BAB 5
SIMPULAN

5.1. Simpulan

Berdasarkan data penelitian yang telah diinterpretasikan, dapat ditarik kesimpulan :

- Formula terbaik yaitu Formula D dengan konsentrasi total polimer *xanthan gum* dan *guar gum* 40% (1:1) dibandingkan ketiga formula lainnya.
- Perbedaan kombinasi polimer *xanthan gum* dan *guar gum* berpengaruh terhadap *floating lag time*, konstanta laju disolusi, $\%ED_{720}$ dan persen pelepasan obat setelah 12 jam, tetapi tidak mempengaruhi *floating time*.

5.2. Saran

Berdasarkan penelitian ini, peningkatan kombinasi polimer *xanthan gum* dan *guar gum* kurang mampu memperlambat pelepasan obat ranitidin HCl seperti yang diharapkan. Oleh karena hal tersebut disarankan menggunakan perbedaan rasio kombinasi polimer *xanthan gum* dan *guar gum* untuk mendapatkan formula optimum.

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LAMPIRAN A

HASIL UJI MUTU FISIK MASSA TABLET

Parameteruji	Replikasi	Formula				Persyaratan
		A	B	C	D	
Kadar air (%)	I	3,17	3,29	3,21	3,31	3-5% (Voight,1995)
	II	3,17	3,69	3,49	3,42	
	III	3,27	3,37	3,23	3,29	
	Rata-rata	3,20	3,45	3,31	3,34	
	SD	0,0577	0,2116	0,1562	0,0700	
Waktu alir	I	7,92	7,76	8,46	8,17	Tidak lebih dari 10 detik (Ansel, 1990)
	II	8,31	9,46	9,49	8,31	
	III	7,83	9,25	9,61	8,38	
	Rata-rata	8,02	8,82	9,18	8,28	
	SD	0,2551	0,9268	0,6321	8,28	
Sudut diam	I	27,76	30,62	26,01	30,71	25-30: sangat baik 31-40: baik (Anonim, 2006)
	II	28,98	28,46	29,3	30,3	
	III	28,63	27,84	28,51	30,71	
	Rata-rata	28,45	28,97	27,94	30,82	
	SD	0,6282	1,4593	1,7174	0,5936	
Carr's index	I	16,9900	19,3278	20,3256	19,3293	16-20 Cukup (Anonim, 2006)
	II	16,9900	19,6613	17,9915	19,3297	
	III	17,3300	19,3285	19,8485	19,3286	
	Rata-rata	17,1033	19,4392	19,3885	19,3292	
	SD	0,1963	0,1923	1,2331	0,00056	
Hausner ratio	I	1,2407	1,2396	1,2550	1,23965	1,19-1,25 Cukup (Anonim, 2006)
	II	1,2047	1,2448	1,2193	1,239657	
	III	1,2097	1,2396	1,2477	1,23964	
	Rata-rata	1,2183	1,241	1,2406	1,23949	
	SD	0,0195	0,003	0,0188	0,0000	
P tapped	I	0,7492	0,7227	0,7847	0,8471	
	II	0,7621	0,7598	0,7883	0,8078	
	III	0,7690	0,8207	0,7996	0,7986	
	Rata-rata	0,7601	0,7677	0,7908	0,8178	
	SD	0,01005	0,04948	0,0077	0,02576	
P bulk	I	0,6218	0,5830	0,6252	0,6833	
	II	0,6326	0,6103	0,6465	0,6516	
	III	0,6357	0,6620	0,6409	0,6442	
	Rata-rata	0,6300	0,6184	0,6375	0,6597	
	SD	0,0072	0,0401	0,0110	0,0207	

LAMPIRAN B

HASIL UJI KESERAGAMAN BOBOT TABLET *FLOATING* RANITIDIN HCL

Hasil Uji Keseragaman Bobot Tablet Formula A

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	701,3	0,05	701,2	0,06	702,2	0,14
2	700,8	0,02	701,2	0,06	700,3	0,13
3	701,2	0,03	700,6	1,12	700,2	0,14
4	700,5	0,07	700,3	1,17	700,5	0,10
5	701,2	0,03	700,2	1,18	700,4	0,11
6	700,8	0,02	701,4	1,01	701,2	0,00
7	700,9	0,01	701,2	1,04	701,4	0,03
8	701,1	0,02	701,3	1,02	701,5	0,04
9	702,1	0,16	701,2	1,04	701,3	0,02
10	701,2	0,03	701,4	1,01	701,4	0,03
11	701,1	0,02	701,2	1,04	701,2	0,00
12	701,2	0,03	700,3	1,17	701,3	0,02
13	700,5	0,07	700,2	1,18	701,2	0,00
14	700,4	0,08	700,3	1,17	701,1	0,01
15	700,3	0,09	701,2	1,04	700,1	0,16
16	700,2	0,11	701,3	1,02	702,2	0,14
17	701,2	0,03	700,2	1,18	701,1	0,01
18	701,1	0,02	700,6	1,12	701,3	0,02
19	701,5	0,08	700,4	1,15	701,3	0,02
20	700,6	0,05	700,1	1,19	701,5	0,04
Rata	700,96	0,0519	700,79	0,9979	701,13	0,0580
SD	0,4581	0,0379	0,4994	0,3283	0,5797	0,0579
KV	0,0654		0,0713		0,0827	

Hasil Uji Keseragaman Bobot Tablet Formula B

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	701,3	0,05	701,2	0,06	701,1	0,01
2	701,3	0,05	700,1	0,10	701,2	0,00
3	701,1	0,02	701,2	1,04	701,5	0,04
4	701,2	0,03	701,1	1,05	701,1	0,01
5	701,3	0,05	700,8	1,09	701,3	0,02
6	701,2	0,03	700,1	1,19	701,4	0,03
7	701,4	0,06	700,9	1,08	701,1	0,01
8	701,3	0,05	700,8	1,09	701,5	0,04
9	702,1	0,16	701,3	1,02	701,3	0,02
10	702,2	0,18	701,1	1,05	700,8	0,06
11	701,4	0,06	700,9	1,08	700,6	0,08
12	700,6	0,05	701,5	1,00	700,3	0,13
13	701,5	0,08	701	1,07	700,4	0,11
14	701,8	0,12	701,4	1,01	700,1	0,16
15	701	0,01	700,7	1,11	701,8	0,09
16	701,6	0,09	701,6	0,98	700,7	0,07
17	700,5	0,07	701,4	1,01	700,8	0,06
18	700,1	0,12	701,5	1,00	700,8	0,06
19	701	0,01	701	1,07	700,1	0,16
20	701,4	0,06	700,2	1,18	700,7	0,07
Rata-rata	701,26	0,0675	700,99	0,9639	700,93	0,0608
SD	0,4945	0,0466	0,4483	0,3080	0,4802	0,0475
KV	0,0705		0,0639		0,0685	

Hasil Uji Keseragaman Bobot Tablet Formula C

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)	Bobot Tablet (mg)	Y (%)
1	701,4	0,06	700,4	0,06	701,5	0,04
2	701,5	0,08	701,3	0,07	700,6	0,08
3	700,2	0,11	701,5	1,00	701,2	0,00
4	701,8	0,12	701,9	0,94	702,2	0,14
5	701,1	0,02	700,4	1,15	701,1	0,01
6	700,5	0,07	700,3	1,17	700,5	0,10
7	701,4	0,06	701,1	1,05	700,1	0,16
8	700,8	0,02	701,9	0,94	701,1	0,01
9	701,2	0,03	701,2	1,04	702,1	0,13
10	700,5	0,07	700,2	1,18	701,1	0,01
11	700,3	0,09	700,7	1,11	700,4	0,11
12	700,1	0,12	701,1	1,05	700,2	0,14
13	702,5	0,22	701,2	1,04	700,9	0,04
14	700,9	0,01	700,3	1,17	700,6	0,08
15	701,1	0,02	700,5	1,14	701,8	0,09
16	700,4	0,08	701,3	1,02	701,4	0,03
17	701,4	0,06	700,5	1,14	700,3	0,13
18	701,6	0,09	701,1	1,05	700,4	0,11
19	700,7	0,04	700,3	1,17	701,2	0,00
20	700,3	0,09	702,2	0,90	700,9	0,04
Rata-rata	700,985	0,0735	700,97	0,9682	700,98	0,0737
SD	0,6268	0,0483	0,6071	0,3201	0,6092	0,0526
KV	0,0894		0,0866		0,0869	

Hasil Uji Keseragaman Bobot Tablet Formula D

No	Replikasi I		Replikasi II		Replikasi III	
	Bobot Tablet (mg)	**Y (%)**	**Bobot Tablet (mg)**	**Y (%)**	**Bobot Tablet (mg)**	**Y (%)**
1	701,2	0,03	700,1	0,10	700,3	0,13
2	701,2	0,03	701,8	0,14	701,4	0,03
3	700,1	0,12	700,1	1,19	700,8	0,06
4	701,5	0,08	701,8	0,95	700,5	0,10
5	700,8	0,02	701,6	0,98	701	0,03
6	700,1	0,12	701,5	1,00	700,8	0,06
7	700,2	0,11	700,4	1,15	700,9	0,04
8	701,1	0,02	700,5	1,14	701,1	0,01
9	702,8	0,26	701,6	0,98	701,1	0,01
10	700,9	0,01	700,7	1,11	700,2	0,14
11	701,6	0,09	701,8	0,95	700,7	0,07
12	701,5	0,08	701,4	1,01	700,8	0,06
13	701,8	0,12	701,5	1,00	700,8	0,06
14	700,7	0,04	700,6	1,12	700,9	0,04
15	701,3	0,05	700,7	1,11	701,1	0,01
16	700,4	0,08	700,1	1,19	701,6	0,06
17	700,8	0,02	700,5	1,14	700,7	0,07
18	700,4	0,08	700,6	1,12	701,8	0,09
19	700,7	0,04	700,4	1,15	701,1	0,01
20	700,8	0,02	701,5	1,00	700,8	0,06
Rata-rata	700,99	0,0715	700,96	0,9767	700,92	0,0560
SD	0,6573	0,0587	0,6353	0,3036	0,3874	0,0362
KV	0,0938		0,0906		0,0553	

LAMPIRAN C

HASIL UJI KEKERASAN TABLET *FLOATING* RANITIDIN HCL

Replikasi I

	Kekerasan Tablet Floating Ranitidin HCl (Kgf)			
	Formula	**Formula**	**Formula**	**Formula**
No	**A**	**B**	**C**	**D**
1	8,8	6,5	5,4	4,5
2	8,7	6,4	5,2	4,8
3	8,7	6,5	5,7	4,6
4	8,6	6,6	4,8	4,5
5	8,5	6,1	5,5	4,9
6	8,6	6,2	6,1	4,2
7	8,7	6,5	5,1	4,8
8	8,5	6,0	5,5	4,7
9	8,6	6,3	5,6	4,7
10	8	6,2	5,4	4,5
Rata-rata	8,57	6,33	5,43	4,62
SD	0,22136	0,20028	0,35292	0,204396

Replikasi II

No	Kekerasan Tablet Floating Ranitidin HCl (Kgf)			
	Formula A	**Formula B**	**Formula C**	**Formula D**
1	8,5	6,0	5,2	4,2
2	8,6	6,5	5,5	4,8
3	8,7	6,0	5,1	4,3
4	8,0	6,3	6,1	4,2
5	8,5	6,3	5,5	4,2
6	8,4	6,5	5,6	4,3
7	8,6	6,4	5,3	4,8
8	8,7	6,7	6	4,3
9	8,6	6,0	5,8	4,7
10	8,5	6,1	6,1	4,2
Rata-rata	8,51	6,28	5,62	4,4
SD	0,20248	0,24855	0,36757	0,258199

Replikasi III

No	Kekerasan Tablet Floating Ranitidin HCl (Kgf)			
	Formula A	**Formula B**	**Formula C**	**Formula D**
1	8,5	6,5	5,5	4,6
2	8,6	6,3	5,8	4,2
3	8,7	6,4	5,4	4,4
4	8,5	6,6	5,5	4,5
5	8,0	6,7	5,7	4,1
6	8,5	6,3	5,1	4,8
7	8,0	6,6	5,6	4,3
8	8,0	6,5	5,5	4,9
9	8,5	6,8	6	4,5
10	8,6	6,3	5,4	4,7
Rata-rata	8,39	6,5	5,55	4,5
SD	0,27669	0,17638	0,24608	0,258199

LAMPIRAN D

HASIL UJI KERAPUHAN TABLET *FLOATING* RANITIDIN HCL

Formula	Replikasi	Berat awal (gram)	Berat akhir (gram)	Kerapuhan (%)	Rata-rata
	I	13,616	13,573	0,317	
	II	13,783	13,736	0,337	
A	III	13,873	13,820	0,384	0,364
	I	13,836	13,73333	0,746	
	II	14,290	14,18	0,770	
B	III	14,340	14,2	0,767	0,762
	I	14,066	13,960	0,758	
	II	14,013	13,906	0,761	
C	III	14,070	13,960	0,781	0,766
	I	14,063	13,956	0,758	
	II	14,096	13,986	0,780	
D	III	14,143	14,033	0,777	0,771

LAMPIRAN E

HASIL UJI KESERAGAMAN UKURAN

TABLET *FLOATING* RANITIDIN HCL

Formula	$^1/_3$Diameter (cm)	Tebal (cm)	$^3/_4$ Diameter (cm)	Syarat
A1	0,443	0,390	0,997	Tidak memenuhi
A2	0,443	0,390	0,997	syarat
A3	0,443	0,390	0,997	$^1/_3$ diameter <
B1	0,443	0.403	0,997	tebal < $^3/_4$
B2	0,443	0.402	0,997	diameter
B3	0,443	0.402	0,997	
C1	0,443	0.403	0,997	
C2	0,443	0.403	0,997	
C3	0,443	0.402	0,997	
D1	0,443	0.410	0,997	
D2	0,443	0.413	0,997	
D3	0,443	0.410	0,997	

LAMPIRAN F

HASIL UJI *FLOATING LAG TIME*

TABLET *FLOATING* RANITIDIN HCL

Replikasi	FA	FB	FC	FD
I	9,63	3,62	3,28	1,83
II	9,32	3,51	3,04	2,35
III	9,02	3,76	3,26	2,43
Rata-rata	9,32	3,63	3,19	2,20
SD	0,30	0,12	0,13	0,32

LAMPIRAN G

HASIL PENETAPAN KADAR TABLET *FLOATING* RANITIDIN HCL

Rep	W (mg)	Absorbansi	C sampel (µg/ml)	C Teoritis (µg/ml)	Kadar (%)	Rata-rata
A1	111,4	0,942	15,09	15,13	99,78	
	110,5	0,935	14,97	15,01	99,75	
	111,9	0,945	15,14	15,20	99,77	99,77
A2	114,1	0,934	14,95	15,00	99,70	
	115,6	0,946	15,16	15,20	99,72	
	114,7	0,939	15,05	15,08	99,81	99,74
A3	115,8	0,928	14,84	14,88	99,73	
	115,6	0,926	14,82	14,85	99,80	
	115,5	0,925	14,81	14,84	99,76	99,76
B1	116,1	0,939	15,04	15,09	99,67	
	116,4	0,942	15,09	15,13	99,79	
	116,3	0,940	15,05	15,12	99,69	99,72
B2	119,6	0,935	14,97	15,01	99,72	
	120,5	0,941	15,07	15,12	99,72	
	119,8	0,936	14,99	15,03	99,74	99,73
B3	119,5	0,954	15,31	15,35	99,74	
	119,6	0,955	15,33	15,37	99,75	
	119,6	0,956	15,34	15,37	99,76	99,75
C1	117,3	0,936	14,98	15,03	99,72	
	117,6	0,940	15,06	15,11	99,73	
	117,5	0,940	15,06	15,10	99,74	99,73
C2	116,3	0,930	14,88	14,93	99,72	
	116,4	0,932	14,91	14,96	99,73	
	116,6	0,895	14,25	14,29	99,74	99,71
C3	117,26	0,934	14,96	15,00	99,74	
	117,31	0,932	14,91	15,00	99,72	
	117,42	0,935	14,97	15,02	99,71	99,72

Lanjutan…

Rep	W (mg)	Absorbansi	C sampel (µg/ml)	C Teoritis (µg/ml)	Kadar (%)	Rata-rata
D1	117,4	0,937	15,00	15,05	99,72	
	117,2	0,938	15,02	15,06	99,74	
	117,6	0,940	15,06	15,11	99,69	99,72
D2	118,2	0,941	15,08	15,12	99,74	
	118,7	0,947	15,20	15,25	99,73	
	118,4	0,946	15,17	15,21	99,77	99,75
D3	118,5	0,934	14,96	15,01	99,69	
	118,7	0,935	14,97	15,03	99,63	
	118,9	0,938	15,02	15,06	99,78	99,70

LAMPIRAN H

HASIL UJI DISOLUSI TABLET *FLOATING* RANITIDIN HCL

Formula A

Perhitungan C teoritis:

106,77% x 300= 320,31 mg/tablet

0,9 x 0,09 x 320,31 mg = 32,031 µg/ml (C teoritis)

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	1,602	26,98	82,58	1858,05
	30	1,615	27,22	83,29	3732,075
	45	1,62	27,49	84,12	3766,725
	60	1,648	27,81	85,12	3807,9
	120	1,694	28,64	87,66	15550,2
	180	1,701	28,77	88,05	15813,9
	240	1,712	28,97	88,65	15903
	300	1,718	29,08	88,99	15987,6
	360	1,724	29,18	89,32	16047,9
	420	1,738	29,44	90,09	16146,9
	480	1,743	29,53	90,37	16241,4
	540	1,753	29,71	90,92	16316,1
	600	1,758	29,8	91,2	16390,8
I	660	1,764	29,91	91,53	16445,7
	720	1,766	29,94	91,64	16485,3
					190493,6

Lanjutan formula A

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	1,608	27,09	83,24	1872,9
	30	1,613	27,18	83,51	3751,875
	45	1,629	27,47	84,4	3777,975
	60	1,653	27,9	85,73	3827,925
	120	1,698	28,72	88,23	15656,4
	180	1,705	28,84	88,62	15916,5
	240	1,71	28,93	88,89	15975,9
	300	1,721	29,13	89,5	16055,1
	360	1,726	29,22	89,78	16135,2
	420	1,741	29,49	90,59	16233,3
	480	1,744	29,55	90,78	16323,3
	540	1,758	29,8	91,56	16410,6
	600	1,762	29,87	91,78	16500,6
	660	1,766	29,94	92	16540,2
II	720	1,773	30,07	92,39	16595,1
					191572,9

Lanjutan formula A

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
III	0	0	0	0	0
	15	1,579	26,57	81,58	1835,55
	30	1,602	26,98	82,85	3699,675
	45	1,625	27,4	84,13	3757,05
	60	1,63	27,49	84,4	3791,925
	120	1,689	28,55	87,68	15487,2
	180	1,699	28,73	88,23	15831,9
	240	1,708	28,9	88,73	15926,4
	300	1,716	29,04	89,17	16011
	360	1,726	29,22	89,73	16101
	420	1,739	29,46	90,45	16216,2
	480	1,746	29,58	90,84	16316,1
	540	1,754	29,73	91,28	16390,8
	600	1,763	29,89	91,78	16475,4
	660	1,769	30	92,11	16550,1
	720	1,776	30,12	92,5	16614,9
					191005,2

Formula B

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,731	11,258	34,4	774
	30	0,791	12,342	37,72	1622,7
	45	0,857	13,533	41,36	1779,3
	60	0,972	15,610	47,7	2003,85
	120	1,115	18,192	55,6	9297
	180	1,201	19,74	60,34	10434,6
	240	1,271	21,009	64,21	11209,5
	300	1,339	22,237	67,96	11895,3
	360	1,380	22,97	70,22	12436,2
	420	1,443	24,11	73,7	12952,8
	480	1,471	24,62	75,24	13404,6
	540	1,484	24,85	75,96	13608
	600	1,526	25,61	78,28	13881,6
I	660	1,581	26,60	81,31	14363,1
	720	1,601	26,96	82,41	14734,8
					144397,4

Lanjutan formula B

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,590	8,712	30,59	688,275
	30	0,666	10,084	35,41	1485
	45	0,777	12,089	42,44	1751,625
	60	0,798	12,468	43,77	1939,725
	120	0,994	16,007	56,2	8997,3
	180	1,161	19,023	66,79	11069,1
	240	1,206	19,835	69,64	12278,7
	300	1,274	21,063	73,95	12923,1
	360	1,286	21,28	74,72	13380,3
	420	1,293	21,40	75,16	13489,2
	480	1,304	21,60	75,86	13591,8
	540	1,314	21,78	76,49	13711,5
	600	1,318	21,85	76,74	13790,7
	660	1,387	23,10	81,12	14207,4
II	720	1,403	23,39	82,13	14692,5
					147996,2

Lanjutan formula B

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
III	0	0	0	0	0
	15	0,585	8,621	30,73	691,425
	30	0,655	9,88	35,24	1484,325
	45	0,769	11,94	42,58	1750,95
	60	0,788	12,28	43,8	1943,55
	120	0,990	15,93	56,8	9054
	180	1,154	18,89	67,36	11174,4
	240	1,201	19,74	70,37	12395,7
	300	1,259	20,79	74,12	13004,1
	360	1,279	21,15	75,41	13457,7
	420	1,284	21,24	75,73	13602,6
	480	1,291	21,36	76,18	13671,9
	540	1,302	21,56	76,89	13776,3
	600	1,310	21,71	77,4	13886,1
	660	1,368	22,76	81,14	14268,6
	720	1,391	23,17	82,62	14738,4
					148900,1

Formula C

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,282	3,15	11,52	259,2
	30	0,360	4,55	16,67	634,275
	45	0,455	6,27	22,94	891,225
	60	0,486	6,83	24,98	1078,2
	120	0,765	11,87	43,4	6154,2
	180	0,859	13,56	49,61	8370,9
	240	1,020	16,47	60,24	9886,5
	300	1,028	16,62	60,77	10890,9
	360	1,155	18,19	69,15	11692,8
	420	1,168	19,14	70,01	12524,4
	480	1,185	19,45	71,39	12726
	540	1,201	19,74	72,19	12922,2
	600	1,225	20,17	73,78	13137,3
I	660	1,248	20,59	75,29	13416,3
	720	1,263	20,86	76,28	13641,3
					128225,7

Lanjutan formula C

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,283	3,16	10,73	241,425
	30	0,363	4,61	15,63	593,1
	45	0,459	6,34	21,5	835,425
	60	0,495	6,99	23,71	1017,225
	120	0,782	12,17	41,27	5848,2
	180	0,924	14,74	49,96	8210,7
	240	1,035	16,74	56,75	9603,9
	300	1,175	19,27	65,32	10986,3
	360	1,238	20,41	69,18	12105
	420	1,278	21,13	71,62	12672
	480	1,290	21,35	72,36	12958,2
	540	1,304	21,60	73,21	13101,3
	600	1,328	22,03	74,68	13310,1
	660	1,339	22,23	75,36	13503,6
II	720	1,356	22,54	76,4	13658,4
					128644,9

Lanjutan formula C

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,282	3,15	11,05	248,625
	30	0,361	4,57	16,03	609,3
	45	0,457	6,31	22,13	858,6
	60	0,493	6,96	24,41	1047,15
	120	0,773	12,01	42,13	5988,6
	180	0,864	13,66	47,92	8104,5
	240	1,024	16,54	58,02	9534,6
	300	1,136	18,57	65,15	11085,3
	360	1,173	19,23	67,46	11934,9
	420	1,210	19,90	69,81	12354,3
	480	1,235	20,35	71,39	12708
	540	1,247	20,57	72,16	12919,5
	600	1,264	20,88	73,25	13086,9
III	660	1,281	21,19	74,34	13283,1
	720	1,320	21,89	76,81	13603,5
					127366,9

Formula D

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,357	4,505	14,9	335,25
	30	0,456	6,29	20,81	803,475
	45	0,512	7,30	24,16	1011,825
	60	0,584	8,60	28,46	1183,95
	120	0,704	10,77	35,63	5768,1
	180	0,847	13,35	44,17	7182
	240	0,948	15,17	50,19	8492,4
	300	1,090	17,74	58,69	9799,2
	360	1,194	19,61	64,91	11124
	420	1,248	20,59	68,13	11973,6
	480	1,312	21,74	71,95	12607,2
	540	1,324	21,96	72,67	13015,8
	600	1,337	22,20	73,45	13150,8
I	660	1,349	22,41	74,17	13285,8
	720	1,365	22,70	75,12	13436,1
					123169,5

Lanjutan formula D

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,347	4,32	14,89	335,025
	30	0,454	6,25	21,55	819,9
	45	0,516	7,37	25,41	1056,6
	60	0,568	8,31	28,64	1216,125
	120	0,701	10,71	36,91	5899,5
	180	0,845	13,31	45,87	7450,2
	240	0,986	15,86	54,64	9045,9
	300	1,090	17,74	61,17	10422,9
	360	1,188	19,51	67,21	11554,2
	420	1,238	20,41	70,32	12377,7
	480	1,276	21,09	72,68	12870
	540	1,285	21,26	73,24	13132,8
	600	1,291	21,37	73,62	13217,4
	660	1,304	21,60	74,42	13323,6
II	720	1,315	21,80	75,13	13459,5
					126181,4

Lanjutan formula D

Replikasi	t (menit)	A	C sampel (µg/ml)	% Obat terlepas	AUC
	0	0	0	0	0
	15	0,341	4,21	14,94	336,15
	30	0,446	6,11	21,66	823,5
	45	0,511	7,28	25,82	1068,3
	60	0,553	8,04	28,5	1222,2
	120	0,604	8,96	31,77	5424,3
	180	0,712	10,91	38,68	6340,5
	240	0,843	13,28	47,06	7716,6
	300	0,913	14,54	51,54	8874
	360	1,054	17,09	60,56	10089
	420	1,181	19,38	68,69	11632,5
	480	1,232	20,30	71,95	12657,6
	540	1,245	20,54	72,79	13026,6
	600	1,261	20,82	73,21	13140
III	660	1,273	21,04	74,58	13301,1
	720	1,288	21,31	75,54	13510,8
					119163,2

LAMPIRAN I

HASIL STATISTIK UJI KESERAGAMAN BOBOT TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 3,15)

ANOVA

Keseragaman bobot formula A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	1,190	2	,595	2,245	,115
Within Groups	15,112	57	,265		
Total	16,302	59			

Keseragaman bobot formula B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	1,276	2	,638	2,832	,067
Within Groups	12,845	57	,225		
Total	14,122	59			

Keseragaman bobot f ormula C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,002	2	,001	,003	,997
Within Groups	21,520	57	,378		
Total	21,522	59			

Keseragaman bobot formula D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,056	2	,028	,086	,918
Within Groups	18,729	57	,329		
Total	18,786	59			

LAMPIRAN J

HASIL UJI KEKERASAN TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 3,34)

ANOVA

Kekerasan formula A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,168	2	,084	1,513	,238
Within Groups	1,499	27	,056		
Total	1,667	29			

Kekerasan formula B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,266	2	,133	3,000	,067
Within Groups	1,197	27	,044		
Total	1,463	29			

Kekerasan formula C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,185	2	,092	,865	,432
Within Groups	2,882	27	,107		
Total	3,067	29			

Kekerasan formula D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,243	2	,121	2,079	,145
Within Groups	1,576	27	,058		
Total	1,819	29			

LAMPIRAN K

HASIL UJI STATISTIK KERAPUHAN TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 5,14)

ANOVA

Kerapuhan formula A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,007	2	,003	,145	,868
Within Groups	,145	6	,024		
Total	,152	8			

Kerapuhan formula B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,001	2	,000	,807	,489
Within Groups	,003	6	,001		
Total	,004	8			

Kerapuhan formula C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,001	2	,000	,510	,624
Within Groups	,006	6	,001		
Total	,007	8			

Kerapuhan formula D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,001	2	,000	,770	,504
Within Groups	,003	6	,001		
Total	,004	8			

LAMPIRAN L

HASIL UJI STATISTIK KESERAGAMAN UKURAN TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 3,15)

ANOVA

KESERAGAMAN UKURAN FORMULA A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,000	2	,000	1,547	,222
Within Groups	,000	57	,000		
Total	,000	59			

KESERAGAMAN UKURAN FORMULA B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,000	2	,000	,302	,741
Within Groups	,001	57	,000		
Total	,001	59			

KESERAGAMAN UKURAN FORMULA C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,000	2	,000	,328	,722
Within Groups	,001	57	,000		
Total	,001	59			

KESERAGAMAN UKURAN FORMULA D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,000	2	,000	,548	,581
Within Groups	,006	57	,000		
Total	,006	59			

LAMPIRAN M

HASIL UJI STATISTIK *FLOATING LAG TIME* TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 3,89)

ANOVA

Floating lag time FORMULA A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,924	2	,462	,689	,521
Within Groups	8,050	12	,671		
Total	8,975	14			

Floating lag time FORMULA B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,164	2	,082	,094	,911
Within Groups	10,439	12	,870		
Total	10,604	14			

Floating lag time FORMULA C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,177	2	,089	1,157	,347
Within Groups	,920	12	,077		
Total	1,097	14			

Floating lag time FORMULA D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	1,078	2	,539	3,885	,050
Within Groups	1,665	12	,139		
Total	2,743	14			

LAMPIRAN N

HASIL UJI STATISTIK PENETEPAN KADAR TABLET ANTAR *BATCH*

Anova: *One Way* (F tabel 5,14)

ANOVA

Pk formula A

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,001	2	,000	,293	,756
Within Groups	,010	6	,002		
Total	,011	8			

Pk formula B

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,002	2	,001	,603	,577
Within Groups	,009	6	,001		
Total	,010	8			

Pk formula C

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,000	2	,000	1,727	,256
Within Groups	,001	6	,000		
Total	,001	8			

Pk formula D

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	,003	2	,002	,744	,515
Within Groups	,014	6	,002		
Total	,017	8			

LAMPIRAN O

HASIL UJI STATISTIK *FLOATING LAG TIME* TABLET ANTAR FORMULA

Anova*: One Way*

Descriptives

Floating lag time

	N	Mean	Std, Deviation	Std, Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula a	3	9,3233	,30501	,17610	8,5656		9,02	9,63
formula b	3	3,6300	,12530	,07234	3,3187	3,9413	3,51	3,76
formula c	3	3,1933	,13317	,07688	2,8625	3,5241	3,04	3,28
formula d	3	2,2033	,32578	,18809	1,3940	3,0126	1,83	2,43
Total	12	4,5875	2,91366	,84110	2,7362	6,4388	1,83	9,63

ANOVA

Floating lag time

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	92,919	3	30,973	532,638	,000
Within Groups	,465	8	,058		
Total	93,384	11			

Lanjutan…

Multiple Comparisons

Floating lag time LSD

(I) formula	(J) formula	Mean Difference (I-J)	Std, Error	Sig,	95% Confidence Interval	
					Lower Bound	Upper Bound
formula a	formula b	5,69333*	,19689	,000	5,2393	6,1474
	formula c	6,13000*	,19689	,000	5,6760	6,5840
	formula d	7,12000*	,19689	,000	6,6660	7,5740
formula b	formula a	-5,69333*	,19689	,000	-6,1474	-5,2393
	formula c	,43667	,19689	,057	-,0174	,8907
	formula d	1,42667*	,19689	,000	,9726	1,8807
formula c	formula a	-6,13000*	,19689	,000	-6,5840	-5,6760
	formula b	-,43667	,19689	,057	-,8907	,0174
	formula d	,99000*	,19689	,001	,5360	1,4440
formula d	formula a	-7,12000*	,19689	,000	-7,5740	-6,6660
	formula b	-1,42667*	,19689	,000	-1,8807	-,9726
	formula c	-,99000*	,19689	,001	-1,4440	-,5360

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

LAMPIRAN P

HASIL UJI STATISTIK PERSEN PELEPASAN OBAT 12 JAM ANTAR FORMULA

Anova*: One Way* (F tabel: 4,07)

Descriptives

Pelepasanobat

	N	Mean	Std, Deviation	Std, Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula A	3	92,1767	,46801	,27021	91,0141	93,3393	91,64	92,50
formula B	3	82,3867	,24583	,14193	81,7760	82,9973	82,13	82,62
formula C	3	76,4967	,27791	,16045	75,8063	77,1870	76,28	76,81
formula D	3	75,2633	,23965	,13836	74,6680	75,8587	75,12	75,54
Total	12	81,5808	6,98616	2,01673	77,1420	86,0196	75,12	92,50

ANOVA

Pelepasanobat

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	536,042	3	178,681	1725,827	,000
Within Groups	,828	8	,104		
Total	536,870	11			

Lanjutan…

Multiple Comparisons

Pelepasanobat
LSD

(I) formula	(J) formula	Mean Difference (I-J)	Std, Error	Sig,	95% Confidence Interval	
					Lower Bound	Upper Bound
formula A	formula B	9,79000*	,26272	,000	9,1842	10,3958
	formula C	15,68000*	,26272	,000	15,0742	16,2858
	formula D	16,91333*	,26272	,000	16,3075	17,5192
formula B	formula A	-9,79000*	,26272	,000	-10,3958	-9,1842
	formula C	5,89000*	,26272	,000	5,2842	6,4958
	formula D	7,12333*	,26272	,000	6,5175	7,7292
formula C	formula A	-15,68000*	,26272	,000	-16,2858	-15,0742
	formula B	-5,89000*	,26272	,000	-6,4958	-5,2842
	formula D	1,23333*	,26272	,002	,6275	1,8392
formula D	formula A	-16,91333*	,26272	,000	-17,5192	-16,3075
	formula B	-7,12333*	,26272	,000	-7,7292	-6,5175
	formula C	-1,23333*	,26272	,002	-1,8392	-,6275

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

LAMPIRAN Q

HASIL UJI STATISTIK PERSEN EFISIENSI DISOLUSI ANTAR FORMULA

Anova: ***One Way***

Descriptives

Efisiensi disolusi

	N	Mean	Std, Deviation	Std, Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula a	3	81,3851	,39481	,22795	80,4043	82,3659	80,96	81,74
formula b	3	69,0648	6,77497	3,91153	52,2348	85,8948	61,29	73,73
formula d	3	62,5842	2,31743	1,33797	56,8274	68,3410	60,57	65,12
formula d	3	58,5555	1,89366	1,09330	53,8514	63,2596	56,61	60,39
Total	12	67,8974	9,56495	2,76116	61,8201	73,9747	56,61	81,74

ANOVA

Efisiensi disolusi

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	896,347	3	298,782	21,725	,000
Within Groups	110,025	8	13,753		
Total	1006,372	11			

Lanjutan…

Multiple Comparisons

efisiensidisolusi
LSD

(I) formula	(J) formula	Mean Difference (I-J)	Std, Error	Sig,	95% Confidence Interval	
					Lower Bound	Upper Bound
formula a	formula b	12,32029*	3,02799	,004	5,3377	19,3029
	formula d	18,80093*	3,02799	,000	11,8184	25,7835
	formula d	22,82960*	3,02799	,000	15,8470	29,8122
formula b	formula a	-12,32029*	3,02799	,004	-19,3029	-5,3377
	formula d	6,48063	3,02799	,065	-,5019	13,4632
	formula d	10,50930*	3,02799	,008	3,5267	17,4919
formula d	formula a	-18,80093*	3,02799	,000	-25,7835	-11,8184
	formula b	-6,48063	3,02799	,065	-13,4632	,5019
	formula d	4,02867	3,02799	,220	-2,9539	11,0112
formula d	formula a	-22,82960*	3,02799	,000	-29,8122	-15,8470
	formula b	-10,50930*	3,02799	,008	-17,4919	-3,5267
	formula d	-4,02867	3,02799	,220	-11,0112	2,9539

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

LAMPIRAN R

HASIL UJI STATISTIK KONSTANTA LAJU DISOLUSI ANTAR FORMULA

Anova: *One Way*

Descriptives

orde0

	N	Mean	Std, Deviation	Std, Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula a	3	1,380667	,0057735	,0033333	1,366324	1,395009	1,3740	1,3840
formula b	3	1,130000	,0312250	,0180278	1,052433	1,207567	1,0950	1,1550
formula c	3	,291667	,0047258	,0027285	,279927	,303406	,2880	,2970
formula d	3	,282333	,0025166	,0014530	,276082	,288585	,2800	,2850
Total	12	,771167	,5142924	,1484634	,444401	1,097932	,2800	1,3840

ANOVA

orde0

	Sum of Squares	df	Mean Square	F	Sig,
Between Groups	2,907	3	,969	3738,206	,000
Within Groups	,002	8	,000		
Total	2,909	11			

Lanjutan…

Multiple Comparisons

orde0
LSD

(I) formula	(J) formula	Mean Difference (I-J)	Std, Error	Sig,	95% Confidence Interval	
					Lower Bound	Upper Bound
formula a	formula b	,2506667*	,0131466	,000	,220351	,280983
	formula c	1,0890000*	,0131466	,000	1,058684	1,119316
	formula d	1,0983333*	,0131466	,000	1,068017	1,128649
formula b	formula a	-,2506667*	,0131466	,000	-,280983	-,220351
	formula c	,8383333*	,0131466	,000	,808017	,868649
	formula d	,8476667*	,0131466	,000	,817351	,877983
formula c	formula a	-1,0890000*	,0131466	,000	-1,119316	-1,058684
	formula b	-,8383333*	,0131466	,000	-,868649	-,808017
	formula d	,0093333	,0131466	,498	-,020983	,039649
formula d	formula a	-1,0983333*	,0131466	,000	-1,128649	-1,068017
	formula b	-,8476667*	,0131466	,000	-,877983	-,817351
	formula c	-,0093333	,0131466	,498	-,039649	,020983

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

LAMPIRAN S

HASIL UJI F KURVA BAKU

UJI KESAMAAN ANTAR SLOPE DALAM HCL 0,1 N

Kurva Baku 1

	x	Y	x2	y2	xy
	1,98	0,202	3,95	0,0408	0,4015
	4,97	0,347	24,70	0,1204	1,7245
	7,45	0,449	55,57	0,2016	3,3473
	10,93	0,638	119,55	0,4070	6,9758
	14,91	0,842	222,30	0,7089	12,5542
	17,89	0,998	320,12	0,9960	17,8562
	22,86	1,239	522,67	1,5351	28,3260
	29,82	1,598	889,23	2,5536	47,6524
Σ	110,83	6,313	2158,12	6,5635	118,8380

Kurva Baku 2

	x	Y	x2	y2	xy
	2,03	0,236	4,14	0,05569	0,4804
	5,09	0,386	25,90	0,1489	1,9647
	7,63	0,523	58,29	0,2735	3,9931
	11,19	0,728	125,39	0,5299	8,1521
	15,27	0,936	233,17	0,8760	14,2927
	18,32	1,118	335,76	1,2499	20,4862
	23,41	1,420	548,21	2,0164	33,2478
	30,54	1,799	932,69	3,2364	54,9414
Σ	113,50	7,146	2263,59	8,3870	137,5588

Kurva Baku 3

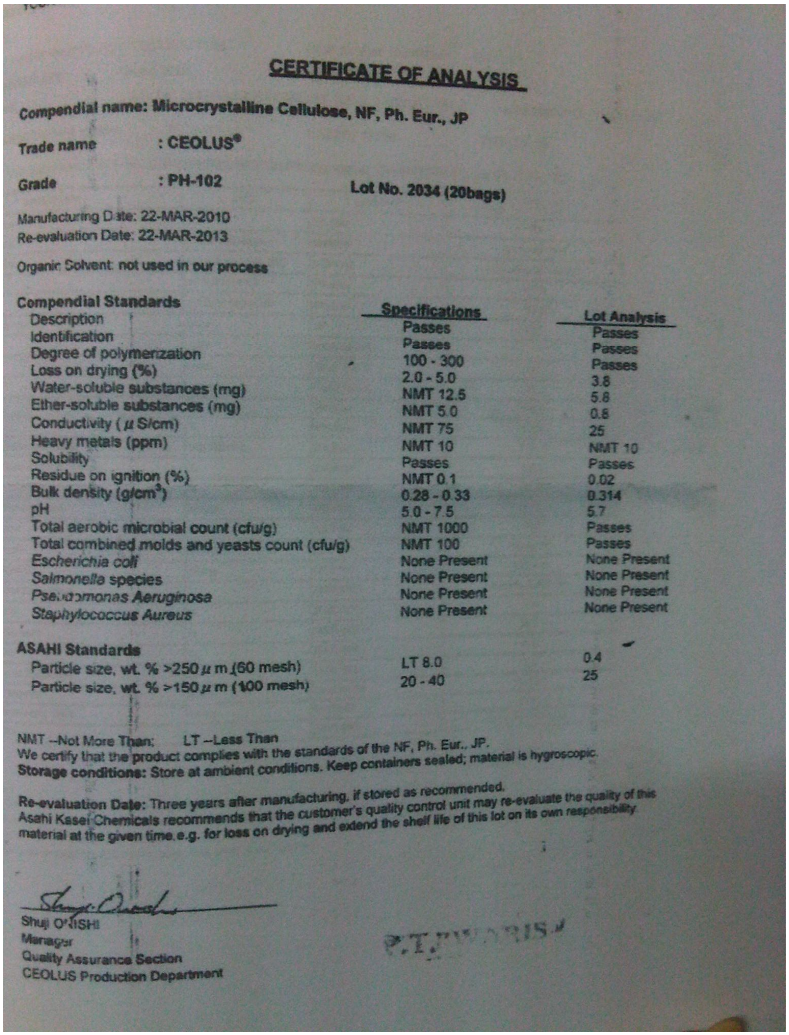
	x	Y	x2	y2	Xy
	2,04	0,231	4,16	0,0533	0,4712
	5,10	0,358	26,01	0,1281	1,8258
	7,65	0,495	58,52	0,2450	3,7867
	11,22	0,700	125,88	0,4900	7,8540
	15,30	0,985	234,09	0,9702	15,0705
	18,36	1,160	337,08	1,3456	21,2976
	23,46	1,409	550,37	1,9852	33,0551
	30,60	1,787	936,36	3,1933	54,6822
Σ	113,73	7,125	2272,49	8,4110	138,0432

Kurva Baku	Σx2	Σxy	Σy2	N	Residual SS	Residual DF
baku 1	2158,12	118,8380	6,5635	8	0,019649	6
baku 2	2263,59	137,5588	8,3870	8	0,027557	6
baku 3	2272,49	138,0432	8,4110	8	0,025553	6
pooled regression					0,047206	18
common regression	4421,708	256,3969	14,9505		0,083157	23

Fhitung = 2,74174 < Ftabel $_{0,05\ (5:18)}$ = 4,58

LAMPIRAN T

SERTIFIKAT AVICEL PH 102



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**
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 12.5	5.8
Ether-soluble substances (mg)	NMT 5.0	0.8
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
Escherichia coli	None Present	None Present
Salmonella species	None Present	None Present
Pseudomonas Aeruginosa	None Present	None Present
Staphylococcus Aureus	None Present	None Present
ASAHI Standards		
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 O'ISHI
Manager
Quality Assurance Section
CEOLUS Production Department

LAMPIRAN U

SERTIFIKAT *XANTHAN GUM*

18/03 0/10-03

degussa.
Texturant Systems

CERTIFICATE OF ANALYSIS

N° of CA : 48528

Product : SATIAXANE CX 2 QD
Batch N° : L 2003-0808
Prepared for : 65022 - PT. MAKMUR PANCAN KHARISMA (Indonesia)
Degussa Order N° : 021488770010 — CUST. ORDER REF 03/PO/20030791112
Bes. Before 06 2006 — DATE OF BATCH : 06 2003
Remarks

Datas :

	Typical values	Specifications
Viscosity in a 1 % aqueous solution (+1% KCl), measured on a Brookfield LVF viscometer, 60 rpm	1480	1200 - 1600 cp
pH in a 1% aqueous solution	6.7	6.1 - 8
Particle size > 250 µm	73.9	>= 50 %
Particle size < 100 µm	1	<= 10 %
Total plate count (PCA medium)	100	<= 2000 cfu/g
Yeast and moulds	100	<= 200 cfu/g
Escherichia coli / 5g	NEG. BY TEST	NEG. BY TEST

Certified characteristics based on random testing :

Loss on drying (4 h. 105° C)	PASS	<= 14 %
Pseudomonas Aeruginosas / 1 g	PASS	NEG. BY TEST
Coagulase positive staphylococcus / 1g	PASS	NEG. BY TEST
Salmonella /10g	PASS	NEG. BY TEST

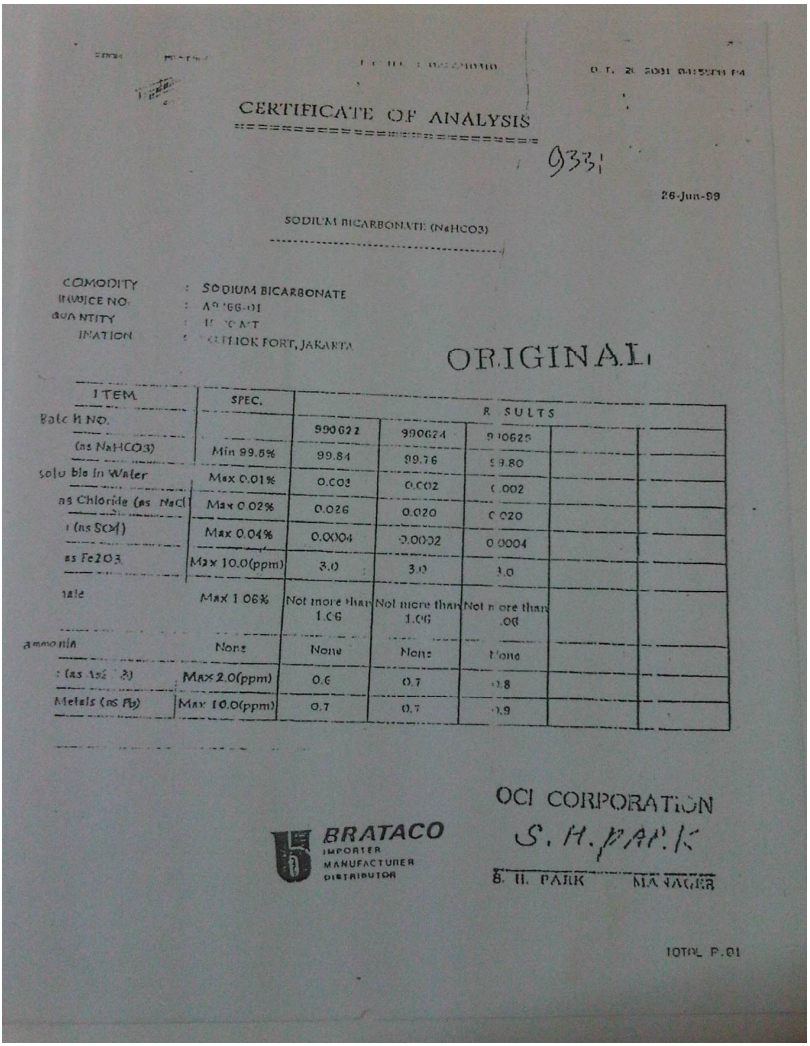
Nota :
Each component of this blend fully meets the FAO/WHO and EC legislations in force on food additives

DEGUSSA TEXTURANT SYSTEMS FRANCE SAS
Société par Actions Simplifiée au capital de 80 132 300 Euros
4, place des ailes
92641 BOULOGNE BILLANCOURT CEDEX (France)
Tél : +33 (0)1.47.12.25.25 - Fax +33 (0)1 47.12.26.36

Sophie Valentini, Quality Department
AUGUST 14, 2003

LAMPIRAN V

SERTIFIKAT NATRIUM BIKARBONAT



CERTIFICATE OF ANALYSIS

9331

26-Jun-99

SODIUM BICARBONATE (NaHCO3)

COMODITY : SODIUM BICARBONATE
INVOICE NO. : AS '66-01
QUANTITY : [illegible] MT
DESTINATION : CILINCING PORT, JAKARTA

ORIGINAL

ITEM	SPEC.	RESULTS				
Batch NO.		990622	990624	990625		
Assay (as NaHCO3)	Min 99.8%	99.84	99.76	99.80		
Insoluble in Water	Max 0.01%	0.003	0.002	0.002		
Chloride (as NaCl)	Max 0.02%	0.026	0.020	0.020		
Sulfate (as SO4)	Max 0.04%	0.0004	0.0002	0.0004		
Iron as Fe2O3	Max 10.0(ppm)	3.0	3.0	3.0		
Loss on Ignite	Max 1.06%	Not more than 1.06	Not more than 1.06	Not more than 1.06		
Test for Ammonia	None	None	None	None		
Arsenic (as As2O3)	Max 2.0(ppm)	0.6	0.7	0.8		
Heavy Metals (as Pb)	Max 10.0(ppm)	0.7	0.7	0.9		

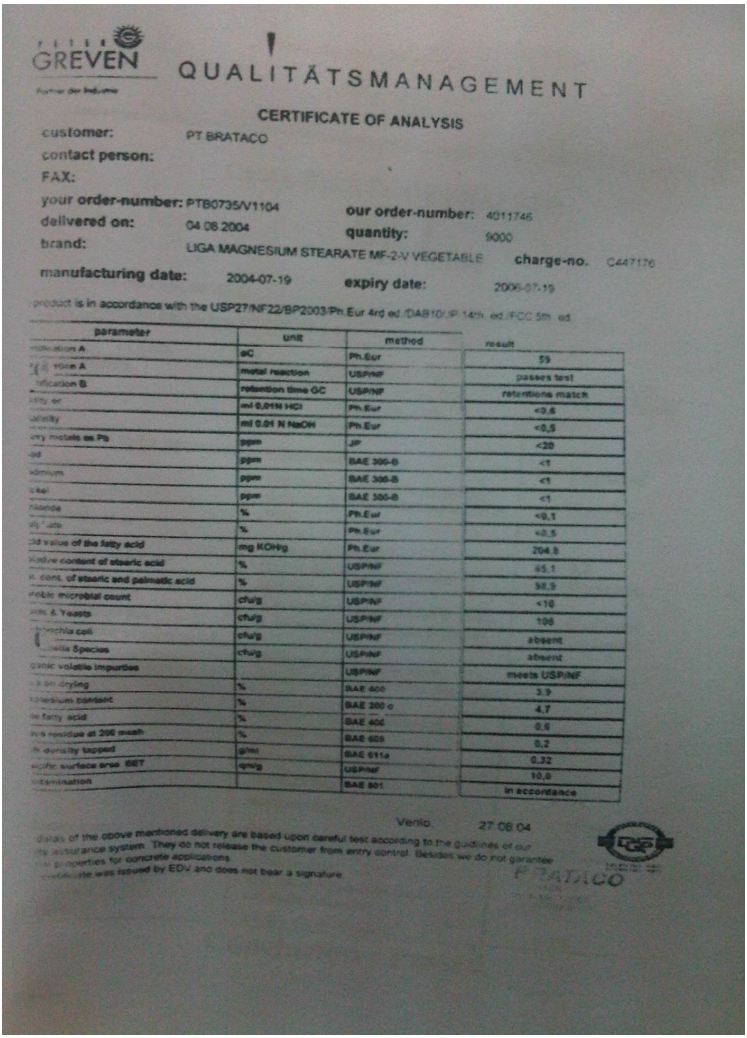
BRATACO
IMPORTER
MANUFACTURER
DISTRIBUTOR

OCI CORPORATION
S. H. PARK
S. H. PARK MANAGER

TOTAL P.01

LAMPIRAN W

SERTIFIKAT MAGNESIUM STEARAT



PETER GREVEN
Partner der Industrie

QUALITÄTSMANAGEMENT

CERTIFICATE OF ANALYSIS

customer: PT BRATACO
contact person:
FAX:
your order-number: PTB0735/V1104 our order-number: 4011746
delivered on: 04.06.2004 quantity: 9000
brand: LIGA MAGNESIUM STEARATE MF-2-V VEGETABLE charge-no. C447176
manufacturing date: 2004-07-19 expiry date: 2006-07-19

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

parameter	unit	method	result
identification A	oC	Ph.Eur	59
identification A	metal reaction	USP/NF	passes test
identification B	retention time GC	USP/NF	retentions match
fatty er	ml 0,01N HCl	Ph.Eur	<0,6
acidity	ml 0.01 N NaOH	Ph.Eur	<0,5
ivy metals as Pb	ppm	JP	<20
ad	ppm	BAE 300-B	<1
admium	ppm	BAE 300-B	<1
ickel	ppm	BAE 300-B	<1
hloride	%	Ph.Eur	<0,1
ulphate	%	Ph.Eur	<0,5
id value of the fatty acid	mg KOH/g	Ph.Eur	204,8
drate content of stearic acid	%	USP/NF	65,1
cont. of stearic and palmatic acid	%	USP/NF	98,9
robic microbial count	cfu/g	USP/NF	<10
ds & Yeasts	cfu/g	USP/NF	100
scherichia coli	cfu/g	USP/NF	absent
lonella Species	cfu/g	USP/NF	absent
anic volatile impurities		USP/NF	meets USP/NF
s on drying	%	BAE 400	3,9
nesium content	%	BAE 300 c	4,7
e fatty acid	%	BAE 400	0,6
e residue at 200 mesh	%	BAE 605	0,2
k density tapped	g/ml	BAE 611a	0,32
ific surface area BET	qm/g	USP/NF	10,0
ntamination		BAE 801	in accordance

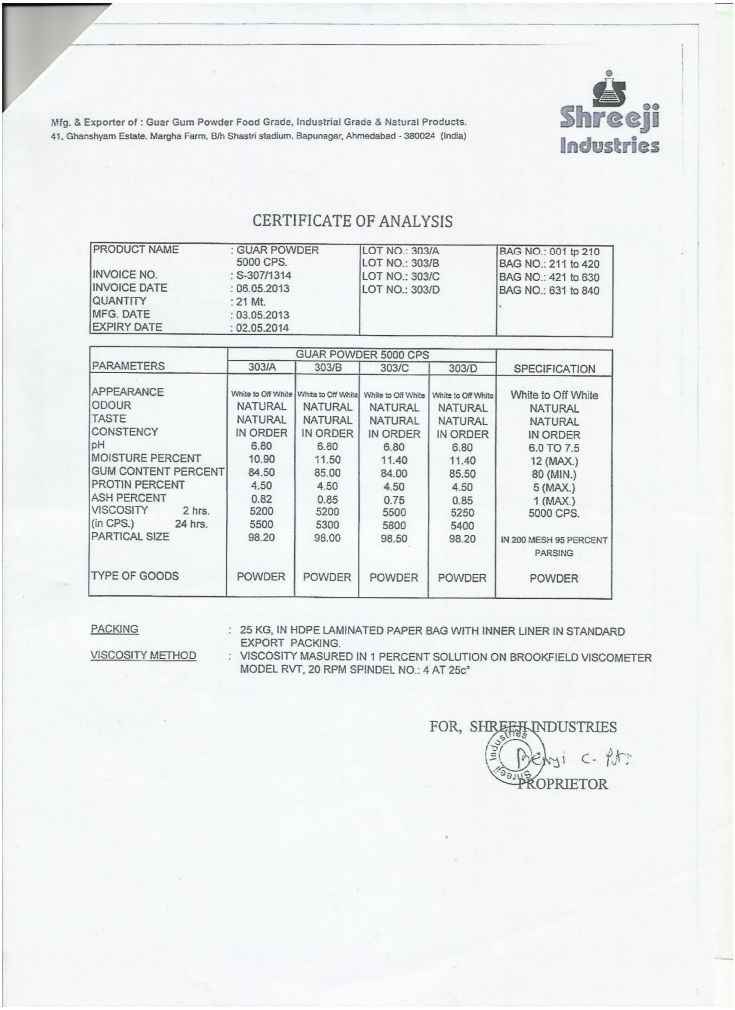
Venlo 27.06.04

details of the above mentioned delivery are based upon careful test according to the guidlines of our ity assurance system. They do not release the customer from entry control. Besides we do not garantee ain properties for concrete applications.
rtificate was issued by EDV and does not bear a signature.

P.T. BRATACO

LAMPIRAN X

SERTIFIKAT *GUAR GUM*



Mfg. & Exporter of : Guar Gum Powder Food Grade, Industrial Grade & Natural Products.
41, Ghanshyam Estate, Margha Farm, B/h Shastri stadium, Bapunagar, Ahmedabad - 380024 (India)

Shreeji Industries

CERTIFICATE OF ANALYSIS

PRODUCT NAME	: GUAR POWDER 5000 CPS.	LOT NO.: 303/A LOT NO.: 303/B	BAG NO.: 001 tp 210 BAG NO.: 211 to 420
INVOICE NO.	: S-307/1314	LOT NO.: 303/C	BAG NO.: 421 to 630
INVOICE DATE	: 06.05.2013	LOT NO.: 303/D	BAG NO.: 631 to 840
QUANTITY	: 21 Mt.		
MFG. DATE	: 03.05.2013		
EXPIRY DATE	: 02.05.2014		

PARAMETERS	GUAR POWDER 5000 CPS				SPECIFICATION
	303/A	303/B	303/C	303/D	
APPEARANCE	White to Off White	White to Off White	White to Off White	White to Off White	White to Off White
ODOUR	NATURAL	NATURAL	NATURAL	NATURAL	NATURAL
TASTE	NATURAL	NATURAL	NATURAL	NATURAL	NATURAL
CONSTENCY	IN ORDER	IN ORDER	IN ORDER	IN ORDER	IN ORDER
pH	6.80	6.80	6.80	6.80	6.0 TO 7.5
MOISTURE PERCENT	10.90	11.50	11.40	11.40	12 (MAX.)
GUM CONTENT PERCENT	84.50	85.00	84.00	85.50	80 (MIN.)
PROTIN PERCENT	4.50	4.50	4.50	4.50	5 (MAX.)
ASH PERCENT	0.82	0.85	0.75	0.85	1 (MAX.)
VISCOSITY 2 hrs.	5200	5200	5500	5250	5000 CPS.
(in CPS.) 24 hrs.	5500	5300	5800	5400	
PARTICAL SIZE	98.20	98.00	98.50	98.20	IN 200 MESH 95 PERCENT PARSING
TYPE OF GOODS	POWDER	POWDER	POWDER	POWDER	POWDER

PACKING : 25 KG, IN HDPE LAMINATED PAPER BAG WITH INNER LINER IN STANDARD EXPORT PACKING.

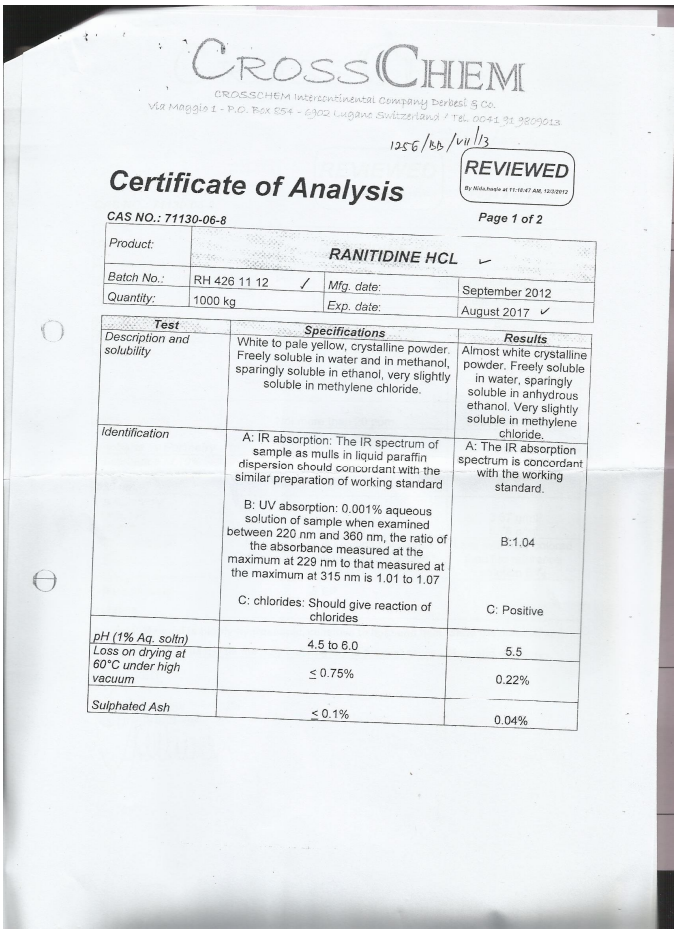
VISCOSITY METHOD : VISCOSITY MASURED IN 1 PERCENT SOLUTION ON BROOKFIELD VISCOMETER MODEL RVT, 20 RPM SPINDEL NO.: 4 AT 25c°

FOR, SHREEJI INDUSTRIES

PROPRIETOR

LAMPIRAN Y

SERTIFIKAT RANITIDIN HCL



CROSSCHEM

CROSSCHEM Intercontinental Company Derbesi & Co.
Via Maggio 1 - P.O. Box 554 - 6902 Lugano Switzerland / Tel. 0041 91 9809013

1256/BB/VII/13

REVIEWED
By Nida.hasle at 11:16:47 AM, 12/3/2012

Certificate of Analysis

CAS NO.: 71130-06-8

Page 1 of 2

Product:	RANITIDINE HCL		
Batch No.:	RH 426 11 12 ✓	Mfg. date:	September 2012
Quantity:	1000 kg	Exp. date:	August 2017 ✓

Test	Specifications	Results
Description and solubility	White to pale yellow, crystalline powder. Freely soluble in water and in methanol, sparingly soluble in ethanol, very slightly soluble in methylene chloride.	Almost white crystalline powder. Freely soluble in water, sparingly soluble in anhydrous ethanol. Very slightly soluble in methylene chloride.
Identification	A: IR absorption: The IR spectrum of sample as mulls in liquid paraffin dispersion should concordant with the similar preparation of working standard B: UV absorption: 0.001% aqueous solution of sample when examined between 220 nm and 360 nm, the ratio of the absorbance measured at the maximum at 229 nm to that measured at the maximum at 315 nm is 1.01 to 1.07 C: chlorides: Should give reaction of chlorides	A: The IR absorption spectrum is concordant with the working standard. B:1.04 C: Positive
pH (1% Aq. soltn)	4.5 to 6.0	5.5
Loss on drying at 60°C under high vacuum	≤ 0.75%	0.22%
Sulphated Ash	≤ 0.1%	0.04%

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CROSSCHEM Intercontinental Company Peresi & Co.
Via Maggio 1 - P.O. Box 854 - 6902 Lugano Switzerland / Tel. 0041 91 9809013

1256 / BB / VII / 13

REVIEWED
By Nida.haqie at 11:19:01 AM, 12/3/2012

CAS NO.: 71130-06-8

Product:	RANITIDINE HCL ✓		
Batch No.:	RH 426 11 12 ✓	Mfg. date:	September 2012
Quantity:	1000 kg	Exp. date:	August 2017

Test	Specifications	Results
Related substances (by TLC)	Impurity "A": not more than 0.5% Any other impurity: not more than 0.3% Such impurity > 0.2%: Maximum 1 Such impurity > 0.1%: Maximum 3	Less than 0.2% Not detected Only one Only one
Heavy metals	Not more than 20 ppm	Less than 20 ppm
Assay dry basis by Pot'metry	98.5% to 101.0%	99.7%
Absorbance of 10% aqueous solution at 430 nm.	≤ 0.200	0.043
Bulk Density Untapped 100 taps	 For information ≥ 0.70 g/ml	 0.67 g/ml 0.78 g/ml
Appearance of solution	1% w/v aqueous solution not more intensely colored than the reference solution BY_5	Less intensely colored than the reference solution BY_5
The product is conform	☒ EP	
Storage: Material is highly hygroscopic, sensitive to light and heat. Store the material at below 25°C. After usage tie the poly bags tightly to prevent access of air and moisture.		

APPROVED

Quality Control Manager
Dr. Alfredo Varisco

LAMPIRAN Z

TABEL R

Tabel r

N	Taraf Signif		N	Taraf Signif		N	Taraf Signif	
	5%	1%		5%	1%		5%	1%
3	0,997	0,999	27	0,381	0,487	55	0,266	0,345
4	0,950	0,990	28	0,374	0,478	60	0,254	0,330
5	0,878	0,959	29	0,367	0,470	65	0,244	0,317
6	0,811	0,917	30	0,361	0,463	70	0,235	0,306
7	0,754	0,874	31	0,355	0,456	75	0,227	0,296
8	0,707	0,834	32	0,349	0,449	80	0,220	0,286
9	0,666	0,798	33	0,344	0,442	85	0,213	0,278
10	0,632	0,765	34	0,339	0,436	90	0,207	0,270
11	0,602	0,735	35	0,334	0,430	95	0,202	0,263
12	0,576	0,708	36	0,329	0,424	100	0,195	0,256
13	0,553	0,684	37	0,325	0,418	125	0,176	0,230
14	0,532	0,661	38	0,320	0,413	150	0,159	0,210
15	0,514	0,641	39	0,316	0,408	175	0,148	0,194
16	0,497	0,623	40	0,312	0,403	200	0,138	0,181
17	0,482	0,606	41	0,308	0,398	300	0,113	0,148
18	0,468	0,590	42	0,304	0,393	400	0,098	0,128
19	0,456	0,575	43	0,301	0,389	500	0,088	0,115
20	0444	0,561	44	0,297	0,384	600	0,080	0,105
21	0,433	0,549	45	0,294	0,380	700	0,074	0,097
22	0,423	0,537	46	0,291	0,376	800	0,070	0,091
23	0,413	0,526	47	0,288	0,372	900	0,065	0,086
24	0,404	0,515	48	0,284	0,368	1000	0,062	0,081
25	0,396	0,505	49	0,281	0,364			
26	0,388	0,496	50	0,279	0,361			

LAMPIRAN AA

TABEL F

Table of F-statistics α = 0.05

df2\df1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	35	40	45	50	60	70	80	100	200	500	1000
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.76	8.74	8.73	8.71	8.70	8.69	8.68	8.67	8.67	8.66	8.65	8.64	8.63	8.62	8.62	8.60	8.59	8.59	8.58	8.57	8.57	8.56	8.55	8.54	8.53	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.94	5.91	5.89	5.87	5.86	5.84	5.83	5.82	5.81	5.80	5.79	5.77	5.76	5.75	5.75	5.73	5.72	5.71	5.70	5.69	5.69	5.68	5.67	5.66	5.65	5.64
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.70	4.68	4.66	4.64	4.62	4.60	4.59	4.58	4.57	4.56	4.54	4.53	4.52	4.50	4.50	4.48	4.46	4.46	4.44	4.43	4.42	4.42	4.41	4.39	4.37	4.37
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.03	4.00	3.98	3.96	3.94	3.92	3.91	3.90	3.88	3.87	3.86	3.84	3.83	3.82	3.81	3.79	3.77	3.76	3.75	3.74	3.73	3.72	3.71	3.69	3.68	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.60	3.57	3.55	3.53	3.51	3.49	3.48	3.47	3.46	3.44	3.43	3.41	3.40	3.39	3.38	3.36	3.34	3.33	3.32	3.30	3.29	3.29	3.27	3.25	3.24	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.31	3.28	3.26	3.24	3.22	3.20	3.19	3.17	3.16	3.15	3.13	3.12	3.10	3.09	3.08	3.06	3.04	3.03	3.01	3.00	2.99	2.99	2.97	2.95	2.94	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.10	3.07	3.05	3.03	3.01	2.99	2.97	2.96	2.95	2.94	2.92	2.90	2.89	2.87	2.86	2.84	2.83	2.81	2.80	2.79	2.78	2.77	2.76	2.73	2.72	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.94	2.91	2.89	2.86	2.85	2.83	2.81	2.80	2.79	2.77	2.75	2.74	2.72	2.71	2.70	2.68	2.66	2.65	2.64	2.62	2.61	2.60	2.59	2.56	2.55	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.82	2.79	2.76	2.74	2.72	2.70	2.69	2.67	2.66	2.65	2.63	2.61	2.59	2.58	2.57	2.55	2.53	2.52	2.51	2.49	2.48	2.47	2.46	2.43	2.42	2.41
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.72	2.69	2.66	2.64	2.62	2.60	2.59	2.57	2.56	2.54	2.53	2.51	2.49	2.48	2.47	2.44	2.43	2.41	2.40	2.38	2.37	2.36	2.35	2.32	2.31	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.63	2.60	2.58	2.55	2.53	2.51	2.50	2.48	2.47	2.46	2.44	2.42	2.41	2.39	2.38	2.36	2.34	2.33	2.31	2.30	2.29	2.28	2.27	2.24	2.23	2.22
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.57	2.53	2.51	2.48	2.46	2.44	2.43	2.41	2.40	2.39	2.37	2.35	2.34	2.33	2.31	2.29	2.27	2.26	2.25	2.23	2.22	2.21	2.20	2.19	2.18	2.17
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.51	2.48	2.45	2.42	2.40	2.38	2.37	2.35	2.34	2.33	2.31	2.29	2.27	2.26	2.25	2.22	2.20	2.19	2.18	2.15	2.14	2.13	2.12	2.10	2.08	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.46	2.42	2.40	2.37	2.35	2.33	2.32	2.30	2.29	2.28	2.25	2.24	2.22	2.21	2.19	2.17	2.15	2.14	2.13	2.11	2.09	2.08	2.07	2.04	2.02	2.02
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.41	2.38	2.35	2.33	2.31	2.29	2.27	2.26	2.24	2.23	2.21	2.19	2.17	2.16	2.15	2.12	2.10	2.09	2.08	2.06	2.05	2.04	2.03	2.00	1.99	1.97
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.37	2.34	2.31	2.29	2.27	2.25	2.23	2.22	2.20	2.19	2.17	2.15	2.13	2.12	2.11	2.08	2.06	2.05	2.04	2.02	2.00	1.99	1.98	1.95	1.93	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.34	2.31	2.28	2.26	2.23	2.21	2.20	2.18	2.17	2.16	2.13	2.11	2.10	2.08	2.07	2.05	2.03	2.02	2.01	1.99	1.97	1.96	1.94	1.91	1.89	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.31	2.28	2.25	2.23	2.20	2.18	2.17	2.15	2.14	2.12	2.10	2.08	2.07	2.05	2.04	2.01	1.99	1.98	1.97	1.95	1.93	1.92	1.91	1.88	1.86	1.85
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.26	2.23	2.20	2.17	2.15	2.13	2.11	2.10	2.08	2.07	2.05	2.03	2.01	2.00	1.99	1.96	1.94	1.93	1.91	1.90	1.88	1.87	1.86	1.83	1.81	1.80
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.22	2.18	2.15	2.13	2.11	2.09	2.07	2.05	2.04	2.03	2.00	1.98	1.97	1.95	1.94	1.91	1.90	1.88	1.86	1.85	1.83	1.82	1.81	1.78	1.76	1.75
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.18	2.15	2.12	2.09	2.07	2.05	2.04	2.02	2.00	1.99	1.97	1.95	1.94	1.92	1.91	1.88	1.86	1.85	1.84	1.82	1.80	1.79	1.78	1.76	1.74	1.73
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.15	2.12	2.09	2.06	2.04	2.02	2.00	1.99	1.97	1.96	1.93	1.91	1.90	1.88	1.87	1.84	1.82	1.81	1.80	1.78	1.76	1.75	1.74	1.72	1.70	1.69
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.13	2.09	2.06	2.04	2.01	1.99	1.98	1.96	1.95	1.93	1.91	1.89	1.87	1.86	1.85	1.82	1.80	1.79	1.78	1.76	1.74	1.73	1.72	1.70	1.68	1.67
35	4.12	3.27	2.87	2.64	2.49	2.37	2.29	2.22	2.16	2.11	2.08	2.04	2.01	1.99	1.96	1.94	1.92	1.91	1.90	1.88	1.86	1.84	1.83	1.82	1.80	1.78	1.76	1.74	1.73	1.71	1.70	1.69	1.68	1.66	1.64	1.63
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.04	2.00	1.97	1.95	1.92	1.90	1.89	1.87	1.86	1.84	1.81	1.80	1.78	1.77	1.76	1.74	1.72	1.70	1.69	1.67	1.66	1.64	1.63	1.61	1.59	1.58
45	4.06	3.20	2.81	2.58	2.42	2.31	2.22	2.15	2.10	2.05	2.01	1.97	1.94	1.92	1.89	1.87	1.86	1.84	1.83	1.81	1.78	1.76	1.75	1.74	1.73	1.71	1.69	1.68	1.66	1.64	1.63	1.61	1.60	1.58	1.56	1.55
50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03	1.99	1.95	1.93	1.89	1.87	1.85	1.83	1.81	1.80	1.78	1.76	1.74	1.72	1.70	1.69	1.66	1.63	1.61	1.60	1.58	1.56	1.55	1.54	1.52	1.50	1.48
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.95	1.92	1.89	1.86	1.84	1.82	1.80	1.79	1.78	1.75	1.73	1.70	1.68	1.67	1.65	1.62	1.59	1.57	1.56	1.53	1.52	1.50	1.48	1.46	1.44	1.42
70	3.98	3.13	2.74	2.50	2.35	2.23	2.14	2.07	2.02	1.97	1.93	1.89	1.86	1.84	1.81	1.79	1.77	1.75	1.74	1.72	1.70	1.67	1.65	1.64	1.62	1.59	1.57	1.55	1.53	1.50	1.49	1.47	1.45	1.42	1.40	1.37
80	3.96	3.11	2.72	2.48	2.33	2.21	2.13	2.06	2.00	1.95	1.91	1.88	1.84	1.82	1.79	1.77	1.75	1.73	1.72	1.70	1.68	1.65	1.63	1.62	1.60	1.57	1.54	1.52	1.51	1.48	1.46	1.45	1.43	1.40	1.38	1.35
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.89	1.85	1.82	1.79	1.77	1.75	1.73	1.71	1.69	1.68	1.65	1.63	1.61	1.59	1.57	1.54	1.52	1.50	1.48	1.46	1.44	1.42	1.40	1.37	1.34	1.31
200	3.89	3.04	2.65	2.41	2.26	2.14	2.06	1.98	1.93	1.88	1.84	1.80	1.77	1.74	1.72	1.69	1.67	1.66	1.64	1.62	1.60	1.57	1.55	1.53	1.52	1.49	1.46	1.45	1.43	1.39	1.38	1.35	1.32	1.28	1.26	1.22
500	3.86	3.01	2.62	2.39	2.23	2.12	2.03	1.96	1.90	1.85	1.81	1.77	1.74	1.71	1.69	1.66	1.64	1.62	1.61	1.59	1.55	1.54	1.52	1.50	1.48	1.46	1.42	1.40	1.39	1.35	1.33	1.32	1.28	1.24	1.21	1.16
1000	3.85	3.00	2.61	2.38	2.22	2.11	2.02	1.95	1.89	1.84	1.80	1.76	1.73	1.70	1.68	1.65	1.63	1.61	1.60	1.58	1.55	1.53	1.51	1.49	1.47	1.45	1.41	1.38	1.36	1.33	1.31	1.30	1.26	1.22	1.19	1.13