

南宁市新版暴雨强度公式及计算图表

(2024 年版)

编 制 单 位： 南宁市住房和城乡建设局

南 宁 市 气 象 局

二〇二四年十二月

本《南宁市新版暴雨强度公式及计算图表（2024 年版）》由：
南宁市住房和城乡建设局、南宁市气象局组织编制和管理；
广西壮族自治区气象服务中心、南宁市勘测设计院集团有限公司
负责编写和具体技术内容的解释。

各单位在执行过程中如有问题，请向广西壮族自治区气象服务中心提出（联系地址：南宁市民族大道 81 号，邮政编码：530022，电话：0771-5776876）。

委 托 单 位： 南 宁 市 住 房 和 城 乡 建 设 局
南 宁 市 气 象 局

设 计 单 位： 广 西 壮 族 自 治 区 气 象 服 务 中 心
南 宁 市 勘 测 设 计 院 集 团 有 限 公 司

说 明

1. 本计算公式和图表是根据南宁国家基本气象站 30 年（1994—2023 年）的连续自记雨量记录为基础，采用“年最大值法”对暴雨样本资料进行选择，由皮尔逊—III 型分布曲线拟合数据，得到 P-i-t 关系表，再由最小二乘法求解公式参数得到。

2. 以重现期 2、3、5、10、20、30、50、100（年）相应的暴雨强度总公式和单一重现期暴雨强度公式制表。设计暴雨强度可按选定设计重现期直接查用表列数值（暴雨强度总公式查算表见表四，单一重现期暴雨强度公式查算表见表五）。

3. 若采用其它重现期，设计暴雨强度可用重现期区间参数公式计算：

$$q = \frac{167A}{(t+b)^n}$$

式中：q—设计暴雨强度[升/（秒·公顷）]，t—降雨历时（分钟），A—雨力，b、n—地方常数（A、b、n 按重现期区间参数公式计算，公式见表三）。

4. 因总公式精度不及重现期区间参数公式，故建议推求其它重现期设计暴雨强度时使用区间参数公式。

5. 本计算公式和图表适用的时间范围是 1~200 分钟，重现期范围是 2~100 年，空间范围是南宁市 6 个区（青秀区、兴宁区、邕宁区、良庆区、江南区和西乡塘区）。

应用重现期区间参数公式计算暴雨强度实例：求 P=25 年，t=50 分钟的暴雨强度 q。

从重现期区间参数公式 II，得：

$$n = 0.875 - 0.008 \ln(P - 6.737) = 0.85176 \text{ (取 } 0.852 \text{)}$$

$$b = 16.818 - 0.284 \ln(P - 6.737) = 19.70704 \text{ (取 } 19.707 \text{)}$$

$$A = 24.918 + 2.082 \ln(P - 0.107) = 62.61649 \text{ (取 } 62.616 \text{)}$$

配得 P=25 年的暴雨强度计算公式如下：

$$q = \frac{167 \times 62.616}{(t + 19.707)^{0.852}}$$

可按上式计算 1~200 分钟中任何时段的暴雨强度。

$$\text{当 } t=50: q = \frac{167 \times 62.616}{(t + 19.707)^{0.852}} = 281.145 \text{ [升/（秒·公顷）]}$$

6. 公式误差

重现期 2~20 年的暴雨强度总公式的平均绝对均方差为 0.045mm/min，平均相对均方差为 2.99%，区间参数公式的平均绝对均方差为 0.035mm/min，平均相对均方差为 2.03%，均符合《室外排水设计标准》（GB50014—2021）和《暴雨强度公式编制技术规范》（DB45/T 2155—2020）的要求。

表一 暴雨强度总公式

推算方法	总 公 式
最小二乘法	$q = \frac{6998.812(1 + 0.529 \lg P)}{(t + 20.893)^{0.883}} \quad i = \frac{41.909(1 + 0.529 \lg P)}{(t + 20.893)^{0.883}}$

表二 单一重现期暴雨强度公式

重现期 P (年)	单一重现期暴雨强度公式
P=2	$q = 8523.012 / (t + 20.363)^{0.910}$
P=3	$q = 8812.924 / (t + 19.973)^{0.895}$
P=5	$q = 9171.640 / (t + 19.562)^{0.880}$
P=10	$q = 9722.907 / (t + 19.471)^{0.866}$
P=20	$q = 10285.530 / (t + 19.668)^{0.854}$
P=30	$q = 10594.814 / (t + 19.736)^{0.850}$
P=50	$q = 10973.904 / (t + 19.810)^{0.845}$
P=100	$q = 11477.242 / (t + 19.899)^{0.839}$

表三 重现期区间参数公式

P (年)	区间	参数	区间参数公式
$2 \leq P < 10$	I	n	$n = 0.913 - 0.023 \ln(P - 0.836)$
		b	$b = 20.459 - 0.629 \ln(P - 0.836)$
		A	$A = 48.454 + 4.077 \ln(P - 0.116)$
$10 \leq P \leq 100$	II	n	$n = 0.875 - 0.008 \ln(P - 6.737)$
		b	$b = 19.383 + 0.114 \ln(P - 7.842)$
		A	$A = 49.285 + 4.238 \ln(P - 1.764)$

表四 暴雨强度总公式查算表

P=2a		t(min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	531.753	41	212.412	81	136.775	121	102.098	161	81.994
2	511.190	42	209.427	82	135.601	122	101.467	162	81.598
3	492.251	43	206.531	83	134.448	123	100.844	163	81.206
4	474.748	44	203.718	84	133.315	124	100.229	164	80.818
5	458.521	45	200.985	85	132.203	125	99.622	165	80.434
6	443.433	46	198.330	86	131.110	126	99.023	166	80.054
7	429.366	47	195.748	87	130.037	127	98.432	167	79.678
8	416.217	48	193.237	88	128.982	128	97.848	168	79.305
9	403.898	49	190.794	89	127.945	129	97.271	169	78.936
10	392.331	50	188.416	90	126.926	130	96.702	170	78.571
11	381.449	51	186.100	91	125.923	131	96.139	171	78.209
12	371.191	52	183.843	92	124.938	132	95.584	172	77.851
13	361.503	53	181.645	93	123.969	133	95.035	173	77.497
14	352.340	54	179.501	94	123.016	134	94.493	174	77.145
15	343.658	55	177.411	95	122.078	135	93.958	175	76.797
16	335.419	56	175.372	96	121.155	136	93.429	176	76.453
17	327.591	57	173.383	97	120.247	137	92.906	177	76.112
18	320.142	58	171.441	98	119.354	138	92.390	178	75.774
19	313.046	59	169.545	99	118.474	139	91.879	179	75.439
20	306.276	60	167.693	100	117.609	140	91.375	180	75.107
21	299.812	61	165.883	101	116.756	141	90.876	181	74.779
22	293.631	62	164.115	102	115.917	142	90.384	182	74.453
23	287.716	63	162.386	103	115.090	143	89.896	183	74.131
24	282.050	64	160.696	104	114.276	144	89.415	184	73.811
25	276.616	65	159.043	105	113.474	145	88.939	185	73.494
26	271.401	66	157.426	106	112.684	146	88.468	186	73.181
27	266.391	67	155.843	107	111.906	147	88.003	187	72.870
28	261.574	68	154.294	108	111.139	148	87.542	188	72.562
29	256.939	69	152.778	109	110.383	149	87.087	189	72.256
30	252.476	70	151.292	110	109.638	150	86.637	190	71.954
31	248.175	71	149.838	111	108.904	151	86.192	191	71.654
32	244.028	72	148.413	112	108.180	152	85.752	192	71.356
33	240.025	73	147.016	113	107.466	153	85.316	193	71.062
34	236.160	74	145.647	114	106.763	154	84.885	194	70.770
35	232.425	75	144.305	115	106.069	155	84.459	195	70.480
36	228.814	76	142.989	116	105.384	156	84.037	196	70.193
37	225.320	77	141.699	117	104.709	157	83.620	197	69.909
38	221.939	78	140.433	118	104.043	158	83.207	198	69.627
39	218.664	79	139.191	119	103.386	159	82.798	199	69.347
40	215.490	80	137.972	120	102.738	160	82.394	200	69.070

P=2a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.1841	41	1.2719	81	0.8190	121	0.6114	161	0.4910
2	3.0610	42	1.2541	82	0.8120	122	0.6076	162	0.4886
3	2.9476	43	1.2367	83	0.8051	123	0.6039	163	0.4863
4	2.8428	44	1.2199	84	0.7983	124	0.6002	164	0.4839
5	2.7456	45	1.2035	85	0.7916	125	0.5965	165	0.4816
6	2.6553	46	1.1876	86	0.7851	126	0.5930	166	0.4794
7	2.5711	47	1.1721	87	0.7787	127	0.5894	167	0.4771
8	2.4923	48	1.1571	88	0.7723	128	0.5859	168	0.4749
9	2.4186	49	1.1425	89	0.7661	129	0.5825	169	0.4727
10	2.3493	50	1.1282	90	0.7600	130	0.5791	170	0.4705
11	2.2841	51	1.1144	91	0.7540	131	0.5757	171	0.4683
12	2.2227	52	1.1009	92	0.7481	132	0.5724	172	0.4662
13	2.1647	53	1.0877	93	0.7423	133	0.5691	173	0.4641
14	2.1098	54	1.0749	94	0.7366	134	0.5658	174	0.4619
15	2.0578	55	1.0623	95	0.7310	135	0.5626	175	0.4599
16	2.0085	56	1.0501	96	0.7255	136	0.5595	176	0.4578
17	1.9616	57	1.0382	97	0.7200	137	0.5563	177	0.4558
18	1.9170	58	1.0266	98	0.7147	138	0.5532	178	0.4537
19	1.8745	59	1.0152	99	0.7094	139	0.5502	179	0.4517
20	1.8340	60	1.0041	100	0.7042	140	0.5472	180	0.4497
21	1.7953	61	0.9933	101	0.6991	141	0.5442	181	0.4478
22	1.7583	62	0.9827	102	0.6941	142	0.5412	182	0.4458
23	1.7229	63	0.9724	103	0.6892	143	0.5383	183	0.4439
24	1.6889	64	0.9623	104	0.6843	144	0.5354	184	0.4420
25	1.6564	65	0.9524	105	0.6795	145	0.5326	185	0.4401
26	1.6252	66	0.9427	106	0.6748	146	0.5297	186	0.4382
27	1.5952	67	0.9332	107	0.6701	147	0.5270	187	0.4363
28	1.5663	68	0.9239	108	0.6655	148	0.5242	188	0.4345
29	1.5386	69	0.9148	109	0.6610	149	0.5215	189	0.4327
30	1.5118	70	0.9059	110	0.6565	150	0.5188	190	0.4309
31	1.4861	71	0.8972	111	0.6521	151	0.5161	191	0.4291
32	1.4612	72	0.8887	112	0.6478	152	0.5135	192	0.4273
33	1.4373	73	0.8803	113	0.6435	153	0.5109	193	0.4255
34	1.4141	74	0.8721	114	0.6393	154	0.5083	194	0.4238
35	1.3918	75	0.8641	115	0.6351	155	0.5057	195	0.4220
36	1.3701	76	0.8562	116	0.6310	156	0.5032	196	0.4203
37	1.3492	77	0.8485	117	0.6270	157	0.5007	197	0.4186
38	1.3290	78	0.8409	118	0.6230	158	0.4982	198	0.4169
39	1.3094	79	0.8335	119	0.6191	159	0.4958	199	0.4153
40	1.2904	80	0.8262	120	0.6152	160	0.4934	200	0.4136

P=3a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	574.483	41	229.481	81	147.766	121	110.302	161	88.583
2	552.267	42	226.256	82	146.497	122	109.620	162	88.155
3	531.806	43	223.126	83	145.252	123	108.948	163	87.731
4	512.897	44	220.088	84	144.028	124	108.283	164	87.312
5	495.366	45	217.136	85	142.826	125	107.628	165	86.897
6	479.066	46	214.267	86	141.646	126	106.980	166	86.487
7	463.868	47	211.478	87	140.486	127	106.341	167	86.080
8	449.662	48	208.765	88	139.346	128	105.711	168	85.678
9	436.354	49	206.125	89	138.226	129	105.088	169	85.279
10	423.858	50	203.556	90	137.125	130	104.472	170	84.885
11	412.101	51	201.054	91	136.042	131	103.865	171	84.494
12	401.018	52	198.616	92	134.978	132	103.265	172	84.107
13	390.552	53	196.241	93	133.931	133	102.672	173	83.724
14	380.652	54	193.925	94	132.901	134	102.087	174	83.344
15	371.272	55	191.667	95	131.888	135	101.508	175	82.969
16	362.372	56	189.465	96	130.891	136	100.937	176	82.596
17	353.915	57	187.315	97	129.910	137	100.372	177	82.228
18	345.868	58	185.217	98	128.945	138	99.814	178	81.863
19	338.201	59	183.169	99	127.995	139	99.262	179	81.501
20	330.887	60	181.168	100	127.059	140	98.717	180	81.143
21	323.903	61	179.213	101	126.138	141	98.179	181	80.788
22	317.226	62	177.303	102	125.232	142	97.646	182	80.436
23	310.836	63	175.435	103	124.339	143	97.120	183	80.087
24	304.714	64	173.609	104	123.459	144	96.600	184	79.742
25	298.844	65	171.823	105	122.593	145	96.086	185	79.400
26	293.209	66	170.076	106	121.739	146	95.577	186	79.061
27	287.797	67	168.366	107	120.898	147	95.074	187	78.725
28	282.593	68	166.693	108	120.070	148	94.577	188	78.392
29	277.586	69	165.054	109	119.253	149	94.085	189	78.062
30	272.764	70	163.450	110	118.448	150	93.599	190	77.736
31	268.118	71	161.878	111	117.655	151	93.118	191	77.411
32	263.637	72	160.338	112	116.873	152	92.642	192	77.090
33	259.312	73	158.830	113	116.102	153	92.172	193	76.772
34	255.137	74	157.351	114	115.342	154	91.706	194	76.456
35	251.102	75	155.901	115	114.592	155	91.246	195	76.144
36	247.201	76	154.479	116	113.852	156	90.790	196	75.834
37	243.426	77	153.085	117	113.123	157	90.339	197	75.526
38	239.773	78	151.717	118	112.403	158	89.893	198	75.221
39	236.235	79	150.375	119	111.694	159	89.452	199	74.919
40	232.806	80	149.059	120	110.993	160	89.015	200	74.620

P=3a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.4400	41	1.3741	81	0.8848	121	0.6605	161	0.5304
2	3.3070	42	1.3548	82	0.8772	122	0.6564	162	0.5279
3	3.1845	43	1.3361	83	0.8698	123	0.6524	163	0.5253
4	3.0712	44	1.3179	84	0.8624	124	0.6484	164	0.5228
5	2.9663	45	1.3002	85	0.8552	125	0.6445	165	0.5203
6	2.8687	46	1.2830	86	0.8482	126	0.6406	166	0.5179
7	2.7777	47	1.2663	87	0.8412	127	0.6368	167	0.5155
8	2.6926	48	1.2501	88	0.8344	128	0.6330	168	0.5130
9	2.6129	49	1.2343	89	0.8277	129	0.6293	169	0.5107
10	2.5381	50	1.2189	90	0.8211	130	0.6256	170	0.5083
11	2.4677	51	1.2039	91	0.8146	131	0.6219	171	0.5060
12	2.4013	52	1.1893	92	0.8082	132	0.6184	172	0.5036
13	2.3386	53	1.1751	93	0.8020	133	0.6148	173	0.5013
14	2.2794	54	1.1612	94	0.7958	134	0.6113	174	0.4991
15	2.2232	55	1.1477	95	0.7897	135	0.6078	175	0.4968
16	2.1699	56	1.1345	96	0.7838	136	0.6044	176	0.4946
17	2.1193	57	1.1216	97	0.7779	137	0.6010	177	0.4924
18	2.0711	58	1.1091	98	0.7721	138	0.5977	178	0.4902
19	2.0252	59	1.0968	99	0.7664	139	0.5944	179	0.4880
20	1.9814	60	1.0848	100	0.7608	140	0.5911	180	0.4859
21	1.9395	61	1.0731	101	0.7553	141	0.5879	181	0.4838
22	1.8996	62	1.0617	102	0.7499	142	0.5847	182	0.4817
23	1.8613	63	1.0505	103	0.7445	143	0.5816	183	0.4796
24	1.8246	64	1.0396	104	0.7393	144	0.5784	184	0.4775
25	1.7895	65	1.0289	105	0.7341	145	0.5754	185	0.4754
26	1.7557	66	1.0184	106	0.7290	146	0.5723	186	0.4734
27	1.7233	67	1.0082	107	0.7239	147	0.5693	187	0.4714
28	1.6922	68	0.9982	108	0.7190	148	0.5663	188	0.4694
29	1.6622	69	0.9883	109	0.7141	149	0.5634	189	0.4674
30	1.6333	70	0.9787	110	0.7093	150	0.5605	190	0.4655
31	1.6055	71	0.9693	111	0.7045	151	0.5576	191	0.4635
32	1.5787	72	0.9601	112	0.6998	152	0.5547	192	0.4616
33	1.5528	73	0.9511	113	0.6952	153	0.5519	193	0.4597
34	1.5278	74	0.9422	114	0.6907	154	0.5491	194	0.4578
35	1.5036	75	0.9335	115	0.6862	155	0.5464	195	0.4560
36	1.4802	76	0.9250	116	0.6818	156	0.5437	196	0.4541
37	1.4576	77	0.9167	117	0.6774	157	0.5410	197	0.4523
38	1.4358	78	0.9085	118	0.6731	158	0.5383	198	0.4504
39	1.4146	79	0.9005	119	0.6688	159	0.5356	199	0.4486
40	1.3940	80	0.8926	120	0.6646	160	0.5330	200	0.4468

P=5a		t (min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	628.315	41	250.985	81	161.613	121	120.638	161	96.883
2	604.018	42	247.458	82	160.225	122	119.893	162	96.416
3	581.640	43	244.035	83	158.863	123	119.157	163	95.952
4	560.959	44	240.711	84	157.524	124	118.430	164	95.494
5	541.785	45	237.483	85	156.210	125	117.713	165	95.040
6	523.957	46	234.345	86	154.919	126	117.005	166	94.591
7	507.335	47	231.295	87	153.651	127	116.306	167	94.147
8	491.799	48	228.328	88	152.404	128	115.616	168	93.706
9	477.243	49	225.441	89	151.179	129	114.935	169	93.270
10	463.576	50	222.630	90	149.974	130	114.262	170	92.839
11	450.717	51	219.894	91	148.790	131	113.598	171	92.412
12	438.596	52	217.228	92	147.626	132	112.941	172	91.988
13	427.150	53	214.630	93	146.481	133	112.293	173	91.569
14	416.322	54	212.098	94	145.354	134	111.653	174	91.154
15	406.063	55	209.628	95	144.246	135	111.020	175	90.743
16	396.329	56	207.219	96	143.156	136	110.395	176	90.336
17	387.079	57	204.868	97	142.083	137	109.777	177	89.933
18	378.278	58	202.573	98	141.028	138	109.167	178	89.534
19	369.892	59	200.333	99	139.988	139	108.564	179	89.138
20	361.894	60	198.144	100	138.966	140	107.968	180	88.746
21	354.255	61	196.006	101	137.958	141	107.379	181	88.358
22	346.953	62	193.917	102	136.967	142	106.797	182	87.973
23	339.963	63	191.875	103	135.990	143	106.221	183	87.592
24	333.268	64	189.877	104	135.028	144	105.652	184	87.215
25	326.847	65	187.924	105	134.081	145	105.089	185	86.840
26	320.685	66	186.013	106	133.147	146	104.533	186	86.470
27	314.765	67	184.143	107	132.227	147	103.983	187	86.102
28	309.074	68	182.313	108	131.321	148	103.439	188	85.738
29	303.598	69	180.521	109	130.428	149	102.902	189	85.377
30	298.324	70	178.766	110	129.548	150	102.370	190	85.020
31	293.242	71	177.047	111	128.680	151	101.844	191	84.665
32	288.341	72	175.363	112	127.825	152	101.323	192	84.314
33	283.612	73	173.713	113	126.981	153	100.809	193	83.966
34	279.045	74	172.095	114	126.150	154	100.300	194	83.621
35	274.632	75	170.510	115	125.330	155	99.796	195	83.279
36	270.365	76	168.955	116	124.521	156	99.298	196	82.940
37	266.237	77	167.430	117	123.723	157	98.805	197	82.604
38	262.241	78	165.934	118	122.936	158	98.317	198	82.270
39	258.371	79	164.467	119	122.160	159	97.834	199	81.940
40	254.621	80	163.026	120	121.394	160	97.356	200	81.612

P=5a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.7624	41	1.5029	81	0.9677	121	0.7224	161	0.5801
2	3.6169	42	1.4818	82	0.9594	122	0.7179	162	0.5773
3	3.4829	43	1.4613	83	0.9513	123	0.7135	163	0.5746
4	3.3590	44	1.4414	84	0.9433	124	0.7092	164	0.5718
5	3.2442	45	1.4221	85	0.9354	125	0.7049	165	0.5691
6	3.1375	46	1.4033	86	0.9277	126	0.7006	166	0.5664
7	3.0379	47	1.3850	87	0.9201	127	0.6964	167	0.5638
8	2.9449	48	1.3672	88	0.9126	128	0.6923	168	0.5611
9	2.8577	49	1.3499	89	0.9053	129	0.6882	169	0.5585
10	2.7759	50	1.3331	90	0.8980	130	0.6842	170	0.5559
11	2.6989	51	1.3167	91	0.8910	131	0.6802	171	0.5534
12	2.6263	52	1.3008	92	0.8840	132	0.6763	172	0.5508
13	2.5578	53	1.2852	93	0.8771	133	0.6724	173	0.5483
14	2.4929	54	1.2700	94	0.8704	134	0.6686	174	0.5458
15	2.4315	55	1.2553	95	0.8638	135	0.6648	175	0.5434
16	2.3732	56	1.2408	96	0.8572	136	0.6610	176	0.5409
17	2.3178	57	1.2268	97	0.8508	137	0.6573	177	0.5385
18	2.2651	58	1.2130	98	0.8445	138	0.6537	178	0.5361
19	2.2149	59	1.1996	99	0.8383	139	0.6501	179	0.5338
20	2.1670	60	1.1865	100	0.8321	140	0.6465	180	0.5314
21	2.1213	61	1.1737	101	0.8261	141	0.6430	181	0.5291
22	2.0776	62	1.1612	102	0.8202	142	0.6395	182	0.5268
23	2.0357	63	1.1489	103	0.8143	143	0.6361	183	0.5245
24	1.9956	64	1.1370	104	0.8086	144	0.6326	184	0.5222
25	1.9572	65	1.1253	105	0.8029	145	0.6293	185	0.5200
26	1.9203	66	1.1139	106	0.7973	146	0.6259	186	0.5178
27	1.8848	67	1.1027	107	0.7918	147	0.6227	187	0.5156
28	1.8507	68	1.0917	108	0.7864	148	0.6194	188	0.5134
29	1.8179	69	1.0810	109	0.7810	149	0.6162	189	0.5112
30	1.7864	70	1.0705	110	0.7757	150	0.6130	190	0.5091
31	1.7559	71	1.0602	111	0.7705	151	0.6098	191	0.5070
32	1.7266	72	1.0501	112	0.7654	152	0.6067	192	0.5049
33	1.6983	73	1.0402	113	0.7604	153	0.6036	193	0.5028
34	1.6709	74	1.0305	114	0.7554	154	0.6006	194	0.5007
35	1.6445	75	1.0210	115	0.7505	155	0.5976	195	0.4987
36	1.6190	76	1.0117	116	0.7456	156	0.5946	196	0.4966
37	1.5942	77	1.0026	117	0.7409	157	0.5916	197	0.4946
38	1.5703	78	0.9936	118	0.7361	158	0.5887	198	0.4926
39	1.5471	79	0.9848	119	0.7315	159	0.5858	199	0.4907
40	1.5247	80	0.9762	120	0.7269	160	0.5830	200	0.4887

P=10a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	701.362	41	280.164	81	180.402	121	134.664	161	108.147
2	674.240	42	276.227	82	178.853	122	133.831	162	107.625
3	649.260	43	272.406	83	177.332	123	133.010	163	107.108
4	626.175	44	268.696	84	175.838	124	132.199	164	106.596
5	604.772	45	265.092	85	174.371	125	131.398	165	106.090
6	584.871	46	261.590	86	172.930	126	130.608	166	105.588
7	566.317	47	258.185	87	171.514	127	129.828	167	105.092
8	548.974	48	254.873	88	170.122	128	129.058	168	104.600
9	532.726	49	251.650	89	168.754	129	128.297	169	104.114
10	517.470	50	248.513	90	167.410	130	127.546	170	103.632
11	503.117	51	245.458	91	166.088	131	126.804	171	103.155
12	489.587	52	242.482	92	164.788	132	126.072	172	102.683
13	476.809	53	239.583	93	163.510	133	125.348	173	102.215
14	464.723	54	236.756	94	162.253	134	124.633	174	101.752
15	453.271	55	233.999	95	161.016	135	123.927	175	101.293
16	442.405	56	231.310	96	159.799	136	123.229	176	100.839
17	432.080	57	228.686	97	158.602	137	122.540	177	100.388
18	422.256	58	226.124	98	157.423	138	121.859	178	99.943
19	412.895	59	223.623	99	156.263	139	121.185	179	99.501
20	403.967	60	221.180	100	155.121	140	120.520	180	99.064
21	395.440	61	218.794	101	153.997	141	119.863	181	98.630
22	387.289	62	216.461	102	152.890	142	119.213	182	98.201
23	379.487	63	214.182	103	151.800	143	118.570	183	97.775
24	372.013	64	211.952	104	150.726	144	117.935	184	97.354
25	364.846	65	209.772	105	149.669	145	117.307	185	96.936
26	357.967	66	207.639	106	148.627	146	116.686	186	96.522
27	351.359	67	205.551	107	147.600	147	116.072	187	96.112
28	345.006	68	203.508	108	146.588	148	115.465	188	95.706
29	338.893	69	201.508	109	145.591	149	114.865	189	95.303
30	333.007	70	199.549	110	144.609	150	114.271	190	94.904
31	327.334	71	197.630	111	143.640	151	113.684	191	94.508
32	321.863	72	195.750	112	142.685	152	113.103	192	94.116
33	316.584	73	193.908	113	141.744	153	112.529	193	93.728
34	311.486	74	192.103	114	140.816	154	111.960	194	93.343
35	306.560	75	190.333	115	139.900	155	111.398	195	92.961
36	301.797	76	188.597	116	138.998	156	110.842	196	92.582
37	297.189	77	186.895	117	138.107	157	110.291	197	92.207
38	292.729	78	185.225	118	137.229	158	109.747	198	91.835
39	288.409	79	183.587	119	136.362	159	109.208	199	91.466
40	284.223	80	181.980	120	135.507	160	108.675	200	91.100

P=10a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.1998	41	1.6776	81	1.0802	121	0.8064	161	0.6476
2	4.0374	42	1.6541	82	1.0710	122	0.8014	162	0.6445
3	3.8878	43	1.6312	83	1.0619	123	0.7965	163	0.6414
4	3.7495	44	1.6090	84	1.0529	124	0.7916	164	0.6383
5	3.6214	45	1.5874	85	1.0441	125	0.7868	165	0.6353
6	3.5022	46	1.5664	86	1.0355	126	0.7821	166	0.6323
7	3.3911	47	1.5460	87	1.0270	127	0.7774	167	0.6293
8	3.2873	48	1.5262	88	1.0187	128	0.7728	168	0.6263
9	3.1900	49	1.5069	89	1.0105	129	0.7682	169	0.6234
10	3.0986	50	1.4881	90	1.0025	130	0.7637	170	0.6206
11	3.0127	51	1.4698	91	0.9945	131	0.7593	171	0.6177
12	2.9317	52	1.4520	92	0.9868	132	0.7549	172	0.6149
13	2.8551	53	1.4346	93	0.9791	133	0.7506	173	0.6121
14	2.7828	54	1.4177	94	0.9716	134	0.7463	174	0.6093
15	2.7142	55	1.4012	95	0.9642	135	0.7421	175	0.6065
16	2.6491	56	1.3851	96	0.9569	136	0.7379	176	0.6038
17	2.5873	57	1.3694	97	0.9497	137	0.7338	177	0.6011
18	2.5285	58	1.3540	98	0.9427	138	0.7297	178	0.5985
19	2.4724	59	1.3391	99	0.9357	139	0.7257	179	0.5958
20	2.4190	60	1.3244	100	0.9289	140	0.7217	180	0.5932
21	2.3679	61	1.3101	101	0.9221	141	0.7177	181	0.5906
22	2.3191	62	1.2962	102	0.9155	142	0.7138	182	0.5880
23	2.2724	63	1.2825	103	0.9090	143	0.7100	183	0.5855
24	2.2276	64	1.2692	104	0.9026	144	0.7062	184	0.5830
25	2.1847	65	1.2561	105	0.8962	145	0.7024	185	0.5805
26	2.1435	66	1.2433	106	0.8900	146	0.6987	186	0.5780
27	2.1039	67	1.2308	107	0.8838	147	0.6950	187	0.5755
28	2.0659	68	1.2186	108	0.8778	148	0.6914	188	0.5731
29	2.0293	69	1.2066	109	0.8718	149	0.6878	189	0.5707
30	1.9941	70	1.1949	110	0.8659	150	0.6843	190	0.5683
31	1.9601	71	1.1834	111	0.8601	151	0.6807	191	0.5659
32	1.9273	72	1.1722	112	0.8544	152	0.6773	192	0.5636
33	1.8957	73	1.1611	113	0.8488	153	0.6738	193	0.5612
34	1.8652	74	1.1503	114	0.8432	154	0.6704	194	0.5589
35	1.8357	75	1.1397	115	0.8377	155	0.6671	195	0.5567
36	1.8072	76	1.1293	116	0.8323	156	0.6637	196	0.5544
37	1.7796	77	1.1191	117	0.8270	157	0.6604	197	0.5521
38	1.7529	78	1.1091	118	0.8217	158	0.6572	198	0.5499
39	1.7270	79	1.0993	119	0.8165	159	0.6539	199	0.5477
40	1.7019	80	1.0897	120	0.8114	160	0.6507	200	0.5455

P=20a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	774.409	41	309.343	81	199.190	121	148.689	161	119.410
2	744.462	42	304.996	82	197.480	122	147.770	162	118.834
3	716.880	43	300.777	83	195.801	123	146.862	163	118.263
4	691.391	44	296.681	84	194.151	124	145.967	164	117.698
5	667.759	45	292.701	85	192.532	125	145.083	165	117.139
6	645.786	46	288.834	86	190.940	126	144.211	166	116.585
7	625.299	47	285.074	87	189.377	127	143.349	167	116.037
8	606.150	48	281.418	88	187.840	128	142.499	168	115.494
9	588.209	49	277.859	89	186.330	129	141.659	169	114.957
10	571.365	50	274.396	90	184.846	130	140.830	170	114.425
11	555.516	51	271.023	91	183.386	131	140.011	171	113.899
12	540.577	52	267.737	92	181.951	132	139.202	172	113.377
13	526.469	53	264.535	93	180.540	133	138.403	173	112.861
14	513.123	54	261.414	94	179.152	134	137.614	174	112.349
15	500.479	55	258.370	95	177.786	135	136.834	175	111.843
16	488.482	56	255.400	96	176.442	136	136.064	176	111.341
17	477.081	57	252.503	97	175.120	137	135.302	177	110.844
18	466.233	58	249.675	98	173.819	138	134.550	178	110.352
19	455.898	59	246.913	99	172.538	139	133.807	179	109.864
20	446.040	60	244.216	100	171.277	140	133.072	180	109.381
21	436.625	61	241.581	101	170.036	141	132.346	181	108.902
22	427.624	62	239.006	102	168.814	142	131.628	182	108.428
23	419.010	63	236.488	103	167.610	143	130.919	183	107.959
24	410.758	64	234.027	104	166.424	144	130.218	184	107.493
25	402.845	65	231.619	105	165.256	145	129.524	185	107.032
26	395.250	66	229.264	106	164.106	146	128.839	186	106.575
27	387.953	67	226.959	107	162.972	147	128.161	187	106.122
28	380.939	68	224.703	108	161.855	148	127.491	188	105.674
29	374.189	69	222.495	109	160.755	149	126.828	189	105.229
30	367.689	70	220.332	110	159.670	150	126.172	190	104.788
31	361.425	71	218.213	111	158.600	151	125.524	191	104.352
32	355.385	72	216.138	112	157.546	152	124.883	192	103.919
33	349.556	73	214.104	113	156.507	153	124.248	193	103.489
34	343.927	74	212.110	114	155.482	154	123.621	194	103.064
35	338.488	75	210.156	115	154.471	155	123.000	195	102.642
36	333.229	76	208.240	116	153.474	156	122.386	196	102.224
37	328.141	77	206.360	117	152.491	157	121.778	197	101.810
38	323.217	78	204.517	118	151.521	158	121.177	198	101.399
39	318.447	79	202.708	119	150.564	159	120.582	199	100.992
40	313.824	80	200.933	120	149.620	160	119.993	200	100.588

P=20a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.6372	41	1.8524	81	1.1928	121	0.8904	161	0.7150
2	4.4579	42	1.8263	82	1.1825	122	0.8848	162	0.7116
3	4.2927	43	1.8011	83	1.1725	123	0.8794	163	0.7082
4	4.1401	44	1.7765	84	1.1626	124	0.8741	164	0.7048
5	3.9986	45	1.7527	85	1.1529	125	0.8688	165	0.7014
6	3.8670	46	1.7295	86	1.1434	126	0.8635	166	0.6981
7	3.7443	47	1.7070	87	1.1340	127	0.8584	167	0.6948
8	3.6296	48	1.6851	88	1.1248	128	0.8533	168	0.6916
9	3.5222	49	1.6638	89	1.1157	129	0.8483	169	0.6884
10	3.4213	50	1.6431	90	1.1069	130	0.8433	170	0.6852
11	3.3264	51	1.6229	91	1.0981	131	0.8384	171	0.6820
12	3.2370	52	1.6032	92	1.0895	132	0.8335	172	0.6789
13	3.1525	53	1.5840	93	1.0811	133	0.8288	173	0.6758
14	3.0726	54	1.5654	94	1.0728	134	0.8240	174	0.6727
15	2.9969	55	1.5471	95	1.0646	135	0.8194	175	0.6697
16	2.9250	56	1.5293	96	1.0565	136	0.8148	176	0.6667
17	2.8568	57	1.5120	97	1.0486	137	0.8102	177	0.6637
18	2.7918	58	1.4951	98	1.0408	138	0.8057	178	0.6608
19	2.7299	59	1.4785	99	1.0332	139	0.8012	179	0.6579
20	2.6709	60	1.4624	100	1.0256	140	0.7968	180	0.6550
21	2.6145	61	1.4466	101	1.0182	141	0.7925	181	0.6521
22	2.5606	62	1.4312	102	1.0109	142	0.7882	182	0.6493
23	2.5090	63	1.4161	103	1.0037	143	0.7839	183	0.6465
24	2.4596	64	1.4014	104	0.9966	144	0.7797	184	0.6437
25	2.4122	65	1.3869	105	0.9896	145	0.7756	185	0.6409
26	2.3668	66	1.3728	106	0.9827	146	0.7715	186	0.6382
27	2.3231	67	1.3590	107	0.9759	147	0.7674	187	0.6355
28	2.2811	68	1.3455	108	0.9692	148	0.7634	188	0.6328
29	2.2407	69	1.3323	109	0.9626	149	0.7594	189	0.6301
30	2.2017	70	1.3194	110	0.9561	150	0.7555	190	0.6275
31	2.1642	71	1.3067	111	0.9497	151	0.7516	191	0.6249
32	2.1281	72	1.2942	112	0.9434	152	0.7478	192	0.6223
33	2.0931	73	1.2821	113	0.9372	153	0.7440	193	0.6197
34	2.0594	74	1.2701	114	0.9310	154	0.7402	194	0.6172
35	2.0269	75	1.2584	115	0.9250	155	0.7365	195	0.6146
36	1.9954	76	1.2469	116	0.9190	156	0.7328	196	0.6121
37	1.9649	77	1.2357	117	0.9131	157	0.7292	197	0.6096
38	1.9354	78	1.2247	118	0.9073	158	0.7256	198	0.6072
39	1.9069	79	1.2138	119	0.9016	159	0.7220	199	0.6047
40	1.8792	80	1.2032	120	0.8959	160	0.7185	200	0.6023

P=30a		t(min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	817.138	41	326.412	81	210.181	121	156.893	161	125.999
2	785.539	42	321.825	82	208.376	122	155.923	162	125.391
3	756.436	43	317.373	83	206.604	123	154.966	163	124.788
4	729.540	44	313.050	84	204.864	124	154.021	164	124.192
5	704.604	45	308.852	85	203.155	125	153.089	165	123.602
6	681.418	46	304.771	86	201.476	126	152.168	166	123.018
7	659.801	47	300.804	87	199.826	127	151.259	167	122.440
8	639.595	48	296.945	88	198.205	128	150.362	168	121.867
9	620.665	49	293.191	89	196.611	129	149.476	169	121.300
10	602.891	50	289.536	90	195.045	130	148.600	170	120.739
11	586.168	51	285.977	91	193.505	131	147.736	171	120.183
12	570.404	52	282.510	92	191.991	132	146.883	172	119.633
13	555.518	53	279.131	93	190.501	133	146.040	173	119.088
14	541.436	54	275.838	94	189.037	134	145.207	174	118.548
15	528.094	55	272.626	95	187.596	135	144.384	175	118.014
16	515.435	56	269.493	96	186.178	136	143.571	176	117.484
17	503.405	57	266.435	97	184.783	137	142.768	177	116.960
18	491.959	58	263.451	98	183.410	138	141.974	178	116.441
19	481.053	59	260.537	99	182.058	139	141.190	179	115.926
20	470.651	60	257.691	100	180.728	140	140.415	180	115.416
21	460.717	61	254.911	101	179.418	141	139.649	181	114.911
22	451.220	62	252.193	102	178.128	142	138.891	182	114.411
23	442.130	63	249.537	103	176.858	143	138.143	183	113.916
24	433.422	64	246.940	104	175.607	144	137.403	184	113.424
25	425.072	65	244.400	105	174.375	145	136.671	185	112.938
26	417.058	66	241.914	106	173.161	146	135.948	186	112.456
27	409.359	67	239.482	107	171.965	147	135.233	187	111.978
28	401.958	68	237.102	108	170.786	148	134.525	188	111.504
29	394.835	69	234.771	109	169.625	149	133.826	189	111.035
30	387.977	70	232.489	110	168.480	150	133.134	190	110.570
31	381.368	71	230.254	111	167.351	151	132.450	191	110.109
32	374.994	72	228.064	112	166.239	152	131.773	192	109.653
33	368.843	73	225.918	113	165.142	153	131.104	193	109.200
34	362.904	74	223.814	114	164.061	154	130.442	194	108.751
35	357.165	75	221.752	115	162.994	155	129.787	195	108.306
36	351.616	76	219.730	116	161.942	156	129.139	196	107.865
37	346.247	77	217.747	117	160.905	157	128.498	197	107.428
38	341.051	78	215.801	118	159.882	158	127.863	198	106.994
39	336.018	79	213.893	119	158.872	159	127.235	199	106.564
40	331.140	80	212.019	120	157.876	160	126.614	200	106.138

P=30a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.8930	41	1.9546	81	1.2586	121	0.9395	161	0.7545
2	4.7038	42	1.9271	82	1.2478	122	0.9337	162	0.7508
3	4.5296	43	1.9004	83	1.2372	123	0.9279	163	0.7472
4	4.3685	44	1.8746	84	1.2267	124	0.9223	164	0.7437
5	4.2192	45	1.8494	85	1.2165	125	0.9167	165	0.7401
6	4.0803	46	1.8250	86	1.2064	126	0.9112	166	0.7366
7	3.9509	47	1.8012	87	1.1966	127	0.9057	167	0.7332
8	3.8299	48	1.7781	88	1.1869	128	0.9004	168	0.7297
9	3.7166	49	1.7556	89	1.1773	129	0.8951	169	0.7263
10	3.6101	50	1.7337	90	1.1679	130	0.8898	170	0.7230
11	3.5100	51	1.7124	91	1.1587	131	0.8846	171	0.7197
12	3.4156	52	1.6917	92	1.1496	132	0.8795	172	0.7164
13	3.3265	53	1.6714	93	1.1407	133	0.8745	173	0.7131
14	3.2421	54	1.6517	94	1.1320	134	0.8695	174	0.7099
15	3.1622	55	1.6325	95	1.1233	135	0.8646	175	0.7067
16	3.0864	56	1.6137	96	1.1148	136	0.8597	176	0.7035
17	3.0144	57	1.5954	97	1.1065	137	0.8549	177	0.7004
18	2.9459	58	1.5776	98	1.0983	138	0.8501	178	0.6972
19	2.8806	59	1.5601	99	1.0902	139	0.8454	179	0.6942
20	2.8183	60	1.5431	100	1.0822	140	0.8408	180	0.6911
21	2.7588	61	1.5264	101	1.0744	141	0.8362	181	0.6881
22	2.7019	62	1.5101	102	1.0666	142	0.8317	182	0.6851
23	2.6475	63	1.4942	103	1.0590	143	0.8272	183	0.6821
24	2.5953	64	1.4787	104	1.0515	144	0.8228	184	0.6792
25	2.5453	65	1.4635	105	1.0442	145	0.8184	185	0.6763
26	2.4974	66	1.4486	106	1.0369	146	0.8141	186	0.6734
27	2.4513	67	1.4340	107	1.0297	147	0.8098	187	0.6705
28	2.4069	68	1.4198	108	1.0227	148	0.8055	188	0.6677
29	2.3643	69	1.4058	109	1.0157	149	0.8014	189	0.6649
30	2.3232	70	1.3922	110	1.0089	150	0.7972	190	0.6621
31	2.2836	71	1.3788	111	1.0021	151	0.7931	191	0.6593
32	2.2455	72	1.3657	112	0.9954	152	0.7891	192	0.6566
33	2.2086	73	1.3528	113	0.9889	153	0.7851	193	0.6539
34	2.1731	74	1.3402	114	0.9824	154	0.7811	194	0.6512
35	2.1387	75	1.3279	115	0.9760	155	0.7772	195	0.6485
36	2.1055	76	1.3157	116	0.9697	156	0.7733	196	0.6459
37	2.0733	77	1.3039	117	0.9635	157	0.7694	197	0.6433
38	2.0422	78	1.2922	118	0.9574	158	0.7656	198	0.6407
39	2.0121	79	1.2808	119	0.9513	159	0.7619	199	0.6381
40	1.9829	80	1.2696	120	0.9454	160	0.7582	200	0.6356

P=50a		t (min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	870.971	41	347.916	81	224.028	121	167.229	161	134.300
2	837.290	42	343.026	82	222.104	122	166.195	162	133.651
3	806.270	43	338.281	83	220.215	123	165.175	163	133.009
4	777.601	44	333.674	84	218.361	124	164.168	164	132.374
5	751.023	45	329.199	85	216.539	125	163.174	165	131.745
6	726.310	46	324.849	86	214.749	126	162.193	166	131.122
7	703.268	47	320.621	87	212.990	127	161.224	167	130.506
8	681.732	48	316.508	88	211.262	128	160.267	168	129.896
9	661.554	49	312.506	89	209.564	129	159.323	169	129.291
10	642.609	50	308.610	90	207.894	130	158.390	170	128.693
11	624.785	51	304.817	91	206.253	131	157.469	171	128.101
12	607.982	52	301.121	92	204.639	132	156.559	172	127.514
13	592.115	53	297.520	93	203.052	133	155.661	173	126.933
14	577.106	54	294.010	94	201.490	134	154.773	174	126.358
15	562.885	55	290.586	95	199.954	135	153.896	175	125.788
16	549.391	56	287.247	96	198.443	136	153.030	176	125.224
17	536.569	57	283.988	97	196.956	137	152.173	177	124.665
18	524.369	58	280.807	98	195.493	138	151.327	178	124.112
19	512.745	59	277.701	99	194.052	139	150.491	179	123.563
20	501.657	60	274.668	100	192.634	140	149.665	180	123.020
21	491.069	61	271.704	101	191.238	141	148.849	181	122.482
22	480.946	62	268.808	102	189.863	142	148.041	182	121.949
23	471.257	63	265.977	103	188.509	143	147.244	183	121.420
24	461.976	64	263.208	104	187.176	144	146.455	184	120.897
25	453.076	65	260.501	105	185.863	145	145.675	185	120.378
26	444.534	66	257.852	106	184.569	146	144.904	186	119.864
27	436.328	67	255.259	107	183.294	147	144.142	187	119.355
28	428.438	68	252.722	108	182.037	148	143.388	188	118.850
29	420.847	69	250.238	109	180.799	149	142.642	189	118.350
30	413.537	70	247.805	110	179.579	150	141.905	190	117.855
31	406.492	71	245.423	111	178.376	151	141.176	191	117.363
32	399.699	72	243.088	112	177.191	152	140.455	192	116.876
33	393.143	73	240.801	113	176.022	153	139.741	193	116.394
34	386.812	74	238.559	114	174.869	154	139.035	194	115.915
35	380.695	75	236.361	115	173.732	155	138.337	195	115.441
36	374.780	76	234.206	116	172.611	156	137.646	196	114.971
37	369.058	77	232.092	117	171.505	157	136.963	197	114.505
38	363.519	78	230.018	118	170.414	158	136.287	198	114.043
39	358.154	79	227.984	119	169.338	159	135.617	199	113.585
40	352.956	80	225.987	120	168.277	160	134.955	200	113.131

P=50a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	5.2154	41	2.0833	81	1.3415	121	1.0014	161	0.8042
2	5.0137	42	2.0540	82	1.3300	122	0.9952	162	0.8003
3	4.8280	43	2.0256	83	1.3187	123	0.9891	163	0.7965
4	4.6563	44	1.9980	84	1.3075	124	0.9830	164	0.7927
5	4.4971	45	1.9713	85	1.2966	125	0.9771	165	0.7889
6	4.3492	46	1.9452	86	1.2859	126	0.9712	166	0.7852
7	4.2112	47	1.9199	87	1.2754	127	0.9654	167	0.7815
8	4.0822	48	1.8953	88	1.2650	128	0.9597	168	0.7778
9	3.9614	49	1.8713	89	1.2549	129	0.9540	169	0.7742
10	3.8480	50	1.8480	90	1.2449	130	0.9484	170	0.7706
11	3.7412	51	1.8253	91	1.2350	131	0.9429	171	0.7671
12	3.6406	52	1.8031	92	1.2254	132	0.9375	172	0.7636
13	3.5456	53	1.7816	93	1.2159	133	0.9321	173	0.7601
14	3.4557	54	1.7605	94	1.2065	134	0.9268	174	0.7566
15	3.3706	55	1.7400	95	1.1973	135	0.9215	175	0.7532
16	3.2898	56	1.7200	96	1.1883	136	0.9163	176	0.7498
17	3.2130	57	1.7005	97	1.1794	137	0.9112	177	0.7465
18	3.1399	58	1.6815	98	1.1706	138	0.9062	178	0.7432
19	3.0703	59	1.6629	99	1.1620	139	0.9011	179	0.7399
20	3.0039	60	1.6447	100	1.1535	140	0.8962	180	0.7366
21	2.9405	61	1.6270	101	1.1451	141	0.8913	181	0.7334
22	2.8799	62	1.6096	102	1.1369	142	0.8865	182	0.7302
23	2.8219	63	1.5927	103	1.1288	143	0.8817	183	0.7271
24	2.7663	64	1.5761	104	1.1208	144	0.8770	184	0.7239
25	2.7130	65	1.5599	105	1.1129	145	0.8723	185	0.7208
26	2.6619	66	1.5440	106	1.1052	146	0.8677	186	0.7178
27	2.6127	67	1.5285	107	1.0976	147	0.8631	187	0.7147
28	2.5655	68	1.5133	108	1.0900	148	0.8586	188	0.7117
29	2.5200	69	1.4984	109	1.0826	149	0.8541	189	0.7087
30	2.4763	70	1.4839	110	1.0753	150	0.8497	190	0.7057
31	2.4341	71	1.4696	111	1.0681	151	0.8454	191	0.7028
32	2.3934	72	1.4556	112	1.0610	152	0.8410	192	0.6999
33	2.3541	73	1.4419	113	1.0540	153	0.8368	193	0.6970
34	2.3162	74	1.4285	114	1.0471	154	0.8325	194	0.6941
35	2.2796	75	1.4153	115	1.0403	155	0.8284	195	0.6913
36	2.2442	76	1.4024	116	1.0336	156	0.8242	196	0.6884
37	2.2099	77	1.3898	117	1.0270	157	0.8201	197	0.6857
38	2.1768	78	1.3774	118	1.0204	158	0.8161	198	0.6829
39	2.1446	79	1.3652	119	1.0140	159	0.8121	199	0.6801
40	2.1135	80	1.3532	120	1.0076	160	0.8081	200	0.6774

P=100a		t(min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	944.018	41	377.095	81	242.817	121	181.254	161	145.563
2	907.512	42	371.795	82	240.732	122	180.134	162	144.860
3	873.890	43	366.652	83	238.684	123	179.028	163	144.165
4	842.817	44	361.659	84	236.674	124	177.936	164	143.476
5	814.010	45	356.808	85	234.699	125	176.859	165	142.794
6	787.224	46	352.094	86	232.760	126	175.795	166	142.119
7	762.250	47	347.511	87	230.854	127	174.745	167	141.451
8	738.907	48	343.053	88	228.981	128	173.709	168	140.790
9	717.037	49	338.715	89	227.140	129	172.685	169	140.135
10	696.503	50	334.493	90	225.330	130	171.674	170	139.486
11	677.184	51	330.381	91	223.551	131	170.676	171	138.844
12	658.973	52	326.376	92	221.802	132	169.690	172	138.209
13	641.775	53	322.473	93	220.081	133	168.716	173	137.579
14	625.506	54	318.668	94	218.389	134	167.754	174	136.956
15	610.093	55	314.957	95	216.724	135	166.803	175	136.338
16	595.468	56	311.338	96	215.086	136	165.864	176	135.726
17	581.570	57	307.806	97	213.474	137	164.936	177	135.121
18	568.347	58	304.358	98	211.888	138	164.019	178	134.521
19	555.748	59	300.992	99	210.327	139	163.113	179	133.926
20	543.730	60	297.704	100	208.790	140	162.217	180	133.337
21	532.254	61	294.492	101	207.277	141	161.332	181	132.754
22	521.282	62	291.352	102	205.787	142	160.457	182	132.176
23	510.781	63	288.284	103	204.319	143	159.593	183	131.604
24	500.721	64	285.283	104	202.874	144	158.738	184	131.036
25	491.075	65	282.348	105	201.450	145	157.893	185	130.474
26	481.816	66	279.477	106	200.048	146	157.057	186	129.917
27	472.922	67	276.667	107	198.666	147	156.231	187	129.365
28	464.371	68	273.917	108	197.305	148	155.413	188	128.818
29	456.143	69	271.225	109	195.963	149	154.605	189	128.276
30	448.219	70	268.588	110	194.640	150	153.806	190	127.739
31	440.584	71	266.006	111	193.337	151	153.016	191	127.206
32	433.221	72	263.476	112	192.051	152	152.234	192	126.679
33	426.115	73	260.996	113	190.784	153	151.461	193	126.155
34	419.253	74	258.566	114	189.535	154	150.696	194	125.637
35	412.623	75	256.184	115	188.303	155	149.939	195	125.123
36	406.212	76	253.848	116	187.088	156	149.191	196	124.613
37	400.010	77	251.557	117	185.889	157	148.450	197	124.108
38	394.007	78	249.309	118	184.707	158	147.717	198	123.608
39	388.192	79	247.104	119	183.540	159	146.991	199	123.111
40	382.557	80	244.940	120	182.390	160	146.274	200	122.619

P=100a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	5.6528	41	2.2581	81	1.4540	121	1.0854	161	0.8716
2	5.4342	42	2.2263	82	1.4415	122	1.0786	162	0.8674
3	5.2329	43	2.1955	83	1.4292	123	1.0720	163	0.8633
4	5.0468	44	2.1656	84	1.4172	124	1.0655	164	0.8591
5	4.8743	45	2.1366	85	1.4054	125	1.0590	165	0.8551
6	4.7139	46	2.1083	86	1.3938	126	1.0527	166	0.8510
7	4.5644	47	2.0809	87	1.3824	127	1.0464	167	0.8470
8	4.4246	48	2.0542	88	1.3711	128	1.0402	168	0.8431
9	4.2936	49	2.0282	89	1.3601	129	1.0340	169	0.8391
10	4.1707	50	2.0030	90	1.3493	130	1.0280	170	0.8352
11	4.0550	51	1.9783	91	1.3386	131	1.0220	171	0.8314
12	3.9459	52	1.9543	92	1.3282	132	1.0161	172	0.8276
13	3.8430	53	1.9310	93	1.3179	133	1.0103	173	0.8238
14	3.7455	54	1.9082	94	1.3077	134	1.0045	174	0.8201
15	3.6533	55	1.8860	95	1.2977	135	0.9988	175	0.8164
16	3.5657	56	1.8643	96	1.2879	136	0.9932	176	0.8127
17	3.4825	57	1.8431	97	1.2783	137	0.9876	177	0.8091
18	3.4033	58	1.8225	98	1.2688	138	0.9821	178	0.8055
19	3.3278	59	1.8023	99	1.2594	139	0.9767	179	0.8020
20	3.2559	60	1.7827	100	1.2502	140	0.9714	180	0.7984
21	3.1871	61	1.7634	101	1.2412	141	0.9661	181	0.7949
22	3.1214	62	1.7446	102	1.2323	142	0.9608	182	0.7915
23	3.0586	63	1.7262	103	1.2235	143	0.9556	183	0.7880
24	2.9983	64	1.7083	104	1.2148	144	0.9505	184	0.7846
25	2.9406	65	1.6907	105	1.2063	145	0.9455	185	0.7813
26	2.8851	66	1.6735	106	1.1979	146	0.9405	186	0.7779
27	2.8319	67	1.6567	107	1.1896	147	0.9355	187	0.7746
28	2.7807	68	1.6402	108	1.1815	148	0.9306	188	0.7714
29	2.7314	69	1.6241	109	1.1734	149	0.9258	189	0.7681
30	2.6839	70	1.6083	110	1.1655	150	0.9210	190	0.7649
31	2.6382	71	1.5928	111	1.1577	151	0.9163	191	0.7617
32	2.5941	72	1.5777	112	1.1500	152	0.9116	192	0.7586
33	2.5516	73	1.5629	113	1.1424	153	0.9070	193	0.7554
34	2.5105	74	1.5483	114	1.1349	154	0.9024	194	0.7523
35	2.4708	75	1.5340	115	1.1276	155	0.8978	195	0.7492
36	2.4324	76	1.5200	116	1.1203	156	0.8934	196	0.7462
37	2.3953	77	1.5063	117	1.1131	157	0.8889	197	0.7432
38	2.3593	78	1.4929	118	1.1060	158	0.8845	198	0.7402
39	2.3245	79	1.4797	119	1.0990	159	0.8802	199	0.7372
40	2.2908	80	1.4667	120	1.0922	160	0.8759	200	0.7342

表五 单一重现期暴雨强度公式查算表

P=2a		t(min) q[L/(s·hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	525.534	41	201.186	81	127.422	121	94.143	161	75.044
2	504.105	42	198.248	82	126.288	122	93.541	162	74.669
3	484.431	43	195.399	83	125.176	123	92.947	163	74.298
4	466.303	44	192.635	84	124.084	124	92.361	164	73.932
5	449.542	45	189.951	85	123.012	125	91.783	165	73.569
6	433.998	46	187.344	86	121.959	126	91.212	166	73.209
7	419.541	47	184.812	87	120.925	127	90.648	167	72.854
8	406.059	48	182.350	88	119.909	128	90.092	168	72.502
9	393.455	49	179.956	89	118.911	129	89.543	169	72.153
10	381.645	50	177.627	90	117.930	130	89.001	170	71.808
11	370.555	51	175.361	91	116.966	131	88.466	171	71.466
12	360.121	52	173.154	92	116.018	132	87.937	172	71.128
13	350.285	53	171.005	93	115.086	133	87.415	173	70.793
14	340.997	54	168.911	94	114.170	134	86.900	174	70.462
15	332.211	55	166.870	95	113.269	135	86.391	175	70.134
16	323.886	56	164.881	96	112.383	136	85.888	176	69.809
17	315.988	57	162.940	97	111.512	137	85.391	177	69.487
18	308.484	58	161.047	98	110.654	138	84.900	178	69.168
19	301.344	59	159.199	99	109.810	139	84.415	179	68.852
20	294.543	60	157.395	100	108.979	140	83.936	180	68.539
21	288.055	61	155.634	101	108.162	141	83.463	181	68.229
22	281.861	62	153.914	102	107.357	142	82.995	182	67.923
23	275.940	63	152.232	103	106.565	143	82.532	183	67.619
24	270.274	64	150.590	104	105.785	144	82.075	184	67.317
25	264.847	65	148.983	105	105.017	145	81.623	185	67.019
26	259.643	66	147.413	106	104.260	146	81.177	186	66.723
27	254.650	67	145.876	107	103.515	147	80.735	187	66.431
28	249.854	68	144.373	108	102.781	148	80.299	188	66.140
29	245.244	69	142.902	109	102.058	149	79.867	189	65.853
30	240.808	70	141.463	110	101.345	150	79.440	190	65.568
31	236.538	71	140.053	111	100.643	151	79.018	191	65.286
32	232.424	72	138.672	112	99.951	152	78.601	192	65.006
33	228.457	73	137.320	113	99.268	153	78.188	193	64.728
34	224.630	74	135.995	114	98.596	154	77.780	194	64.454
35	220.934	75	134.697	115	97.933	155	77.377	195	64.181
36	217.364	76	133.424	116	97.279	156	76.977	196	63.911
37	213.913	77	132.177	117	96.634	157	76.582	197	63.644
38	210.576	78	130.953	118	95.999	158	76.191	198	63.378
39	207.345	79	129.753	119	95.372	159	75.805	199	63.115
40	204.217	80	128.576	120	94.753	160	75.422	200	62.855

P=2a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.1469	41	1.2047	81	0.7630	121	0.5637	161	0.4494
2	3.0186	42	1.1871	82	0.7562	122	0.5601	162	0.4471
3	2.9008	43	1.1701	83	0.7496	123	0.5566	163	0.4449
4	2.7922	44	1.1535	84	0.7430	124	0.5531	164	0.4427
5	2.6919	45	1.1374	85	0.7366	125	0.5496	165	0.4405
6	2.5988	46	1.1218	86	0.7303	126	0.5462	166	0.4384
7	2.5122	47	1.1067	87	0.7241	127	0.5428	167	0.4362
8	2.4315	48	1.0919	88	0.7180	128	0.5395	168	0.4341
9	2.3560	49	1.0776	89	0.7120	129	0.5362	169	0.4321
10	2.2853	50	1.0636	90	0.7062	130	0.5329	170	0.4300
11	2.2189	51	1.0501	91	0.7004	131	0.5297	171	0.4279
12	2.1564	52	1.0369	92	0.6947	132	0.5266	172	0.4259
13	2.0975	53	1.0240	93	0.6891	133	0.5234	173	0.4239
14	2.0419	54	1.0114	94	0.6837	134	0.5204	174	0.4219
15	1.9893	55	0.9992	95	0.6783	135	0.5173	175	0.4200
16	1.9394	56	0.9873	96	0.6730	136	0.5143	176	0.4180
17	1.8921	57	0.9757	97	0.6677	137	0.5113	177	0.4161
18	1.8472	58	0.9644	98	0.6626	138	0.5084	178	0.4142
19	1.8045	59	0.9533	99	0.6575	139	0.5055	179	0.4123
20	1.7637	60	0.9425	100	0.6526	140	0.5026	180	0.4104
21	1.7249	61	0.9319	101	0.6477	141	0.4998	181	0.4086
22	1.6878	62	0.9216	102	0.6429	142	0.4970	182	0.4067
23	1.6523	63	0.9116	103	0.6381	143	0.4942	183	0.4049
24	1.6184	64	0.9017	104	0.6334	144	0.4915	184	0.4031
25	1.5859	65	0.8921	105	0.6288	145	0.4888	185	0.4013
26	1.5547	66	0.8827	106	0.6243	146	0.4861	186	0.3995
27	1.5248	67	0.8735	107	0.6199	147	0.4834	187	0.3978
28	1.4961	68	0.8645	108	0.6155	148	0.4808	188	0.3960
29	1.4685	69	0.8557	109	0.6111	149	0.4782	189	0.3943
30	1.4420	70	0.8471	110	0.6069	150	0.4757	190	0.3926
31	1.4164	71	0.8386	111	0.6027	151	0.4732	191	0.3909
32	1.3918	72	0.8304	112	0.5985	152	0.4707	192	0.3893
33	1.3680	73	0.8223	113	0.5944	153	0.4682	193	0.3876
34	1.3451	74	0.8143	114	0.5904	154	0.4658	194	0.3859
35	1.3230	75	0.8066	115	0.5864	155	0.4633	195	0.3843
36	1.3016	76	0.7989	116	0.5825	156	0.4609	196	0.3827
37	1.2809	77	0.7915	117	0.5786	157	0.4586	197	0.3811
38	1.2609	78	0.7842	118	0.5748	158	0.4562	198	0.3795
39	1.2416	79	0.7770	119	0.5711	159	0.4539	199	0.3779
40	1.2229	80	0.7699	120	0.5674	160	0.4516	200	0.3764

P=3a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	578.407	41	222.547	81	141.696	121	105.110	161	84.053
2	554.791	42	219.330	82	140.451	122	104.447	162	83.640
3	533.126	43	216.211	83	139.230	123	103.793	163	83.231
4	513.179	44	213.183	84	138.031	124	103.147	164	82.826
5	494.748	45	210.244	85	136.853	125	102.510	165	82.425
6	477.664	46	207.390	86	135.697	126	101.882	166	82.028
7	461.783	47	204.616	87	134.561	127	101.261	167	81.635
8	446.981	48	201.920	88	133.445	128	100.648	168	81.246
9	433.148	49	199.298	89	132.349	129	100.043	169	80.862
10	420.191	50	196.747	90	131.271	130	99.446	170	80.481
11	408.028	51	194.264	91	130.212	131	98.856	171	80.103
12	396.587	52	191.846	92	129.171	132	98.274	172	79.730
13	385.805	53	189.492	93	128.147	133	97.699	173	79.360
14	375.626	54	187.197	94	127.140	134	97.131	174	78.994
15	365.998	55	184.961	95	126.150	135	96.570	175	78.631
16	356.879	56	182.781	96	125.176	136	96.015	176	78.272
17	348.228	57	180.654	97	124.218	137	95.468	177	77.916
18	340.009	58	178.579	98	123.275	138	94.927	178	77.564
19	332.190	59	176.554	99	122.347	139	94.392	179	77.215
20	324.742	60	174.576	100	121.434	140	93.864	180	76.869
21	317.640	61	172.646	101	120.535	141	93.342	181	76.526
22	310.858	62	170.759	102	119.650	142	92.826	182	76.187
23	304.376	63	168.916	103	118.779	143	92.316	183	75.851
24	298.173	64	167.115	104	117.921	144	91.812	184	75.518
25	292.232	65	165.354	105	117.076	145	91.314	185	75.189
26	286.537	66	163.631	106	116.244	146	90.821	186	74.862
27	281.071	67	161.946	107	115.425	147	90.334	187	74.538
28	275.821	68	160.298	108	114.617	148	89.853	188	74.217
29	270.775	69	158.684	109	113.821	149	89.377	189	73.899
30	265.921	70	157.105	110	113.037	150	88.906	190	73.584
31	261.247	71	155.558	111	112.264	151	88.440	191	73.272
32	256.743	72	154.044	112	111.503	152	87.980	192	72.962
33	252.401	73	152.560	113	110.752	153	87.524	193	72.656
34	248.212	74	151.106	114	110.012	154	87.074	194	72.352
35	244.167	75	149.681	115	109.282	155	86.629	195	72.050
36	240.259	76	148.285	116	108.563	156	86.188	196	71.752
37	236.481	77	146.915	117	107.853	157	85.752	197	71.456
38	232.827	78	145.573	118	107.153	158	85.320	198	71.162
39	229.290	79	144.256	119	106.463	159	84.894	199	70.871
40	225.865	80	142.963	120	105.782	160	84.471	200	70.583

P=3a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.4635	41	1.3326	81	0.8485	121	0.6294	161	0.5033
2	3.3221	42	1.3134	82	0.8410	122	0.6254	162	0.5008
3	3.1924	43	1.2947	83	0.8337	123	0.6215	163	0.4984
4	3.0729	44	1.2765	84	0.8265	124	0.6176	164	0.4960
5	2.9626	45	1.2589	85	0.8195	125	0.6138	165	0.4936
6	2.8603	46	1.2419	86	0.8126	126	0.6101	166	0.4912
7	2.7652	47	1.2252	87	0.8058	127	0.6064	167	0.4888
8	2.6765	48	1.2091	88	0.7991	128	0.6027	168	0.4865
9	2.5937	49	1.1934	89	0.7925	129	0.5991	169	0.4842
10	2.5161	50	1.1781	90	0.7861	130	0.5955	170	0.4819
11	2.4433	51	1.1633	91	0.7797	131	0.5920	171	0.4797
12	2.3748	52	1.1488	92	0.7735	132	0.5885	172	0.4774
13	2.3102	53	1.1347	93	0.7673	133	0.5850	173	0.4752
14	2.2493	54	1.1209	94	0.7613	134	0.5816	174	0.4730
15	2.1916	55	1.1076	95	0.7554	135	0.5783	175	0.4708
16	2.1370	56	1.0945	96	0.7496	136	0.5749	176	0.4687
17	2.0852	57	1.0818	97	0.7438	137	0.5717	177	0.4666
18	2.0360	58	1.0693	98	0.7382	138	0.5684	178	0.4645
19	1.9892	59	1.0572	99	0.7326	139	0.5652	179	0.4624
20	1.9446	60	1.0454	100	0.7271	140	0.5621	180	0.4603
21	1.9020	61	1.0338	101	0.7218	141	0.5589	181	0.4582
22	1.8614	62	1.0225	102	0.7165	142	0.5558	182	0.4562
23	1.8226	63	1.0115	103	0.7113	143	0.5528	183	0.4542
24	1.7855	64	1.0007	104	0.7061	144	0.5498	184	0.4522
25	1.7499	65	0.9901	105	0.7011	145	0.5468	185	0.4502
26	1.7158	66	0.9798	106	0.6961	146	0.5438	186	0.4483
27	1.6831	67	0.9697	107	0.6912	147	0.5409	187	0.4463
28	1.6516	68	0.9599	108	0.6863	148	0.5380	188	0.4444
29	1.6214	69	0.9502	109	0.6816	149	0.5352	189	0.4425
30	1.5923	70	0.9407	110	0.6769	150	0.5324	190	0.4406
31	1.5644	71	0.9315	111	0.6722	151	0.5296	191	0.4388
32	1.5374	72	0.9224	112	0.6677	152	0.5268	192	0.4369
33	1.5114	73	0.9135	113	0.6632	153	0.5241	193	0.4351
34	1.4863	74	0.9048	114	0.6588	154	0.5214	194	0.4332
35	1.4621	75	0.8963	115	0.6544	155	0.5187	195	0.4314
36	1.4387	76	0.8879	116	0.6501	156	0.5161	196	0.4297
37	1.4161	77	0.8797	117	0.6458	157	0.5135	197	0.4279
38	1.3942	78	0.8717	118	0.6416	158	0.5109	198	0.4261
39	1.3730	79	0.8638	119	0.6375	159	0.5083	199	0.4244
40	1.3525	80	0.8561	120	0.6334	160	0.5058	200	0.4227

P=5a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	641.135	41	247.805	81	158.601	121	118.120	161	94.758
2	614.895	42	244.260	82	157.226	122	117.385	162	94.299
3	590.847	43	240.821	83	155.876	123	116.660	163	93.844
4	568.722	44	237.483	84	154.551	124	115.945	164	93.394
5	548.296	45	234.243	85	153.249	125	115.239	165	92.948
6	529.375	46	231.096	86	151.971	126	114.542	166	92.507
7	511.797	47	228.038	87	150.715	127	113.854	167	92.071
8	495.420	48	225.065	88	149.481	128	113.175	168	91.639
9	480.124	49	222.174	89	148.269	129	112.504	169	91.211
10	465.802	50	219.361	90	147.078	130	111.842	170	90.787
11	452.363	51	216.623	91	145.906	131	111.188	171	90.368
12	439.726	52	213.957	92	144.755	132	110.542	172	89.953
13	427.820	53	211.360	93	143.622	133	109.904	173	89.542
14	416.582	54	208.830	94	142.509	134	109.274	174	89.134
15	405.957	55	206.363	95	141.414	135	108.652	175	88.731
16	395.894	56	203.958	96	140.336	136	108.037	176	88.332
17	386.350	57	201.612	97	139.276	137	107.429	177	87.936
18	377.284	58	199.322	98	138.233	138	106.829	178	87.544
19	368.660	59	197.088	99	137.207	139	106.236	179	87.156
20	360.448	60	194.906	100	136.196	140	105.650	180	86.772
21	352.616	61	192.776	101	135.202	141	105.071	181	86.391
22	345.139	62	190.694	102	134.222	142	104.498	182	86.014
23	337.993	63	188.660	103	133.258	143	103.932	183	85.640
24	331.156	64	186.672	104	132.309	144	103.373	184	85.270
25	324.607	65	184.728	105	131.373	145	102.820	185	84.903
26	318.329	66	182.827	106	130.452	146	102.273	186	84.539
27	312.305	67	180.967	107	129.545	147	101.733	187	84.179
28	306.519	68	179.147	108	128.651	148	101.198	188	83.822
29	300.958	69	177.366	109	127.770	149	100.670	189	83.468
30	295.608	70	175.622	110	126.901	150	100.147	190	83.117
31	290.457	71	173.914	111	126.046	151	99.630	191	82.770
32	285.494	72	172.241	112	125.202	152	99.119	192	82.426
33	280.709	73	170.603	113	124.371	153	98.613	193	82.084
34	276.091	74	168.997	114	123.551	154	98.113	194	81.746
35	271.634	75	167.423	115	122.743	155	97.618	195	81.411
36	267.327	76	165.881	116	121.945	156	97.129	196	81.078
37	263.163	77	164.368	117	121.159	157	96.645	197	80.749
38	259.136	78	162.885	118	120.384	158	96.165	198	80.422
39	255.238	79	161.429	119	119.619	159	95.691	199	80.098
40	251.463	80	160.002	120	118.864	160	95.222	200	79.777

P=5a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	3.8391	41	1.4839	81	0.9497	121	0.7073	161	0.5674
2	3.6820	42	1.4626	82	0.9415	122	0.7029	162	0.5647
3	3.5380	43	1.4420	83	0.9334	123	0.6986	163	0.5619
4	3.4055	44	1.4221	84	0.9255	124	0.6943	164	0.5592
5	3.2832	45	1.4027	85	0.9177	125	0.6901	165	0.5566
6	3.1699	46	1.3838	86	0.9100	126	0.6859	166	0.5539
7	3.0647	47	1.3655	87	0.9025	127	0.6818	167	0.5513
8	2.9666	48	1.3477	88	0.8951	128	0.6777	168	0.5487
9	2.8750	49	1.3304	89	0.8878	129	0.6737	169	0.5462
10	2.7892	50	1.3135	90	0.8807	130	0.6697	170	0.5436
11	2.7088	51	1.2971	91	0.8737	131	0.6658	171	0.5411
12	2.6331	52	1.2812	92	0.8668	132	0.6619	172	0.5386
13	2.5618	53	1.2656	93	0.8600	133	0.6581	173	0.5362
14	2.4945	54	1.2505	94	0.8533	134	0.6543	174	0.5337
15	2.4309	55	1.2357	95	0.8468	135	0.6506	175	0.5313
16	2.3706	56	1.2213	96	0.8403	136	0.6469	176	0.5289
17	2.3135	57	1.2073	97	0.8340	137	0.6433	177	0.5266
18	2.2592	58	1.1935	98	0.8277	138	0.6397	178	0.5242
19	2.2075	59	1.1802	99	0.8216	139	0.6361	179	0.5219
20	2.1584	60	1.1671	100	0.8155	140	0.6326	180	0.5196
21	2.1115	61	1.1543	101	0.8096	141	0.6292	181	0.5173
22	2.0667	62	1.1419	102	0.8037	142	0.6257	182	0.5151
23	2.0239	63	1.1297	103	0.7980	143	0.6223	183	0.5128
24	1.9830	64	1.1178	104	0.7923	144	0.6190	184	0.5106
25	1.9438	65	1.1062	105	0.7867	145	0.6157	185	0.5084
26	1.9062	66	1.0948	106	0.7812	146	0.6124	186	0.5062
27	1.8701	67	1.0836	107	0.7757	147	0.6092	187	0.5041
28	1.8354	68	1.0727	108	0.7704	148	0.6060	188	0.5019
29	1.8021	69	1.0621	109	0.7651	149	0.6028	189	0.4998
30	1.7701	70	1.0516	110	0.7599	150	0.5997	190	0.4977
31	1.7393	71	1.0414	111	0.7548	151	0.5966	191	0.4956
32	1.7095	72	1.0314	112	0.7497	152	0.5935	192	0.4936
33	1.6809	73	1.0216	113	0.7447	153	0.5905	193	0.4915
34	1.6532	74	1.0120	114	0.7398	154	0.5875	194	0.4895
35	1.6265	75	1.0025	115	0.7350	155	0.5845	195	0.4875
36	1.6008	76	0.9933	116	0.7302	156	0.5816	196	0.4855
37	1.5758	77	0.9842	117	0.7255	157	0.5787	197	0.4835
38	1.5517	78	0.9754	118	0.7209	158	0.5758	198	0.4816
39	1.5284	79	0.9666	119	0.7163	159	0.5730	199	0.4796
40	1.5058	80	0.9581	120	0.7118	160	0.5702	200	0.4777

P=10a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	711.786	41	278.597	81	179.485	121	134.272	161	108.080
2	682.986	42	274.668	82	177.952	122	133.450	162	107.565
3	656.585	43	270.856	83	176.448	123	132.638	163	107.054
4	632.289	44	267.157	84	174.970	124	131.837	164	106.548
5	609.851	45	263.564	85	173.519	125	131.047	165	106.048
6	589.061	46	260.074	86	172.093	126	130.266	166	105.553
7	569.740	47	256.683	87	170.692	127	129.496	167	105.062
8	551.735	48	253.385	88	169.316	128	128.735	168	104.577
9	534.913	49	250.177	89	167.963	129	127.984	169	104.096
10	519.159	50	247.055	90	166.634	130	127.242	170	103.620
11	504.371	51	244.016	91	165.327	131	126.509	171	103.149
12	490.462	52	241.057	92	164.042	132	125.786	172	102.682
13	477.354	53	238.174	93	162.778	133	125.071	173	102.220
14	464.979	54	235.364	94	161.535	134	124.365	174	101.762
15	453.274	55	232.624	95	160.312	135	123.667	175	101.309
16	442.187	56	229.953	96	159.109	136	122.978	176	100.860
17	431.668	57	227.346	97	157.925	137	122.297	177	100.415
18	421.673	58	224.803	98	156.760	138	121.624	178	99.975
19	412.164	59	222.320	99	155.614	139	120.959	179	99.538
20	403.106	60	219.895	100	154.485	140	120.302	180	99.106
21	394.466	61	217.527	101	153.374	141	119.653	181	98.678
22	386.215	62	215.213	102	152.280	142	119.011	182	98.254
23	378.328	63	212.951	103	151.203	143	118.376	183	97.833
24	370.779	64	210.740	104	150.142	144	117.749	184	97.417
25	363.548	65	208.577	105	149.096	145	117.129	185	97.004
26	356.614	66	206.462	106	148.067	146	116.515	186	96.595
27	349.958	67	204.393	107	147.052	147	115.909	187	96.190
28	343.565	68	202.368	108	146.053	148	115.309	188	95.788
29	337.418	69	200.386	109	145.068	149	114.716	189	95.390
30	331.504	70	198.445	110	144.097	150	114.130	190	94.995
31	325.808	71	196.544	111	143.140	151	113.550	191	94.604
32	320.319	72	194.682	112	142.197	152	112.976	192	94.217
33	315.026	73	192.857	113	141.267	153	112.409	193	93.833
34	309.917	74	191.069	114	140.350	154	111.847	194	93.452
35	304.984	75	189.316	115	139.445	155	111.292	195	93.075
36	300.217	76	187.598	116	138.553	156	110.742	196	92.700
37	295.607	77	185.912	117	137.674	157	110.199	197	92.329
38	291.148	78	184.260	118	136.806	158	109.661	198	91.962
39	286.831	79	182.638	119	135.950	159	109.129	199	91.597
40	282.649	80	181.047	120	135.106	160	108.602	200	91.235

P=10a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.2622	41	1.6682	81	1.0748	121	0.8040	161	0.6472
2	4.0897	42	1.6447	82	1.0656	122	0.7991	162	0.6441
3	3.9316	43	1.6219	83	1.0566	123	0.7942	163	0.6410
4	3.7862	44	1.5997	84	1.0477	124	0.7894	164	0.6380
5	3.6518	45	1.5782	85	1.0390	125	0.7847	165	0.6350
6	3.5273	46	1.5573	86	1.0305	126	0.7800	166	0.6321
7	3.4116	47	1.5370	87	1.0221	127	0.7754	167	0.6291
8	3.3038	48	1.5173	88	1.0139	128	0.7709	168	0.6262
9	3.2031	49	1.4981	89	1.0058	129	0.7664	169	0.6233
10	3.1087	50	1.4794	90	0.9978	130	0.7619	170	0.6205
11	3.0202	51	1.4612	91	0.9900	131	0.7575	171	0.6177
12	2.9369	52	1.4435	92	0.9823	132	0.7532	172	0.6149
13	2.8584	53	1.4262	93	0.9747	133	0.7489	173	0.6121
14	2.7843	54	1.4094	94	0.9673	134	0.7447	174	0.6094
15	2.7142	55	1.3930	95	0.9600	135	0.7405	175	0.6066
16	2.6478	56	1.3770	96	0.9527	136	0.7364	176	0.6040
17	2.5848	57	1.3614	97	0.9457	137	0.7323	177	0.6013
18	2.5250	58	1.3461	98	0.9387	138	0.7283	178	0.5987
19	2.4681	59	1.3313	99	0.9318	139	0.7243	179	0.5960
20	2.4138	60	1.3167	100	0.9251	140	0.7204	180	0.5934
21	2.3621	61	1.3026	101	0.9184	141	0.7165	181	0.5909
22	2.3127	62	1.2887	102	0.9119	142	0.7126	182	0.5883
23	2.2654	63	1.2752	103	0.9054	143	0.7088	183	0.5858
24	2.2202	64	1.2619	104	0.8991	144	0.7051	184	0.5833
25	2.1769	65	1.2490	105	0.8928	145	0.7014	185	0.5809
26	2.1354	66	1.2363	106	0.8866	146	0.6977	186	0.5784
27	2.0956	67	1.2239	107	0.8806	147	0.6941	187	0.5760
28	2.0573	68	1.2118	108	0.8746	148	0.6905	188	0.5736
29	2.0205	69	1.1999	109	0.8687	149	0.6869	189	0.5712
30	1.9851	70	1.1883	110	0.8629	150	0.6834	190	0.5688
31	1.9509	71	1.1769	111	0.8571	151	0.6799	191	0.5665
32	1.9181	72	1.1658	112	0.8515	152	0.6765	192	0.5642
33	1.8864	73	1.1548	113	0.8459	153	0.6731	193	0.5619
34	1.8558	74	1.1441	114	0.8404	154	0.6697	194	0.5596
35	1.8263	75	1.1336	115	0.8350	155	0.6664	195	0.5573
36	1.7977	76	1.1233	116	0.8297	156	0.6631	196	0.5551
37	1.7701	77	1.1132	117	0.8244	157	0.6599	197	0.5529
38	1.7434	78	1.1034	118	0.8192	158	0.6567	198	0.5507
39	1.7175	79	1.0936	119	0.8141	159	0.6535	199	0.5485
40	1.6925	80	1.0841	120	0.8090	160	0.6503	200	0.5463

P=20a		t (min)		q[L/(s•hm ²)]					
t	q	t	q	t	q	t	q	t	q
1	774.394	41	308.730	81	200.335	121	150.546	161	121.577
2	743.768	42	304.450	82	198.651	122	149.638	162	121.005
3	715.655	43	300.296	83	196.998	123	148.741	163	120.439
4	689.752	44	296.263	84	195.374	124	147.857	164	119.879
5	665.801	45	292.347	85	193.778	125	146.983	165	119.324
6	643.585	46	288.540	86	192.211	126	146.121	166	118.775
7	622.918	47	284.840	87	190.671	127	145.270	167	118.231
8	603.640	48	281.241	88	189.158	128	144.430	168	117.693
9	585.611	49	277.740	89	187.670	129	143.600	169	117.160
10	568.712	50	274.332	90	186.208	130	142.780	170	116.633
11	552.837	51	271.013	91	184.770	131	141.970	171	116.110
12	537.894	52	267.780	92	183.356	132	141.170	172	115.592
13	523.801	53	264.630	93	181.965	133	140.380	173	115.080
14	510.485	54	261.560	94	180.597	134	139.600	174	114.572
15	497.883	55	258.565	95	179.252	135	138.829	175	114.069
16	485.938	56	255.644	96	177.927	136	138.067	176	113.571
17	474.597	57	252.794	97	176.624	137	137.314	177	113.078
18	463.816	58	250.011	98	175.341	138	136.569	178	112.589
19	453.553	59	247.295	99	174.079	139	135.834	179	112.105
20	443.771	60	244.642	100	172.836	140	135.107	180	111.625
21	434.435	61	242.049	101	171.612	141	134.389	181	111.150
22	425.515	62	239.516	102	170.406	142	133.679	182	110.679
23	416.984	63	237.039	103	169.219	143	132.976	183	110.213
24	408.815	64	234.618	104	168.050	144	132.282	184	109.751
25	400.986	65	232.249	105	166.898	145	131.596	185	109.292
26	393.476	66	229.932	106	165.763	146	130.917	186	108.838
27	386.264	67	227.664	107	164.645	147	130.246	187	108.389
28	379.333	68	225.445	108	163.543	148	129.582	188	107.943
29	372.667	69	223.272	109	162.457	149	128.926	189	107.501
30	366.250	70	221.144	110	161.387	150	128.277	190	107.063
31	360.068	71	219.059	111	160.331	151	127.635	191	106.629
32	354.108	72	217.016	112	159.291	152	126.999	192	106.198
33	348.358	73	215.015	113	158.265	153	126.371	193	105.772
34	342.807	74	213.053	114	157.253	154	125.749	194	105.349
35	337.445	75	211.130	115	156.255	155	125.134	195	104.929
36	332.261	76	209.243	116	155.271	156	124.526	196	104.514
37	327.247	77	207.394	117	154.300	157	123.924	197	104.102
38	322.395	78	205.579	118	153.343	158	123.328	198	103.693
39	317.696	79	203.798	119	152.398	159	122.738	199	103.288
40	313.144	80	202.051	120	151.466	160	122.154	200	102.886

P=20a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.6371	41	1.8487	81	1.1996	121	0.9015	161	0.7280
2	4.4537	42	1.8231	82	1.1895	122	0.8960	162	0.7246
3	4.2854	43	1.7982	83	1.1796	123	0.8907	163	0.7212
4	4.1302	44	1.7740	84	1.1699	124	0.8854	164	0.7178
5	3.9868	45	1.7506	85	1.1604	125	0.8801	165	0.7145
6	3.8538	46	1.7278	86	1.1510	126	0.8750	166	0.7112
7	3.7300	47	1.7056	87	1.1417	127	0.8699	167	0.7080
8	3.6146	48	1.6841	88	1.1327	128	0.8648	168	0.7047
9	3.5067	49	1.6631	89	1.1238	129	0.8599	169	0.7016
10	3.4055	50	1.6427	90	1.1150	130	0.8550	170	0.6984
11	3.3104	51	1.6228	91	1.1064	131	0.8501	171	0.6953
12	3.2209	52	1.6035	92	1.0979	132	0.8453	172	0.6922
13	3.1365	53	1.5846	93	1.0896	133	0.8406	173	0.6891
14	3.0568	54	1.5662	94	1.0814	134	0.8359	174	0.6861
15	2.9813	55	1.5483	95	1.0734	135	0.8313	175	0.6831
16	2.9098	56	1.5308	96	1.0654	136	0.8267	176	0.6801
17	2.8419	57	1.5137	97	1.0576	137	0.8222	177	0.6771
18	2.7773	58	1.4971	98	1.0499	138	0.8178	178	0.6742
19	2.7159	59	1.4808	99	1.0424	139	0.8134	179	0.6713
20	2.6573	60	1.4649	100	1.0349	140	0.8090	180	0.6684
21	2.6014	61	1.4494	101	1.0276	141	0.8047	181	0.6656
22	2.5480	62	1.4342	102	1.0204	142	0.8005	182	0.6628
23	2.4969	63	1.4194	103	1.0133	143	0.7963	183	0.6600
24	2.4480	64	1.4049	104	1.0063	144	0.7921	184	0.6572
25	2.4011	65	1.3907	105	0.9994	145	0.7880	185	0.6544
26	2.3561	66	1.3768	106	0.9926	146	0.7839	186	0.6517
27	2.3130	67	1.3633	107	0.9859	147	0.7799	187	0.6490
28	2.2715	68	1.3500	108	0.9793	148	0.7759	188	0.6464
29	2.2315	69	1.3370	109	0.9728	149	0.7720	189	0.6437
30	2.1931	70	1.3242	110	0.9664	150	0.7681	190	0.6411
31	2.1561	71	1.3117	111	0.9601	151	0.7643	191	0.6385
32	2.1204	72	1.2995	112	0.9538	152	0.7605	192	0.6359
33	2.0860	73	1.2875	113	0.9477	153	0.7567	193	0.6334
34	2.0527	74	1.2758	114	0.9416	154	0.7530	194	0.6308
35	2.0206	75	1.2642	115	0.9357	155	0.7493	195	0.6283
36	1.9896	76	1.2530	116	0.9298	156	0.7457	196	0.6258
37	1.9596	77	1.2419	117	0.9240	157	0.7421	197	0.6234
38	1.9305	78	1.2310	118	0.9182	158	0.7385	198	0.6209
39	1.9024	79	1.2203	119	0.9126	159	0.7350	199	0.6185
40	1.8751	80	1.2099	120	0.9070	160	0.7315	200	0.6161

P=30a		t(min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	805.151	41	322.971	81	210.081	121	158.106	161	127.822
2	773.554	42	318.519	82	208.324	122	157.158	162	127.224
3	744.537	43	314.198	83	206.599	123	156.221	163	126.632
4	717.789	44	310.003	84	204.905	124	155.297	164	126.046
5	693.048	45	305.928	85	203.241	125	154.384	165	125.466
6	670.090	46	301.968	86	201.606	126	153.483	166	124.891
7	648.726	47	298.117	87	200.000	127	152.594	167	124.322
8	628.791	48	294.372	88	198.421	128	151.715	168	123.759
9	610.142	49	290.728	89	196.868	129	150.848	169	123.202
10	592.657	50	287.180	90	195.342	130	149.991	170	122.650
11	576.226	51	283.726	91	193.842	131	149.145	171	122.103
12	560.756	52	280.360	92	192.366	132	148.309	172	121.561
13	546.162	53	277.081	93	190.915	133	147.483	173	121.025
14	532.370	54	273.883	94	189.487	134	146.668	174	120.494
15	519.315	55	270.765	95	188.083	135	145.862	175	119.968
16	506.936	56	267.723	96	186.700	136	145.065	176	119.446
17	495.182	57	264.755	97	185.340	137	144.278	177	118.930
18	484.006	58	261.857	98	184.001	138	143.500	178	118.419
19	473.365	59	259.028	99	182.683	139	142.731	179	117.912
20	463.219	60	256.264	100	181.385	140	141.971	180	117.410
21	453.536	61	253.563	101	180.108	141	141.220	181	116.913
22	444.282	62	250.924	102	178.849	142	140.478	182	116.420
23	435.430	63	248.344	103	177.610	143	139.744	183	115.932
24	426.953	64	245.820	104	176.389	144	139.018	184	115.448
25	418.827	65	243.352	105	175.186	145	138.300	185	114.968
26	411.030	66	240.938	106	174.001	146	137.591	186	114.493
27	403.543	67	238.574	107	172.834	147	136.889	187	114.022
28	396.346	68	236.261	108	171.683	148	136.195	188	113.556
29	389.422	69	233.996	109	170.549	149	135.509	189	113.093
30	382.757	70	231.778	110	169.431	150	134.830	190	112.634
31	376.335	71	229.605	111	168.328	151	134.158	191	112.180
32	370.143	72	227.475	112	167.242	152	133.494	192	111.729
33	364.168	73	225.389	113	166.170	153	132.837	193	111.283
34	358.400	74	223.343	114	165.113	154	132.186	194	110.840
35	352.827	75	221.338	115	164.071	155	131.543	195	110.401
36	347.438	76	219.371	116	163.043	156	130.907	196	109.966
37	342.226	77	217.442	117	162.029	157	130.277	197	109.535
38	337.181	78	215.549	118	161.029	158	129.653	198	109.107
39	332.296	79	213.692	119	160.041	159	129.037	199	108.683
40	327.561	80	211.870	120	159.067	160	128.426	200	108.262

P=30a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	4.8213	41	1.9340	81	1.2580	121	0.9467	161	0.7654
2	4.6321	42	1.9073	82	1.2475	122	0.9411	162	0.7618
3	4.4583	43	1.8814	83	1.2371	123	0.9355	163	0.7583
4	4.2981	44	1.8563	84	1.2270	124	0.9299	164	0.7548
5	4.1500	45	1.8319	85	1.2170	125	0.9245	165	0.7513
6	4.0125	46	1.8082	86	1.2072	126	0.9191	166	0.7479
7	3.8846	47	1.7851	87	1.1976	127	0.9137	167	0.7444
8	3.7652	48	1.7627	88	1.1881	128	0.9085	168	0.7411
9	3.6535	49	1.7409	89	1.1789	129	0.9033	169	0.7377
10	3.5488	50	1.7196	90	1.1697	130	0.8982	170	0.7344
11	3.4505	51	1.6990	91	1.1607	131	0.8931	171	0.7312
12	3.3578	52	1.6788	92	1.1519	132	0.8881	172	0.7279
13	3.2704	53	1.6592	93	1.1432	133	0.8831	173	0.7247
14	3.1878	54	1.6400	94	1.1347	134	0.8782	174	0.7215
15	3.1097	55	1.6213	95	1.1262	135	0.8734	175	0.7184
16	3.0355	56	1.6031	96	1.1180	136	0.8687	176	0.7152
17	2.9652	57	1.5854	97	1.1098	137	0.8639	177	0.7122
18	2.8982	58	1.5680	98	1.1018	138	0.8593	178	0.7091
19	2.8345	59	1.5511	99	1.0939	139	0.8547	179	0.7061
20	2.7738	60	1.5345	100	1.0861	140	0.8501	180	0.7031
21	2.7158	61	1.5183	101	1.0785	141	0.8456	181	0.7001
22	2.6604	62	1.5025	102	1.0710	142	0.8412	182	0.6971
23	2.6074	63	1.4871	103	1.0635	143	0.8368	183	0.6942
24	2.5566	64	1.4720	104	1.0562	144	0.8324	184	0.6913
25	2.5079	65	1.4572	105	1.0490	145	0.8281	185	0.6884
26	2.4613	66	1.4427	106	1.0419	146	0.8239	186	0.6856
27	2.4164	67	1.4286	107	1.0349	147	0.8197	187	0.6828
28	2.3733	68	1.4147	108	1.0280	148	0.8155	188	0.6800
29	2.3319	69	1.4012	109	1.0212	149	0.8114	189	0.6772
30	2.2920	70	1.3879	110	1.0146	150	0.8074	190	0.6745
31	2.2535	71	1.3749	111	1.0080	151	0.8033	191	0.6717
32	2.2164	72	1.3621	112	1.0014	152	0.7994	192	0.6690
33	2.1806	73	1.3496	113	0.9950	153	0.7954	193	0.6664
34	2.1461	74	1.3374	114	0.9887	154	0.7915	194	0.6637
35	2.1127	75	1.3254	115	0.9825	155	0.7877	195	0.6611
36	2.0805	76	1.3136	116	0.9763	156	0.7839	196	0.6585
37	2.0493	77	1.3020	117	0.9702	157	0.7801	197	0.6559
38	2.0191	78	1.2907	118	0.9642	158	0.7764	198	0.6533
39	1.9898	79	1.2796	119	0.9583	159	0.7727	199	0.6508
40	1.9614	80	1.2687	120	0.9525	160	0.7690	200	0.6483

P=50a		t (min) q[L/(s•hm ²)]							
t	q	t	q	t	q	t	q	t	q
1	844.153	41	341.116	81	222.536	121	167.790	161	135.834
2	811.329	42	336.447	82	220.688	122	166.790	162	135.202
3	781.170	43	331.915	83	218.873	123	165.802	163	134.577
4	753.355	44	327.514	84	217.090	124	164.827	164	133.958
5	727.615	45	323.239	85	215.338	125	163.865	165	133.345
6	703.721	46	319.084	86	213.617	126	162.915	166	132.739
7	681.476	47	315.043	87	211.926	127	161.977	167	132.138
8	660.711	48	311.113	88	210.264	128	161.050	168	131.543
9	641.279	49	307.288	89	208.630	129	160.135	169	130.954
10	623.053	50	303.564	90	207.023	130	159.232	170	130.371
11	605.922	51	299.938	91	205.443	131	158.339	171	129.794
12	589.787	52	296.405	92	203.890	132	157.457	172	129.222
13	574.561	53	292.961	93	202.361	133	156.586	173	128.655
14	560.168	54	289.604	94	200.858	134	155.725	174	128.094
15	546.539	55	286.329	95	199.378	135	154.875	175	127.538
16	533.614	56	283.134	96	197.923	136	154.035	176	126.987
17	521.339	57	280.016	97	196.490	137	153.204	177	126.442
18	509.663	58	276.972	98	195.080	138	152.383	178	125.902
19	498.544	59	274.000	99	193.691	139	151.572	179	125.366
20	487.942	60	271.096	100	192.324	140	150.770	180	124.836
21	477.819	61	268.258	101	190.978	141	149.978	181	124.310
22	468.144	62	265.485	102	189.653	142	149.194	182	123.790
23	458.887	63	262.773	103	188.347	143	148.419	183	123.274
24	450.020	64	260.121	104	187.061	144	147.653	184	122.762
25	441.519	65	257.527	105	185.793	145	146.896	185	122.256
26	433.361	66	254.989	106	184.545	146	146.147	186	121.754
27	425.525	67	252.505	107	183.314	147	145.406	187	121.256
28	417.992	68	250.073	108	182.102	148	144.674	188	120.763
29	410.744	69	247.691	109	180.906	149	143.949	189	120.274
30	403.765	70	245.359	110	179.728	150	143.233	190	119.789
31	397.040	71	243.074	111	178.566	151	142.524	191	119.309
32	390.555	72	240.835	112	177.421	152	141.823	192	118.833
33	384.296	73	238.640	113	176.291	153	141.129	193	118.361
34	378.253	74	236.489	114	175.177	154	140.442	194	117.893
35	372.413	75	234.379	115	174.079	155	139.763	195	117.429
36	366.766	76	232.311	116	172.995	156	139.091	196	116.969
37	361.304	77	230.281	117	171.926	157	138.426	197	116.513
38	356.015	78	228.290	118	170.871	158	137.768	198	116.061
39	350.893	79	226.336	119	169.830	159	137.117	199	115.612
40	345.929	80	224.419	120	168.803	160	136.472	200	115.168

P=50a		t(min) i(mm/min)							
t	i	t	i	t	i	t	i	t	i
1	5.0548	41	2.0426	81	1.3326	121	1.0047	161	0.8134
2	4.8583	42	2.0147	82	1.3215	122	0.9987	162	0.8096
3	4.6777	43	1.9875	83	1.3106	123	0.9928	163	0.8059
4	4.5111	44	1.9612	84	1.2999	124	0.9870	164	0.8021
5	4.3570	45	1.9356	85	1.2894	125	0.9812	165	0.7985
6	4.2139	46	1.9107	86	1.2791	126	0.9755	166	0.7948
7	4.0807	47	1.8865	87	1.2690	127	0.9699	167	0.7912
8	3.9564	48	1.8630	88	1.2591	128	0.9644	168	0.7877
9	3.8400	49	1.8400	89	1.2493	129	0.9589	169	0.7842
10	3.7309	50	1.8178	90	1.2397	130	0.9535	170	0.7807
11	3.6283	51	1.7960	91	1.2302	131	0.9481	171	0.7772
12	3.5317	52	1.7749	92	1.2209	132	0.9429	172	0.7738
13	3.4405	53	1.7543	93	1.2117	133	0.9376	173	0.7704
14	3.3543	54	1.7342	94	1.2027	134	0.9325	174	0.7670
15	3.2727	55	1.7145	95	1.1939	135	0.9274	175	0.7637
16	3.1953	56	1.6954	96	1.1852	136	0.9224	176	0.7604
17	3.1218	57	1.6767	97	1.1766	137	0.9174	177	0.7571
18	3.0519	58	1.6585	98	1.1681	138	0.9125	178	0.7539
19	2.9853	59	1.6407	99	1.1598	139	0.9076	179	0.7507
20	2.9218	60	1.6233	100	1.1516	140	0.9028	180	0.7475
21	2.8612	61	1.6063	101	1.1436	141	0.8981	181	0.7444
22	2.8033	62	1.5897	102	1.1356	142	0.8934	182	0.7413
23	2.7478	63	1.5735	103	1.1278	143	0.8887	183	0.7382
24	2.6947	64	1.5576	104	1.1201	144	0.8842	184	0.7351
25	2.6438	65	1.5421	105	1.1125	145	0.8796	185	0.7321
26	2.5950	66	1.5269	106	1.1051	146	0.8751	186	0.7291
27	2.5481	67	1.5120	107	1.0977	147	0.8707	187	0.7261
28	2.5029	68	1.4974	108	1.0904	148	0.8663	188	0.7231
29	2.4595	69	1.4832	109	1.0833	149	0.8620	189	0.7202
30	2.4178	70	1.4692	110	1.0762	150	0.8577	190	0.7173
31	2.3775	71	1.4555	111	1.0693	151	0.8534	191	0.7144
32	2.3386	72	1.4421	112	1.0624	152	0.8492	192	0.7116
33	2.3012	73	1.4290	113	1.0556	153	0.8451	193	0.7087
34	2.2650	74	1.4161	114	1.0490	154	0.8410	194	0.7059
35	2.2300	75	1.4035	115	1.0424	155	0.8369	195	0.7032
36	2.1962	76	1.3911	116	1.0359	156	0.8329	196	0.7004
37	2.1635	77	1.3789	117	1.0295	157	0.8289	197	0.6977
38	2.1318	78	1.3670	118	1.0232	158	0.8250	198	0.6950
39	2.1012	79	1.3553	119	1.0169	159	0.8211	199	0.6923
40	2.0714	80	1.3438	120	1.0108	160	0.8172	200	0.6896

P=100a					t (min) q[L/(s•hm ²)]				
t	q	t	q	t	q	t	q	t	q
1	895.885	41	365.216	81	239.098	121	180.677	161	146.504
2	861.433	42	360.259	82	237.128	122	179.608	162	145.828
3	829.758	43	355.447	83	235.193	123	178.553	163	145.158
4	800.529	44	350.775	84	233.292	124	177.512	164	144.496
5	773.465	45	346.234	85	231.425	125	176.483	165	143.840
6	748.330	46	341.821	86	229.590	126	175.468	166	143.190
7	724.918	47	337.529	87	227.787	127	174.465	167	142.547
8	703.054	48	333.353	88	226.014	128	173.475	168	141.911
9	682.585	49	329.289	89	224.272	129	172.497	169	141.280
10	663.379	50	325.332	90	222.558	130	171.531	170	140.656
11	645.319	51	321.477	91	220.873	131	170.577	171	140.037
12	628.302	52	317.722	92	219.216	132	169.634	172	139.425
13	612.239	53	314.061	93	217.586	133	168.703	173	138.818
14	597.050	54	310.492	94	215.982	134	167.783	174	138.217
15	582.663	55	307.010	95	214.404	135	166.873	175	137.622
16	569.015	56	303.612	96	212.851	136	165.975	176	137.032
17	556.048	57	300.296	97	211.322	137	165.087	177	136.448
18	543.712	58	297.059	98	209.817	138	164.209	178	135.869
19	531.960	59	293.897	99	208.335	139	163.342	179	135.296
20	520.751	60	290.807	100	206.877	140	162.484	180	134.728
21	510.047	61	287.788	101	205.440	141	161.636	181	134.165
22	499.814	62	284.837	102	204.025	142	160.798	182	133.607
23	490.021	63	281.952	103	202.631	143	159.970	183	133.055
24	480.638	64	279.129	104	201.258	144	159.151	184	132.507
25	471.640	65	276.368	105	199.905	145	158.340	185	131.964
26	463.004	66	273.666	106	198.572	146	157.539	186	131.426
27	454.707	67	271.022	107	197.259	147	156.747	187	130.893
28	446.728	68	268.432	108	195.964	148	155.963	188	130.365
29	439.051	69	265.897	109	194.688	149	155.188	189	129.841
30	431.657	70	263.413	110	193.429	150	154.421	190	129.322
31	424.530	71	260.980	111	192.189	151	153.663	191	128.807
32	417.656	72	258.595	112	190.966	152	152.913	192	128.297
33	411.022	73	256.257	113	189.759	153	152.170	193	127.791
34	404.614	74	253.966	114	188.569	154	151.436	194	127.289
35	398.422	75	251.718	115	187.396	155	150.709	195	126.792
36	392.433	76	249.514	116	186.238	156	149.990	196	126.299
37	386.638	77	247.352	117	185.096	157	149.278	197	125.811
38	381.028	78	245.231	118	183.969	158	148.574	198	125.326
39	375.593	79	243.148	119	182.858	159	147.877	199	124.846
40	370.325	80	241.105	120	181.760	160	147.187	200	124.369

P=100a									
					t(min)		i(mm/min)		
t	i	t	i	t	i	t	i	t	i
1	5.3646	41	2.1869	81	1.4317	121	1.0819	161	0.8773
2	5.1583	42	2.1572	82	1.4199	122	1.0755	162	0.8732
3	4.9686	43	2.1284	83	1.4083	123	1.0692	163	0.8692
4	4.7936	44	2.1004	84	1.3970	124	1.0629	164	0.8652
5	4.6315	45	2.0733	85	1.3858	125	1.0568	165	0.8613
6	4.4810	46	2.0468	86	1.3748	126	1.0507	166	0.8574
7	4.3408	47	2.0211	87	1.3640	127	1.0447	167	0.8536
8	4.2099	48	1.9961	88	1.3534	128	1.0388	168	0.8498
9	4.0873	49	1.9718	89	1.3429	129	1.0329	169	0.8460
10	3.9723	50	1.9481	90	1.3327	130	1.0271	170	0.8422
11	3.8642	51	1.9250	91	1.3226	131	1.0214	171	0.8385
12	3.7623	52	1.9025	92	1.3127	132	1.0158	172	0.8349
13	3.6661	53	1.8806	93	1.3029	133	1.0102	173	0.8312
14	3.5752	54	1.8592	94	1.2933	134	1.0047	174	0.8276
15	3.4890	55	1.8384	95	1.2839	135	0.9992	175	0.8241
16	3.4073	56	1.8180	96	1.2746	136	0.9939	176	0.8206
17	3.3296	57	1.7982	97	1.2654	137	0.9885	177	0.8171
18	3.2558	58	1.7788	98	1.2564	138	0.9833	178	0.8136
19	3.1854	59	1.7599	99	1.2475	139	0.9781	179	0.8102
20	3.1183	60	1.7414	100	1.2388	140	0.9730	180	0.8068
21	3.0542	61	1.7233	101	1.2302	141	0.9679	181	0.8034
22	2.9929	62	1.7056	102	1.2217	142	0.9629	182	0.8000
23	2.9343	63	1.6883	103	1.2134	143	0.9579	183	0.7967
24	2.8781	64	1.6714	104	1.2051	144	0.9530	184	0.7935
25	2.8242	65	1.6549	105	1.1970	145	0.9481	185	0.7902
26	2.7725	66	1.6387	106	1.1891	146	0.9433	186	0.7870
27	2.7228	67	1.6229	107	1.1812	147	0.9386	187	0.7838
28	2.6750	68	1.6074	108	1.1734	148	0.9339	188	0.7806
29	2.6290	69	1.5922	109	1.1658	149	0.9293	189	0.7775
30	2.5848	70	1.5773	110	1.1583	150	0.9247	190	0.7744
31	2.5421	71	1.5628	111	1.1508	151	0.9201	191	0.7713
32	2.5009	72	1.5485	112	1.1435	152	0.9156	192	0.7682
33	2.4612	73	1.5345	113	1.1363	153	0.9112	193	0.7652
34	2.4228	74	1.5208	114	1.1292	154	0.9068	194	0.7622
35	2.3858	75	1.5073	115	1.1221	155	0.9024	195	0.7592
36	2.3499	76	1.4941	116	1.1152	156	0.8981	196	0.7563
37	2.3152	77	1.4812	117	1.1084	157	0.8939	197	0.7534
38	2.2816	78	1.4684	118	1.1016	158	0.8897	198	0.7505
39	2.2491	79	1.4560	119	1.0950	159	0.8855	199	0.7476
40	2.2175	80	1.4437	120	1.0884	160	0.8814	200	0.7447

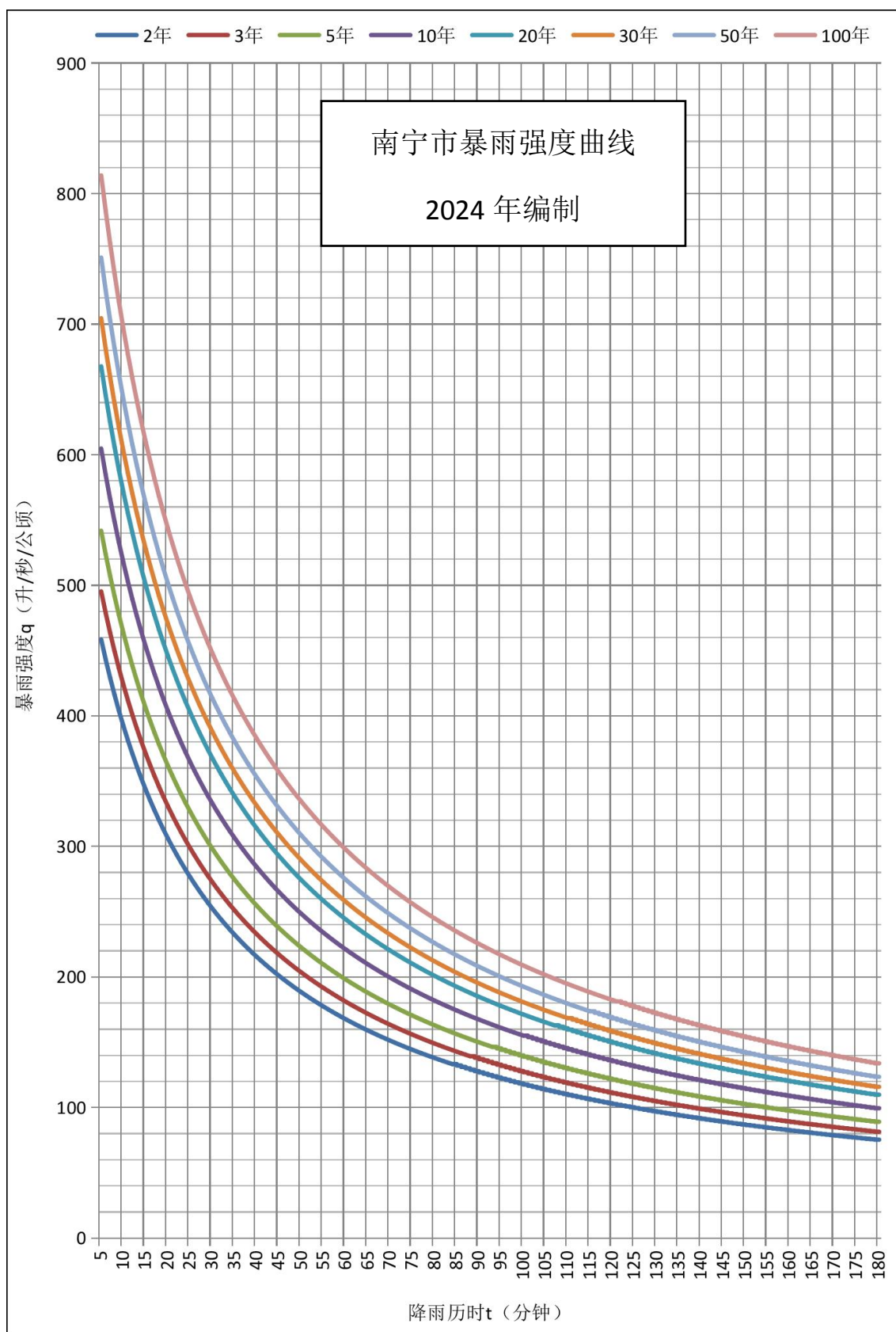


图 1 不同重现期下暴雨强度随历时变化曲线图

表六 各历时各重现期设计雨型降雨量查算表 (mm)

历时	时间 (min)	2 年	3 年	5 年	10 年	20 年	30 年	50 年	100 年
30min	5	4.748	5.130	5.610	6.262	6.915	7.296	7.777	8.429
	10	8.350	9.021	9.866	11.013	12.160	12.831	13.676	14.823
	15	13.718	14.820	16.209	18.093	19.977	21.080	22.468	24.353
	20	8.741	9.444	10.329	11.529	12.730	13.433	14.318	15.518
	25	5.708	6.167	6.745	7.529	8.313	8.771	9.349	10.133
	30	4.090	4.419	4.833	5.395	5.957	6.286	6.700	7.262
60min	5	2.014	2.176	2.380	2.657	2.933	3.095	3.299	3.576
	10	2.683	2.899	3.171	3.539	3.908	4.124	4.395	4.764
	15	3.847	4.156	4.545	5.073	5.602	5.911	6.300	6.829
	20	6.205	6.704	7.332	8.184	9.036	9.535	10.163	11.016
	25	12.249	13.233	14.473	16.156	17.838	18.823	20.063	21.745
	30	11.257	12.161	13.301	14.847	16.393	17.298	18.438	19.984
	35	6.889	7.443	8.140	9.086	10.033	10.586	11.284	12.230
	40	4.749	5.130	5.611	6.263	6.916	7.297	7.778	8.430
	45	3.524	3.807	4.163	4.647	5.131	5.415	5.771	6.255
	50	2.750	2.971	3.250	3.628	4.006	4.227	4.505	4.883
	55	2.228	2.407	2.633	2.939	3.245	3.424	3.650	3.956
	60	1.854	2.003	2.191	2.446	2.700	2.849	3.037	3.292
90min	5	1.193	1.289	1.409	1.573	1.737	1.833	1.954	2.117
	10	1.439	1.554	1.700	1.898	2.095	2.211	2.356	2.554
	15	1.789	1.932	2.113	2.359	2.605	2.749	2.930	3.175
	20	2.322	2.509	2.744	3.063	3.382	3.569	3.804	4.123
	25	3.201	3.459	3.783	4.222	4.662	4.919	5.243	5.683
	30	4.841	5.230	5.720	6.385	7.050	7.439	7.929	8.594
	35	8.595	9.286	10.156	11.337	12.517	13.208	14.078	15.259
	40	13.716	14.818	16.207	18.091	19.975	21.077	22.466	24.350
	45	8.545	9.232	10.097	11.271	12.445	13.131	13.996	15.170

南宁市新版暴雨强度公式及计算图表

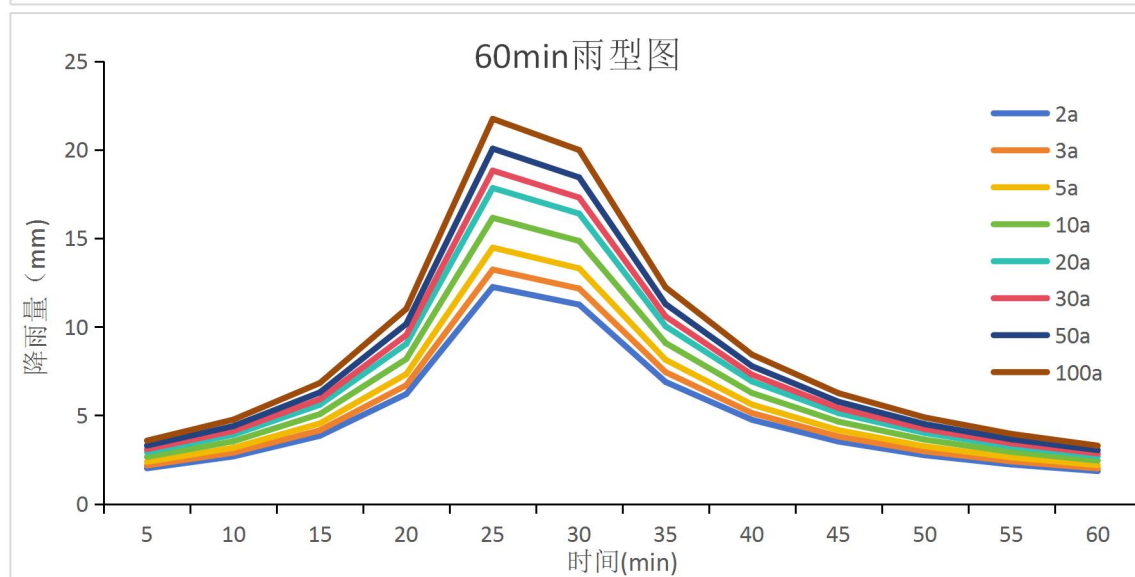
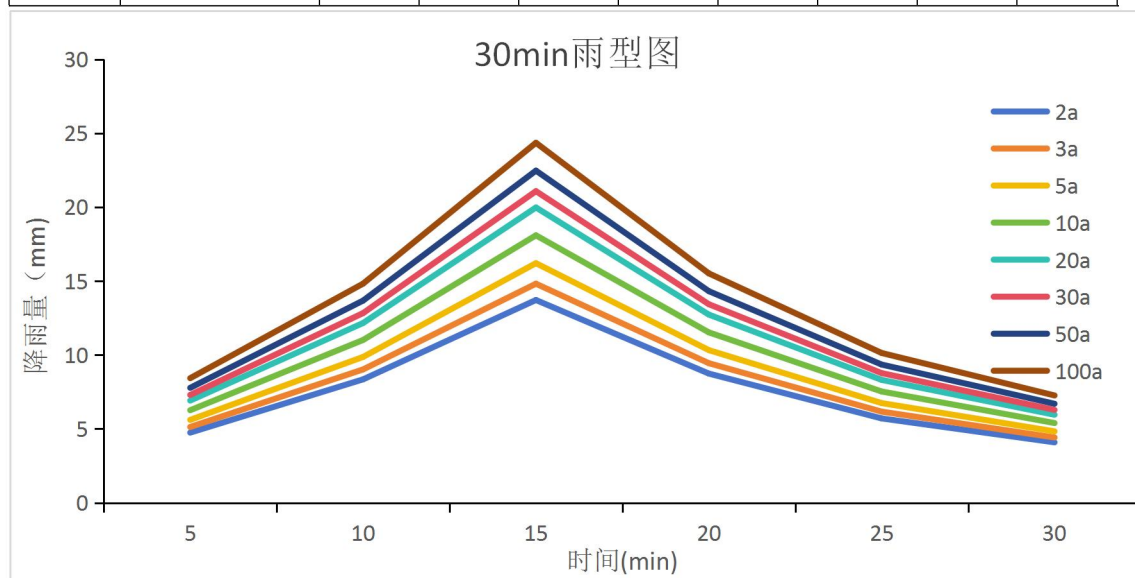
历时	时间 (min)	2 年	3 年	5 年	10 年	20 年	30 年	50 年	100 年
	50	5.607	6.057	6.625	7.395	8.165	8.616	9.183	9.954
	55	4.032	4.356	4.764	5.318	5.872	6.196	6.604	7.158
	60	3.080	3.328	3.640	4.063	4.486	4.733	5.045	5.468
	65	2.454	2.652	2.900	3.237	3.575	3.772	4.020	4.357
	70	2.019	2.181	2.385	2.662	2.940	3.102	3.306	3.584
	75	1.702	1.838	2.011	2.244	2.478	2.615	2.787	3.021
	80	1.463	1.580	1.728	1.929	2.130	2.248	2.396	2.597
	85	1.277	1.379	1.509	1.684	1.859	1.962	2.091	2.267
	90	1.129	1.219	1.334	1.489	1.644	1.735	1.849	2.004
120min	5	0.823	0.889	0.972	1.085	1.198	1.264	1.347	1.460
	10	0.944	1.019	1.115	1.245	1.374	1.450	1.546	1.675
	15	1.102	1.190	1.302	1.453	1.604	1.693	1.804	1.956
	20	1.312	1.417	1.550	1.730	1.910	2.016	2.149	2.329
	25	1.605	1.734	1.896	2.117	2.337	2.466	2.629	2.849
	30	2.040	2.204	2.411	2.691	2.971	3.135	3.342	3.622
	35	2.724	2.943	3.218	3.592	3.967	4.185	4.461	4.835
	40	3.919	4.234	4.631	5.170	5.708	6.023	6.420	6.958
	45	6.365	6.876	7.521	8.395	9.269	9.781	10.425	11.300
	50	12.494	13.498	14.762	16.479	18.195	19.199	20.464	22.180
	55	10.983	11.865	12.977	14.486	15.995	16.877	17.989	19.498
	60	6.767	7.311	7.996	8.926	9.855	10.399	11.084	12.014
	65	4.682	5.058	5.532	6.175	6.818	7.195	7.669	8.312
	70	3.484	3.764	4.117	4.595	5.074	5.354	5.707	6.185
	75	2.726	2.945	3.221	3.595	3.969	4.189	4.464	4.839
	80	2.210	2.388	2.612	2.915	3.219	3.397	3.620	3.924
	85	1.842	1.990	2.177	2.430	2.683	2.831	3.017	3.270
	90	1.569	1.695	1.854	2.069	2.285	2.411	2.570	2.785
	95	1.361	1.470	1.608	1.795	1.982	2.091	2.229	2.416
	100	1.197	1.293	1.414	1.578	1.743	1.839	1.960	2.125
	105	1.063	1.148	1.256	1.402	1.548	1.633	1.741	1.887
	110	0.956	1.032	1.129	1.260	1.392	1.468	1.565	1.696
	115	0.867	0.936	1.024	1.143	1.262	1.332	1.419	1.538
	120	0.791	0.855	0.935	1.044	1.153	1.216	1.296	1.405

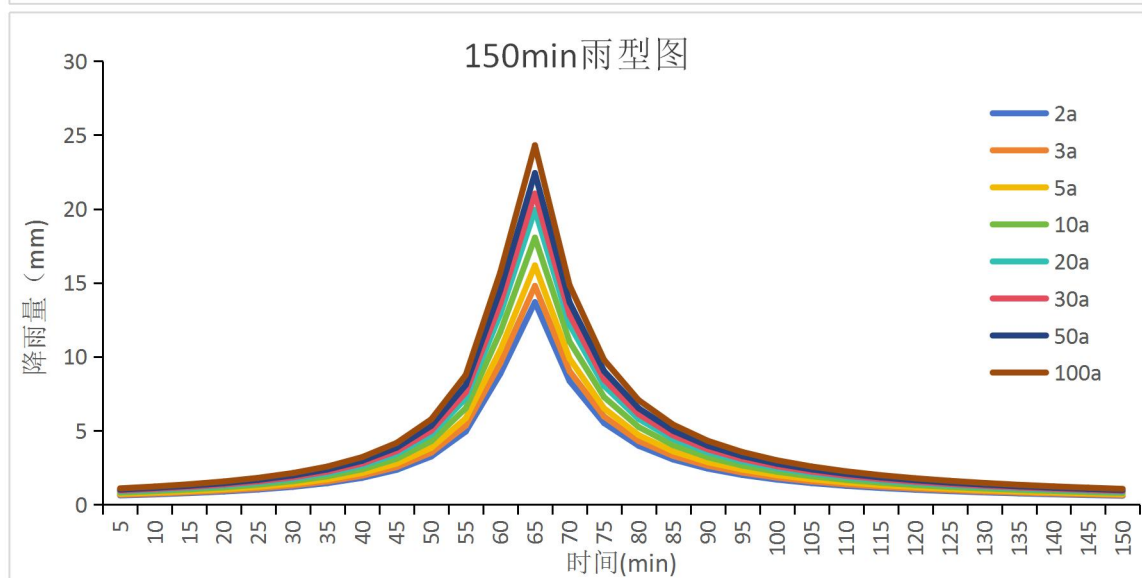
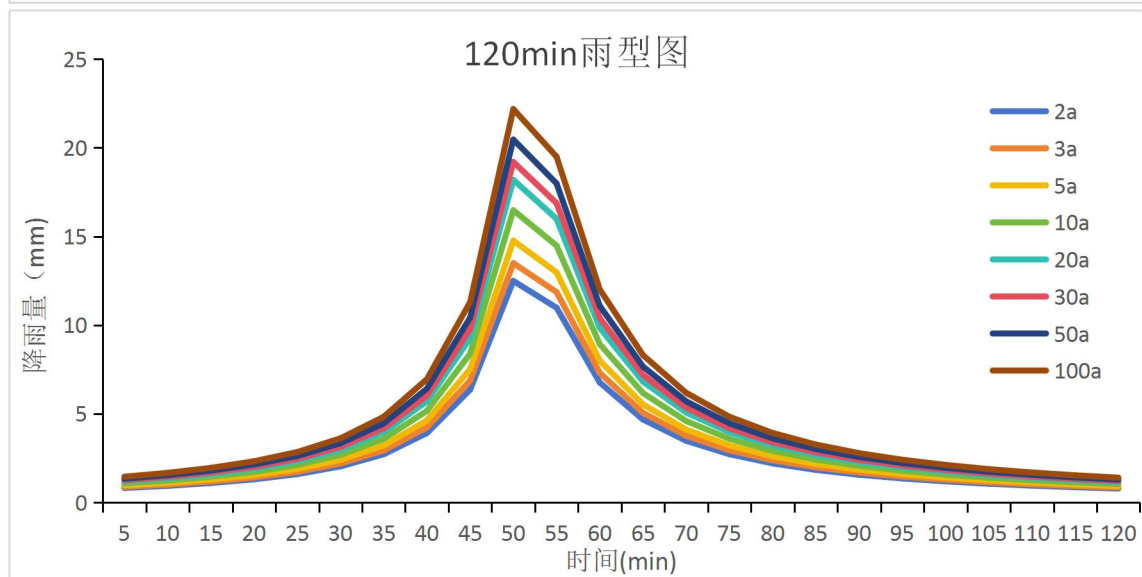
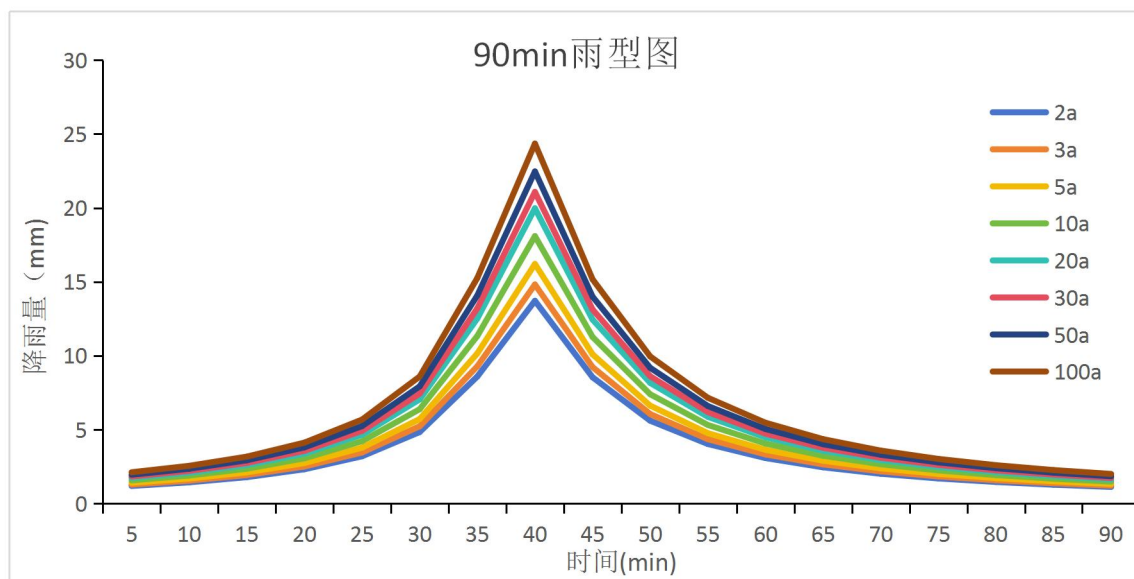
历时	时间 (min)	2 年	3 年	5 年	10 年	20 年	30 年	50 年	100 年
150min	5	0.618	0.668	0.731	0.816	0.901	0.950	1.013	1.098
	10	0.689	0.745	0.815	0.909	1.004	1.059	1.129	1.224
	15	0.775	0.838	0.916	1.023	1.129	1.191	1.270	1.376
	20	0.881	0.952	1.041	1.162	1.283	1.354	1.443	1.564
	25	1.020	1.102	1.205	1.345	1.485	1.567	1.671	1.811
	30	1.202	1.298	1.420	1.585	1.750	1.847	1.968	2.134
	35	1.451	1.567	1.714	1.913	2.113	2.229	2.376	2.575
	40	1.807	1.952	2.135	2.384	2.632	2.777	2.960	3.208
	45	2.350	2.539	2.776	3.099	3.422	3.611	3.849	4.171
	50	3.250	3.511	3.840	4.286	4.733	4.994	5.323	5.769
	55	4.942	5.339	5.840	6.519	7.197	7.595	8.095	8.774
	60	8.859	9.571	10.468	11.685	12.902	13.614	14.511	15.728
	65	13.691	14.791	16.177	18.057	19.938	21.038	22.424	24.305
	70	8.361	9.033	9.879	11.028	12.176	12.848	13.694	14.843
	75	5.513	5.956	6.514	7.271	8.028	8.471	9.029	9.786
	80	3.978	4.298	4.700	5.247	5.793	6.113	6.516	7.062
	85	3.045	3.290	3.598	4.016	4.435	4.679	4.988	5.406
	90	2.430	2.625	2.871	3.205	3.538	3.734	3.980	4.313
	95	2.002	2.163	2.366	2.641	2.916	3.077	3.279	3.554
	100	1.687	1.823	1.994	2.226	2.457	2.593	2.764	2.996
	105	1.452	1.568	1.715	1.915	2.114	2.231	2.378	2.577
	110	1.268	1.370	1.498	1.672	1.846	1.948	2.076	2.251
	115	1.121	1.211	1.324	1.478	1.632	1.722	1.836	1.990
	120	1.003	1.084	1.185	1.323	1.461	1.541	1.643	1.781
	125	0.906	0.979	1.071	1.195	1.320	1.392	1.484	1.609
	130	0.824	0.890	0.974	1.087	1.200	1.267	1.350	1.463
	135	0.754	0.815	0.891	0.995	1.098	1.159	1.235	1.339
	140	0.695	0.751	0.822	0.917	1.013	1.068	1.139	1.234

南宁市新版暴雨强度公式及计算图表

历时	时间 (min)	2 年	3 年	5 年	10 年	20 年	30 年	50 年	100 年
	145	0.644	0.696	0.761	0.850	0.938	0.990	1.055	1.144
	150	0.599	0.648	0.708	0.791	0.873	0.921	0.982	1.064
180min	5	0.493	0.533	0.583	0.651	0.718	0.758	0.808	0.876
	10	0.540	0.584	0.638	0.713	0.787	0.830	0.885	0.959
	15	0.591	0.639	0.699	0.780	0.861	0.909	0.968	1.050
	20	0.655	0.708	0.774	0.864	0.954	1.007	1.073	1.163
	25	0.732	0.791	0.865	0.966	1.066	1.125	1.199	1.300
	30	0.827	0.894	0.978	1.091	1.205	1.271	1.355	1.469
	35	0.949	1.026	1.122	1.252	1.383	1.459	1.555	1.685
	40	1.109	1.199	1.311	1.463	1.616	1.705	1.817	1.970
	45	1.323	1.429	1.563	1.744	1.926	2.032	2.166	2.348
	50	1.622	1.752	1.916	2.139	2.362	2.492	2.656	2.879
	55	2.062	2.228	2.436	2.720	3.003	3.168	3.377	3.660
	60	2.761	2.983	3.263	3.642	4.021	4.243	4.523	4.902
	65	3.991	4.311	4.715	5.264	5.812	6.132	6.536	7.085
	70	6.527	7.051	7.712	8.609	9.505	10.030	10.690	11.587
	75	12.756	13.782	15.073	16.825	18.578	19.603	20.894	22.647
	80	10.712	11.572	12.657	14.128	15.600	16.460	17.545	19.016
	85	6.644	7.178	7.850	8.763	9.676	10.210	10.882	11.795
	90	4.614	4.985	5.452	6.086	6.719	7.090	7.557	8.191
	95	3.442	3.719	4.068	4.541	5.013	5.290	5.639	6.111
	100	2.697	2.914	3.187	3.557	3.928	4.145	4.418	4.788
	105	2.191	2.367	2.589	2.890	3.191	3.367	3.589	3.890
	110	1.830	1.977	2.162	2.413	2.665	2.812	2.997	3.248
	115	1.559	1.684	1.842	2.056	2.270	2.395	2.553	2.767
	120	1.352	1.460	1.597	1.783	1.968	2.077	2.214	2.399
	125	1.190	1.285	1.406	1.569	1.732	1.828	1.948	2.112
	130	1.057	1.142	1.249	1.395	1.540	1.625	1.732	1.877

历时	时间 (min)	2 年	3 年	5 年	10 年	20 年	30 年	50 年	100 年
	135	0.951	1.028	1.124	1.255	1.386	1.462	1.558	1.689
	140	0.862	0.932	1.019	1.137	1.256	1.325	1.412	1.531
	145	0.787	0.851	0.930	1.038	1.147	1.210	1.290	1.398
	150	0.723	0.781	0.855	0.954	1.053	1.112	1.185	1.284
	155	0.670	0.724	0.792	0.884	0.976	1.030	1.098	1.190
	160	0.621	0.671	0.734	0.819	0.905	0.955	1.018	1.103
	165	0.579	0.626	0.684	0.764	0.844	0.890	0.949	1.028
	170	0.542	0.586	0.641	0.715	0.790	0.833	0.888	0.963
	175	0.509	0.550	0.602	0.672	0.742	0.783	0.834	0.904
	180	0.480	0.519	0.567	0.633	0.699	0.738	0.787	0.853





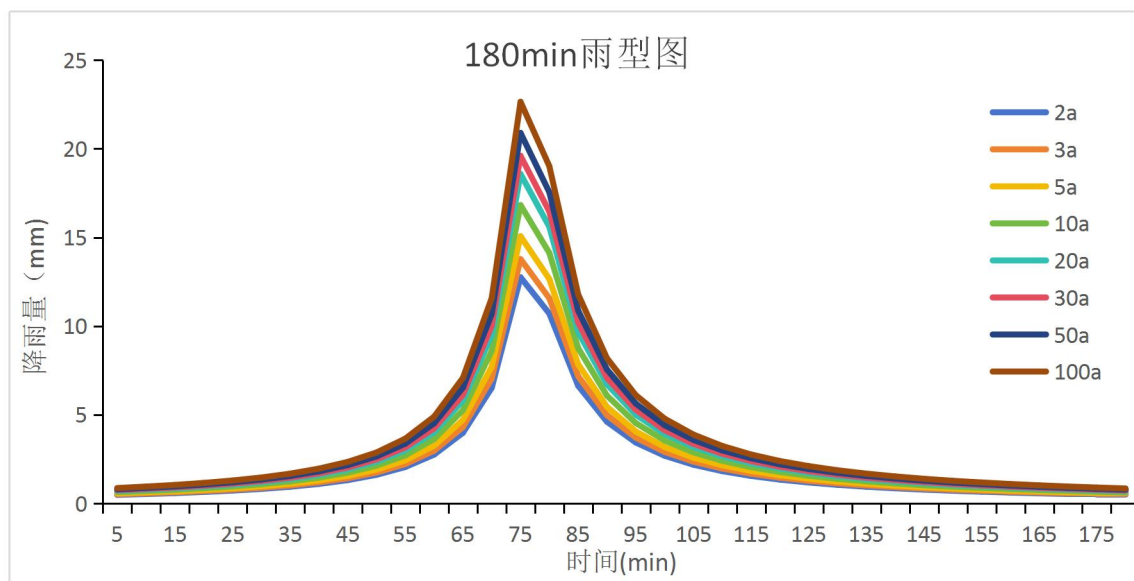


图2 各历时雨型图