

LAMPIRAN A
HASIL UJI MUTU FISIK GRANUL

Mutu fisik yang diuji	F I	F II	F III	F IV	Persyaratan
Kadar air (MC) (%)	3,32 ± 0,08	3,53 ± 0,05	3,41 ± 0,03	3,47 ± 0,15	3-5% (Voigt, 1995)
Waktu alir (detik)	4,53 ± 0,06	4,83 ± 0,06	4,53 ± 0,06	4,80 ± 0,10	Tidak lebih dari 10 detik (Banker & Anderson, 1994)
Sudut diam (°)	28,39 ± 0,33	29,58 ± 0,21	30,53 ± 0,17	29,99 ± 0,10	25-30 baik (Wells, 1988)
Indeks kompresibilitas (%)	11,04 ± 0,12	10,68 ± 0,58	10,66 ± 0,58	11,66 ± 0,58	5-15% Baik (Wells, 1988)

LAMPIRAN B

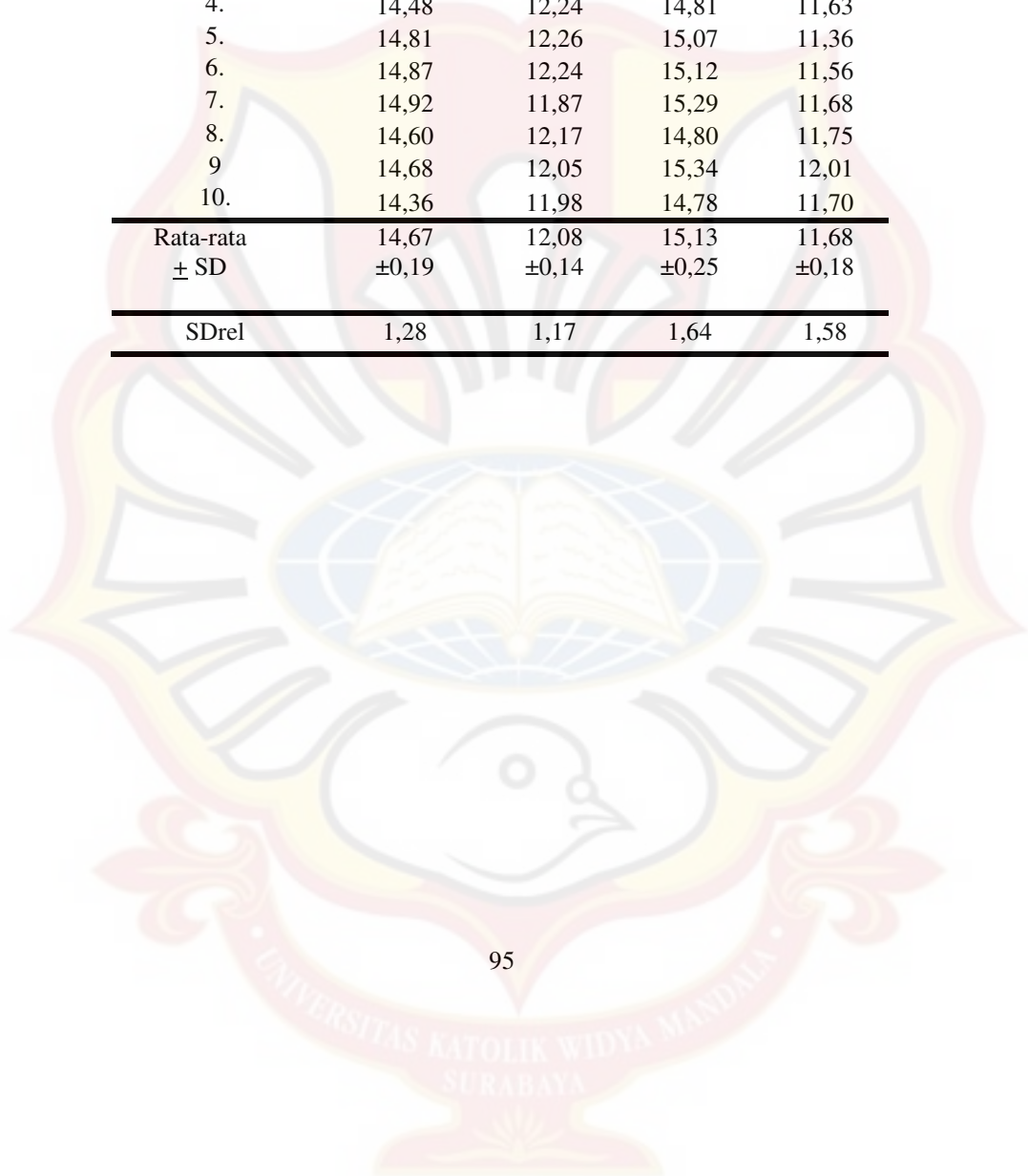
HASIL UJI KEKERASAN TABLET

Replikasi I

No	Kekerasan Tablet Kaptopril (kp)			
	Formula	Formula	Formula	Formula
	A	B	C	D
1.	14,62	11,93	14,48	11,98
2.	14,87	11,99	15,37	11,65
3.	14,89	12,05	15,05	11,58
4.	14,46	11,92	14,68	11,37
5.	14,59	11,95	15,17	11,79
6.	14,85	11,54	14,83	11,92
7.	14,55	11,74	14,79	11,82
8.	14,95	11,62	14,99	11,45
9.	14,43	11,62	14,54	11,58
10.	14,12	11,98	14,68	11,36
Rata-rata	14,63	11,83	14,86	11,61
± SD	±0,26	±0,19	±0,28	±0,21
SDrel	1,78	1,57	1,91	1,84

Replikasi II

N0.	Kekerasan Tablet Kaptopril (kp)			
	Formula	Formula	Formula	Formula
	A	B	C	D
1.	14,48	12,10	15,37	11,12
2.	14,81	12,00	15,37	12,37
3.	14,67	11,92	15,31	11,75
4.	14,48	12,24	14,81	11,63
5.	14,81	12,26	15,07	11,36
6.	14,87	12,24	15,12	11,56
7.	14,92	11,87	15,29	11,68
8.	14,60	12,17	14,80	11,75
9	14,68	12,05	15,34	12,01
10.	14,36	11,98	14,78	11,70
Rata-rata	14,67	12,08	15,13	11,68
± SD	±0,19	±0,14	±0,25	±0,18
SDrel	1,28	1,17	1,64	1,58



Replikasi III

N0.	Kekerasan Tablet Kaptopril (kp)			
	Formula A	Formula B	Formula C	Formula D
1.	14,99	11,87	15,18	11,55
2.	14,92	11,31	15,30	11,75
3.	14,87	11,88	15,06	11,68
4.	14,97	11,68	15,23	11,89
5.	14,55	11,87	14,70	11,93
6.	14,45	11,35	15,24	11,37
7.	14,87	11,49	14,57	11,56
8.	14,87	11,41	15,45	11,49
9.	14,89	11,54	14,70	11,91
10.	14,55	11,68	15,19	11,88
Rata-rata	14,79	11,61	15,06	11,71
±SD	±1,33	±0,19	±0,30	±0,22
SDrel	1,33	1,89	1,98	1,87

LAMPIRAN C

HASIL UJI KERAPUHAN TABLET KAPTOPRIL

Formula A

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6,11	6,09	0,32733
II	6,12	6,10	0,32680
III	6,09	6,07	0,32841
Rata-rata=			0,32751
SD=			0,000819882
KV=			0,2503364

Formula B

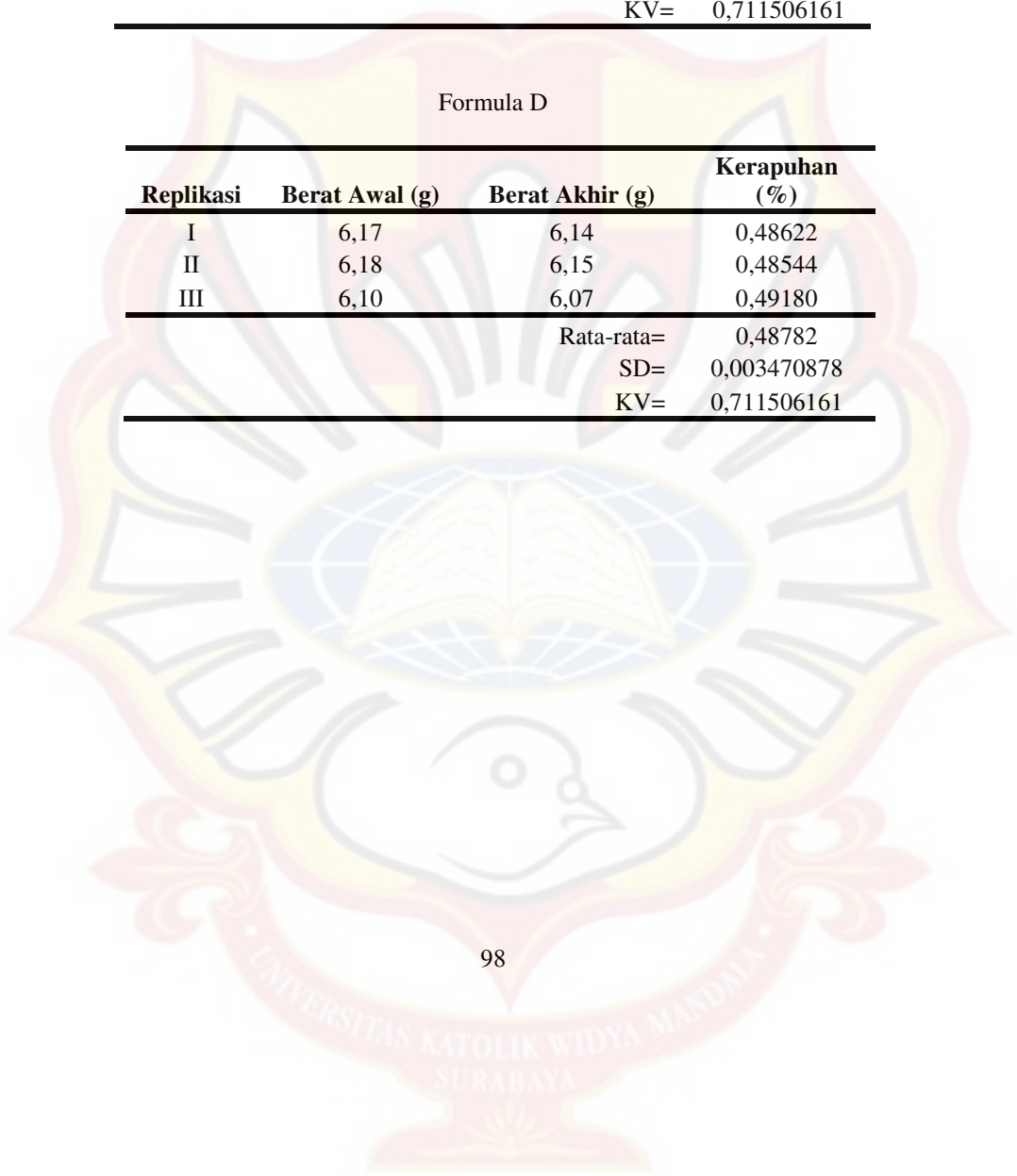
replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6,15	6,12	0,48780
II	6,18	6,15	0,48544
III	6,14	6,11	0,48860
Rata-rata=			0,48728
SD=			0,001645178
KV=			0,337624468

Formula C

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6,17	6,15	0,32415
II	6,18	6,16	0,32362
III	6,10	6,08	0,32787
Rata-rata=			0,32521
SD=			0,002313919
KV=			0,711506161

Formula D

Replikasi	Berat Awal (g)	Berat Akhir (g)	Kerapuhan (%)
I	6,17	6,14	0,48622
II	6,18	6,15	0,48544
III	6,10	6,07	0,49180
Rata-rata=			0,48782
SD=			0,003470878
KV=			0,711506161



LAMPIRAN D

HASIL PENETAPAN KADAR TABLET KAPOPRIL

Formula A

<i>Replikasi</i>	<i>Absorbansi</i>	<i>C Sampel</i>	<i>C teotiris</i>	<i>Kadar %</i>
I	0,5370	9,15201192	9,021	101,4522993
II	0,5470	9,30104322	9,204	101,0543592
III	0,5500	9,34575261	9,288	100,6217981
Rata-rata =				101,0428189
SD =				0,41537
KV =				0,4110831

Formula B

<i>Replikasi</i>	<i>Absorbansi</i>	<i>C Sampel</i>	<i>C teotiris</i>	<i>Kadar %</i>
I	0,5370	9,19672131	9,036	101,7786776
II	0,5470	9,46497765	9,255	102,2688022
III	0,5500	9,31594635	9,156	101,746902
Rata-rata =				101,9314606
SD =				0,44975
KV =				0,4412279

Formula C

replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0,546	9,286140089	9,222	100,695512
II	0,545	9,271236960	9,051	102,433289
III	0,557	9,450074516	9,228	102,406529
Rata-rata =				101,8451099
SD =				0,29257
KV =				0,2872696

Formula D

replikasi	Absorbansi	C Sampel	C teotiris	Kadar %
I	0,546	9,420268256	9,144	103,021306
II	0,545	9,315946349	9,084	102,55335
III	0,538	9,166915052	9,165	100,020895
Rata-rata =				101,865184
SD =				1,61425
KV =				1,5846926

LAMPIRAN E
HASIL UJI DISOLUSI TABLET LEPAS LAMBAT KAPTOPRIL

Formula A

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	32,78	33,21	32,78	32,92	0,20	0,62
60	33,21	34,38	33,95	33,85	0,48	1,43
90	35,21	35,85	35,55	35,54	0,26	0,74
120	36,72	38,04	37,31	37,36	0,54	1,45
180	47,11	44,91	45,65	45,89	0,91	1,99
240	48,13	47,55	48,86	48,18	0,54	1,11
300	49,89	49,16	49,59	49,55	0,30	0,60
360	51,5	50,47	50,76	50,91	0,43	0,85

Formula B

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	44,73	42,82	44,29	43,95	0,82	1,86
60	45,75	45,75	45,9	45,80	0,07	0,15
90	47,51	50,15	50,88	49,51	1,45	2,92
120	58,95	60,41	60,85	60,07	0,81	1,35
180	62,32	60,85	61,44	61,54	0,60	0,98
240	64,08	62,91	63,93	63,64	0,52	0,82
300	65,84	64,66	66,13	65,54	0,64	0,97
360	67,01	67,3	67,89	67,40	0,37	0,54

Formula C

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	40,25	39,08	39,37	39,57	0,50	1,26
60	42,59	39,67	39,81	40,69	1,34	3,30
90	44,64	40,4	42,01	42,35	1,75	4,13
120	45,23	42,45	43,91	43,86	1,14	2,59
180	47,13	45,67	46,84	46,55	0,63	1,36
240	48,45	49,62	50,06	49,38	0,68	1,38
300	54,88	52,54	53,27	53,56	0,98	1,83
360	57,37	58,1	57,81	57,76	0,30	0,52

Formula D

Waktu	Replikasi			Rata-rata	SD	KV
	I	II	III			
30	62,15	60,97	66,85	63,32	2,54	4,01
60	63,32	63,76	67,58	64,89	1,91	2,95
90	65,09	66,11	70,81	67,34	2,49	3,70
120	66,26	69,35	75,37	70,33	3,78	5,38
180	77,86	74,93	78,31	77,03	1,50	1,95
240	80,95	79,48	79,19	79,87	0,77	0,96
300	90,94	92,55	89,47	90,99	1,26	1,38
360	97,11	94,9	96,08	96,03	0,90	0,94

LAMPIRAN F

HASIL UJI *FLOATING LAG TIME* TABLET LEPAS LAMBAT
KAPTOPRIL

Formula A

Replikasi	<i>Floating lag time</i> (menit)	Rata-rata	SD	KV (%)
I	1,53			
II	1,55			
III	1,56	1,54	0,015	0,99

Formula B

replikasi	<i>Floating lag time</i> (menit)	Rata-rata	SD	KV (%)
I	0,68			
II	0,65			
III	0,75	0,665	0,051	0,99

Formula C

replikasi	<i>Floating lag time</i> (menit)	Rata-rata	SD	KV (%)
I	0,31			
II	0,38			
III	0,40	0,345	0,047	0,99

Formula D

replikasi	<i>Floating lag time</i> (menit)	Rata-rata	SD	KV (%)
I	0,25			
II	0,23			
III	0,28	0,24	0,025	0,99

LAMPIRAN G

HASIL KESERAGAMAN KANDUNGAN

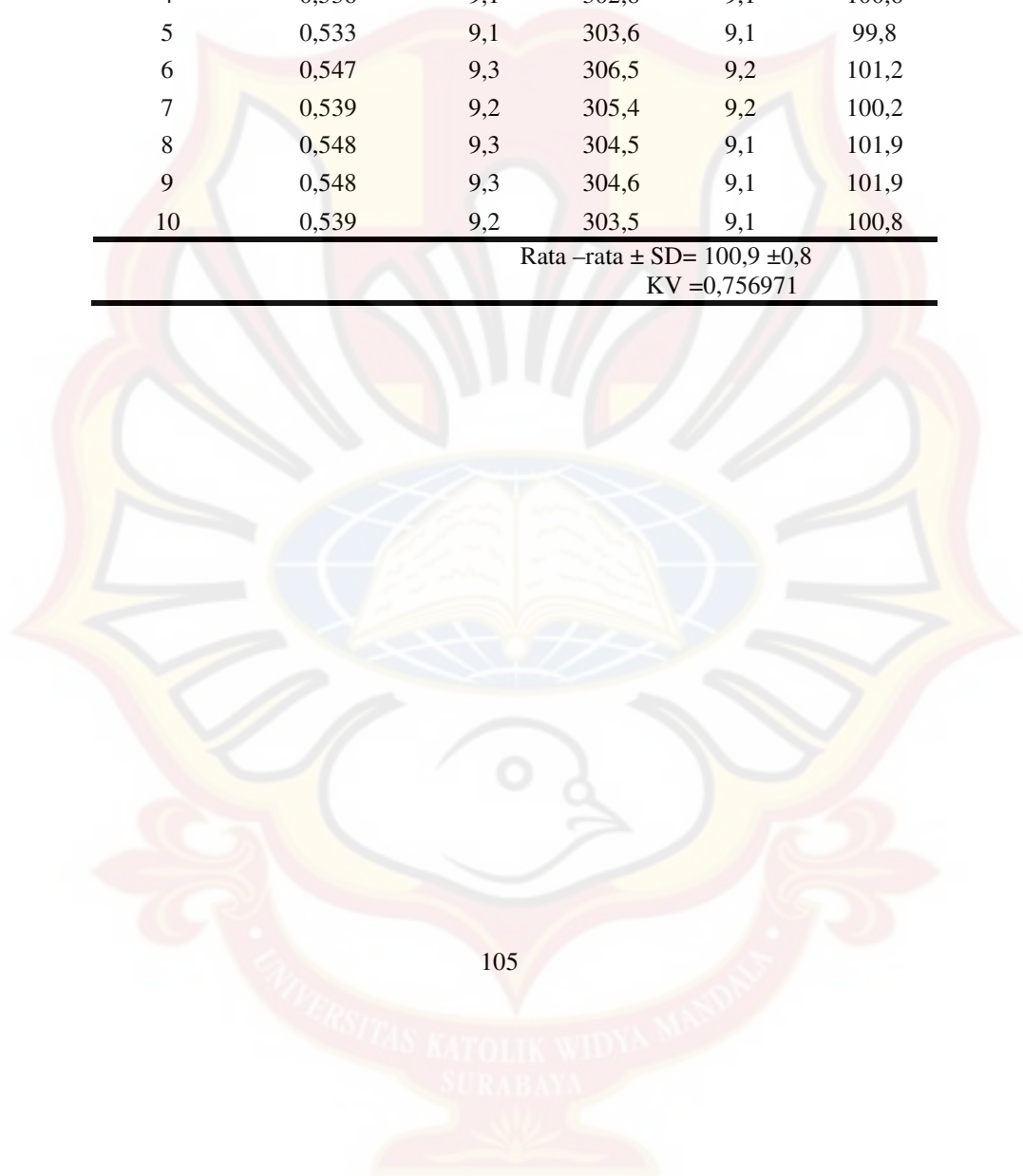
Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi I

Replikasi	Absorbansi	C sampel	W sampel (mg)	C teoritis	Kadar (%)
1	0,531	9,0	301,1	9,0	100,3
2	0,541	9,2	300,9	9,0	102,0
3	0,543	9,2	297,6	8,9	103,5
4	0,535	9,1	301,8	9,1	100,8
5	0,532	9,1	298,8	8,9	101,3
6	0,547	9,3	294,5	8,8	105,3
7	0,536	9,1	300,6	9,0	101,3
8	0,545	9,3	305,3	9,2	101,2
9	0,547	9,3	303,3	9,1	102,2
10	0,539	9,2	301,0	9,0	101,7

Rata-rata \pm SD = 101,96 \pm 1,4
KV = 1,42862

Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,539	9,2	304,5	9,1	100,5
2	0,545	9,3	303,4	9,1	101,9
3	0,543	9,2	306,5	9,2	100,5
4	0,536	9,1	302,8	9,1	100,6
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,2
7	0,539	9,2	305,4	9,2	100,2
8	0,548	9,3	304,5	9,1	101,9
9	0,548	9,3	304,6	9,1	101,9
10	0,539	9,2	303,5	9,1	100,8
Rata-rata ± SD= 100,9 ±0,8					
KV =0,756971					



Hasil Uji Keseragaman Kandungan Tablet Formula A replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,536	9,1	304,5	9,1	100,0
2	0,541	9,2	303,4	9,1	101,2
3	0,533	9,1	306,5	9,2	98,9
4	0,536	9,1	302,8	9,1	100,6
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,1
7	0,539	9,2	305,4	9,2	100,2
8	0,547	9,3	304,5	9,1	101,8
9	0,546	9,3	304,6	9,1	101,6
10	0,534	9,1	303,5	9,1	100,0
Rata-rata ± SD=					100,53±0,91
KV =					0,90832237

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,539	9,2	304,5	9,2	100,5
2	0,545	9,3	303,4	9,1	101,9
3	0,543	9,2	306,5	9,2	100,5
4	0,53	9,0	302,8	9,1	99,6
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,2
7	0,539	9,2	305,4	9,2	100,2
8	0,548	9,3	304,5	9,1	101,9
9	0,548	9,3	304,6	9,1	101,9
10	0,539	9,2	303,5	9,1	100,8
Rata-rata \pm SD=					100,84 \pm 0,87
KV =					0,864013

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,535	9,1	304,5	9,1	99,9
2	0,529	9,0	303,4	9,1	99,2
3	0,543	9,2	306,5	9,2	100,5
4	0,531	9,1	302,8	9,1	99,8
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,2
7	0,533	9,1	305,4	9,2	99,2
8	0,548	9,3	304,5	9,1	101,9
9	0,548	9,3	304,6	9,1	101,9
10	0,541	9,2	303,5	9,1	101,2
Rata-rata \pm SD=					100,46 \pm 1,04
KV =					1,035013

Hasil Uji Keseragaman Kandungan Tablet Formula B replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,532	9,1	304,5	9,1	99,4
2	0,545	9,3	303,4	9,1	101,9
3	0,543	9,2	306,5	9,2	100,5
4	0,535	9,1	302,8	9,1	100,4
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,2
7	0,539	9,2	305,4	9,2	100,2
8	0,546	9,3	304,5	9,1	101,7
9	0,548	9,3	304,6	9,1	101,9
10	0,539	9,2	303,5	9,1	100,8

Rata-rata ± SD= 100,78±0,87

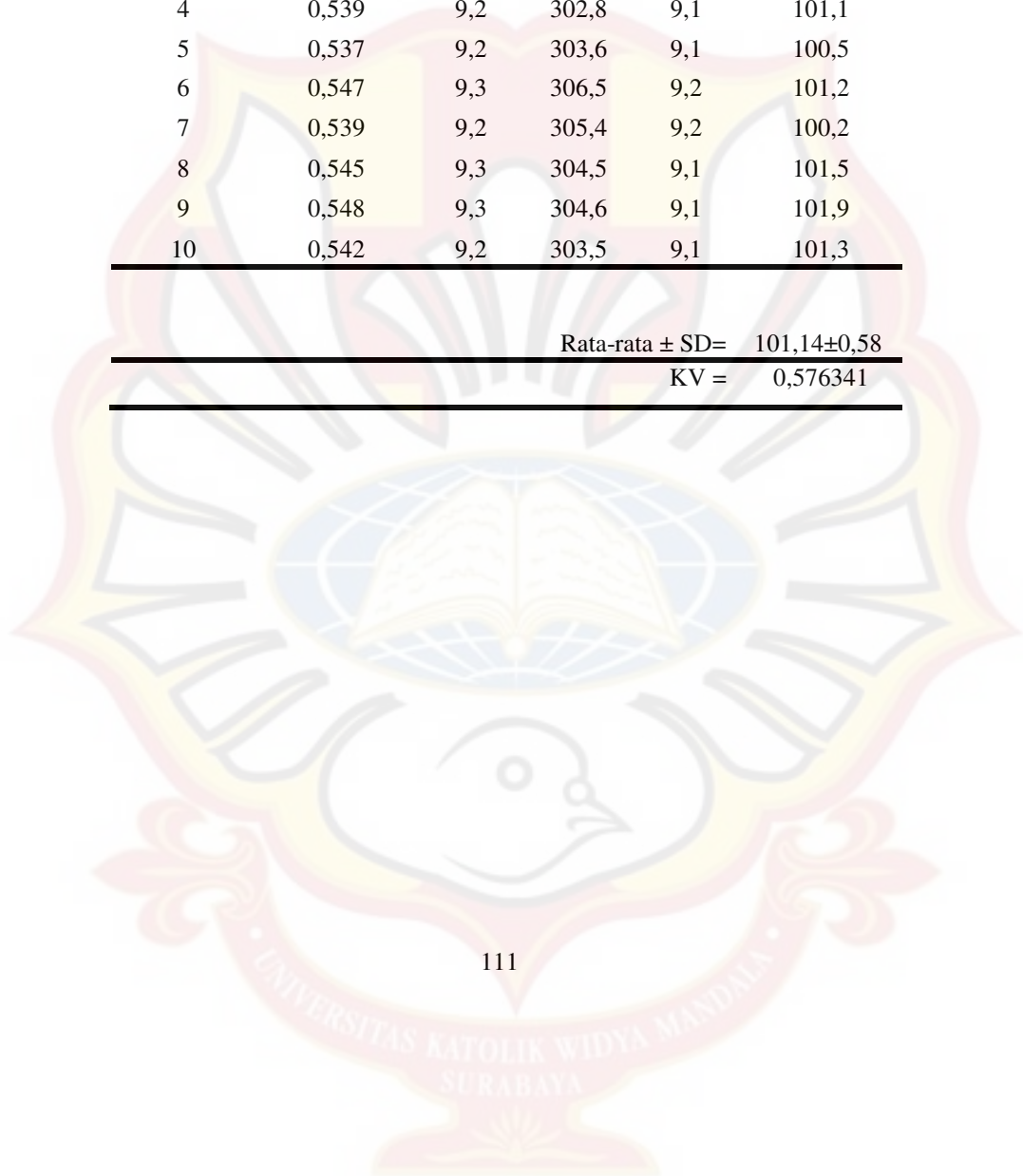
KV = 0,865663

Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,536	9,1	304,5	9,1	100,0
2	0,545	9,3	303,4	9,1	101,9
3	0,543	9,2	306,5	9,2	100,5
4	0,534	9,1	302,8	9,1	100,3
5	0,533	9,1	303,6	9,1	99,8
6	0,547	9,3	306,5	9,2	101,2
7	0,539	9,2	305,4	9,2	100,2
8	0,545	9,3	304,5	9,1	101,5
9	0,548	9,3	304,6	9,1	101,9
10	0,539	9,2	303,5	9,1	100,8
Rata-rata \pm SD =					100,8 \pm 0,77
KV =					0,762054

Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,544	9,3	304,5	9,1	101,3
2	0,545	9,3	303,4	9,1	101,9
3	0,543	9,2	306,5	9,2	100,5
4	0,539	9,2	302,8	9,1	101,1
5	0,537	9,2	303,6	9,1	100,5
6	0,547	9,3	306,5	9,2	101,2
7	0,539	9,2	305,4	9,2	100,2
8	0,545	9,3	304,5	9,1	101,5
9	0,548	9,3	304,6	9,1	101,9
10	0,542	9,2	303,5	9,1	101,3
Rata-rata ± SD=					101,14±0,58
KV =					0,576341



Hasil Uji Keseragaman Kandungan Tablet Formula C replikasi III

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C Teori -tis	Kadar (%)
1	0,543	9,2	304,5	9,1	101,2
2	0,536	9,1	303,4	9,1	100,4
3	0,543	9,2	306,5	9,2	100,5
4	0,539	9,2	302,8	9,1	101,1
5	0,537	9,2	303,6	9,1	100,5
6	0,548	9,3	306,5	9,2	101,3
7	0,539	9,2	305,4	9,2	100,2
8	0,542	9,2	304,5	9,1	101,0
9	0,548	9,3	304,6	9,1	101,9
10	0,541	9,2	303,5	9,1	101,2
Rata-rata ± SD=					100,93±0,5
KV =					0,523177

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi I

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,543	9,2	304,5	9,1	101,2
2	0,528	9,0	303,4	9,1	99,1
3	0,543	9,2	306,5	9,2	100,5
4	0,539	9,2	302,8	9,1	101,1
5	0,537	9,2	303,6	9,1	100,5
6	0,528	9,0	306,5	9,2	98,1
7	0,539	9,2	305,4	9,2	100,2
8	0,542	9,2	304,5	9,1	101,0
9	0,539	9,2	304,6	9,1	100,5
10	0,541	9,2	303,5	9,1	101,2
Rata-rata ± SD=					100,3±1,00
KV =					1,005941

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi II

Replikasi	Absorbansi	C sampel	W Sampel (mg)	C teoritis	Kadar (%)
1	0,537	9,2	304,5	9,1	100,2
2	0,528	9,1	303,4	9,1	99,1
3	0,54	9,2	306,5	9,2	100,0
4	0,539	9,2	302,8	9,1	101,0
5	0,537	9,2	303,6	9,1	100,5
6	0,528	9,0	306,5	9,2	98,1
7	0,539	9,2	305,4	9,2	100,2
8	0,542	9,2	304,5	9,1	101,0
9	0,530	9,0	304,6	9,1	99,0
10	0,542	9,2	303,5	9,1	101,3
rata-rata ± SD=					100±1,0
KV =					1,041849

Hasil Uji Keseragaman Kandungan Tablet Formula D replikasi III

Replikasi	Absorbansi	C sampel	W		Kadar (%)
			Sampel (mg)	C teoritis	
1	0,534	9,1	304,5	9,135	99,7
2	0,526	8,9	303,4	9,102	98,7
3	0,54	9,2	306,5	9,195	100,0
4	0,533	9,1	302,8	9,084	100,1
5	0,537	9,2	303,6	9,108	100,5
6	0,527	9,0	306,5	9,195	97,9
7	0,539	9,2	305,4	9,162	100,2
8	0,541	9,2	304,5	9,135	100,8
9	0,532	9,1	304,6	9,138	99,33
10	0,543	9,2	303,5	9,105	101,5
Rata-rata ± SD =					99,88±1,03
KV =					1,031942

Semua formula di atas memenuhi persyaratan keseragaman kandungan dimana jumlah zat aktif terletak antara 90-110% dan simpangan baku relatif kurang dari 6,0% (Anonim, 1995)

LAMPIRAN H

HASIL UJI DISOLUSI TABLET LEPAS LAMBAT KAPTOPRIL

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula A

Replikasi	t (menit)	Absor- bansi	Csampel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0,147	3,34	16,70	250,48
	60	0,150	3,38	16,92	504,32
	90	0,163	3,58	17,89	522,21
	120	0,174	3,74	18,71	549,03
	180	0,245	4,80	24,00	1281,37
	240	0,252	4,90	24,52	1455,74
	300	0,264	5,08	25,42	1498,21
	360	0,275	5,25	26,24	1549,63
			Σ =		7610,99
II	30	0,150	3,38	16,92	253,84
	60	0,158	3,50	17,52	516,62
	90	0,168	3,65	18,26	536,74
	120	0,183	3,88	19,38	564,68
	180	0,230	4,58	22,88	1267,96
	240	0,248	4,85	24,23	1413,26
	300	0,259	5,01	25,04	1478,09
	360	0,268	5,14	25,72	1522,80
			Σ =		7553,99
III	30	0,147	3,34	16,70	250,48
	60	0,155	3,46	17,30	509,91
	90	0,166	3,62	18,11	531,15
	120	0,178	3,80	19,01	556,86
	180	0,235	4,65	23,26	1267,96
	240	0,257	4,98	24,90	1444,56
	300	0,262	5,05	25,27	1504,92
	360	0,270	5,17	25,86	1533,98
			Σ =		7599,81

Keterangan: Abs=absorbansi sampel, Csampel=konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula B

Replikasi	t (menit)	Absorbansi	Csmpel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0,215	4,35	21,77	326,49
	60	0,235	4,65	23,26	675,34
	90	0,265	5,10	25,49	731,22
	120	0,335	6,14	30,71	843,00
	180	0,338	6,19	30,93	1849,18
	240	0,352	6,39	31,97	1887,18
	300	0,364	6,57	32,87	1945,31
	360	0,382	6,84	34,21	2012,37
			Σ =		10270,08
II	30	0,225	4,50	22,51	337,67
	60	0,236	4,67	23,33	687,63
	90	0,270	5,17	25,86	737,93
	120	0,338	6,19	30,93	851,94
	180	0,342	6,25	31,23	1864,83
	240	0,359	6,50	32,50	1911,77
	300	0,374	6,72	33,61	1983,31
	360	0,386	6,90	34,51	2043,67
			Σ =		10418,74
III	30	0,228	4,55	22,73	341,02
	60	0,235	4,65	23,26	689,87
	90	0,247	4,83	24,15	711,10
	120	0,325	5,99	29,96	811,70
	180	0,348	6,34	31,68	1849,18
	240	0,360	6,51	32,57	1927,42
	300	0,372	6,69	33,46	1981,07
	360	0,380	6,81	34,06	2025,78
			Σ =		10337,15

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula C

Replikasi	t (menit)	Absorbansi	Csmpel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0,198	4,100	20,50	307,49
	60	0,214	4,338	21,69	632,86
	90	0,228	4,547	22,73	666,39
	120	0,232	4,607	23,03	686,51
	180	0,245	4,800	24,00	1411,03
	240	0,254	4,934	24,67	1460,21
	300	0,298	5,590	27,95	1578,69
	360	0,315	5,844	29,22	1715,05
			Σ =		8458,23
II	30	0,190	3,981	19,90	298,55
	60	0,194	4,040	20,20	601,56
	90	0,199	4,115	20,57	611,62
	120	0,213	4,323	21,62	632,86
	180	0,235	4,651	23,26	1346,20
	240	0,262	5,054	25,27	1455,74
	300	0,282	5,352	26,76	1560,80
	360	0,320	5,918	29,59	1690,46
			Σ =		8197,80
III	30	0,192	4,010	20,05	300,78
	60	0,195	4,055	20,28	604,92
	90	0,210	4,279	21,39	625,04
	120	0,223	4,472	22,36	656,33
	180	0,243	4,770	23,85	1386,44
	240	0,265	5,098	25,49	1480,33
	300	0,287	5,426	27,13	1578,69
	360	0,318	5,888	29,44	1697,17
			Σ =		8329,69

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = kaptopril yang terlarut.

Hasil Uji Disolusi Tablet Lepas Lambat Kaptopril Formula D

Replikasi	t (menit)	Absorbansi	Csmpel (µg/ml)	Wt (mg)	AUC (mg.menit)
I	30	0,346	6,306	31,53	472,91
	60	0,354	6,425	32,12	954,77
	90	0,366	6,604	33,02	977,12
	120	0,374	6,723	33,61	999,48
	180	0,453	7,900	39,50	2193,44
	240	0,474	8,213	41,07	2416,99
	300	0,542	9,227	46,13	2615,95
	360	0,584	9,852	49,26	2861,85
			Σ =		13492,51
II	30	0,338	6,186	30,93	463,97
	60	0,357	6,469	32,35	949,18
	90	0,373	6,708	33,54	988,30
	120	0,395	7,036	35,18	1030,77
	180	0,433	7,602	38,01	2195,68
	240	0,464	8,064	40,32	2349,93
	300	0,553	9,390	46,95	2618,18
	360	0,569	9,629	48,14	2852,91
			Σ =		13448,92
III	30	0,378	6,782	33,91	508,68
	60	0,383	6,857	34,28	1022,95
	90	0,405	7,185	35,92	1053,13
	120	0,436	7,647	38,23	1112,37
	180	0,456	7,945	39,72	2338,75
	240	0,462	8,034	40,17	2396,87
	300	0,532	9,077	45,39	2566,77
	360	0,577	9,748	48,74	2823,85
			Σ =		13823,36

Keterangan: Abs = absorbansi sampel, C sampel = konsentrasi sampel, Wt = jumlah kaptopril yang terlarut.

LAMPIRAN I

CONTOH PERHITUNGAN

Contoh perhitungan sudut diam:

Formula A:

$$W \text{ persegi panjang} = 3,50 \text{ gram}$$

$$W \text{ lingkaran} = 0,47 \text{ gram}$$

$$\begin{aligned} \text{Luas persegi panjang} &= 31,9 \times 21,2 \\ &= 676,28 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Luas lingkaran} &= \frac{0,47}{3,50} \times 676,28 = 90,81 \text{ cm}^2 \end{aligned}$$

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

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

$$= \frac{90,81}{3,14} = 28,92$$

$$r = 5,378 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{2,95}{5,378} = 0,5485$$

$$\alpha = 28,75^\circ$$

Contoh perhitungan indeks kompresibilitas:

Formula A :

$$\text{Berat gelas} = 127,46 \text{ g } (W_1)$$

$$\text{Berat gelas + granul} = 175,67 \text{ g } (W_2)$$

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

$$V_2 = 90 \text{ ml}$$

$$\text{Bj nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{(175,67 - 127,46)}{100} = 0,4821$$

$$\text{Bj mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{(175,67 - 127,46)}{90} = 0,54$$

$$\% \text{ kompresibilitas} = \left(1 - \frac{\text{Bj.nyata}}{\text{Bj.mampat}} \right) \times 100\% = 11,1\%$$

Contoh perhitungan akurasi & presisi:

%	Bahan aktif (mg)	Matriks (mg)	+Larutan HCl pH 1,0 ad	Pipet (ml)	+Larutan HCl pH 1,0 ad	Konsentrasi (ppm)
100	50	250	100	0,18	10	9

Absorbansi = 0,546 → $y = 0,0671 - 0,0771$

Konsentrasi sebenarnya = 9,420 ppm

Konsentrasi teoritis = 9,144 ppm

$$\begin{aligned} \% \text{ perolehan kembali} &= (\text{konsentrasi sebenarnya} / \text{konsentrasi teoritis}) \times 100\% \\ &= (9,420 / 9,144) \times 100\% \\ &= 103,02 \% \end{aligned}$$

$$\begin{aligned} \text{Untuk menghitung \% KV} &= \frac{SD}{\bar{X}} \times 100\% \\ &= \frac{0,415}{101,04} \times 100\% \\ &= 0,409 \% \end{aligned}$$

Contoh perhitungan W_t :

$W_t = C \times t$

Formula A replikasi 1 pada $t = 30$ menit

$W_t = 3,34 \times 5 = 16,70 \text{ mg}$

Contoh perhitungan % obat terlepas:

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

Formula A replikasi 1 pada $t = 30$ menit

$$\% \text{ obat terlepas} = \frac{16,70 \text{ mg}}{50,95 \text{ mg}} \times 100\% = 32,78\%$$

Contoh perhitungan AUC pada disolusi:

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

Formula A *batch* 1

$W_{t_{n-1}} = 16,70$

$W_{t_n} = 16,92$

$t_n = 60$ menit

$t_{n-1} = 30$ menit

$$\begin{aligned} \text{AUC} &= \frac{16,92 + 16,70}{2} \times (60 - 30) \\ &= 504,32 \end{aligned}$$

$$\begin{aligned} \% \text{ ED Formula A } \textit{batch} \textit{ 1} &= (\sum \text{AUC} / \text{luas } \square) \times 100\% \\ &= (7610,99/18342) \times 100\% \\ &= 41,49 \% \end{aligned}$$

Perhitungan persamaan orde nol:

Rumus: $C_t = C_0 - k \cdot t$

Dari persamaan regresi C_t *versus* t (waktu), maka didapatkan suatu persamaan regresi dan nilai r , *slope* serta *intersept*. Nilai k_{diss} adalah *slope*.

Perhitungan persamaan orde satu:

Rumus: $\ln(\bar{X} - C_t) = \ln C_0 - k \cdot t$

Dari persamaan regresi $\ln(\bar{X} - C_t)$ *versus* t (waktu), maka didapatkan suatu persamaan regresi dan nilai r , *slope* serta *intersept*. Nilai k_{diss} adalah $-slope$.

\bar{X} adalah rata-rata penetapan kadar.

Perhitungan persamaan Higuchi:

Rumus: $C_t = C_0 + k \cdot t^{1/2}$

Dari persamaan regresi C_t *versus* \sqrt{t} (waktu), maka didapatkan suatu persamaan regresi dan nilai r , *slope* serta *intersept*.

LAMPIRAN J
SERTIFIKAT ANALISIS BAHAN

Kaptopril :

Kunze / indopharm

P.T. Coronet Crown
Jl. Raya Taman Km 15
Taman Sidoarjo 61257
Indonesia

Date 05.03.2009



ANNO 1932

**Kunze Indopharm by
Pharmaceutical and
Veterinary Products**

Koningin Emmakade 171
2518 JN Den Haag
Holland
Telephone : 31-70-3247602
Fax : 31-70-3240318
e-mail / website:
office@kunze-indopharm.com
www.kunze-indopharm.com
Bankers:
ING Bank : 66.80.02.166
Postbank : 31.05.220
Chamber of Commerce
Den Haag no. 27132564
BTW/Vat. no. 007946089 B01

Your ref. PO.00136/BB/09

CERTIFICATE OF ANALYSIS

Product:	Captopril
Batch No. :	CQ0201
Date of mfg.:	08/01/2009
Date of expiry:	08/01/2012
Quantity:	10.0 kg
Package:	10.0 kg/drum

Tests	Specifications	Results
Characteristic	A white or almost white crystalline powder, free soluble in water, in methanol, in alcohol and in chloroform (96%)	Conform
Identification	Infrared absorption (197 K)	Positive
Melting range	104.0 – 110.0 °C	107.0 – 108.0 °C
Specific rotation	-125.0 – - 134.0 °	-132.0 °
Loss on drying	NMT 0.5 %	0.03 %
Residue on ignition	NMT 0.2 %	0.03 %
Heavy metals	NMT 30 ppm	< 30 ppm
Related substances		
Captopril disulfide	NMT 1.0 %	0.3 %
Single unknown impurity	NMT 0.2 %	Not detected
Total unknown impurities	NMT 0.5 %	Not detected
O.V.I.	As per USP31	Conform
Residual solvents	LOD NMT 0.5 %	0.03 %
Assay (on dried basis)	97.5 – 102.0 %	99.4 %

Conclusion: This batch of product complies with USP31.



PVP K-30:

杭州南杭化工有限公司
NANHANG INDUSTRIAL CO.,LTD
 地址:中国杭州市西湖区周浦乡姚家坞

CERTIFICATE OF ANALYSIS

Product	PVP K-30 USP/BP		
Batch No.	20051213	Quantity	2025KGS
Manufacture Date	DEC.,2005	Expiry Date	DEC.,2008
ITEMS	SPECIFICATIONS	TEST RESULTS	
Characteristics	A white, fine powder	Complies	
Identification	Positive	Positive	
Water	5% max	2.8%	
Residue on ignition	0.1% max	0.02%	
K-Value	27-32	30.7	
Heavy metals(Lead)	10ppm max	Complies	
Nitrogen	11.5%-12.8%	12.2%	
Vinylpyrrolidone	0.2% max	0.032%	
Aldehydes	0.05% max	Complies	
Ph Value	3.0-7.0	3.62	
Hydrazine	1ppm max	Complies	
Peroxides	400ppm max	Complies	
Microbial Limits(By annual verification test)	Salmonella	Negative	
	Coli	Negative	
	Coliforms <1CFU/gm	Conform	
	Standard Plate Count<10,000CFU/gm	Conform	
	Mold & Yeast <1,000 CFU/gm	Conform	
Conclusion: IT CONFORMS USP/BP			

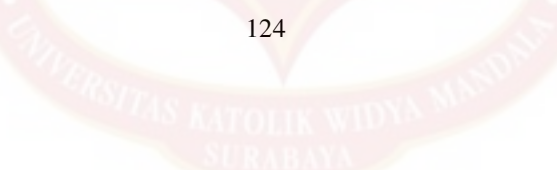
Analyst: Wang liu ling

Checker: li ling

Head of Q.C. Dept: Wang xiao fang




 PT. MEGASETIA AGUNG KINJA



Talkum :



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/5 JAKARTA, INDONESIA
NPWP.01.130.689.1-032.001

RE: 48 MT TALC POWDER HAICHEN SHIPPED PER V.SI "HUANDAO" V3192 FROM BAYUQUAN,
CHINA SEAPORT TO TG.PRIOK PORT, JAKARTA, INDONESIA ON/ABOUT 18 OCT 2003
DRAWN UNDER IRREVOCABLE DC NO.02/03U/0645 DD 19SBPT03 OF BANK NISP PT (SWIFT
ADDRESS : NISPIDJA)

COMMODITY : TALC POWDER HAICHEN
QUANTITY : 48 MT

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

 **BRATACO**
IMPORTER
MANUFACTURER
DISTRIBUTOR

Produced on behalf of
SUN PLAN DEVELOPMENT LIMITED
1514
MANUFACTURER
DISTRIBUTOR

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/5 JAKARTA, INDONESIA
NPWP.01.130.689.1-032.001

RE: 48 MT TALC POWDER HAICHEN SHIPPED PER V.SL "HUANDAO" V3192 FROM BAYUQUAN,
CHINA SEAPORT TO TG.PRIOK PORT, JAKARTA, INDONESIA ON/ABOUT 18 OCT 2003
DRAWN UNDER IRREVOCABLE DC NO.02/03U/0645 DD 19SEPT03 OF BANK NISP PT (SWIFT
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FINENESS :	98.5% PASSING THROUGH 325 MESH
PH :	7.9
MOISTURE :	0.38%
ASBESTOS :	FREE

BRATACO
IMPORTER
MANUFACTURER
DISTRIBUTOR

For and on behalf of
SUN PLAN DEVELOPMENT LTD
15/10/2003
WIPORALA
MANUFACTURER
DISTRIBUTOR

Kalsium sulfat :



SIGMA-ALDRICH

Certificate of Analysis

Product Name Calcium sulfate dihydrate,
puriss. p.a., ACS reagent, ≥99%
Product Number 31221
Product Brand Riedel-de Haën
CAS Number 10101-41-4
Molecular Formula CaSO₄ · 2H₂O
Molecular Weight 172.17

TEST

assay
insoluble in HCl
iron (Fe)
potassium (K)
magnesium (Mg)
sodium (Na)
strontium (Sr)
heavy metals (as Pb)
carbonate (CO₃)
chloride (Cl)
nitrate (NO₃)

LOT 31870 RESULTS

Reag. ACS

102.0 %

< 0.02 %

< 0.001 %

< 0.005 %

< 0.02 %

< 0.02 %

< 0.05 %

< 0.002 %

complying

< 0.005 %

complying

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

QC-Releasedate

08.Jul.03

rec. Retest Date

18.Dec.06

Andreas Tomczak, Manager
Quality Control
Seelze Germany

FeCl₃ :



Certificate of Analysis

<http://certificates.merck.de>

Date of print: 12.04.2010

1.03943.0250 Iron(III) chloride hexahydrate GR for analysis
ACS,Reag. Ph Eur
Batch B0444943

	Spec. Values		Batch Values	
Assay (iodometric, FeCl ₃ ·6H ₂ O)	99.0 - 102.0	%	99.6	%
Identity	passes test		passes test	
Insoluble matter	≤ 0.01	%	≤ 0.01	%
Free chlorine	passes test		passes test	
Acidic substances	passes test		passes test	
Nitrate (NO ₃)	≤ 0.01	%	≤ 0.01	%
Sulphate (SO ₄)	≤ 0.01	%	≤ 0.01	%
Total nitrogen (N)	≤ 0.001	%	≤ 0.001	%
Total phosphorus (as PO ₄)	≤ 0.01	%	≤ 0.01	%
Heavy metals (as Pb)	≤ 0.005	%	≤ 0.005	%
Ca (Calcium)	≤ 0.01	%	≤ 0.01	%
Cu (Copper)	≤ 0.003	%	≤ 0.003	%
Fe II (Iron II)*	≤ 0.002	%	≤ 0.002	%
K (Potassium)	≤ 0.005	%	≤ 0.005	%
Mg (Magnesium)	≤ 0.005	%	≤ 0.005	%
Na (Sodium)	≤ 0.05	%	≤ 0.05	%
Zn (Zinc)	≤ 0.003	%	≤ 0.003	%

* The Fe(II)-content increases if the recommended storage conditions (+15 to +25 °C) are not observed.

PEDIARUN
SURABAYA

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0

Page 1 of 2

Certificate of Analysis

1.03943.0250 Iron(III) chloride hexahydrate GR for analysis
ACS.Reag. Ph Eur
Batch B0444943

Test date (DD.MM.YYYY): 16.10.2009
Minimum shelf life (DD.MM.YYYY): 31.10.2012

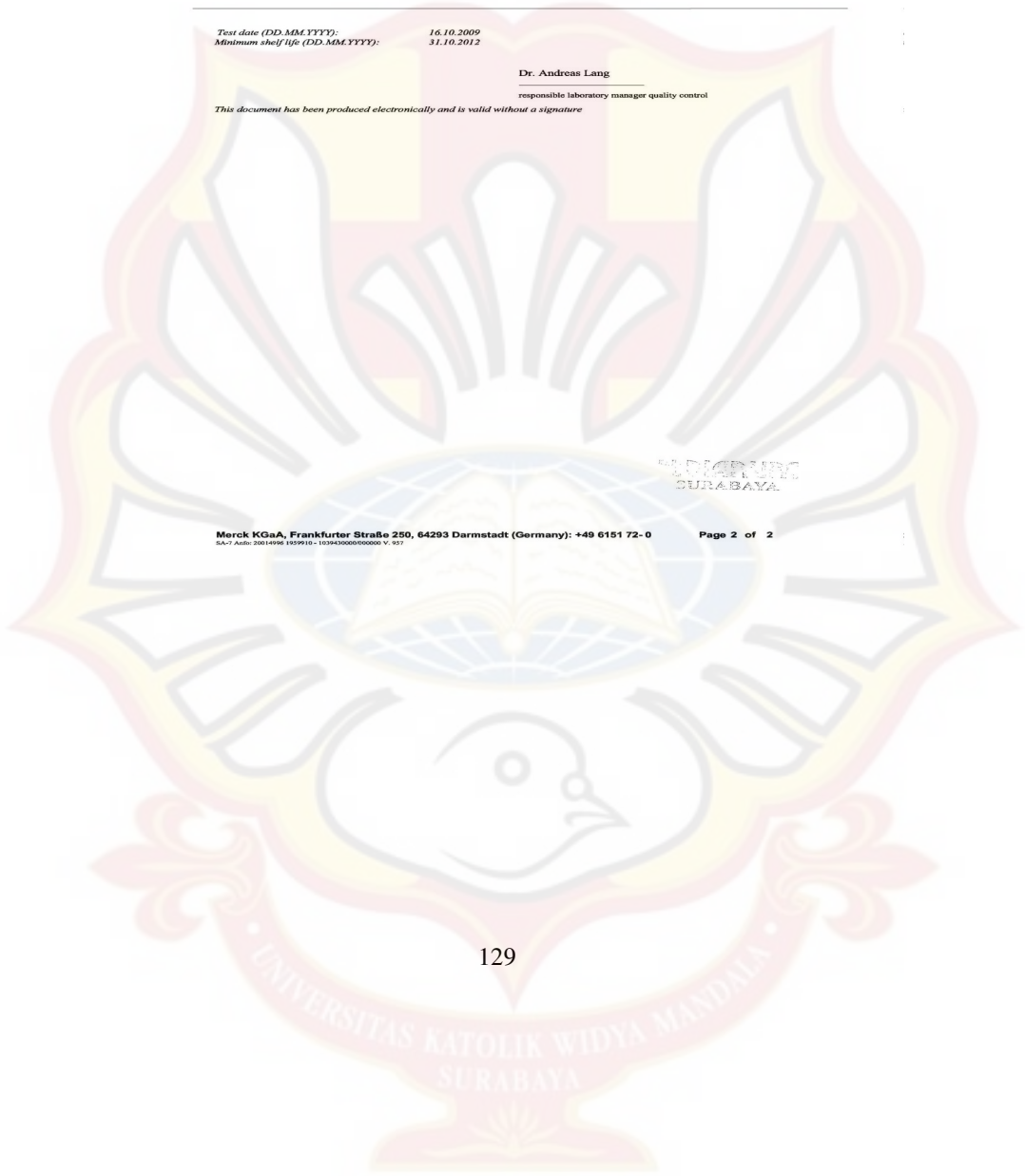
Dr. Andreas Lang

responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0
SA-7 Add: 2014196 143910 - 10394300000000 V. 021

Page 2 of 2



LAMPIRAN K

TABEL F

Tabel Distribusi F

Denomins for Degrees of Freedom	Numerator Degrees of Freedom								
	1	2	3	4	5	6	7	8	9
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5
2	18.81	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38
3	10.73	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88

(Sumber: John E., 1992)

LAMPIRAN L

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 M
TABEL UJI HSD (0,05)

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

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

Sumber: Scheffler (1987).

LAMPIRAN N

HASIL UJI STATISTIK KEKERASAN TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	3	44,09	14,698	0,01
Column 2	3	35,52	11,84	0,06
Column 3	3	45,04	15,01	0,02
Column 4	3	35	11,67	0,00

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	29,06	3	9,689	449,3982	2,97E-09	4,066
Within Groups	0,172	8	0,022			
Total	29,240	11				

Keterangan: $F_{hitung} = 449,40 > F_{0,05} = 3,59$ sehingga H_0 ditolak dan ada perbedaan yang bermagna antar formula.

Hasil Uji HSD Kekerasan Tablet

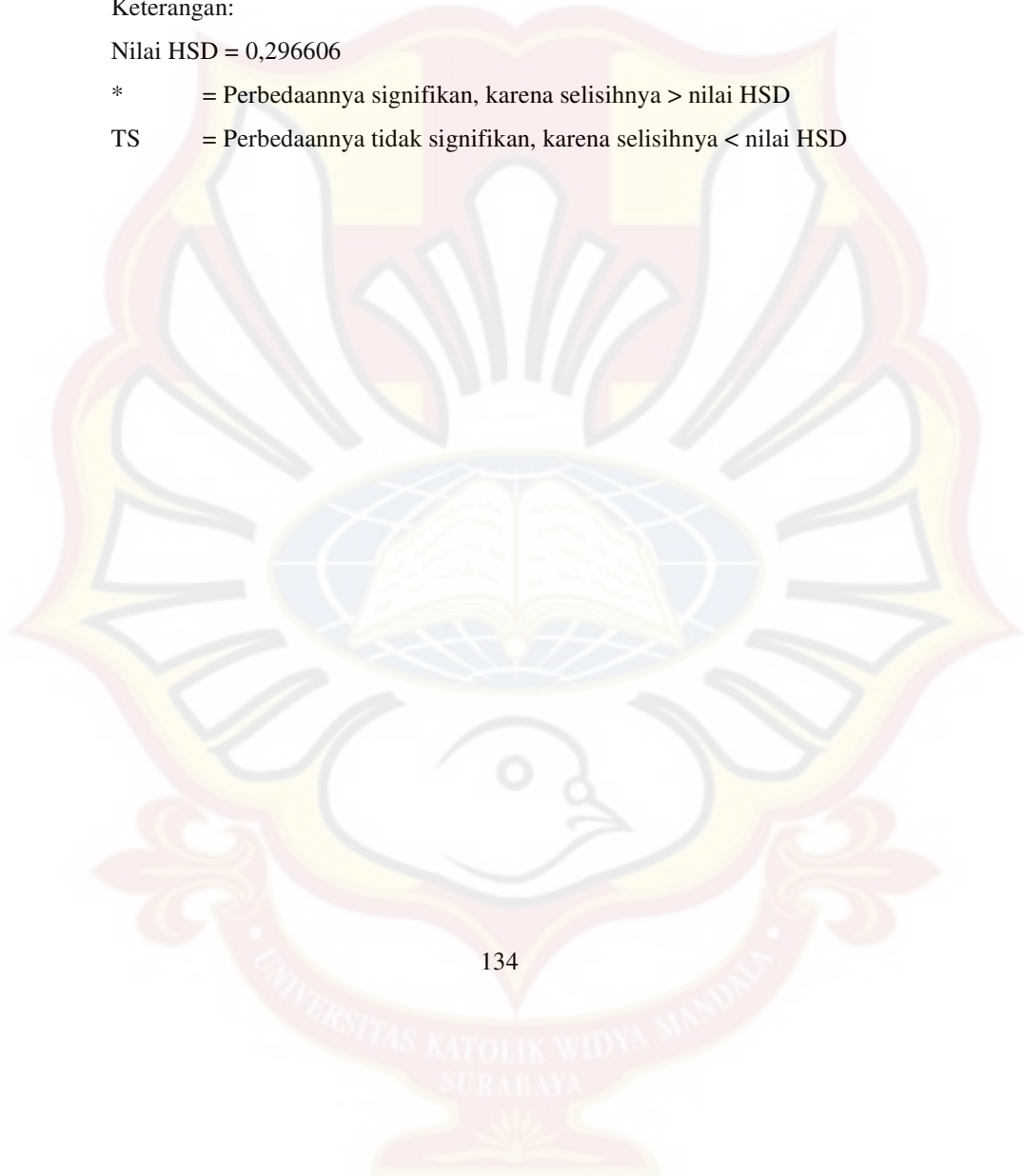
		FA	FB	FC	FD
Perlakuan	Mean	14,6	11,8	15,01	11,667
FA	14,698	0	-2,86 *	0,315 *	-3,031 *
FB	11,84		0	3,173 *	-0,173 TS
FC	15,01333			0	-3,346 *
FD	11,66667				0

Keterangan:

Nilai HSD = 0,296606

* = Perbedaannya signifikan, karena selisihnya > nilai HSD

TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD



LAMPIRAN O

HASIL UJI STATISTIK KERAPUHAN TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	3	0,983	0,328	6,71E-07
Column 2	3	1,462	0,487	2,71E-06
Column 3	3	0,976	0,325	5,35E-06
Column 4	3	1,463	0,488	1,2E-05

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0,08	3	0,03	5002,12	1,98E-13	4,07
Within Groups	4,16E-05	8	5,19E-06			
Total	0,08	11				

Keterangan: $F_{hitung} = 5002,1 > F_{0,05} = 3,59$ sehingga H_0 ditolak dan ada perbedaan bermagna antar formula.

Hasil Uji HSD Kerapuhan Talet

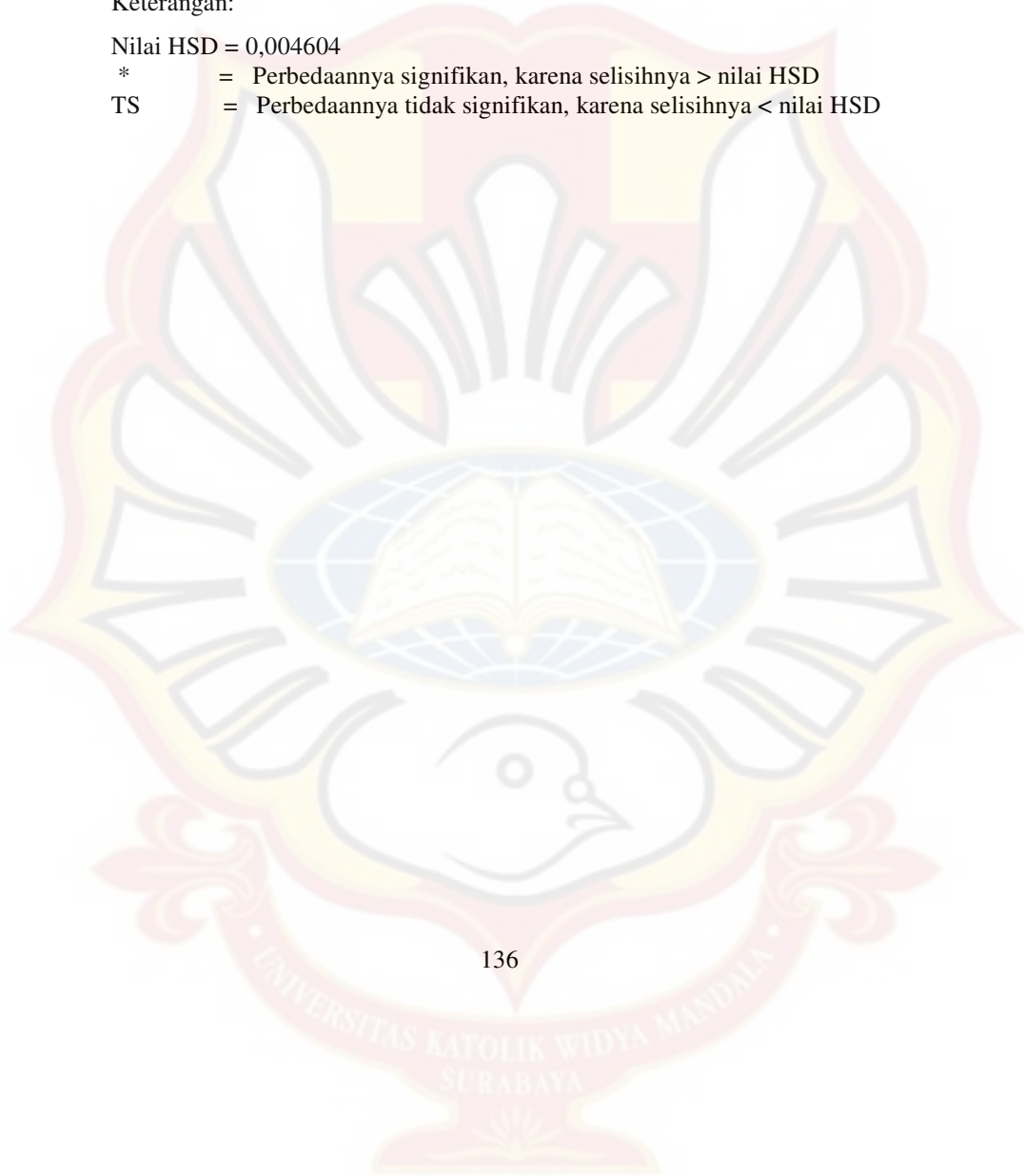
Perlakuan	Mean	FA 0,33	FB 0,49	FC 0,33	FD 0,49
FA	0,33	0	0,16 *	-0,00	TS 0,16 *
FB	0,49		0	-0,16 *	0,00 TS
FC	0,33			0	0,16 *
FD	0,49				0

Keterangan:

Nilai HSD = 0,004604

* = Perbedaannya signifikan, karena selisihnya > nilai HSD

TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD



LAMPIRAN P

HASIL UJI STATISTIK PENETAPAN KADAR TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	3	303,13	101,04	0,17
Column 2	3	305,79	101,93	0,09
Column 3	3	305,54	101,85	0,99
Column 4	3	305,6	101,87	2,61

ANOVA

<i>Source of variation</i>	<i>ss</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1,59	3	0,53	0,55	0,66	4,07
Within Groups	7,71	8	0,96			
Total	9,3	11				

Keterangan: $F_{hitung} = 0,55 < F_{0,05} = 3,59$ sehingga H_0 diterima dan tidak ada perbedaan yang bermagna antar formula.

LAMPIRAN Q

UJI F KURVA BAKU PENETAPAN KADAR

REPLIKASI 1

Konsentrasi	Absorbansi	X ²	Y ²	XY
3	0,147	9	0,02	0,44
5	0,232	25	0,05	1,16
7	0,451	49	0,20	3,16
9	0,595	81	0,35	5,36
11	0,695	121	0,48	7,65
13	0,858	169	0,74	11,15
15	0,94	225	0,88	14,10
		679	2,74	43,01

REPLIKASI 2

Konsentrasi	Absorbansi	X ²	Y ²	XY
3,06	0,143	9,364	0,0204	0,438
5,1	0,221	26,01	0,0488	1,127
7,14	0,415	50,98	0,1722	2,963
9,18	0,554	84,27	0,3069	5,086
11,22	0,685	125,9	0,4692	7,686
13,26	0,824	175,8	0,679	10,93
15,3	0,928	234,1	0,8612	14,2
		706,4	2,5578	42,42

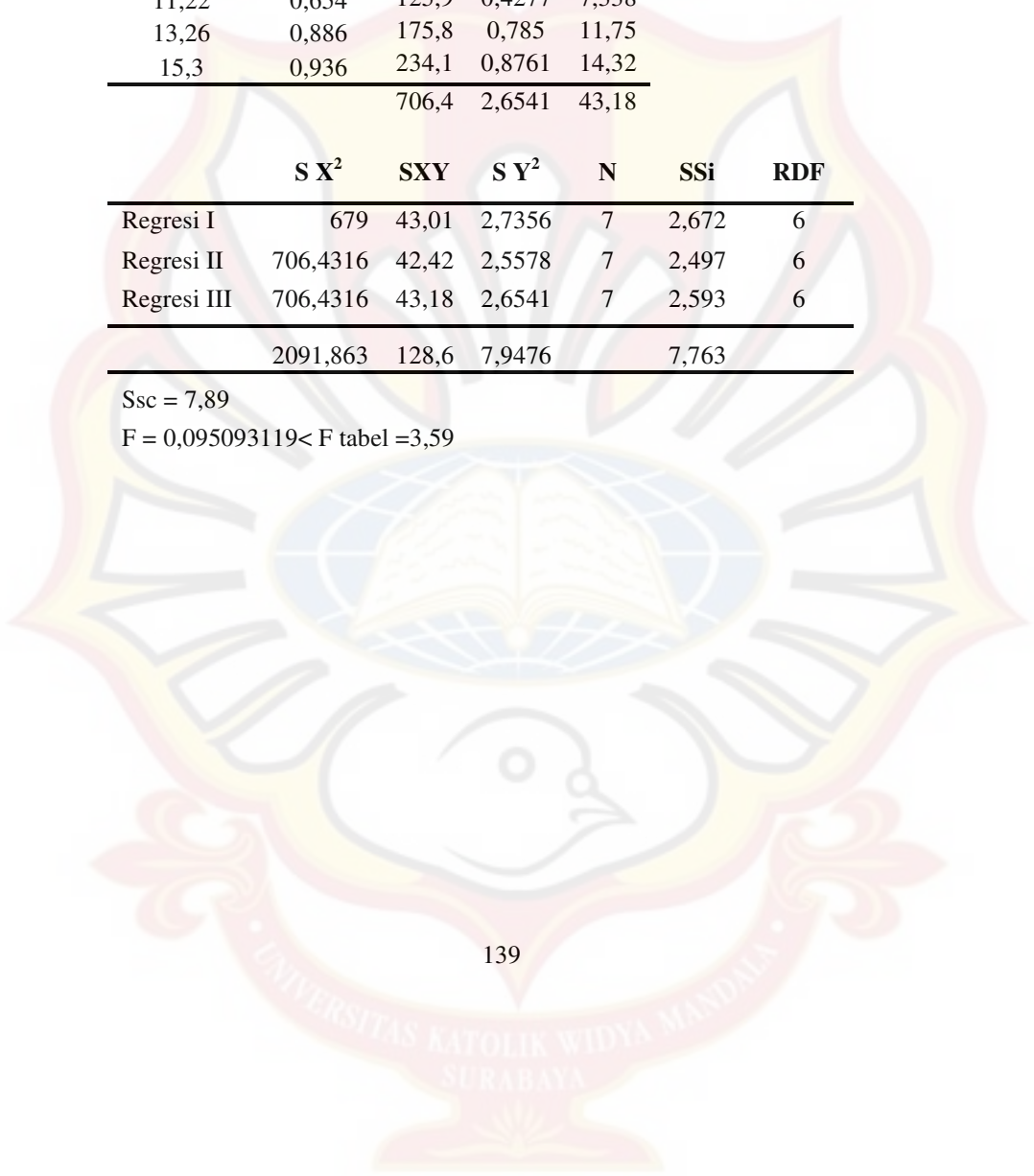
REPLIKASI 3

Konsentrasi	Absorbansi	X ²	Y ²	XY
3,06	0,15	9,364	0,0225	0,459
5,1	0,228	26,01	0,052	1,163
7,14	0,421	50,98	0,1772	3,006
9,18	0,56	84,27	0,3136	5,141
11,22	0,654	125,9	0,4277	7,338
13,26	0,886	175,8	0,785	11,75
15,3	0,936	234,1	0,8761	14,32
		706,4	2,6541	43,18

	S X ²	SXY	S Y ²	N	SSi	RDF
Regresi I	679	43,01	2,7356	7	2,672	6
Regresi II	706,4316	42,42	2,5578	7	2,497	6
Regresi III	706,4316	43,18	2,6541	7	2,593	6
	2091,863	128,6	7,9476		7,763	

Ssc = 7,89

F = 0,095093119 < F tabel = 3,59



LAMPIRAN R

HASIL UJI STATISTIK DISOLUSI TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMAR
Y

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	8	334,2	41,78	57,35
Column 2	8	457,45	57,18	86,69
Column 3	8	373,72	46,72	41,50
Column 4	8	609,8	76,23	147,56

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	5583,21	3	1861,07	22,35	1,37 E-07	2,95
Within Groups	2331,66	28	83,27			
Total	7914,87	31				

Keterangan: $F_{hitung} = 22,35 > F_{0,05} = 2,92$ sehingga H_0 ditolak dan ada perbedaan yang bermagna antar formula

Hasil Uji HSD Disolusi Tablet

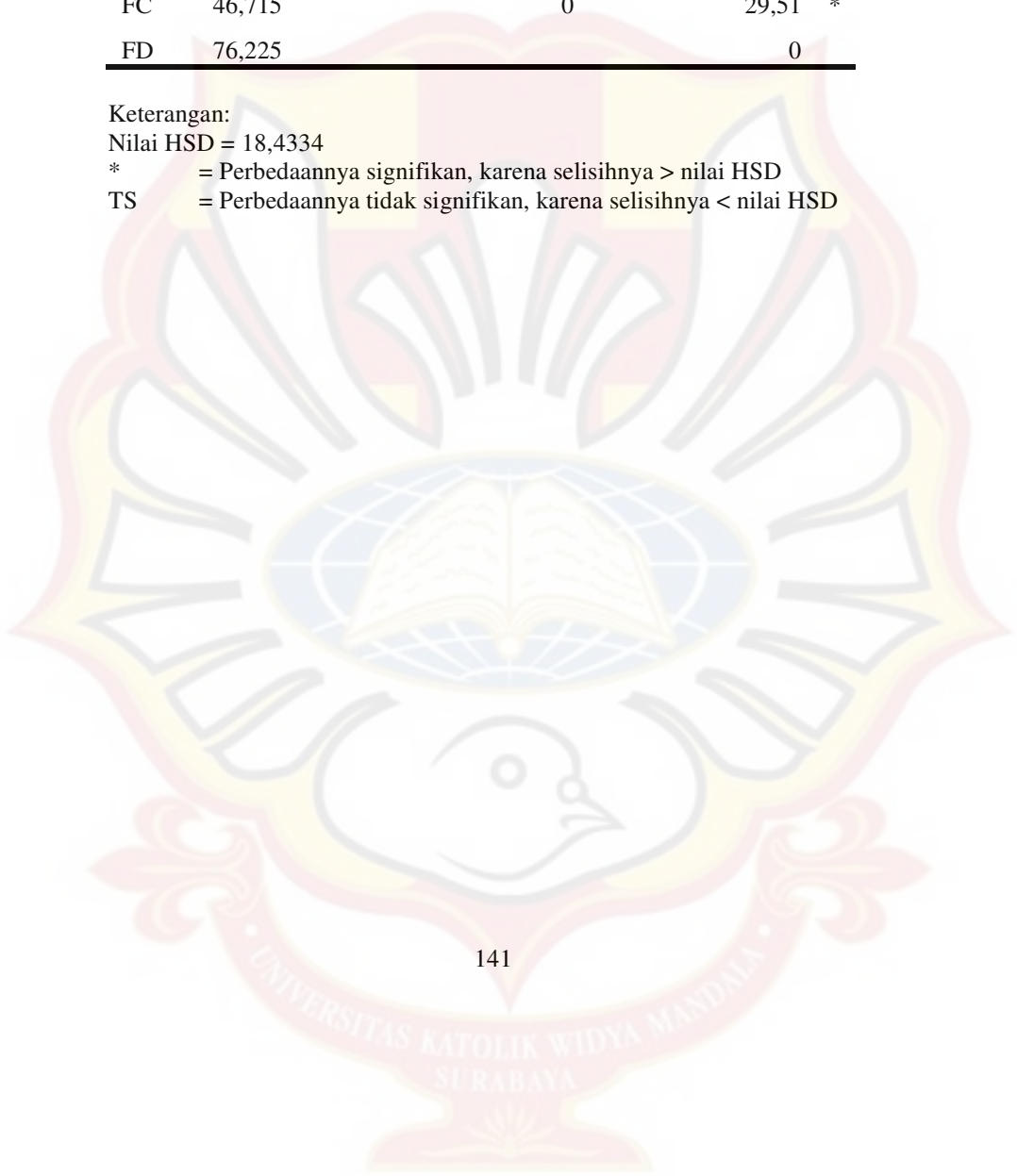
Perla kuan	Mean	FA	FB	FC	FD
		41,775	57,18	46,71	76,225
FA	41,775	0	15,41 TS	4,94 TS	34,45 *
FB	57,181		0	10,47 TS	19,04375 *
FC	46,715			0	29,51 *
FD	76,225				0

Keterangan:

Nilai HSD = 18,4334

* = Perbedaannya signifikan, karena selisihnya > nilai HSD

TS = Perbedaannya tidak signifikan, karena selisihnya < nilai HSD



LAMPIRAN S

HASIL UJI STATISTIK *FLOATING LAG TIME* TABLET ANTAR FORMULA

Anova: *Single Factor*

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	3	4,64	1,546667	0,000233
Column 2	3	2,08	0,693333	0,002633
Column 3	3	1,09	0,363333	0,002233
Column 4	3	0,76	0,253333	0,000633

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3,09	3	1,03	717,87	4,61E-10	4,07
Within Groups	0,01	8	0,001			
Total	3,09	11				

Keterangan: $F_{hitung} = 717,87 > F_{0,05} = 3,59$ sehingga H_0 ditolak dan ada perbedaan yang bermagna antar formula

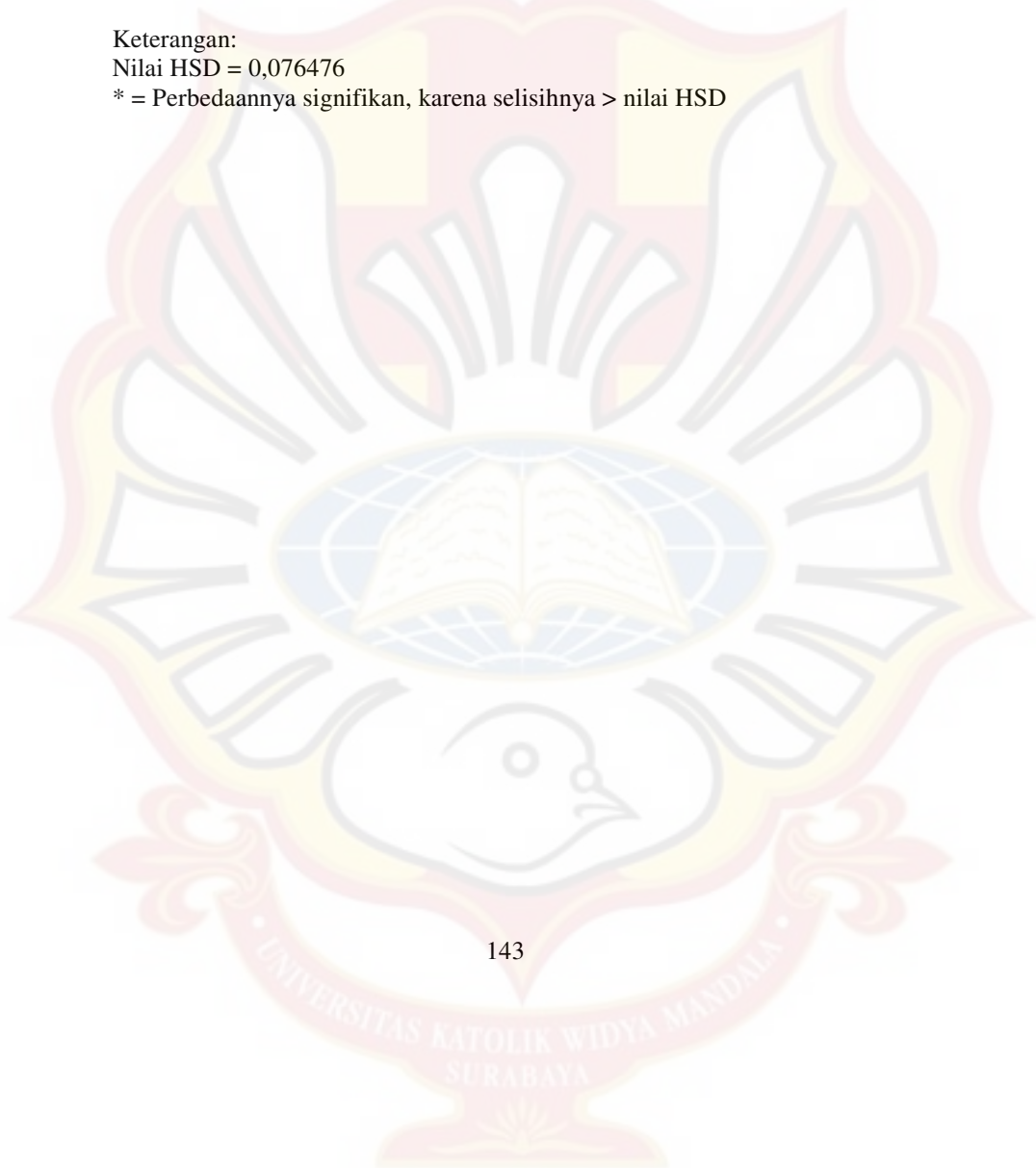
Hasil Uji HSD *Floating Lag Time* Tablet

		FA	FB	FC	FD
Perlakuan	Mean	1,55	0,69	0,36	0,25
			-		
FA	1,55	0	0,85 *	-1,18 *	-1,29 *
FB	0,69		0	-0,33 *	-0,44 *
FC	0,36			0	-0,11 *
FD	0,25				0

Keterangan:

Nilai HSD = 0,076476

* = Perbedaannya signifikan, karena selisihnya > nilai HSD



LAMPIRAN T

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	F Prob > F	p-value	significant
Model	28.91	3	9.64	511.02		< 0.0001	significant
<i>A-perbandingan Polimer HPMC K4M</i>							
<i>-Xanthan Gum</i>	0.012	1	0.012	0.64		0.4475	
<i>B-Konsentrasi Asam Tartrat</i>	28.71	1	28.71	1522.20		< 0.0001	
<i>AB</i>	0.19	1	0.19	10.21		0.0127	
Pure Error	0.15	8	0.019				
Cor Total	29.06	11					

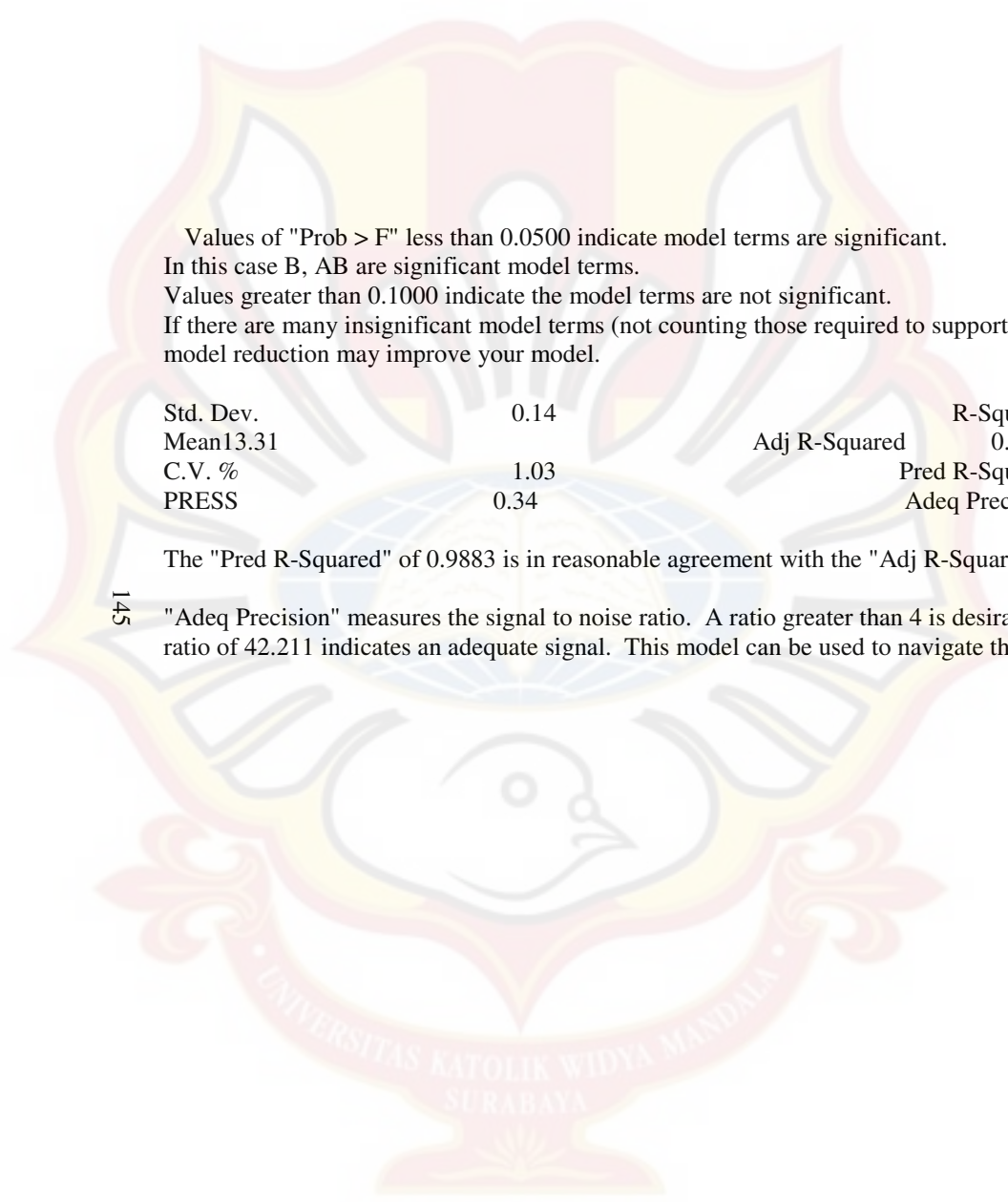
The Model F-value of 511.02 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise.

Values of "Prob > F" less than 0.0500 indicate model terms are significant.
In this case B, AB are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy),
model reduction may improve your model.

Std. Dev.	0.14	R-Squared	0.9948
Mean	13.31	Adj R-Squared	0.9929
C.V. %	1.03	Pred R-Squared	0.9883
PRESS	0.34	Adeq Precision	42.211

The "Pred R-Squared" of 0.9883 is in reasonable agreement with the "Adj R-Squared" of 0.9929.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 42.211 indicates an adequate signal. This model can be used to navigate the design space.



Coefficient	Estimate	Standard	95% CI	95% CI	High	VIF
Factor		df	Error	Low		
Intercept	13.31	1	0.040	13.22	13.40	
A-perbandingan polimer HPMC K4M						
-Xanthan Gum	0.032	1	0.040	-0.060	0.12	1.00
B-Konsentrasi						
Asam Tartrat	-1.55	1	0.040	-1.64	-1.46	1.00
AB-0.13	1	0.040	-0.22	-0.035	1.00	

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Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{Kekerasan} &= \\
 &+13.31 \\
 &+0.032 * A \\
 &-1.55 * B \\
 &-0.13 * A * B
 \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ +13.30833 & \\ +0.031667 & * \text{perbandingan polimer HPMC K4M-Xanthan Gum} \\ -1.54667 & * \text{Konsentrasi Asam Tartrat} \\ -0.12667 & * \text{perbandingan polimer HPMC K4M-Xanthan Gum} * \text{Konsentrasi Asam Tartrat} \end{aligned}$$

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

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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 U

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 Prob > F	
Model significant		0.078		3	4270.15	< 0.0001
<i>A-perbandingan polimer HPMC K4M-Xanthan Gum</i>	2.083E-006	1	2.083E-006	0.34	0.5745	
<i>B-Konsentrasi Asam Tartrat</i>	0.078	1	0.078	12809.44	< 0.0001	
<i>AB4.083E-006</i>		1	4.083E-006	0.67	0.4363	
Pure Error	4.867E-005	8	6.083E-006			
Cor Total	0.078	11				

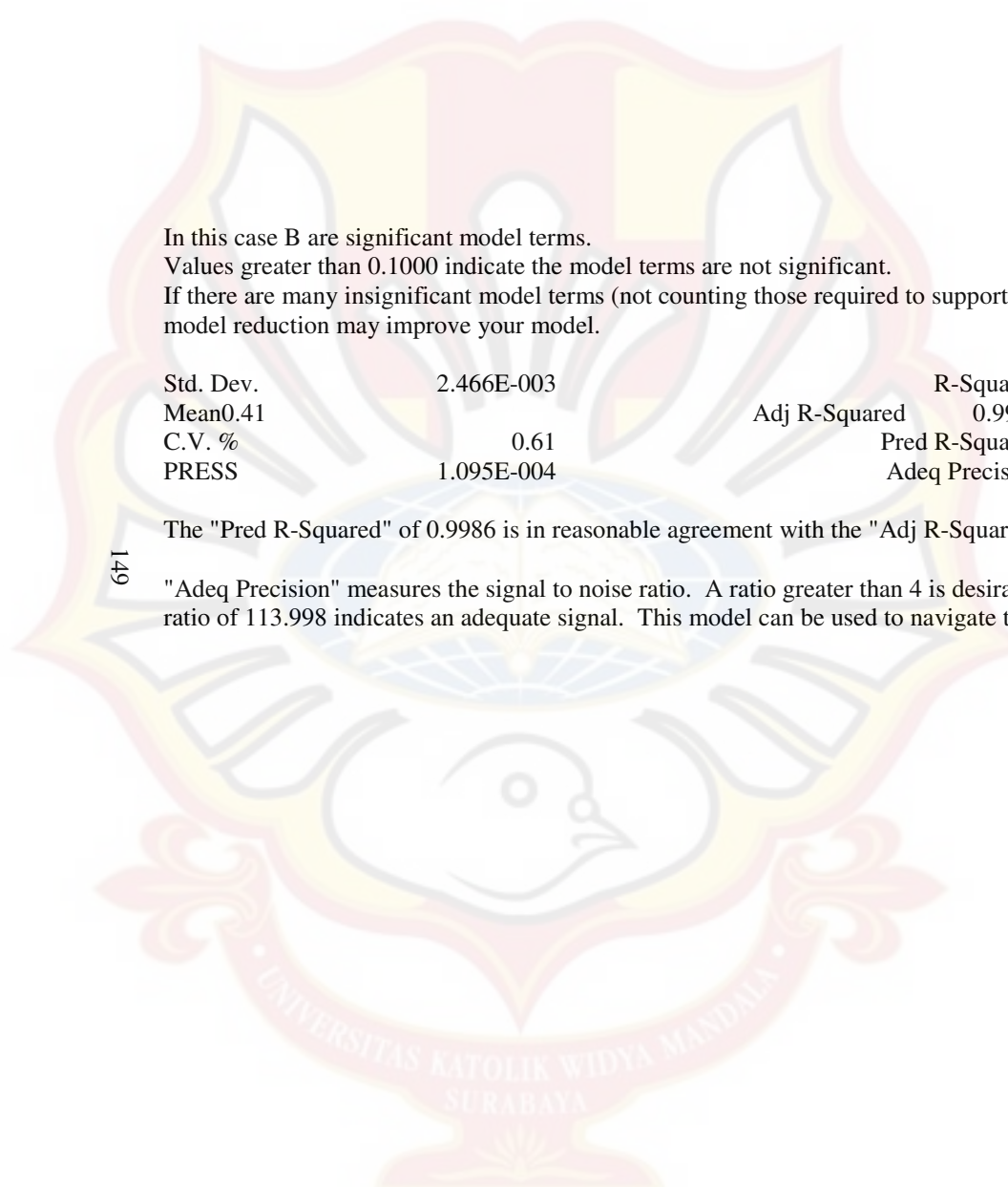
The Model F-value of 4270.15 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant.

In this case 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.	2.466E-003	R-Squared	0.9994
Mean	0.41	Adj R-Squared	0.9991
C.V. %	0.61	Pred R-Squared	0.9986
PRESS	1.095E-004	Adeq Precision	113.998

The "Pred R-Squared" of 0.9986 is in reasonable agreement with the "Adj R-Squared" of 0.9991.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 113.998 indicates an adequate signal. This model can be used to navigate the design space.



Factor	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
Intercept	0.41	1	7.120E-004	0.41		
A-perbandingan polimer HPMC K4M-Xanthan Gum	-4.167E-004	1	7.120E-004	-2.059E-003	1.225E-003	1.00
B-Konsentrasi Asam Tartrat	0.081	1	7.120E-004	0.079	0.082	1.00
AB	5.833E-004	1	7.120E-004	-1.059E-003	2.225E-003	1.00

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Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Kerapuhan} &= \\ &+0.41 \\ &-4.167E-004 * A \\ &+0.081 * B \\ &+5.833E-004 * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kerapuhan} &= \\ +0.40692 & \\ -4.16667\text{E-}004 & * \text{perbandingan polimer HPMC K4M-Xanthan Gum} \\ +0.080583 & * \text{Konsentrasi Asam Tartrat} \\ +5.83333\text{E-}004 & * \text{perbandingan polimer HPMC K4M-Xanthan Gum} * \text{Konsentrasi Asam Tartrat} \end{aligned}$$

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

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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 *FLOATING LAG TIME* DENGAN DESIGN-EXPERT

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

Response 3 Floating Lag Time

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	significant
Model	2.97	3	0.99	555.42	< 0.0001	significant
<i>A-perbandingan polimer HPMC K4M-Xanthan Gum</i>	1.92	1	1.92	1076.64	< 0.0001	
<i>B-Konsentrasi Asam Tartrat</i>	0.66	1	0.66	371.61	< 0.0001	
AB	0.39	1	0.39	218.02	< 0.0001	
Pure Error	0.014	8	1.783E-003			
Cor Total	2.99	11				

The Model F-value of 555.42 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise.

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

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

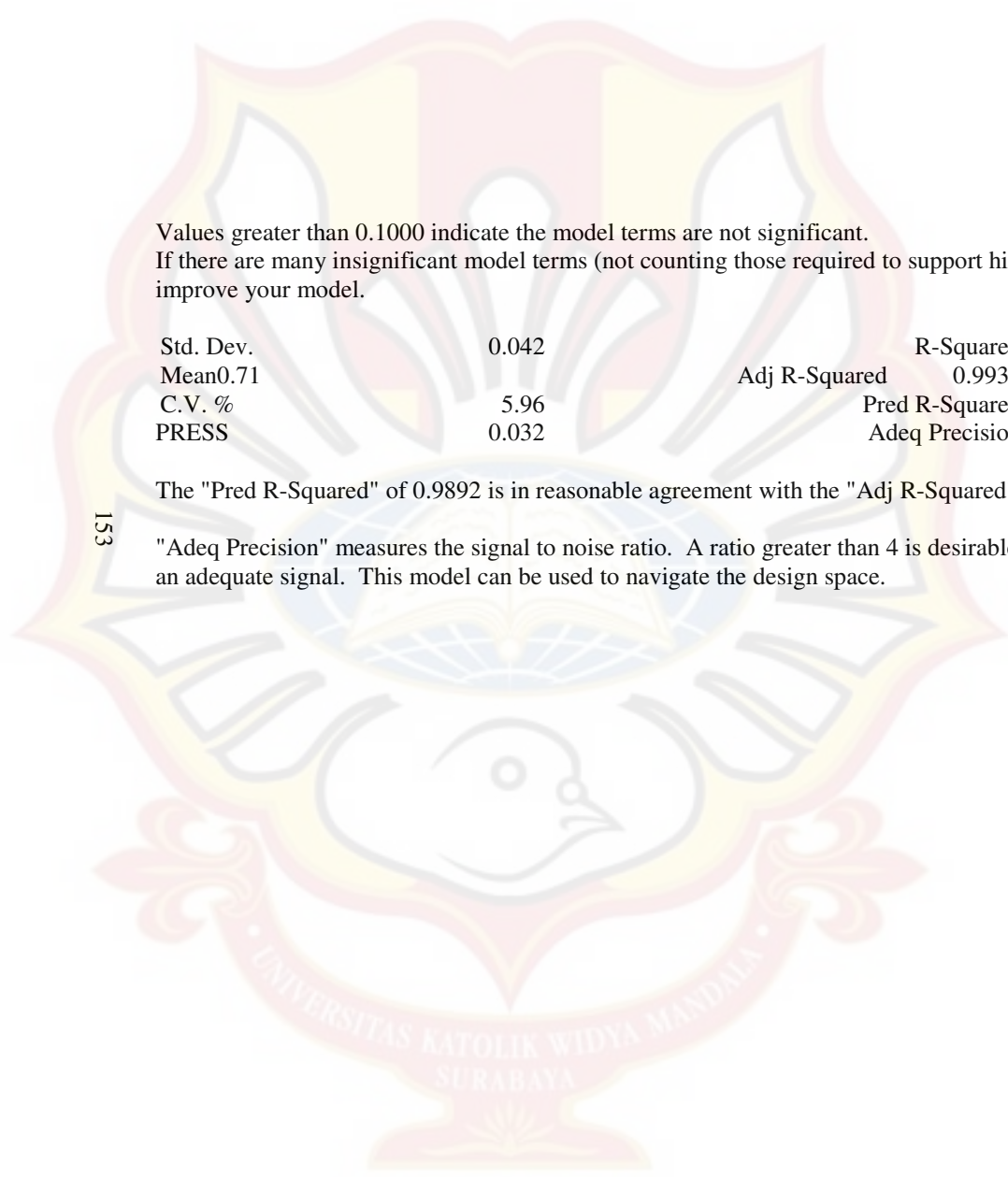
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Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	0.042	R-Squared	0.9952
Mean	0.71	Adj R-Squared	0.9934
C.V. %	5.96	Pred R-Squared	0.9892
PRESS	0.032	Adeq Precision	52.089

The "Pred R-Squared" of 0.9892 is in reasonable agreement with the "Adj R-Squared" of 0.9934.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 52.089 indicates an adequate signal. This model can be used to navigate the design space.



Factor	Coefficient		Standard Error	95% CI		VIF
	Estimate	df		Low	High	
Intercept	0.71	1	0.012	0.68	0.74	
A-perbandingan polimer HPMC K4M-Xanthan Gum	-0.40	1	0.012	-0.43	-0.37	1.00
B-Konsentrasi Asam Tartrat	-0.24	1	0.012	-0.26	-0.21	1.00
AB	0.18	1	0.012	0.21	1.00	

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Floating Lag Time} &= \\ &+0.71 \\ &-0.40 * A \\ &-0.24 * B \\ &+0.18 * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} &\text{Floating Lag Time} &&= \\ &+0.70833 && \\ &-0.40000 &&* \text{ perbandingan polimer HPMC K4M-Xanthan Gum} \\ &-0.23500 &&* \text{ Konsentrasi Asam Tartrat} \\ &+0.18000 &&* \text{ perbandingan polimer HPMC K4M-Xanthan Gum} * \text{ Konsentrasi Asam Tartrat} \end{aligned}$$

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

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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 K DISOLUSI TABLET DENGAN DESIGN EXPERT

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

Response 4 K disolusi
ANOVA for selected factorial model
Analysis of variance table [Partial sum of squares - Type III]

value	Sum of	Mean	F	p-		
Source	Squares	df	Square	Value	Prob > F	significant
Model	9.945E-004	3	3.315E-004	22.25	0.0003	significant
<i>A-perbandingan polimer HPMC K4M-Xanthan Gum</i>	9.185E-005	1	9.185E-005	6.16	0.0379	
<i>B-Konsentrasi Asam Tartrat</i>	6.395E-004	1	6.395E-004	42.92	0.0002	
<i>AB</i>	2.632E-004	12.632E-004	17.67	0.0030		
Pure Error	1.192E-004	8	1.490E-005			
Cor Total	1.114E-003	11				

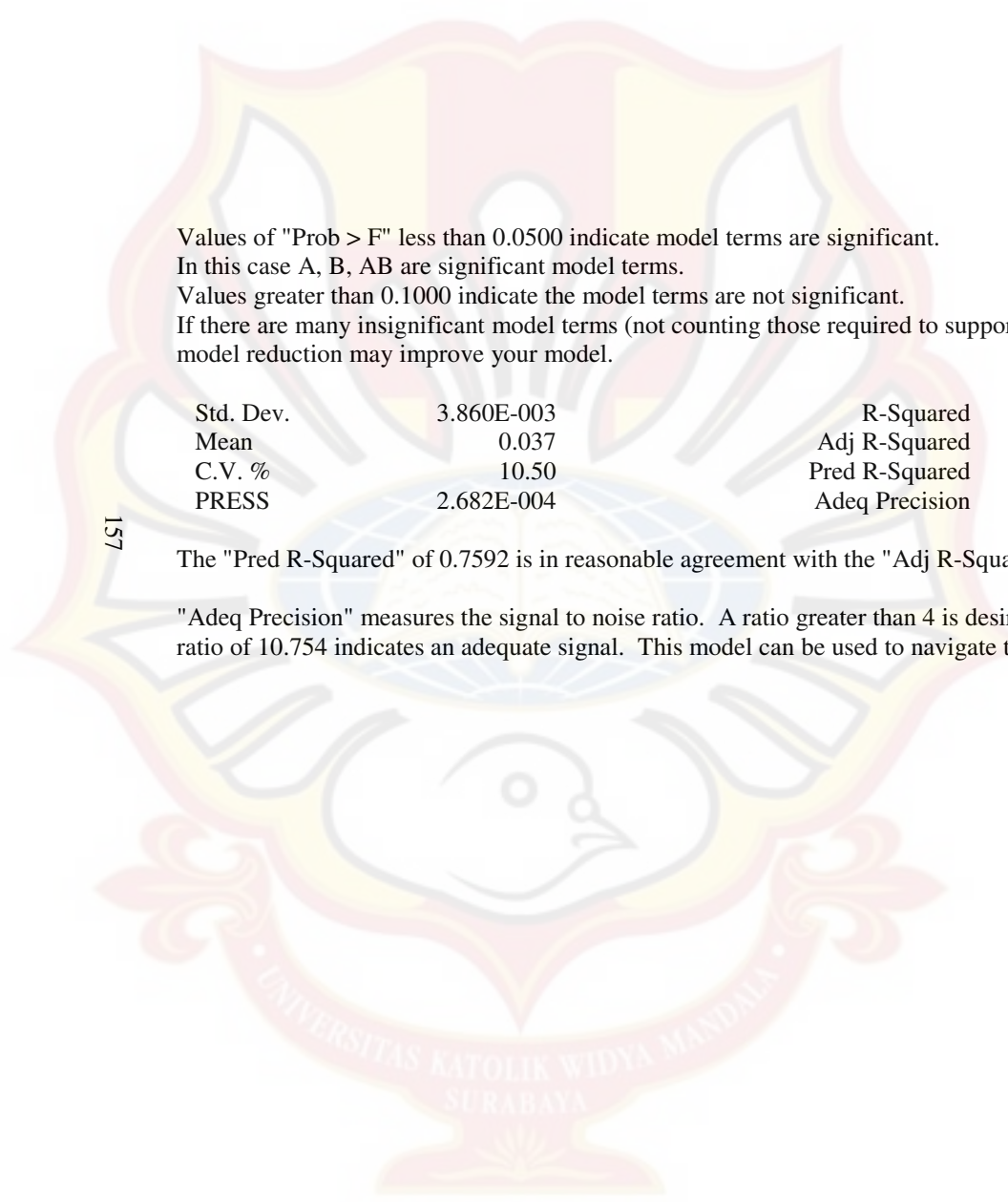
The Model F-value of 22.25 implies the model is significant. There is only a 0.03% chance that a "Model F-Value" this large could occur due to noise.

Values of "Prob > F" less than 0.0500 indicate model terms are significant.
In this case A, B, AB are significant model terms.
Values greater than 0.1000 indicate the model terms are not significant.
If there are many insignificant model terms (not counting those required to support hierarchy),
model reduction may improve your model.

Std. Dev.	3.860E-003	R-Squared	0.8930
Mean	0.037	Adj R-Squared	0.8528
C.V. %	10.50	Pred R-Squared	0.7592
PRESS	2.682E-004	Adeq Precision	10.754

The "Pred R-Squared" of 0.7592 is in reasonable agreement with the "Adj R-Squared" of 0.8528.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 10.754 indicates an adequate signal. This model can be used to navigate the design space.



Factor	Coefficient Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
Intercept	0.037	1	1.114E-003	0.034	0.039	
A-perbandingan polimer HPMC K4M-Xanthan Gum	2.767E-003	1	1.114E-003	1.972E-004	5.336E-003	1.00
B-Konsentrasi Asam Tartrat	7.300E-003	1	1.114E-003	4.730E-003	9.870E-003	1.00
AB	4.683E-003	1	1.114E-003	2.114E-003	7.253E-003	1.00

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Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{K disolusi} &= \\
 &+0.037 \\
 &+2.767E-003 * A \\
 &+7.300E-003 * B \\
 &+4.683E-003 * A * B
 \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} & \text{K disolusi} \\ & +0.036750 \\ & +2.76667\text{E-}003 * \text{perbandingan polimer HPMC K4M-Xanthan Gum} \\ & +7.30000\text{E-}003 * \text{Konsentrasi Asam Tartrat} \\ & +4.68333\text{E-}003 * \text{perbandingan polimer HPMC K4M-Xanthan Gum} * \text{Konsentrasi Asam} \\ \text{Tartrat} & \end{aligned} =$$

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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.
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- 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.