan

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	.1067	.04041	.02333	.0063	.2071	.06	.13
B	3	.0833	.04041	.02333	-.0171	.1837	.06	.13
C	3	.0800	.03464	.02000	-.0061	.1661	.06	.12
D	3	.0800	.03464	.02000	-.0061	.1661	.06	.12
Total	12	.0875	.03415	.00986	.0658	.1092	.06	.13

Test of Homogeneity of Variances

Kerapuhan

Levene Statistic	df1	df2	Sig.
.125	3	8	.942

ANOVA

Kerapuhan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.001	3	.000	.351	.790
Within Groups	.011	8	.001		
Total	.013	11			

F hitung = 0,351 < F tabel_{0,05(3,8)} = 4,07, maka H₀ diterima dan tidak ada perbedaan bermakna antar formula.

LAMPIRAN L

HASIL UJI STATISTIK WAKTU HANCUR TABLET LIKUISOLID IBUPROFEN ANTAR FORMULA

Descriptives

WaktuHancur

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	.2333	.07572	.04372	.0452	.4214	.18	.32
B	3	1.4167	.11015	.06360	1.1430	1.6903	1.29	1.49
C	3	1.6900	.30643	.17692	.9288	2.4512	1.47	2.04
D	3	2.1767	.03215	.01856	2.0968	2.2565	2.14	2.20
Total	12	1.3792	.76077	.21962	.8958	1.8625	.18	2.20

Test of Homogeneity of Variances

WaktuHancur

Levene Statistic	df1	df2	Sig.
7.021	3	8	.012

ANOVA

WaktuHancur

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.141	3	2.047	72.587	.000
Within Groups	.226	8	.028		
Total	6.366	11			

F hitung = 72,587 > F tabel_{0,05(3,8)} = 4,07, maka H₀ ditolak dan ada perbedaan bermakna antar formula.

Post Hoc Tests

Multiple Comparisons

WaktuHancur
Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A	B	-1.18333*	.13711	.000	-1.6224	-.7442
	C	-1.45667*	.13711	.000	-1.8958	-1.0176
	D	-1.94333*	.13711	.000	-2.3824	-1.5042
B	A	1.18333*	.13711	.000	.7442	1.6224
	C	-.27333	.13711	.266	-.7124	.1658
	D	-.76000*	.13711	.002	-1.1991	-.3209
C	A	1.45667*	.13711	.000	1.0176	1.8958
	B	.27333	.13711	.266	-.1658	.7124
	D	-.48667*	.13711	.031	-.9258	-.0476
D	A	1.94333*	.13711	.000	1.5042	2.3824
	B	.76000*	.13711	.002	.3209	1.1991
	C	.48667*	.13711	.031	.0476	.9258

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

LAMPIRAN M

HASIL UJI STATISTIK PENETAPAN KADAR TABLET LIKUISOLID IBUPROFEN ANTAR FORMULA

Descriptives

PK

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	100.7100	.79699	.46014	98.7302	102.6898	100.23	101.63
B	3	100.1167	.66365	.38316	98.4681	101.7653	99.36	100.60
C	3	100.1567	.86385	.49874	98.0107	102.3026	99.52	101.14
D	3	101.0233	.59408	.34299	99.5476	102.4991	100.55	101.69
Total	12	100.5017	.74455	.21493	100.0286	100.9747	99.36	101.69

Test of Homogeneity of Variances

PK

Levene Statistic	df1	df2	Sig.
.393	3	8	.762

ANOVA

PK

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.748	3	.583	1.072	.414
Within Groups	4.350	8	.544		
Total	6.098	11			

F hitung = 1,072 < F tabel_{0,05(3,8)} = 4,07, maka H₀ diterima dan tidak ada perbedaan bermakna antar formula.

LAMPIRAN N

HASIL UJI STATISTIK TETAPAN DISOLUSI BERDASARKAN %ED₆₀ TABLET LIKUISOLID IBUPROFEN ANTAR FORMULA

Descriptives

ED

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	73.2033	.24214	.13980	72.6018	73.8049	73.03	73.48
B	3	80.7767	.59248	.34207	79.3049	82.2485	80.30	81.44
C	3	86.5933	.20984	.12115	86.0721	87.1146	86.43	86.83
D	3	82.5867	.27592	.15930	81.9012	83.2721	82.38	82.90
Total	12	80.7900	.508521	.146797	77.5590	84.0210	73.03	86.83

Test of Homogeneity of Variances

ED

Levene Statistic	df1	df2	Sig.
2.488	3	8	.135

ANOVA

ED

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	283.393	3	94.464	713.163	.000
Within Groups	1.060	8	.132		
Total	284.453	11			

F hitung = 713,163 > F tabel_{0,05(3,8)} = 4,07, maka H₀ ditolak dan ada perbedaan bermakna antar formula.

Post Hoc Tests

Multiple Comparisons

ED

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A	B	-7.57333*	.29716	.000	-8.5250	-6.6217
	C	-13.39000*	.29716	.000	-14.3416	-12.4384
	D	-9.38333*	.29716	.000	-10.3350	-8.4317
B	A	7.57333*	.29716	.000	6.6217	8.5250
	C	-5.81667*	.29716	.000	-6.7683	-4.8650
	D	-1.81000*	.29716	.001	-2.7616	-.8584
C	A	13.39000*	.29716	.000	12.4384	14.3416
	B	5.81667*	.29716	.000	4.8650	6.7683
	D	4.00667*	.29716	.000	3.0550	4.9583
D	A	9.38333*	.29716	.000	8.4317	10.3350
	B	1.81000*	.29716	.001	.8584	2.7616
	C	-4.00667*	.29716	.000	-4.9583	-3.0550

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

LAMPIRAN O

HASIL UJI STATISTIK TETAPAN KONSTANTA LAJU DISOLUSI TABLET LIKUISOLID IBUPROFEN ANTAR FORMULA

Descriptives

LajuDisolusi

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	3	.0192	.00061	.00035	.0176	.0207	.02	.02
B	3	.0309	.00050	.00029	.0297	.0322	.03	.03
C	3	.0428	.00078	.00045	.0409	.0447	.04	.04
D	3	.0357	.00055	.00032	.0343	.0370	.04	.04
Total	12	.0321	.00900	.00260	.0264	.0379	.02	.04

Test of Homogeneity of Variances

LajuDisolusi

Levene Statistic	df1	df2	Sig.
.521	3	8	.680

ANOVA

LajuDisolusi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.001	3	.000	768.406	.000
Within Groups	.000	8	.000		
Total	.001	11			

F hitung = 768,406 > F tabel_{0,05(3,8)} = 4,07, maka H₀ ditolak dan ada perbedaan bermakna antar formula.

Post Hoc Tests Multiple Comparisons

LajuDisolusi

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A	B	-.01177 [*]	.00051	.000	-.0134	-.0101
	C	-.02363 [*]	.00051	.000	-.0253	-.0220
	D	-.01650 [*]	.00051	.000	-.0181	-.0149
B	A	.01177 [*]	.00051	.000	.0101	.0134
	C	-.01187 [*]	.00051	.000	-.0135	-.0102
	D	-.00473 [*]	.00051	.000	-.0064	-.0031
C	A	.02363 [*]	.00051	.000	.0220	.0253
	B	.01187 [*]	.00051	.000	.0102	.0135
	D	.00713 [*]	.00051	.000	.0055	.0088
D	A	.01650 [*]	.00051	.000	.0149	.0181
	B	.00473 [*]	.00051	.000	.0031	.0064
	C	-.00713 [*]	.00051	.000	-.0088	-.0055

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

LAMPIRAN P
HASIL UJI KURVA BAKU

REPLIKASI I

KONSENTRASI	ABSORBANSI	X²	Y²	XY
100,8	0,211	10160,64	0,044521	21,2688
201,6	0,387	40642,56	0,149769	78,0192
302,4	0,558	91445,76	0,311364	168,7392
403,2	0,742	162570,24	0,550564	299,1744
504	0,906	254016	0,820836	456,624

REPLIKASI II

KONSENTRASI	ABSORBANSI	X²	Y²	XY
100,4	0,21	10080,16	0,0441	21,084
200,8	0,385	40320,64	0,148225	77,308
301,2	0,572	90721,44	0,327184	172,2864
401,6	0,747	161282,56	0,558009	299,9952
502	0,908	252004	0,824464	455,816

REPLIKASI III

KONSENTRASI	ABSORBANSI	X²	Y²	XY
100,5	0,183	10100,25	0,033489	18,3915
210	0,379	44100	0,143641	79,59
301,5	0,559	90902,25	0,312481	168,5385
402	0,743	161604	0,552049	298,686
502,5	0,922	252506,25	0,850084	463,305

	ΣX^2	ΣXY	ΣY^2	N	Residual SS	RDF
Replikasi 1	558835,2	1023,8256	1,877054	5	0,001333109	3
Replikasi 2	554408,8	1026,4896	1,901982	5	0,001433345	3
Replikasi 3	559212,75	1028,511	1,891744	5	9,38595E-05	3
<i>Pooled regression</i>					0,002860314	9
<i>Common regression</i>	1672456,75	3078,8262	5,67078		0,002967801	11

F hitung = 0,1691 < F_{tabel}_{0,05(2,9)} = 4,26, karena F hitung lebih kecil dari F tabel maka tidak ada perbedaan bermakna antar persamaan regresi.

LAMPIRAN Q

SERTIFIKAT ANALISIS IBUPROFEN



Shasun Chemicals And Drugs Ltd.

IBUPROFEN BP/Ph.Eur. (SN Grade) CERTIFICATE OF ANALYSIS			
TESTS		RESULTS	
S.No	TESTS	RESULTS	LIMITS
Nature of Packing : Sea Worthy Fibre Drum		Analytical Report No. : FPBU0607674	
Sample Taken By : S.Sivakumar		Batch Number : IBU0607674	
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.	
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	Conforms	The IR spectrum of sample should be concordant with the spectrum of Ibuprofen RS
	a) By IR		
	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	
	c) By TLC	Complies	The ratio of absorbance at the max. at 272 nm to that at 258 nm is 1.00 to 1.10
	d) Melting point	76.1 °C	The principal spot should be similar in position, colour and size compared to Ibuprofen RS
	Optical rotation	0.00°	75.0°C to 78.0 °C - 0.05° to +0.05°
6.	Heavy metals	LT 10 PPM	NMT 10 PPM
7.	Related substances (by HPLC)	0.06 % (Area %)	NMT 0.20 % (Area %)
	a) 2-(4-Isobutyl) Phenyl Propanoic Acid (Impurity I)	Not Detected	NMT 0.30 % (w/w)
	b) 2-(4-Butyl phenyl)propanoic acid (Impurity B)	Not Detected	NMT 0.30 % (Area %)
	c) 4-Isobutylacetophenone (Impurity E)	0.04 % (Area %)	NMT 0.10 % (Area %)
	d) Any unidentified impurity (Apart from impurity B)	0.14 % (Area %)	NMT 0.50 % (Area %)
	Sulfated ash	0.04 % (w/w)	NMT 0.10 % (w/w)
	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)

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_____ 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 _____



Shasun Chemicals And Drugs Ltd.

IBUPROFEN BP/Ph.Eur. (SN Grade) CERTIFICATE OF ANALYSIS			
Nature of Packing : Sea Worthy Fibre Drum		Analytical Report No. : FP1BU0607674	
Sample Taken By : S.Sivakumar		Batch Number : IBU0607674	
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
ADDITIONAL TESTS			
a.	Bulk Density		
	Untapped	0.45 g/mL	0.35- 0.55 g/mL
	Tapped(1250 tappings)	0.64 g/mL	0.50- 0.75 g/mL
b.	Mean Particle Size	76.4 microns	60.0 - 130.0 microns
c.	Residual solvents		
	i) Acetone	17 PPM	NMT 100 PPM
	ii) Isopropyl alcohol	LT 0.89 PPM	NMT 250 PPM
	iii) Hexanes	29 PPM	NMT 290 PPM
	iv) Tri chloro ethylene	LT 0.19 PPM	NMT 80 PPM
	v) Methanol	Not Detected	NMT 500 PPM
OPINION: The Material Complies As Per BP/Ph.Eur. Standard.			
Note :NMT = Not more than NLT = Not less than LT = Less than			
φ NOT USED IN THE PROCESS, TEST INCLUDED FOR COMPLIANCE WITH CERTIFICATE OF SUITABILITY.			
Compiled by : <i>Ch</i> Date : 25/07/2006 (E.Senthikumar) Senior Chemist		Reviewed by : <i>pre</i> Date : 25/07/2006 (S.Rajasudalaiimuthu) Senior Chemist	
		Approved by : <i>[Signature]</i> Date : 25/07/2006 (N.Vinayagaperumal) Dy.QC-Incharge	
SCQC/F-024/F/06			

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_____ 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 : shasundy@md4.vsnl.net.in _____
 _____ shasudy@shasun.com _____

LAMPIRAN R
SERTIFIKAT ANALISIS AVICEL PH 102

ASAHI KASEI CHEMICALS CORPORATION

Date: 21-JUN-20

Issued by manufact

1-15 Kanda, Atsuta, Chiyoh-ku, TOKYO 101-8101, JAPAN
TEL: +81-493-3286-3381 FAX: +81-493-3286-3887
Manufacturing site: 304, Mizusaki-machi, Nabekawa-city, Miyazaki 882-0015, Japan

1701 / 05 / 1110

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. 2034 (20bags)

Manufacturing Date: 22-MAR-2010

Re-evaluation Date: 22-MAR-2013

Organic Solvent: not used in our process

Compendial Standards

Specifications

Lot Analysis

Compendial Standards	Specifications	Lot Analysis
Description	Passes	Passes
Identification	Passes	Passes
Degree of polymerization	100 - 300	Passes
Loss on drying (%)	2.0 - 5.0	3.8
Water-soluble substances (mg)	NMT 12.6	5.8
Ether-soluble substances (mg)	NMT 5.0	0.6
Conductivity (μ S/cm)	NMT 75	25
Heavy metals (ppm)	NMT 10	NMT 10
Solubility	Passes	Passes
Residue on ignition (%)	NMT 0.1	0.02
Bulk density (g/cm ³)	0.28 - 0.33	0.314
pH	5.0 - 7.5	5.7
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

ASAHI Standards	Specifications	Lot Analysis
Particle size, wt. % >250 μ m (60 mesh)	LT 8.0	0.4
Particle size, wt. % >150 μ m (100 mesh)	20 - 40	25

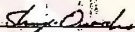
NMT - Not More Than; LT - Less Than

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 OASHI
Manager
Quality Assurance Section
CEOLUS Production Department

ASAHI KASEI CHEMICALS CORPORATION

LAMPIRAN S

SERTIFIKAT ANALISIS 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. C447126
 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 /JCC 5th ed.

parameter	unit	method	result
identification A	QC	Ph.Eur	59
identification A	metal reaction	USP/NF	passes test
identification B	retention time GC	USP/NF	retention match
clarity or color	ml 0,5M HCl	Ph.Eur	<0,6
clarity	ml 0,01 N NaOH	Ph.Eur	<0,6
heavy metals as Pb	ppm	JP	<20
lead	ppm	BAE 300-B	<1
cadmium	ppm	BAE 300-B	<1
copper	ppm	BAE 300-B	<1
arsenic	%	Ph.Eur	<0,1
nickel	%	Ph.Eur	<0,5
acid value of the fatty acid	mg KOH/g	Ph.Eur	204,8
moisture content of stearic acid	%	USP/NF	65,1
H ₂ O cont. of stearic and palmitic acid	%	USP/NF	56,9
total microbial count	cfu/g	USP/NF	<10
Bacteria & Yeasts	cfu/g	USP/NF	106
Gram positive cocci	cfu/g	USP/NF	absent
Gram negative bacilli	cfu/g	USP/NF	absent
Organic volatile impurities		USP/NF	meets USP/NF
Loss on drying	%	BAE 600	3,9
Iron content	%	BAE 200 c	4,7
Free fatty acid	%	BAE 400	6,6
Residue at 200 mesh	%	BAE 605	0,2
Hardness (topped)	g/mm	BAE 611a	0,32
Surface area BET	cm ² /g	USP/NF	10,0
Identification		BAE 601	in accordance

Verlo. 27 08 04

Results 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 other properties for concrete applications.
 This certificate was issued by EDV and does not bear a signature.



PT BRATACO
 PTB0735V1104

LAMPIRAN T
SERTIFIKAT ANALISIS SODIUM STARCH GLYCOLATE

YUNG ZIP CHEMICAL IND. CO., LTD.

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

TEL: 886-4-26818780, 26811344

FAX: 886-4-26812911

CERTIFICATE OF ANALYSIS

DST

(Sodium Starch Glycolate)

Lot No.: SSG0010162

Mfg. Date: Jun. 20, 2010

Analysis Following: BP2010/EP 6.0

Retest Date: Jun. 19, 2013

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	5.7
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 1.	Conformed
Colorless	Not more intensely colored than reference solution B ₂ .	Conformed
Sodium chloride	Not more than 7.0 %	6.1 %
Sodium glycolate	Not more than 2.0 %	1.7 %
Iron	Not more than 20 ppm	< 20 ppm
Heavy metals	Not more than 20 ppm	< 20 ppm
Loss on drying	Not more than 10.0 %	2.9 %
Microbial contamination	Absence of <i>Salmonella</i> species and <i>Escherichia Coll</i>	Negative
Assay	2.8 % ~ 4.2 % of sodium	2.9 %

Conclusion : Passed

LAMPIRAN U
SERTIFIKAT ANALISIS HYDROXY PROPYL METHYL
CELLULOSE K4M

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

NO. 2010010879

Page 1 / 2

样品名称 Name of Goods	中文 Chinese	羟丙甲纤维素; 美多秀
	英文 English	METHOCEL (Hypromellose)
送检单位 Shipper	上海卡乐康包衣技术有限公司	
生产单位 Manufacturer	DOW CHEMICAL	
检查方法、程序 Inspection Methods and Procedures	联合国《关于危险货物运输的建议书》 UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS"	
样品外观与性状 Appearance & Odor	白色粉末, 无臭 white powder, odorless	
TRANSPORT 鉴定 INFORMATION 结果	<p>1. 危险性识别 (Hazards identification)</p> <p>无。 None.</p> <p>2. 空运按照 IATA DGR 办理的类项 (Suggestion according to IATA DGR)</p> <p>可按普通货物条件办理。 The substance is not subject to IATA DGR.</p> <p>3. 包装要求 (Packaging requirements)</p> <p>可按普通货物条件办理。 The goods are packaged according to the packaging requirement of ordinary goods.</p> <p>检查日期: 2009年12月15日至 2009年12月15日 生效日期: 2009年12月01日</p>	
备注 Comment	无。 None.	



批准:

审核:

主检:

Tabel VII (lanjutan)

Baris pertama pada setiap pasangan baris adalah titik pada distribusi F untuk aras 0,05; baris kedua untuk aras 0,01.

		Derajat kebebasan untuk rataan kuadrat yang lebih besar																											
		1	2	3	4	5	6	7	8	9	10	11	12	14	16	20	24	30	40	50	75	100	200	500	∞				
Derajat kebebasan untuk rataan kuadrat yang lebih kecil.	16	4.49 8.33	3.63 6.23	3.24 5.29	3.01 4.77	2.83 4.44	2.74 4.20	2.66 4.02	2.59 3.69	2.54 3.78	2.49 3.69	2.45 3.61	2.42 3.55	2.37 3.45	2.33 3.37	2.28 3.25	2.24 3.19	2.20 3.10	2.16 3.01	2.13 2.96	2.09 2.89	2.07 2.86	2.04 2.80	2.02 2.77	2.01 2.75				
	17	4.45 8.40	3.59 6.11	3.20 5.18	2.96 4.67	2.81 4.34	2.70 4.10	2.62 3.93	2.55 3.79	2.50 3.68	2.45 3.59	2.41 3.52	2.38 3.45	2.33 3.35	2.29 3.27	2.23 3.16	2.19 3.06	2.15 3.00	2.11 2.91	2.07 2.83	2.04 2.78	2.02 2.71	1.99 2.66	1.97 2.62	1.95 2.59	1.92 2.57			
	18	4.41 8.28	3.55 6.01	3.16 5.09	2.92 4.58	2.77 4.25	2.66 4.01	2.58 3.85	2.51 3.71	2.46 3.60	2.41 3.51	2.37 3.44	2.34 3.37	2.29 3.32	2.25 3.19	2.21 3.07	2.15 3.00	2.11 2.91	2.07 2.83	2.04 2.78	2.00 2.71	1.98 2.66	1.95 2.62	1.93 2.59	1.91 2.57	1.88 2.55			
	19	4.38 8.18	3.52 5.93	3.13 5.01	2.90 4.50	2.74 4.17	2.63 3.94	2.55 3.77	2.48 3.63	2.43 3.52	2.38 3.43	2.34 3.36	2.31 3.30	2.26 3.19	2.21 3.12	2.15 3.00	2.11 2.92	2.07 2.84	2.02 2.78	1.99 2.70	1.96 2.63	1.94 2.60	1.91 2.54	1.89 2.51	1.88 2.49	1.86 2.48			
	20	4.35 8.10	3.49 5.85	3.10 4.94	2.87 4.43	2.71 4.10	2.60 3.87	2.52 3.71	2.45 3.56	2.40 3.45	2.35 3.37	2.31 3.30	2.28 3.20	2.23 3.13	2.18 3.05	2.12 2.94	2.06 2.86	2.01 2.77	1.99 2.69	1.94 2.63	1.91 2.58	1.89 2.51	1.87 2.47	1.85 2.44	1.84 2.42	1.81 2.40			
	21	4.32 8.02	3.47 5.78	3.07 4.87	2.84 4.37	2.68 4.04	2.57 3.81	2.49 3.65	2.42 3.51	2.37 3.40	2.32 3.31	2.28 3.24	2.25 3.17	2.20 3.09	2.15 2.99	2.09 2.90	2.05 2.80	2.00 2.80	1.97 2.72	1.94 2.63	1.93 2.58	1.91 2.51	1.87 2.47	1.84 2.42	1.81 2.38	1.78 2.36			
	22	4.30 7.94	3.44 5.72	3.05 4.82	2.82 4.31	2.66 3.99	2.55 3.76	2.47 3.59	2.40 3.45	2.35 3.35	2.30 3.26	2.26 3.18	2.23 3.12	2.18 3.02	2.13 2.94	2.07 2.83	2.02 2.75	1.98 2.67	1.94 2.58	1.91 2.53	1.89 2.46	1.87 2.42	1.84 2.39	1.81 2.37	1.78 2.35	1.76 2.31			
	23	4.28 7.86	3.42 5.66	3.03 4.76	2.80 4.26	2.64 3.94	2.53 3.71	2.45 3.54	2.38 3.41	2.32 3.30	2.28 3.21	2.24 3.14	2.20 3.07	2.14 2.97	2.10 2.89	2.04 2.78	1.99 2.70	1.94 2.63	1.91 2.53	1.89 2.48	1.87 2.41	1.84 2.37	1.81 2.33	1.78 2.30	1.76 2.28	1.74 2.26			
	24	4.26 7.82	3.40 5.61	3.01 4.72	2.78 4.22	2.62 3.90	2.51 3.67	2.43 3.50	2.36 3.34	2.30 3.25	2.26 3.17	2.22 3.09	2.18 3.03	2.13 2.93	2.07 2.85	2.02 2.74	1.97 2.66	1.94 2.58	1.91 2.49	1.89 2.44	1.87 2.36	1.84 2.33	1.81 2.29	1.78 2.27	1.74 2.23	1.73 2.21			
	25	4.24 7.77	3.38 5.57	2.99 4.68	2.74 4.18	2.60 3.86	2.49 3.63	2.41 3.46	2.34 3.32	2.28 3.21	2.24 3.13	2.20 3.05	2.16 2.99	2.11 2.89	2.06 2.81	2.00 2.70	1.95 2.62	1.91 2.54	1.89 2.45	1.87 2.40	1.84 2.32	1.81 2.29	1.77 2.23	1.74 2.20	1.72 2.19	1.71 2.17			
	26	4.22 7.72	3.37 5.53	2.99 4.64	2.74 4.14	2.59 3.82	2.47 3.59	2.39 3.42	2.32 3.29	2.27 3.17	2.22 3.09	2.18 3.02	2.15 2.96	2.10 2.87	2.05 2.77	2.00 2.66	1.95 2.58	1.91 2.50	1.89 2.41	1.87 2.36	1.84 2.28	1.81 2.25	1.77 2.21	1.74 2.19	1.72 2.17	1.69 2.13			
	27	4.21 7.68	3.35 5.49	2.96 4.60	2.73 4.11	2.57 3.79	2.46 3.56	2.37 3.39	2.30 3.26	2.25 3.14	2.20 3.06	2.16 2.98	2.13 2.93	2.08 2.83	2.03 2.74	1.97 2.63	1.93 2.55	1.88 2.47	1.84 2.38	1.81 2.33	1.77 2.25	1.74 2.21	1.71 2.19	1.68 2.17	1.67 2.12	1.64 2.10			
	28	4.19 7.64	3.34 5.40	2.95 4.57	2.71 4.07	2.56 3.76	2.44 3.53	2.36 3.36	2.29 3.23	2.24 3.11	2.19 3.03	2.14 2.95	2.10 2.90	2.05 2.80	2.00 2.71	1.94 2.60	1.91 2.52	1.87 2.44	1.84 2.35	1.81 2.30	1.78 2.22	1.74 2.18	1.71 2.15	1.69 2.13	1.67 2.09	1.65 2.06			
	29	4.18 7.60	3.33 5.52	2.93 4.54	2.70 4.04	2.54 3.73	2.43 3.56	2.35 3.37	2.28 3.20	2.22 3.08	2.18 3.00	2.14 2.92	2.10 2.87	2.05 2.77	2.00 2.68	1.94 2.57	1.90 2.49	1.85 2.41	1.81 2.31	1.77 2.27	1.73 2.19	1.71 2.15	1.68 2.10	1.66 2.06	1.64 2.03	1.64 2.03			
	30	4.17 7.56	3.32 5.39	2.92 4.51	2.69 4.02	2.53 3.70	2.42 3.47	2.34 3.30	2.27 3.17	2.21 3.06	2.16 2.98	2.12 2.90	2.09 2.84	2.04 2.74	1.99 2.65	1.93 2.55	1.89 2.47	1.84 2.38	1.81 2.29	1.77 2.24	1.72 2.16	1.71 2.13	1.69 2.07	1.67 2.03	1.64 2.01	1.62 2.01			

(beranjutan)

Dikutip dari: Scheffler (1987)

LAMPIRAN W

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 X
TABEL UJI HSD (0,05)

k 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	4.04	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
∞	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).