

2505 2019-0010

()

0	.....	1
0.1	.....	1
0.2	.....	2
0.3	.....	2
0.4	.....	3
0.5	.....	3
0.6	.....	4
1	.....	5
1.1	.....	5
1.2	.....	7
1.3	.....	8
1.4	.....	8
1.5	.....	9
1.6	.....	10
1.7	.....	15
1.8	.....	20
2	.....	24
2.1	.....	24
2.2	.....	24
2.3	.....	26
2.4	.....	26
2.5	.....	26
2.6	.....	28
2.7	.....	28
2.8	.....	32
2.9	.....	35
2.10	.....	36
2.11	.....	38
2.12	.....	38
3	.....	39
3.1	.....	39

3.2	.....	45
3.3	.....	48
3.4	.....	50
3.5	.....	67
3.6	.....	67
4	.....	75
4.1	.....	75
4.2	.....	79
4.3	.....	79
5	.....	80
5.1	.....	80
5.2	.....	82
5.3	.....	86
5.4	.....	89
5.5	.....	91
5.6	.....	93
6	.....	97
6.1	.....	97
6.2	.....	97
6.3	.....	99
6.4	.....	101
6.5	.....	101
7	.....	104
7.1	.....	104
7.2	.....	116
7.3	.....	117
7.4	.....	122
7.5	.....	124
8	.....	126
8.1	.....	126
8.2	.....	126
8.3	.....	128

8.4	.....	131
8.5	.....	133
8.6	.....	133
8.7	.....	135
8.8	.....	136
8.9	.....	136
9	.....	137
9.1	.....	137
9.2	.....	139
9.3	.....	143
9.4	.....	148
9.5	.....	150
9.6	.....	151
9.7	.....	153
9.8	.....	153
9.9	.....	153
10	.....	156
10.1	.....	156
10.2	.....	161
11	.....	165
11.1	.....	165
11.2	.....	165
11.3	.....	165
11.4	.....	166
11.5	.....	166
12	.....	167
12.1	.....	167
12.2	.....	167
12.3	.....	168
12.4	.....	168
12.5	.....	169
13	.....	171

13.1	.....	171
13.2	.....	176
14	.....	179
14.1	.....	179
14.2	.....	179
14.3	.....	179
14.4	.....	179
14.5	.....	179
14.6	.....	181
14.7	.....	181
14.8	.....	182
14.9	.....	183

1.

2.

[2019]12

3.

[2007]574

0

0.1

2020

20%

2016 6

30

20

50%

506111

128.4hm²(1926)

10

2017

10 1

44

<

>

1

2015

0.2

2019 3 5

2019 3

2019 3

0.3

0.4

0.4.1

2011

2013

2009

2012-2020

2017 1055

[2016]114

0.4.2

0.6

1

GB/T18075.1-2012

1

1.1

1.1.1

1.1.1.1 2015 1 1

1.1.1.2 2017 10 1

1.1.1.3 2018 12 29

1.1.1.4 2018 10 26

1.1.1.5 2018 1 1

1.1.1.6 1997 3 1

1.1.1.7 2016 11 7

1.1.1.8 2012 7 1

1.1.1.9 2018 1 1

1.1.2

1.1.2.1 [2011] 35

1.1.2.2 2013 37

1.1.2.3 2015 17

1.1.2.4 2016 31

1.1.2.5 44

1.1.2.6 < >

1

1.1.2.7 2011 21

1.1.2.8 39 2016 8 1

1.1.2.9 2018 1 1

1.1.2.10 2018 4 27

1.1.2.11 2018 9 29

1.1.2.12 2019 1 1

1.1.2.13 2014 19

1.1.3.2				HJ 2.2-2018
1.1.3.3				HJ2.33-2018
1.1.3.4				HJ/T2.4-2009
1.1.3.5				HJ610-2016
1.1.3.6			2017	10 1
1.1.3.7				GB34330-2017
1.1.3.8				HJ169-2018
1.1.3.9				GB18218-2018
1.1.3.10				HJ 819-2017
1.1.3.11				(HJ 971-2018)
1.1.3.12				1
	GB/T18075.1-2012			
1.1.3.13				
		2016	21	
1.1.3.14	2016			VOCs
	2016	75		
1.1.3.15				
	[2016]114			
1.1.3.16				
1.1.4				
1.1.4.1				
1.1.4.2				
		[2019]12		
1.1.4.3				
	[2007]574			

1.2

1.2.1

1.2.2

1.2.3

1.2.4

1.4.4

1.5

1-1

1-1															
							NO _x				COD				
			1		2	1					1	1		2	1
		1						1						1	
			1		1							1		1	
		2	1	2	1	2	1	1	2	2	2	2	1	1	2
					1									1	
			1	2	1	2								1	2
				2											
		1			2			3							

1-1

1.5.1

SO₂ NO₂ PM₁₀ PM_{2.5} O₃
SO₂ NO₂

1.5.2

pH COD LAS
pH
LAS K⁺ Na⁺ Ca²⁺
Mg²⁺ CO₃²⁻ HCO₃⁻ Cl⁻ SO₄²⁻

1.5.3

A
A

1.5.4

1.6

1.6.1

1.6.1.1

					HJ2.2-2018
			AERSCREEN		
SO ₂	NO _x	PM ₁₀		<i>Pi</i>	<i>i</i>
<i>i</i>					
					HJ2.2-2018
		G2			1.00×10 ¹² m ³ /a
		1-2			
1-3				1-4	

1-2

			/m		m				(h)		m/s		kg/h	(t/a)	C ₀ (ug/m ³)	P ₀ m ³ /a
			X	Y		(m)	(m)	()								
1		CO ₂ G1	521745.14	3507046.91	16	15	0.3	25	3720		16.1		0.001	0.004	450	8.889E+06
2		G2	521361.13	3507433.02	9	35	8 5.7	25	3800		7.15		0.032	0.12	200	1.000E+12
													0.989	3.76	2000	1.880E+09
													0.603	2.29	450	5.089E+09
												SO ₂	0.088	0.33	500	6.600E+08
												NO _x	0.412	1.56	250	6.240E+09
													0.434	1.65	2000	8.250E+08
3		G3	521440.63	3507402.34	9	20	0.9	100	3800		16.11					

												NO _x	0.309	1.17	250	4.680E+09
													0.029	0.11	200	5.500E+08

5 G5 521437.96 3507376.06 9 20 0.9 100 3800 16.7

1-3

			mg/m ³	%	m
	G2	1	0.000595	0.30	274
	G5	1	0.000210	0.10	90
		1	0.000810	0.40	205
	G2	1	0.0184	0.92	274
	G3	1	0.00323	0.16	72
	G4	1	0.000701	0.04	62
	G5	1	0.00379	0.19	90
		1	0.0165	0.83	205
CO ₂	G1	1	0.0000951	0.02	90
	G2	1	0.0112	2.49	274
	G3	1	0.000253	0.06	72
	G4	1	0.000237	0.05	62
	G5	1	0.000224	0.05	90
	G6	1	0.000838	0.19	28
		1	0.00133	0.30	498
SO ₂	G2	1	0.00164	0.33	274
	G3	1	0.000714	0.14	72
	G4	1	0.000681	0.14	62
	G5	1	0.000636	0.13	90
	G6	1	0.00241	0.48	28
		1	0.00380	0.76	498
NO ₂	G2	1	0.00689	3.45	274
	G3	1	0.00301	1.50	72
	G4	1	0.00287	1.43	62
	G5	1	0.00268	1.34	90
	G6	1	0.0101	5.07	28
		1	0.0160	8.00	498

1-4	
	$P_{\max}$
	$\max < 10\%$
	$P_{\max} < 1\%$

$P_{\max}$ 8.00% 10%
 1% $P_{\max} < 10\%$

5km

1.6.1.2

B

1.6.1.3

HJ610-2016 2
 1-5

1-5			

2.25km²

500m

1.6.1.4

GB3096-2008 3

200m

1m

GB12348-2008 3

200m

1.6.1.5

HJ169-2018

1-6

				a

a

1.6.2

1.7

1.7.1

1.7.1.1

GB3095-2012

1.7.1.2

HJ2.2-2018

D.1

0.2mg/m³

1.7.1.3

2.0mg/m³

1.7.1.4 GB3838-2002

1.7.1.5 GB/T14848-2017

1.7.1.6 GB3096-2008 3 4a

1.7.1.7 () (GB36600-2018)

1-7

		mg/m³		
	PM ₁₀	0.15	mg/m³	GB3095-2012
	PM _{2.5}	0.075		
	SO ₂	0.15		
		10.50		
	NO ₂	0.08		
		10.20		
	O ₃	80.16		
		10.2		
	2.0			
	0.2		HJ2.2-2018D.1	
	pH	6~9		GB3838-2002
	COD	30	mg/L	
		1.5		
		0.05		
		0.3		
		2.0		
		/		
		1.5		
	LAS	0.3		
		pH			6.5~8.5		GB/T14848-93
		450	mg/L	
		1000		
		250		
		250		

1-7

		mg/m ³			
	N	20			
	N	0.02			
		0.2			
		0.05			
		0.05			
		0.1			
		1.0			
		0.3			
		0.05			
		1.0			
		3.0			
	LAS	0.3			
		3	4a	dB(A)	GB3096-2008 3 4a
		65	70		
		55	55		
		60	140	mg/kg	() (GB36600-2018)
		65	172		
		5.7	78		
		18000	36000		
		800	2500		
		38	82		
		900	200		
		2.8	36		
		0.9	10		
		37	120		
	1,1-	9	100		
	1,2-	5	21		

1-7

		mg/m ³			
	1,1-	66	200		
	-1,2-	596	2000		
	-1,2-	54	163		
		616	2000		
	1,2-	5	47		
	1,1,1,2-	10	100		
	1,1,2,2-	6.8	50		
		53	183		
	1,1,1-	840	840		
	1,1,2-	2.8	15		
		2.8	20		

1,2,3-

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1-7				
		mg/m ³		
	[a]	15	151	
	[a]	1.5	15	
	[b]	15	151	
	[k]	151	1500	
		1293	12900	
	[a,h]	1.5	15	
	[1,2,3-c,d]	15	151	
		70	700	

1.7.2

1.7.2.1 GB16297-1996 2

1.7.2.2 VOCs

DB12/ 524-2014 2

1.7.2.3 GB13271-2014 3

1.7.2.4

GB8978-1996 1 4

1.7.2.5 GB12348-2008 3 4

1.7.2.6 GB 12523-2011

1.7.2.7 GB18597-2001 2013

1.7.2.8 GB18599-2001 2013

1-8					
		mg/m ³	mg/m ³		(kg/h)
NO					

1-8

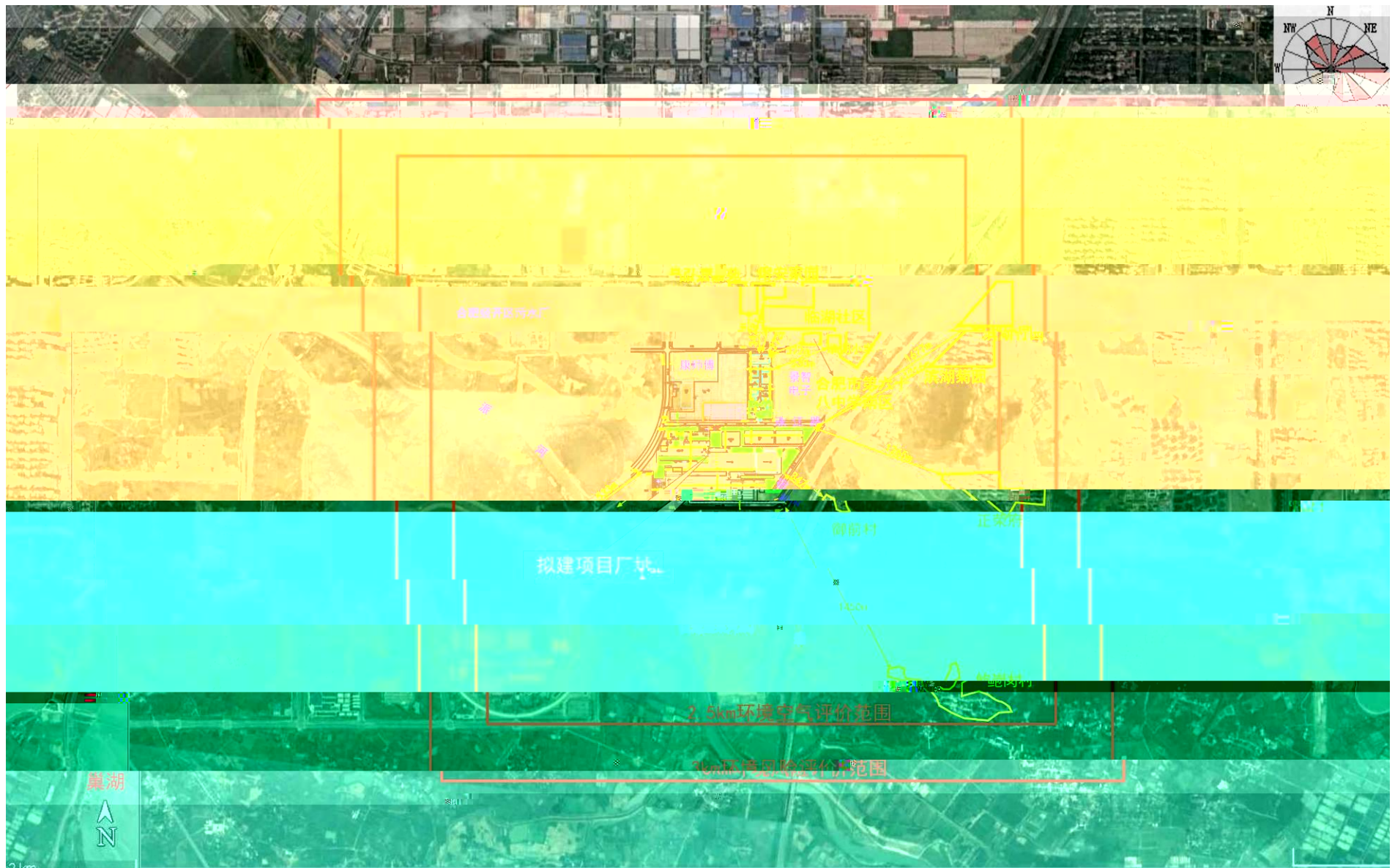
mg/m³

1.8.2

1-9

1-1

1-9							
				m	m		
(E 11.6%)	1		NNE	372	1270	72	1100
	2		NE	272	1234	5638	16914
	3		NE	530	1387	55	1116
	4		N	481	1435	700	2100
	5		NE	342	1259	168	504
	6		SE	1450	2088	120	360
	8		E	347	1031	20	60
	9		E	1265	2120	172	516



1-1

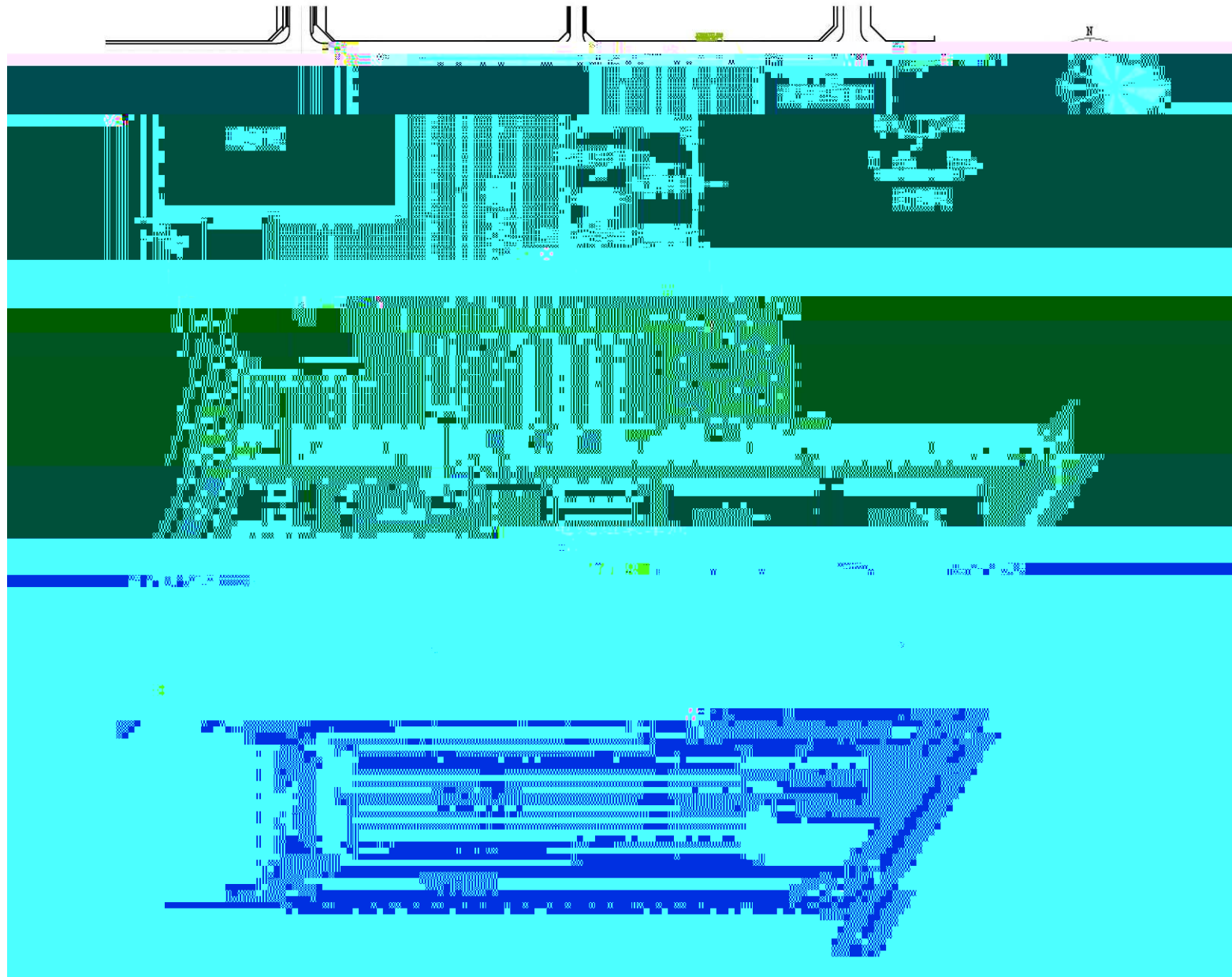
2.1

31 °42'10.27"

2.2

210958

1.3%



2-1

2.3

10 / SUV A0
A MPV A 2-1

	A0 SUV	A SUV	A MPV
			
× × mm	4135 1750 1560	4780 1825 1745	4750 1795 1717
mm	2490	2760	2760
/ mm	1515/1500	1555/1550	1525/1520
kg	1460	1870	1840
	5	5	7
	85KW	110KW	110KW
kWh	40	58	58
km	250	300	300
km/h	130	130	130
0-100km/h	12S	12S	12S
h /	8/1.5	11/1.5	11/1.5
%	30	30	30

2.4

2019 5 2020 6

2.5

2-2

2-2

				m ²
1			1 1	146400
2			1 1	81000
3			1	136000
4			1	13000
1			/	
2			/	2268
3			/	30095.46
4				1000
5	3		/	79680
6			/	8050
7			/	3600
8				3240
9			/	/

2-2

				m ²
1	2		/	44544
2			/	/
3			/	/
4			/	41000
5			/	185000
1	2			8900
1			/	5000
2			/	1680

2.6

2-3

2-3

1		hm ²	128.4	1926
2		m ²	628237.46	/
3		m ²	937872.46	
4		m ²	708891.87	/
5				

2-4

12			1	
13			1	
14			1	
15			1	
16			1	
17			1	
18			1	
19			1	
20			10	
21			2	
22			1	
23			1	
24		DVT	3	
25			2	
27	AUDIT		1	
28			2	
29			21	
			62	
1			10	
2			2	
3			14	
4			2	
5			5	
6			1	
7			1	
			35	
			482	

2.8

2.8.1

2-5

2-6

2-7

2-8

2-5

1		t/a	70000	
2		t/a	12	
3	CO ₂	t/a	6	
4		t/a	146	NaOH LAS
5		t/a	165	H ₃ PO ₄
6		t/a	14	Na ₃ PO ₄
7		t/a	1028.21	8%
8		t/a	147	55% 25% 15% 5%
9		t/a	70	PVC 82% 10% 8%
10	B1	t/a	233.33	
11	B2	t/a	608.93	/
13		t/a	270	
14		t/a	56.4	
15		t/a	120	
16		t/a	139	PAC PAM
17		m ³ /a	271	

18		m ³ /a	150	
19		m ³ /a	115	
20		m ³ /a	64	
21		m ³ /a	400	
22		m ³ /a	800	
23		t/a	80	
24		/	10	
25		/	10	
26		/	10	
27		/	10	
28		/a	10	
29		/a	10	

2-6

	NaOH		PO ₄ ³⁻	LAS				
	20~32%	2~10%	0.5ppm	1~5%				
	10~15%	6%	6%					
	Zn(H ₂ PO ₄) ₂	Mn(H ₂ PO ₄) ₂	NaH ₂ PO ₄	NiNO ₃	H ₃ PO ₄		Fe(NO ₃) ₃	
	10~15%	5~10%	2~5%	5~10%	5~10%			
	10%	29%	8%					
B1	36%	15%	49%					
B2	20%	15%	65%					
	58%	5%	37%					

	100%							
	15%	85%						

2-7

	m ² /	(m ² /a)			g/cm ³	(m)		(t/a)
	120	1200	95%	50%	1.10	37	2	1028.21
B1	20	200	70%	36%	1.05	28	2	233.33
B2	25	250	70%	20%	1.10	31	1	608.93
	20	200	70%	58.6%	1.20	70	60~100	409.56

2-8

	pH 14 =1 1.5	LD₅₀ 500mg/kg LD₅₀ 5000mg/kg
	pH 8.5 =1 1.3	8.3

8.1

LD₅₀ 1990 mg/kg

LD₅₀ 8290 mg/kg

LD₅₀ 1520 mg/kg LD₅₀ 1620

mg/kg LD₅₀ 3250 mg/kg LD₅₀

1530 mg/kg LD₅₀ N/A

	100	
B1	pH 8.5 =1 1.01 >37.78 62	LD ₅₀ 6019.4mg/kg LD ₅₀ 6298.9mg/kg
B2	pH 8.5 =1 1.01 >37.78 62	LD ₅₀ 10182.4mg/kg LD ₅₀ 9537.5mg/kg
	=1 0.98 30	LD ₅₀ 9404.4mg/kg LD ₅₀ 5516.8mg/kg

2.8.2

2-9

2-9

1		kWh/a	14489	
2		m ³ /a	3.55	
3		m ³ /a	579.5	
4		m ³ /a	2574.99	

2.9

2-10

2-10

1		
2		
3		
4		
5		
6	ABS	
7		
8		
9		
10	ECU	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

2.10

2.10.1

1 35/10kV

10kV

2.10.2

1 DN250

0.20MPa

1

1

1

60m³/h 300m³/h 120m³/h 4992m³/h

2.10.3

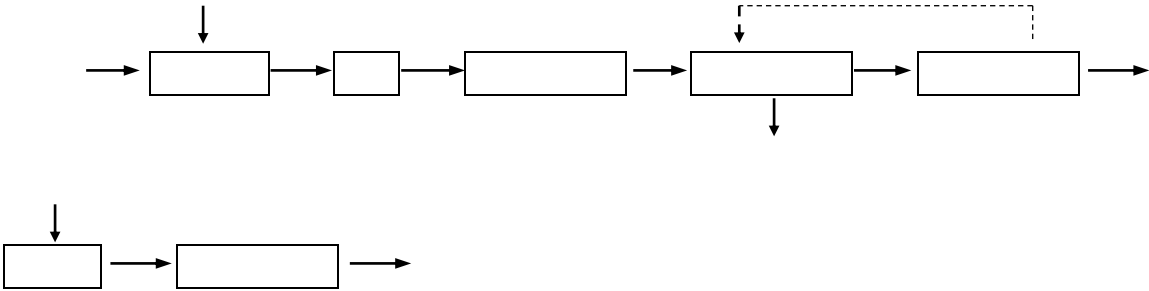
2.10.4

1

20m³/h

70%

30%



2.10.5

7

7

12

2.10.6

1	3	56m ³ /min	1	25m ³ /min
2	30m ³ /min		223m ³ /min	
	4	10m ³		

2.10.8

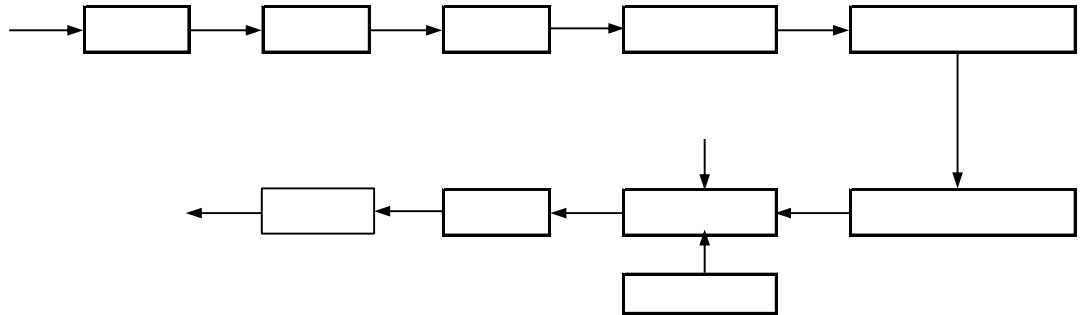
95

2.11

2.12

3

3.1

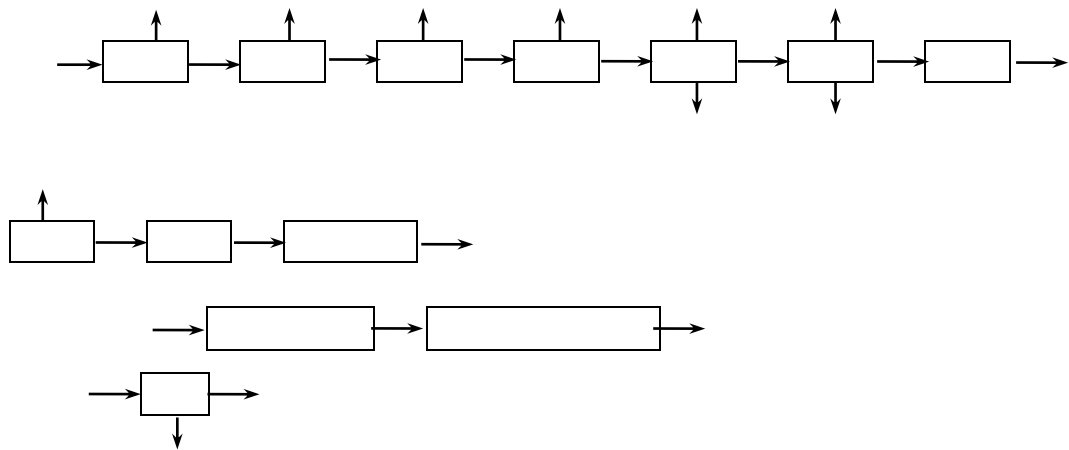


3-1

3.1.1

1

10



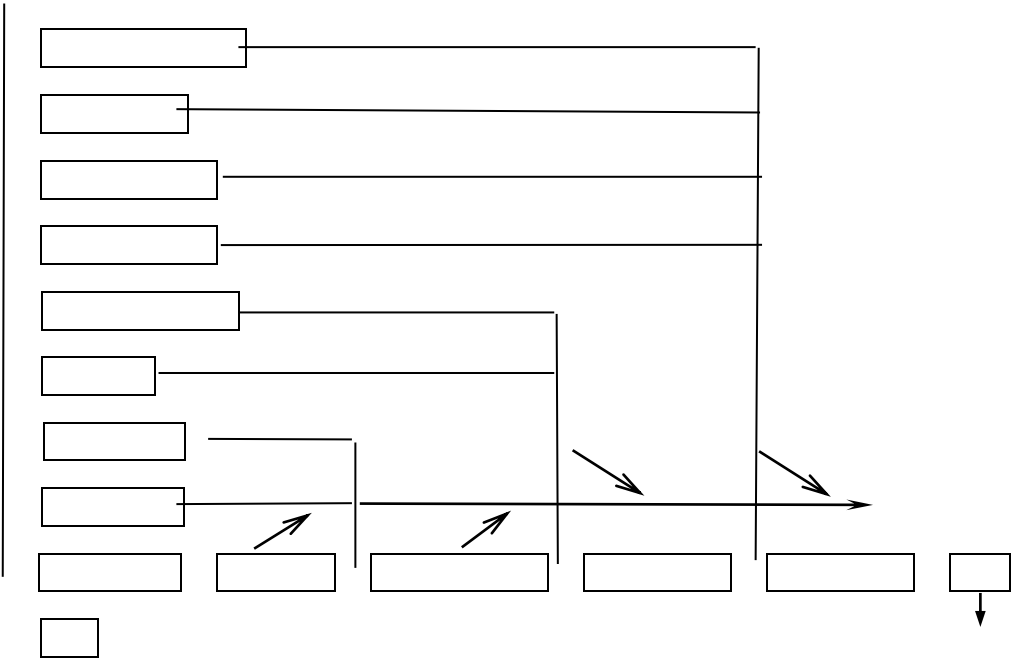
3-2

3.1.2

1

1

10



3-3

CO₂

3.1.3

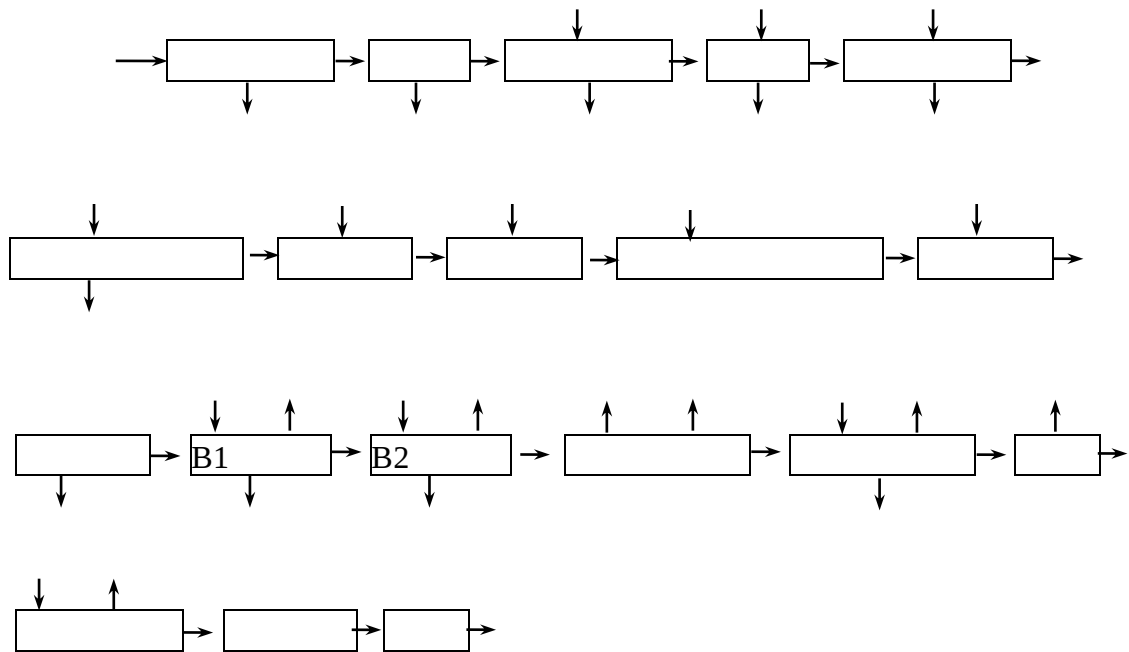
1

10

PVC

B1

B2



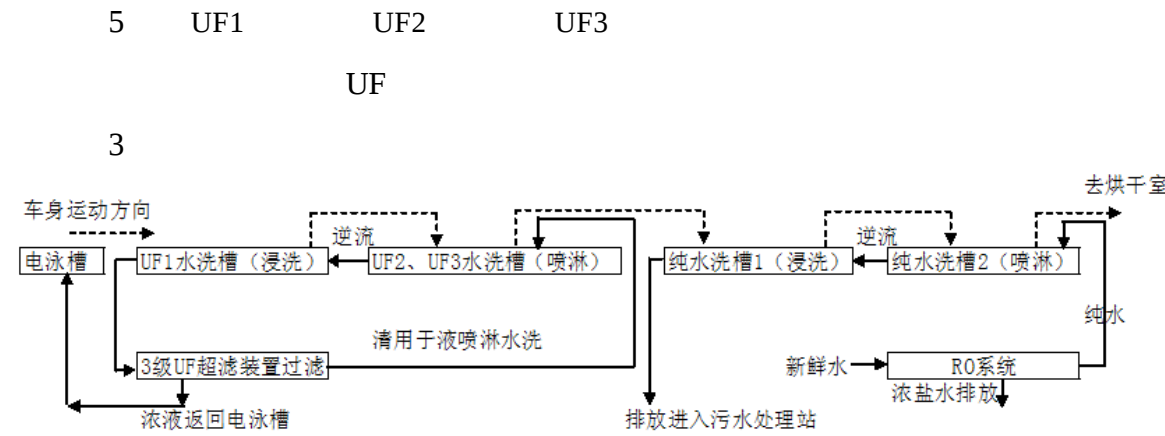
3-4

pH COD

SS

pH COD SS

Zn Ni



3-5

pH COD

SS

PVC

150 15

PVC

170

SS

B1 B2 2

B1 B2

B1 B2

B1 B2

B1 B2

B1 UV

B2

98%

B1 B2

5

180

30 60~80 10 150

30

SO₂ NO_x

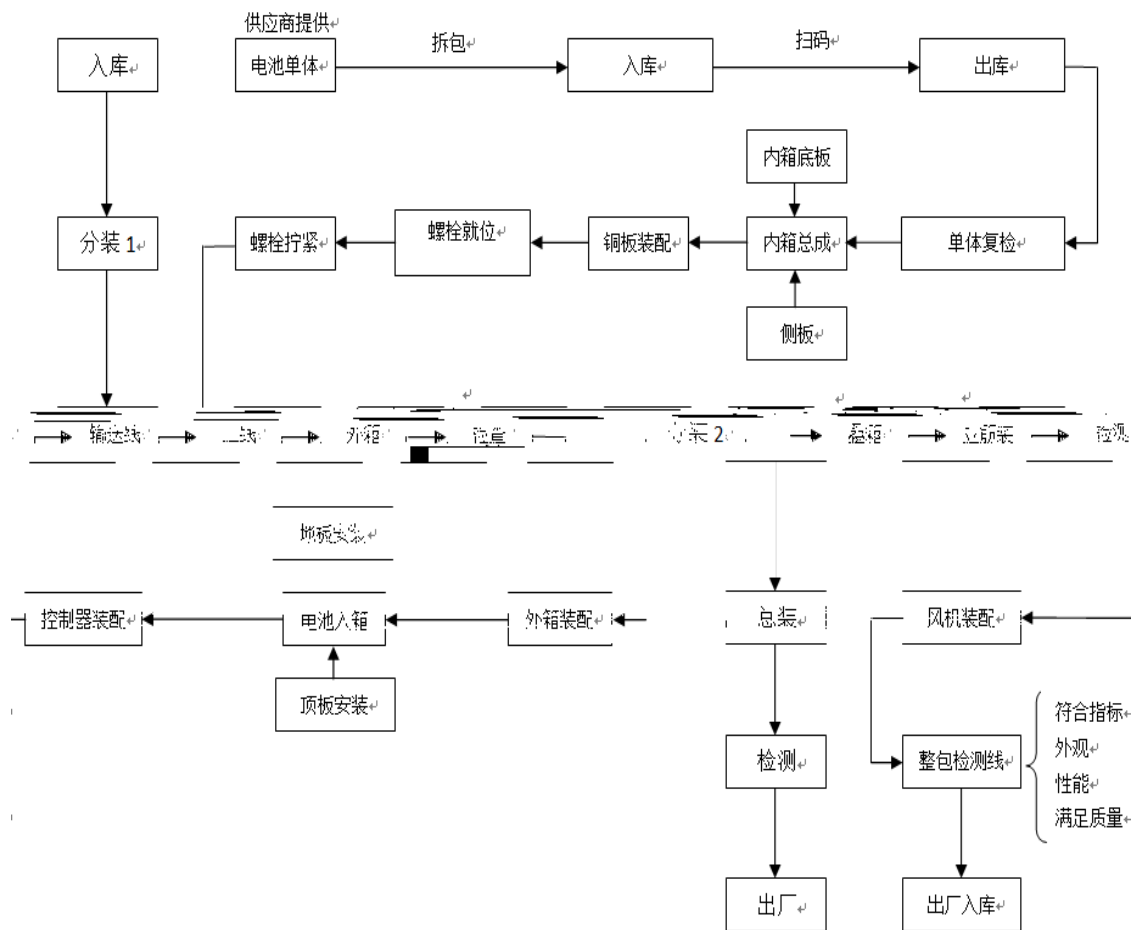
10

10

2

1

3-7



3-7

3.2

10 /

B1	233.33t/a	B2	608.93t/a		270t/a	B1
B2		36%	20%	58%	B1	B2
						5%

1112.26t/a	13.5t/a	510.14t/a
56.4 t/a	85%	120 t/a
1028.21t/a	82.26 t/a	
	217t t/a	12.95t/a
3-8		

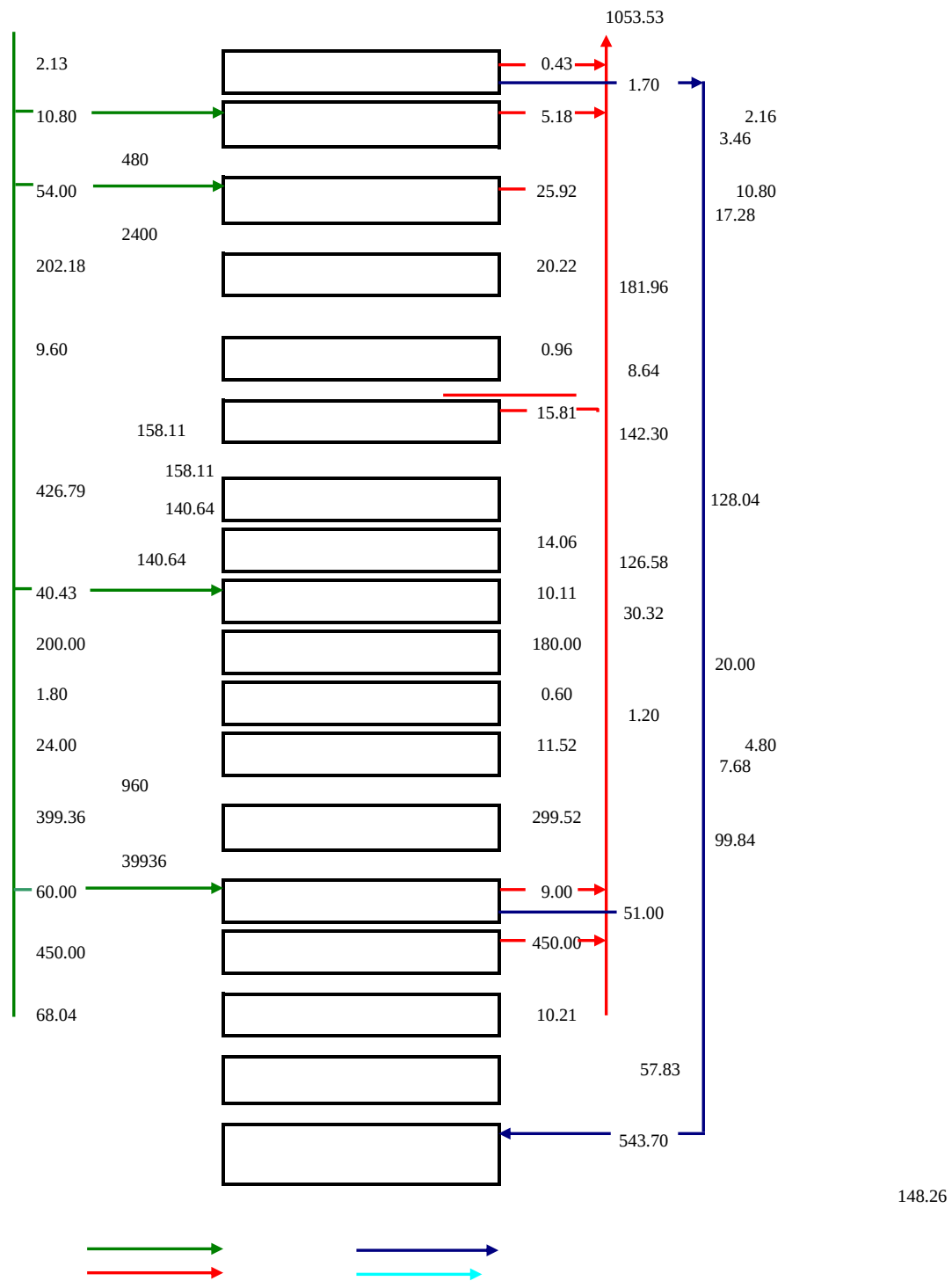
3.3

	45702.64m ³ /d	1775.70m ³ /d
150.94m ³ /d	43776.00m ³ /d	96.11%
387.04m ³ /d		
150.94m ³ /d	105.66 m ³ /d	
45.28m ³ /d	51m ³ /d	
	438.04m ³ /d	148.26m ³ /d
78.04m ³ /d		
	57.83 m ³ /d	
	3-1	3-9

3-1

m³/d

1.1		2.13				0.43	1.70			
1.2		10.80			8.64				2.16	
			8.64	480.00		5.18				3.46
2.1		54.00			43.20				10.80	
			43.20	2400.00		25.92				17.28
3										
3.1		202.18				20.22	181.96			
3.3		9.60				0.96	8.64			
3.4			158.11			15.81	142.30			
3.5		426.79			298.75				128.04	
3.6			140.64			14.06	126.58			
3.7		40.43				10.11	30.32			
3.8		399.36		39936.00		299.52				99.84
3.9		200.00				180.00				20.00
4		1.80				0.60	1.20			
5		24.00			19.20				4.80	
			19.20	960.00		11.52				7.68
6		60.00				9.00		51.00		
7		450.00				450.00				
8		68.04				10.21		57.83		
9		1949.11	369.80	43776.00	369.79	1053.53	492.70	51.00	145.80	148.26
10		45725.11					543.70			
11				95.74%			57.83			
12		11431277.61								
13		487277.61					601.53		294.05	



3-9

m³/d

3.4

3.4.1

CO₂

3.4.1.1

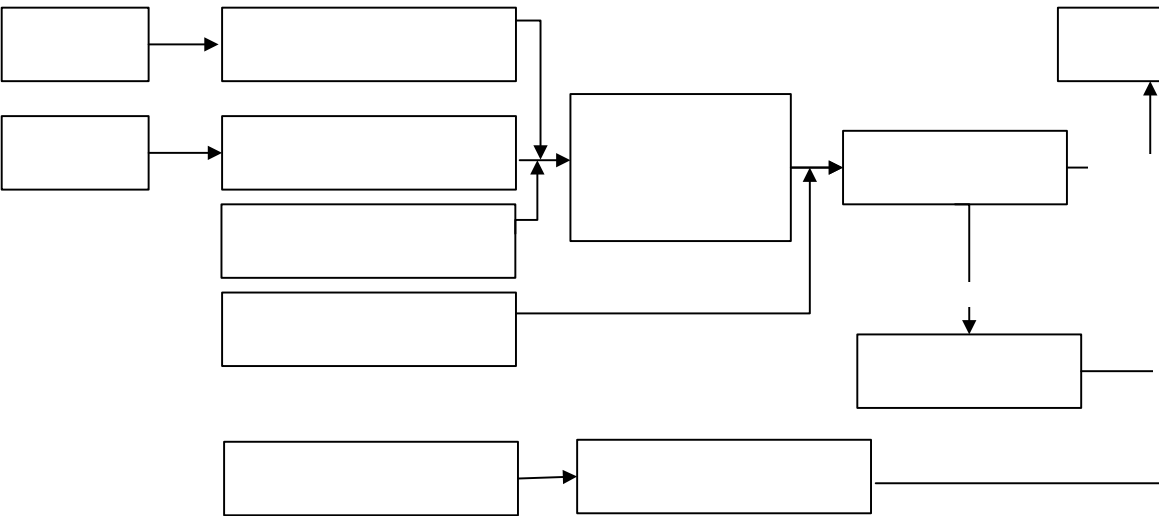
8 CO₂ 1t 7kg
Fe₂O₃ MnO₂
6t/a 0.01kg/h 0.042t/a
CO₂ CO₂
CO₂
90 1 15m
0.001kg/h 0.11mg/m³ GB16297-1996
2 10000m³/h

GB16297-1996 2

3.4.1.2

B1
B2
A.
1028.21t/a
8% 21.65kg/h
TNV
98% 1 20m
0.434kg/h 16.08mg/m³ 27000m³/h
240m³/h
2010 10 249
SO₂ 0.02Skg/
m³ S S 200mg/m³ NO_x 18.71kg/
m³ 1000m³ 0.14kg SO₂ NO_x
0.034kg/h 0.096kg/h 0.449kg/h 1.24mg/m³
3.56mg/m³ 16.63mg/m³

				GB16297-1996	2
VOCs	0.43kg/h	16.08mg/m ³			
		DB12/ 524-2014		2	
B.					
		5% 8%			
	3.41kg/h				
				98%	
	1 20m				
0.068kg/h	4.56mg/m ³	15000m ³ /h		1 20m	
		165m ³ /h	SO ₂ NO _x		
0.023kg/h 0.066kg/h 0.309kg/h			1.54mg/m ³ 4.40mg/m ³		
20.58mg/m ³					
				GB16297-1996	2
VOCs	0.068kg/h	4.56mg/m ³			
		DB12/ 524-2014		2	
C.					
		B1 B2			
B1 B2					
B1 B2					
		98%			
					92%
2019-3	52				SCIVIC

1		TNV		98%		TNV	
220m³/h						1 35m	
				4			
80%				35m			
							
				35m			
0.032kg/h		0.989kg/h		0.08mg/m³		2.57mg/m³	
385000m³/h							
				220m³/h		SO₂ NOx	
0.031kg/h		0.088kg/h		0.412kg/h		0.08mg/m³	
0.23mg/m³		1.07mg/m³					
				GB16297-1996		2	
VOCs				0.989kg/h		2.57mg/m³	
						DB12/	
524-2014		2					
E.							
98%							
0.029kg/h		0.524kg/h		1.03mg/m³		18.70mg/m³	
2019-3		53				SCIVIC	

28000m³/h 1 20m

				15mg/m ³					
					90			10000m ³ /h	
				<1.5mg/m ³				GB18483-2001	
				0.015t/a					
3.4.1.5									
	3		2	1				140m ³ /h	
			SO ₂	NO _x		0.039kg/h	0.112kg/h	0.524kg/h	
	10.27mg/m ³	29.36mg/m ³	137.31mg/m ³				3815.25m ³ /h	1	
	15m								
GB13271-2014	3								
						3-2			

3-2

		m³/h	/		m g / ³ m	k g / h	t / a		m g / ³ m	k g / h	t / a	m g / ³ m	k g / h	
1.1	CO ₂	10000	1 × 15 m / 0.2 m		1.05	0.01	0.042		0.11	0.001	0.004			
1.2														
2.1	385000	1 × 35 m / (8 × 5.7 m)		74.31	28.61	108.72		1.49	0.572	2.17				
				4.06	1.56	5.94		0.08	0.032	0.12				
				124.25	47.84	181.79		2.57	0.989	3.76				
				0.08	0.031	0.12		0.08	0.031	0.12				
			SO ₂	0.23	0.088	0.33		0.23	0.088	0.33				
			NOx	1.07	0.412	1.56		1.07	0.412	1.56				
2.2	27000	1 × 20 m / 0.1		801.75	21.65	82.26	1 T N V 20m GB16297-1996 2 DB12/ 524-2014 2	16.08	0.434	1.65				
				1.24	0.034	0.13		1.24	0.034	0.13				
			SO ₂	3.56	0.096	0.36		3.56	0.096	0.36				
			NOx	16.63	0.449	1.71		16.63	0.449	1.71				
2.3	15000	1 × 20 m / 0.1		227.19	3.41	12.95	1 T N V 20m GB16297-1996 2 DB12/ 524-2014	4.56	0.068	0.26				
				1.54	0.023	0.09		1.54	0.023	0.09				
			SO ₂	4.40	0.066	0.25		4.40	0.066	0.25				
			NOx	20.58	0.309	1.17		20.58	0.309	1.17				
2.4	28000	1 × 20 m / 0.1		52.91	1.48	5.63	1 T N V 20m GB16297-1996 2 DB12/ 524-2014	1.03	0.029	0.11				
				935.71	26.20	99.56		18.70	0.524	1.99				
				1.10	0.031	0.12		1.10	0.031	0.12				
			SO ₂	3.14	0.088	0.33		3.14	0.088	0.33				
			NOx	14.70	0.412	1.56		14.70	0.412	1.56				
2.5					0.056	0.21			0.056	0.21				
			SO ₂		0.160	0.61			0.160	0.61				
			NOx		0.748	2.84			0.748	2.84				
2.6		408 × 108 × ()			0.008	0.03			0.008	0.03				
					0.163	0.65			0.163	0.65				
3	3815.2	1 × 15 m / 0.1		10.27	0.039	0.15	1 15m GB13271-2014 3	10.27	0.039	0.15				
			SO ₂	29.36	0.112	0.43		29.36	0.112	0.43				
			NOx	137.31	0.524	1.99		137.31	0.524	1.99				
4		10000			15.00	0.150	0.15		1.50	0.015	0.015			

3.4.2

3.4.2.1

3-4

				(m ³ /d)	
1			6m ³ /	1.20	
			0.5m ³ /	0.50	
2			20m ³ /	0.96	
			28m ³ /3	9.33	
			15m ³ /	5	
			187m ³ /3	2.99	
			205m ³ /6	1.64	
			4m ³ /h	32	
			15m ³ /h	120	
			7m ³ /	1.40	
			90m ³ /	8.64	
			90m ³ /	8.64	
			195m ³ /6	1.56	
			215m ³ /6	1.72	
			15m ³ /h	120	
			7m ³ /	1.40	
			90m ³ /	8.64	
			7m ³ /	0.34	
			90m ³ /3	8.64	
			290m ³ /6	2.32	
			UF1	7m ³ /6	0.06
			UF2	90m ³ /6	0.72
			UF3	7m ³ /6	0.06
				330m ³ /6	2.64
				15m ³ /h	120
				7m ³ /6	0.06
				90m ³ /6	0.72
				200m ³ /3	3.20
				110m ³ /3	1.76
				195m ³ /	9.36
				2m ³ /h	16
3			60m ³ /	1.2	
4			492.70m ³ /d		
5			51m ³ /d		
6			294.05m ³ /d		

3-4					
				(m ³ /d)	
			837.75m ³ /d		
			57.83 m ³ /d		

3.4.2.3

1

57.83 m³/d

29.68 m³/d

28.15 m³/d

1 40m³

1 50m³

3-5

3-5									
				mg/L				t/a	
	m ³ /d	m ³ /a		pH	SS	COD	BOD ₅		
	29.68	7420	()	6~9	120	300	262.5		16
	28.15	7037.5	()	6~9	175	297.5	198	38.8	
	57.83	14457.5		6~9	146.77	298.78	231.10	18.89	8.21
				/	2.12	4.32	3.34	0.27	0.12
GB8978-1996	4			6~9	400	500	300	-	100

2

1

a.

Ni

150.94m³/d

GB8978-1996 1

15m³/h 240m³/d

3-10

b.

57.74m³/d +
284.02m³/d 341.76m³/d

SBR + +

GB 8978-1996

4

5000m² 3-6

3-7

3-11

3-6

	+	15m ³ /h 240m ³ /d	150.94m ³ /d
	+	10m ³ /h 160m ³ /d	57.74m ³ /d
		30m ³ /h 480m ³ /d	341.76m ³ /d
(SBR+ +)		30m ³ /h 720m ³ /d	543.7m ³ /d

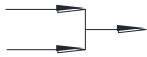
3-7

				mg/L						t/a		
	m ³ /d	m ³ /a		pH	SS	COD		Zn	Ni		BOD ₅	
	543.7	135925			39.27	231.14	9.47	1.214	1.123	7.187	2.81	0.51

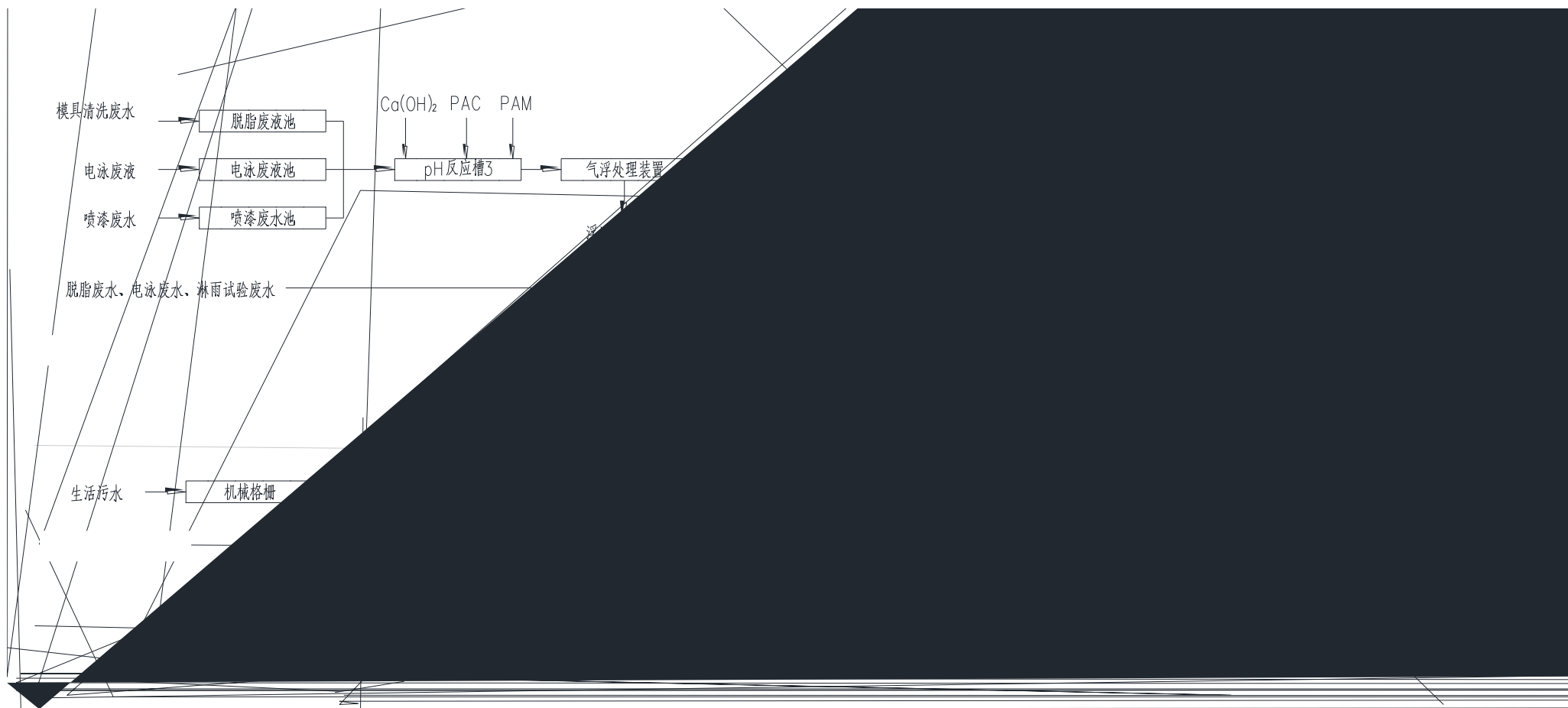
3-7

				mg/L								t/a	
	m³/d	m³/a		pH	SS	COD		Zn	Ni		BOD ₅		
	15094	37735		6~9	19	123		0.32	0.30	1.90			
	543.7	135925		7~9	55	299	7.17	0.09	0.08	0.53	20.64	3.75	
	543.7	135925		7~9	17	150	5.73	0.09	0.08	0.05	4.13	0.75	
					2.26	20.32	0.78	0.012	0.011	0.007	0.56	0.102	
GB8978-1996	1	4		6~9	400	500	20	5.0	1.0	-	300	-	
				6~9	200	330	-	-	-	0.5	160	15	

表



3-10



3-11

3.4.3

75~95dB(A)

3-8

3-8					dB(A)	
		5	90~95			70~75
			90~95			
			85~90			65~75
		6	80			< 65
		7	80~85			60~65
			80~85			60~65
		5	80~85			60~65
			85~90			65~70
			75~85			65~70

60~75dB(A)

3.4.4

		12t		12t/a	
		4	3	500kg	
6t/a					
0.5t/a	15%			1.5/a	42%
0.705t/a		2.35t/a		3.06t/a	

3-10

				t/a								
1		HW08	900-217-08	12					1	T I		
2		HW49	900-041-49	11.79						T/In		
3		HW12	264-011-12	213.08						T		
4		HW17	336-064-17	8						T/C		
5		HW12	900-252-12	176.4						T		
6		HW49	900-041									

3.5

3-11

3-11			t/a			
			m³/a	181949.8	0	181949.8
			t/a	109.57	106.58	2.99
			t/a	0.85	0.038	0.816
			t/a	108.72	106.55	2.17
			t/a	377.21	368.90	8.31
			t/a	11.60	11.34	0.26
	SO ₂		t/a	2.32	0	2.32
	NO _x		t/a	10.84	0	10.84
	(	(m³/a)		m³/a	150382.5	0	150382.5
(m³/a)		m³/a	73512.5	0	73512.5	
SS		t/a	43.26	38.88	4.38	
COD		t/a	238.05	213.41	24.64	
		t/a	9.47	8.69	0.78	
		t/a	7.187	7.180	0.007	
		t/a	1.214	1.202	0.012	
		t/a	1.123	1.112	0.011	

3-12

						I	II	III	
1					0.10	a b c	a b		I
2				--	0.10	a b c	a b d c	a b	II
3					0.06		c		I
4		0.53		--	0.10	i c			II
5				--	0.06	c j	f		I
6					0.06				8% I
7				--	0.05		UV	c	I

3-12

						I	II	III	
						c e	e	e	TNV I
8						0.06	c j	j	I
9					--	0.08	VOCs VOCs	VOCs VOCs	+TNV 98% VOCs I
10					--	0.08	VOCs VOCs	VOCs VOCs	VOCs TNV VOCs I
11					--	0.03	f	g	(55 5) II

3-12									
						I	II	III	

h

12 -- 0.03

3-12

							I	II	III	
20		0.25	CODcr		g/m²	0.33		4	8	9.91 I
21			*		g/m²	0.17		4	6	0.3 I
22			*		g/m²	0.17		60	240	46.41 I
23			VOCs		g/m²	0.33	35	40	45	31.43 II
	*	g/m²			60		80	/		
24	0.1				--	0.05				I
25					--	0.05	GB 18599 GB			I
26					--	0.05				I

3-12

						I	II	III	
27				--	0.05				I
28				--	0.05				I
29				--	0.05	GB/T 24001			I
30				--	0.05	VOCs			I
31				--	0.05				I
32				--	0.05				I
33				--	0.05				I
34				--	0.10				I
35				--	0.10				I
36				--	0.10				I

3-12

3-13

	Y 85
	Y 85
	Y =100

3-13

Y_{II}=100

3-14

4

4.1

4.1.1

~

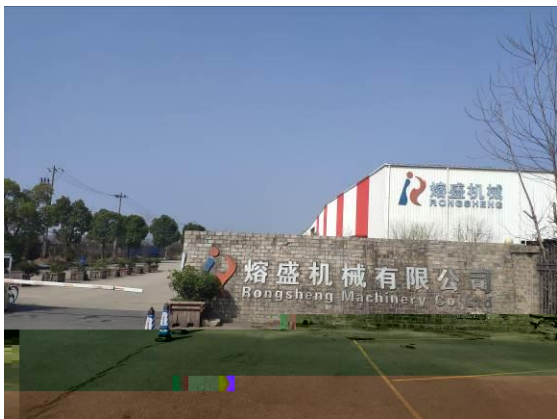
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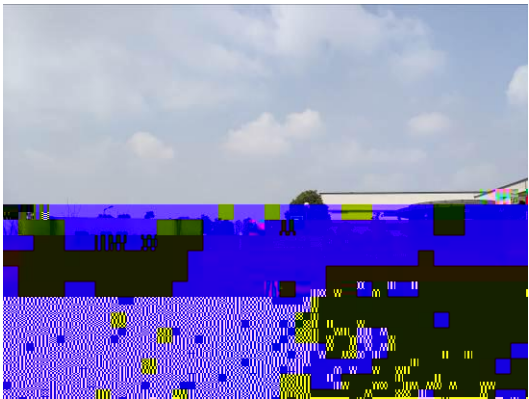
40

1993 2000
206 405 312
11km 4km

117 °13'49.19" 31 °42'11.75"
272m

4-1 4-2





4-1

4.1.2

		12	45		10.4
43.4m		8.4	10.4m		
				5%	87.2% 7.8%
282			158		
		2.5	2.8kg/cm		10-15
					294
	3		1977		
		7		38	
15	70				



4-2

4.1.3

85%

()

4.1.4

16.5

995.4mm

1012.5hPa

2.8m/s

4.1.5

1

1/3

9131km²

800km²

30 m³

33

8.31m

760km²

19 m³

3394.9km²

267.47

60km

571km²

1.8 m³/a

4.1.6

				30	t/d					
10	t/d	2007	6					10	t/d	2011
				10	t/d	2016				
				15.6	m ²	61.33km ²				
								9.3	m ²	

5

5.1

5.1.1

		2018		5	2017	
SO ₂		12	/			
NO ₂		52	/			0.3
CO	95		1.4	/		
O ₃	8		90		170	/
	0.06					
		PM ₁₀		80	/	
	0.14					
		(PM _{2.5})		56	/	0.6

2017

5.1.2

		(HJ2.2-2018)	5.5
3		1	6.2
			1

2017						
() (HJ663-2013)		1				
SO ₂	NO ₂		24	98		CO
	24	95		O ₃	8	90
	PM ₁₀	PM _{2.5}		24	95	

5-1 2017

	1	2	3	4	5	6	7	8	9	10	11	12
	88	64	47	47	32	40	28	25	28			

5.2

5.2.1

2
5-3 5-1 2019 3 13 ~2019
3 19

5-3

1#			/
2#		W	4100m

5.2.2

7 4
2:00 8:00 14:00 20:00 45

5.2.3

5-4
5-4 mg/m³

5.2.5

$$Pi = \frac{Ci}{Si}$$

Pi

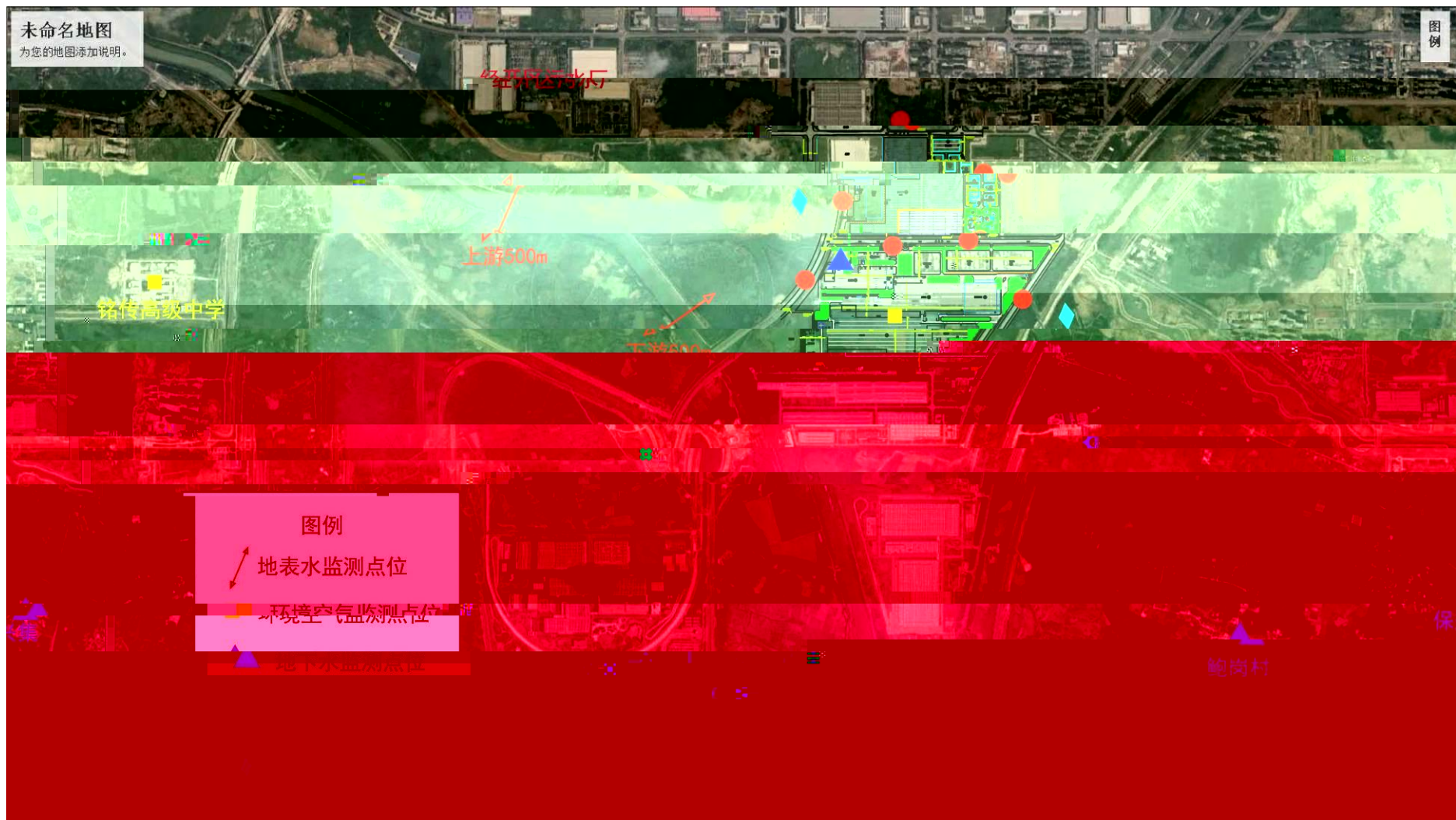
Si

Ci

mg/m^3

mg/m^3

5.2.6



5-1

5-6

5-6		mg/m ³					
		mg/m ³			Pi		
	20190313	ND	ND	0.538	/	/	0.269
	20190314	ND	ND	0.530	/	/	0.265
	20190315	ND	ND	0.490	/	/	0.245
	20190316	ND	ND	0.405	/	/	0.203
	20190317	ND	ND	0.443	/	/	0.222
	20190318	ND	ND	0.523	/	/	0.262
	20190319	ND	ND	0.395	/	/	0.198
	20190313	ND	ND	0.515	/	/	0.258
	20190314	ND	ND	0.455	/	/	0.228
	20190315	ND	ND	0.525	/	/	0.263
	20190316	ND	ND	0.450	/	/	0.225
	20190317	ND	ND	0.463	/	/	0.232
	20190318	ND	ND	0.470	/	/	0.235
	20190319	ND	ND	0.435	/	/	0.218

5-6

0.395~0.538mg/m³

0.198~0.269

5.3

5.3.1

5.3.1.1

2 5-7 5-1
2019 3 13 ~2019 3 15

5-7

1#		500m	
2#		500m	

5.3.1.2

pH COD NH₃-N LAS

5.3.1.3

5-8

5-8

1	pH	pH 2002	/
2	COD	HJ 828-2017	4mg/L
3		HJ535-2009	0.025mg/L
4		HJ 637-2012	0.04mg/L
5	P	GB/T 11893-1989	0.01mg/L
6		GB/T 7484-1987	0.05mg/L
7	LAS	GB/T 7494-1987	0.05mg/L
8		32	0.007mg/L
9		HJ 776-2015	

5-9		mg/L pH	
		1#	2#
	pH	6~9	
	COD	30	
		5	
	P	3	
		1.5	
	LAS		
		/	
		2.0	

5.3.1.5

5.3.1.6

5-10

5-11

5-10

		mg/L pH			
		20190313	20190314	20190315	
500m	pH	7.38	7.31	7.34	6~9
	COD	24	22	25	30
		1.46	1..33	1.29	5
	P	0.22	0.21	0.23	3
		0.33	0.28	0.28	1.5
		ND	ND	ND	
	LAS	ND	ND	ND	
		ND	ND	ND	/
		ND	ND	ND	2.0
	pH	7.22	7.34	7.37	6~9
	COD	18	22	17	30

500m		1.34	1.29	1.42	5
		0.23	0.24	0.18	
	P	0.26	0.21	0.24	/
		ND	ND	ND	1.0
	LAS	ND	ND	ND	
		ND	ND	ND	
		ND	ND	ND	0.05

5-11

		mg/L pH					
		20190313	20190314	20190315	20190313	20190314	20190315
500m	pH	0.190	0.155	0.170	/	/	/
	COD	0.800	0.733	0.833	/	/	/
		0.973	0.887	0.860	/	/	/
		0.733	0.700	0.767	/	/	/
	P	0.220	0.187	0.187	/	/	/
		0.800	0.733	0.833	/	/	/
	LAS	0	0	0	/	/	/
		0	0	0	/	/	/
		0	0	0	/	/	/
1500m	pH	0.110	0.170	0.185	/	/	/
	COD	0.600	0.733	0.567	/	/	/
		0.893	0.860	0.947	/	/	/
		0.767	0.800	0.600	/	/	/
	P	0.173	0.140	0.160	/	/	/
		0.600	0.733	0.567	/	/	/
		0	0	0	/	/	/

	LAS						
		0	0	0	/	/	/
		0	0	0	/	/	/

0

5-11

5-12

LAS

GB3838-2002

5.4

3

2019 3 13

5.4.1

5-13

5-1

5-13

1#			
2#	SE 2000m		
3#	SE 2600m		

5.4.2

K⁺ Na⁺ Ca²⁺ Mg²⁺ CO₃²⁻ HCO₃⁻ Cl⁻ SO₄²⁻ pH

LAS

25

5.4.3

5-14

5-14

1	K ⁺	GB/T 11904-1989	0.05 mg/L
2	Na ⁺		0.01 mg/L
3	Ca ²⁺	GB/T 11905-1989	0.02 mg/L
4	Mg ²⁺		0.002 mg/L
5	CO ₃ ²⁻	HJ84-2016	0.01mg/L
6	HCO ₃ ⁻		

5-14			
7	Cl ⁻	F ⁻ Cl ⁻ NO ₂ ⁻ Br ⁻ NO ₃ ⁻ PO ₄ ³⁻	0.007mg/L
8	SO ₄ ²⁻	SO ₃ ²⁻ SO ₄ ²⁻ HJ 84-2016	0.018mg/L
9	pH	pH 2002	/
10		HJ 535-2009	0.025mg/L
11		F ⁻ Cl ⁻ NO ₂ ⁻ Br ⁻ NO ₃ ⁻ PO ₄ ³⁻ SO ₃ ²⁻ SO ₄ ²⁻ HJ 84-2016	0.016
12		GB/T 7493-1987	0.02 mg/L
13		GB/T 7467-1987	0.004mg/L
14		EDTA GB/T 7477-1987	5 mg/L
15		GB/T 7475-1987	0.01mg/L
16		GB/T	0.03mg/L
17		11911-1989	0.01mg/L
18		32	0.007 mg/L
19		HJ 776-2015	0.02 mg/L
20		GB/T 5750.4-2006	/
21		GB/T 7494-1987	0.05 mg/L
22		GB/T 11892-1989	0.5 mg/L
23		HJ 488-2009	0.02 mg/L
24		HJ 970-2018	0.01 mg/L
25		GB/T 5750.5-2006	0.1 mg/L

5.4.3.1

GB/T14848-2017

5-15

5.4.3.2

5-15

5-15		mg/L			pH
	1#	2#	3#	GB/T14848-2017	
K ⁺	2.25	2.71	2.28	/	
Na ⁺	14.9	12.4	15.3	200	
Ca ²⁺	36.2	33.9	32.4	/	
Mg ²⁺	7.33	5.36	7.24	/	
CO ₃ ²⁻ mmol/L	47.6	45.8	43.2	/	
HCO ₃ ⁻ mmol/L	41.8	37.3	40.7	/	
mg/L	13.5	14.5	12.6	250	
mg/L	14.6	16.8	13.4	250	
pH	7.14	7.26	7.26		

1m

4

2019

3 13

5-16

5-1

5.5.2

5-16			5-16		5-17	
			dB(A)			
1#	1m		3	GB3096-2008 3		
2#	1m			65 55		
3#	1m					
4#	1m					
5-17			dB(A)			
1#	1m		4a	GB3096-2008 3		
2#	1m		3	65 55		
3#	1m			4a 70		
4#	1m			55		

5.5.3

5-18

5-18

dB(A)

2019 3 16

2019 3 17

5-18

GB3096-2008 3 4a

5.6

2019 3 14

5.6.1

3 5-19

5-19

				1	pH
					pH 45
	100m				pH
	100m				
0 0.2m		0 0.5m	0.5 1.5m	1.5 3m	

5.6.2

5-20

5-20

1		GB/T22105.2-2008	0.01mg/kg
2		GB/T17141-1997	0.01mg/kg
3		HJ491-2009	5mg/kg
4		GB/T17138-1997	1mg/kg
5		GB/T22105.1-2008	0.002mg/kg
6		GB/T17141-1997	0.1mg/kg
7		HJ/T17139-1997	5.0mg/kg
8		/	0.02mg/kg
9			0.02mg/kg
10	-1,2-		0.02mg/kg

5-20

11	1,1-		0.02mg/kg
12	-1,2-		0.008mg/kg
13			0.02mg/kg
14	1,1,1-		0.02mg/kg
15			0.03mg/kg
16	1,2- +		0.01mg/kg
17			0.009mg/kg
18	1,2-		0.008mg/kg
19			0.006mg/kg
20	1,1,2-		0.02mg/kg
21			0.02mg/kg
22			0.005mg/kg
23	1,1,1,2-		0.02mg/kg
24			0.006mg/kg
25	+ -		0.009mg/kg
26	-		0.02mg/kg
27			0.02mg/kg
28	1,1,2,2-		0.02mg/kg

5.6.3

5-21

5-21										mg/kg
										GB36600-2018
	0.5m	1.0m	2.0m	0.5m	1.0m	2.0m	0.5m	1.0m	2.0m	
pH	6.82	6.78	6.78	6.74	6.77	6.73	6.82	6.81	6.77	/
	2.15	1.86	1.93	5.23	5.27	3.66	2.46	2.53	2.17	60
	0.34	0.27	0.28	0.38	0.41	0.32	0.37	0.45	0.29	65
	12.7	10.9	11.7	14.2	14.8	11.4	15.1	12.9	14.3	/
	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.7
	34.4	28.6	31.7	35.2	41.1	36.0	38.3	32.9	31.7	18000
	12.7	10.7	12.5	14.2	12.9	13.3	13.3	12.9	11.8	800
	0.23 3	0.214	0.246	0.273	0.225	0.218	0.230	0.227	0.204	38
	16.1	13.2	14.5	14.2	13.7	13.4	15.6	10.2	14.7	900
	52.1	57.9	64.5	46.8	43.9	54.2	57.1	57.2	54.3	_____

1,1-	<0.02	9
-1,2-	<0.008	596
	<0.02	0.9
1,1,1-	<0.02	840
	<0.03	53
1,2-	<0.01	5
	<0.009	2.8
1,2-	<0.008	5
	<0.006	1200
1,1,2-	<0.02	2.8
	<0.02	53
	<.005	270
1,1,1,2-	<0.02	10
	<0.006	28
+ -	<0.009	570
-	<0.02	640
	<0.02	1290
1,1,2,2-	<0.02	6.8
1,2,3-	<0.02	0.5
1,4-	<0.008	20
1,2-	<0.02	560
	<0.003	70
2-	<0.06	2256
	<0.09	76
	<0.08	260
	<0.03	37
a	<0.004	15
a	<0.005	1.5
b	<0.005	15
k	<0.005	151
	<0.003	1293
a h	<0.005	1.5
1,2,3-cd	<0.004	15

GB36600-2018

6

6.1

6.2

85~95dB(A)

6-1

6.2.1

r

$$L_A(r)=L_A(r_0)-20\lg(r/r_0)$$

$$L_A=10\lg\left(\sum_{i=1}^n10^{0.1L_{Ai}}\right)$$

$L_A(r)$ r dB(A)

$L_A(r_0)$ r_0 dB(A)

r_0 m

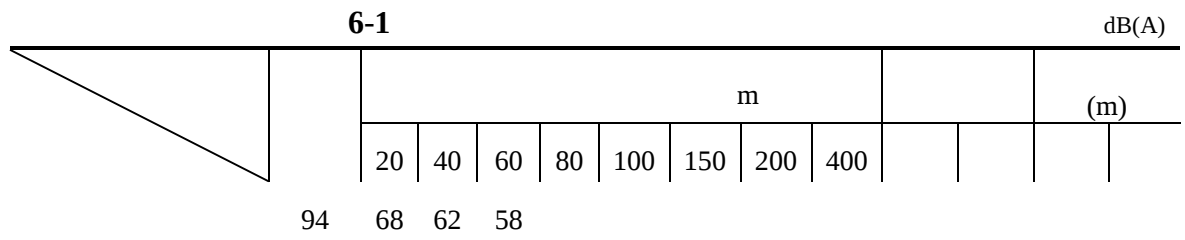
r m

L_A dB(A)

L_{Ai} i dB(A)

GB12523-2011

6-1 68



B.

C.

6.3

6.3.1

6.3.1.1

A.

B.

C.

D.

6.3.1.2

6.3.2

6.3.2.1

150m

TSP

1.5

GB 3095-2012

0.30mg/m³

1.6

6.3.2.2

600m

6.3.3

6.3.3.1

A.

70%

B.

C.

D.

E.

F.

6.3.3.2

6.3.4

6.3.4.1

COD

SS

COD BOD₅ SS

6.3.4.2

A.

B.

C.

6.4

6.5

6.5.1

7

7.1

7.1.1

7.1.1.1

(1998 ~2017)

117 18 E 31 47 N 27m

7.1.1.2

7.1.1.3

7-1

7-1

	1	2	3	4	5	6	7	8	9	10	11	12	
	3.0	5.9	10.2	16.6	22	25.6	28.6	27.7	23.7	18	11.2	5.5	16.5

7-1 16.5

7 28.6 1 3.0

7.1.1.4

7-2

7-2

	1	2	3	4	5	6	7	8	9	10	11	12	
--	---	---	---	---	---	---	---	---	---	----	----	----	--

m/s 2.5 2.7 3 3.1 2.9

7.1.1.5

20

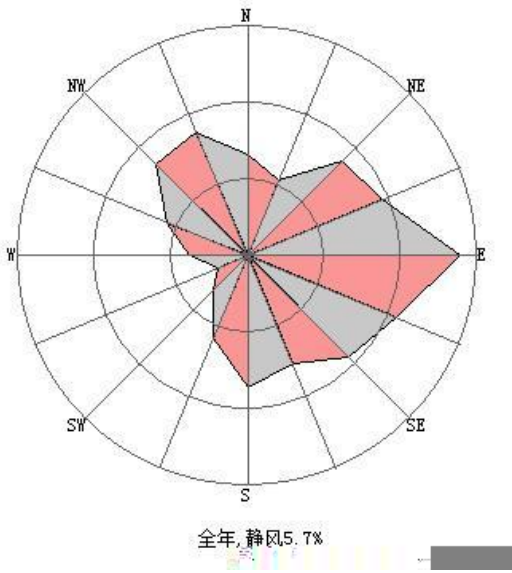
7-2

7-1

E11.1%ESE

8.4%SE7.7%30%(28.2%)

7-3									:%
	N	NNE	NE	ENE	E	ESE	SE	SSE	
	5.3	4.3	7.0	7.6	11.1	8.4	7.7	6.1	
	S	SSW	SW	WSW	W	WNW	NW	NNW	C
	6.8	4.6	2.5	1.7	3.0	4.5	6.8	7.0	5.7



7-1

AERSCREEN

7-4

7-4		
/	/	
		30
/		40
/		-6

	/m	90
	/km	/
	/	/

7.1.2

7.1.2.1

CO₂

SO₂ NO₂

7-5

7-5

	g/m ³	
	200	HJ2.2-2018
		D.1
	2000	DB13/1577-2012 1
SO ₂	500	GB3095-2012
NO ₂	200	
	450	

HJ2.2-2018

7.1.2.2

7-6

7-6

			/m		m				(h)		m/s		kg/h			
			X	Y		(m)	(m)	()						(t/a)	C ₀ (ug/m³)	P ₀ m³/a
1		CO ₂ G1	521745.14	3507046.91	16	15	0.3	25	3720		16.1		0.001	0.004	450	8.889E+06
5		G2	521361.13	3507433.02	9	35	8 5.7	25	3800		7.15		0.032	0.12	200	1.000E+12
													0.989	3.76	2000	1.880E+09
													0.603	2.29	450	5.089E+09
												SO ₂	0.088	0.33	500	6.600E+08
													0.412	1.56	250	6.240E+09
													0.434	1.65	2000	8.250E+08
6		G3	521440.63	3507402.34	9	20	0.9	100	3800		16.1 1					

												NO _x	0.309	1.17	250	4.680E+09
10		G5	521437.96	3507376.06	9	20	0.9	100	3800		16.7		0.029	0.11	200	5.500E+08
													0.524	1.99	2000	9.950E+08
													0.031	0.12	450	2.667E+08
												SO ₂	0.088	0.33	500	6.600E+08
												NO _x	0.412	1.56	250	6.240E+09
													0.039	0.15	450	3.333E+08
11		G6	522174.03	3507975.12	14	15	0.4	150	/		11.5 2	SO ₂	0.112	0.43	500	8.600E+08
												NO _x	0.524	1.99	250	7.960E+09

h

7.1.2.3

A

SO₂ NO₂

7-8

7-8

			mg/m ³	%	m
	G2	1	0.000595	0.30	274
	G5	1	0.000210	0.10	90
		1	0.000810	0.40	205
	G2	1	0.0184	0.92	274
	G3	1	0.00323	0.16	72
	G4	1	0.000701	0.04	62
	G5	1	0.00379	0.19	90
		1	0.0165	0.83	205
CO ₂	G1	1	0.0000951	0.02	90
	G2	1	0.0112	2.49	274
	G3	1	0.000253	0.06	72
	G4	1	0.000237	0.05	62
	G5	1	0.000224	0.05	90
	G6	1	0.000838	0.19	28
		1	0.00133	0.30	498
SO ₂	G2	1	0.00164	0.33	274
	G3	1	0.000714	0.14	72
	G4	1	0.000681	0.14	62
	G5	1	0.000636	0.13	90
	G6	1	0.00241	0.48	28
		1	0.00380	0.76	498
NO ₂	G2	1	0.00689	3.45	274
	G3	1	0.00301	1.50	72

7-8

			mg/m ³	%	m
	G4	1	0.00287	1.43	62
	G5	1	0.00268	1.34	90
	G6	1	0.0101	5.07	28
		1	0.0160	8.00	498

SO₂ NO₂
0.000810mg/m³ 0.0184mg/m³ 0.0112mg/m³ 0.00380mg/m³ 0.0160mg/m³
0.40% 0.92% 2.49% 0.76% 8.00% SO₂ NO₂
498m GB3095-2012
274m
205m
- 2018 D
205m
DB13/1577-2012 1

SO₂ NO₂
B

HJ2.2-2018

7-9

7-9

			mg/m ³	kg/h	(h)	t/a
1			0.08	3.04	3800	0.12
			2.57	0.47		3.76

	G2		1.57	0.13		2.29
		SO ₂	0.23	0.59		0.33
		NO _x	1.07	0.54		1.56
2	G3		16.08	0.434	3800	1.65
			1.24	0.034		0.13
		SO ₂	3.56	0.096		0.36
		NO _x	16.63	0.449		1.71
3	G4		4.56	0.068	3800	0.26
			1.54	0.023		0.09
		SO ₂	4.40	0.066		0.25
		NO _x	20.58	0.309		1.17
4	G5		1.03	0.029	3800	0.11
			18.70	0.524		1.99
			1.10	0.031		0.12
		SO ₂	3.14	0.088		0.33
		NO _x	14.70	0.412		1.56
						0.23
						7.66
						2.63
		SO ₂				1.27
		NO _x				6.00
1	CO ₂ G1		0.11	0.001	3720	0.004
2	G6		10.27	0.039	/	0.15
		SO ₂	29.36	0.112		0.43
		NO _x	137.31	0.524		1.99
						0.154
		SO ₂				0.43
		NO _x				1.99
						0.23
						7.66
						2.78
		SO ₂				1.70
		NO _x				7.99

7-10

7-10

							t/a
						mg/m ³	
1					DB12/ 524-2014	2	0.65
						0.2	0.03

GB16297-1996

2

7.66t/a 0.23t/a 1.70t/a 7.99t/a 2.78t/a
 SO₂ NO_x 0.03t/a 0.65t/a
 0.32t/a 0.91t/a 4.27t/a
 SO₂ NO_x 0.26t/a 8.31t/a 3.10t/a 2.61t/a 12.26t/a
 C

7-12

7-12		mg/m ³		
		mg/m ³	%	
		0.000120	0.06	
		0.000245		

DB12/ 524-2014
2

0.2mg/m³
2.0mg/m³

7.1.2.5

GB/T3840-91

$$\frac{Q_c}{C_m} = \frac{1}{A} (BL^C + 0.25r^2)^{0.50} L^D$$

C_m mg/m³
L m
Q_c kg/h
r m

S m² r= S/ 0.5
A B C D

470 0.021 1.85 0.84

7-13

7-13

			Q _c kg/h	m ²	C _m mg/m ³	L m	
1	408×108×16		0.008	17280	0.2	0.086	50
			0.163		2.0	0.101	50

GB/T3840-1991

100m

1 GB/T

18075.1-2012 2.7m/s 10

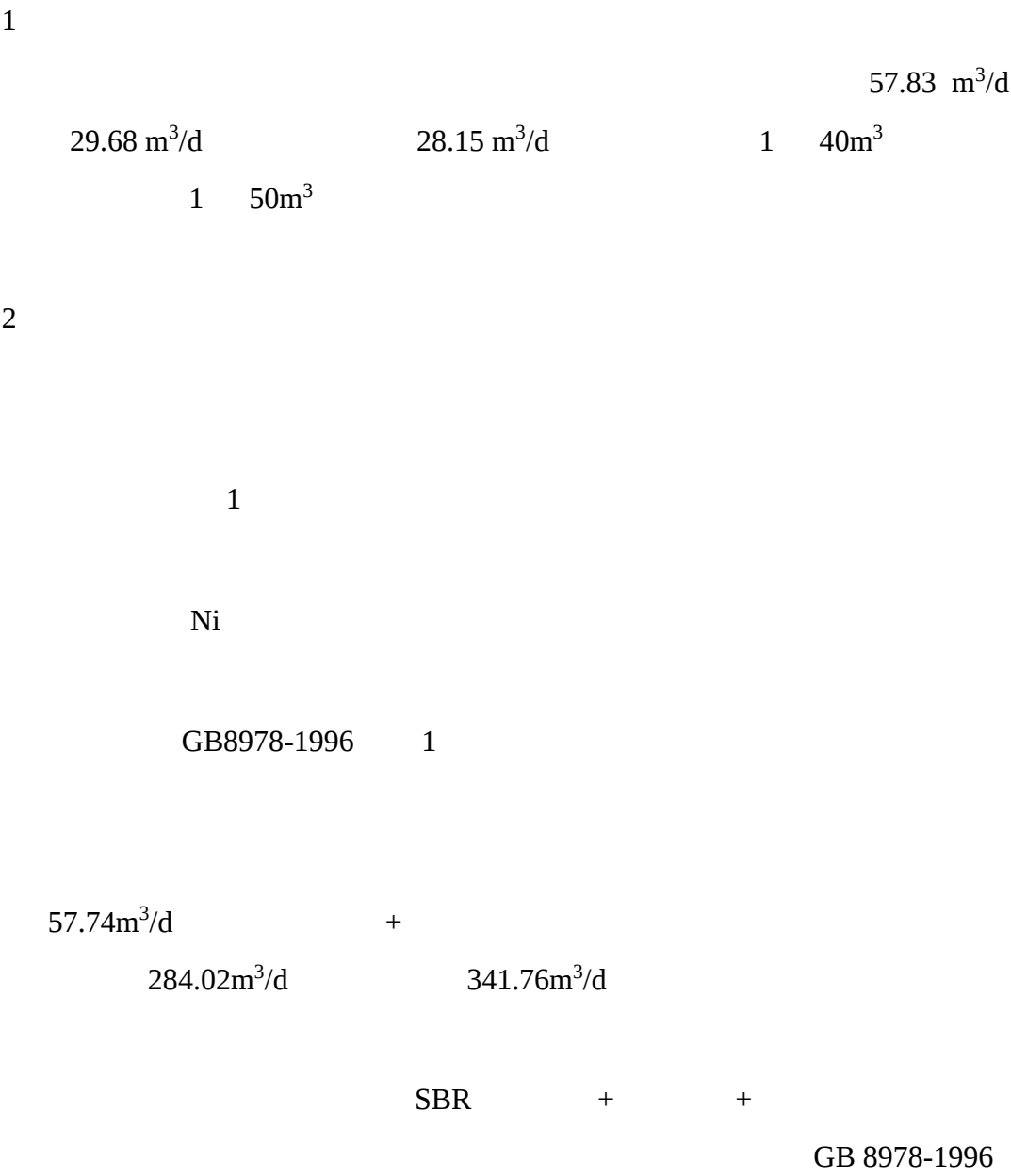
/ 300m

300m

7-2

7.2

7.2.1



7.2.2

10 t/d 2011

61.33km²

9.3 m²

30 m³/d 0.3%

A

7.3.1

7.3.1.1

 $1 \sim 4$

/

pH

7.7~8.3

0.9-1.5 /

		40-60	70	10
	2800	/		
		20-52	1400-2400	/
7.3.1.2				
	10.2~11.3m	58.8m		-
		4	1	

15t/d

SS

2

COD

SS

1

2

50

1

-

HJ610-2016

$$\frac{C}{C_0} = \frac{1}{2} \operatorname{erfc} \left(\frac{x - ut}{2\sqrt{D_L t}} \right) + \frac{1}{2} e^{\frac{ux}{D_L}} \operatorname{erfc} \left(\frac{x + ut}{2\sqrt{D_L t}} \right)$$

x t d

$C(x,t)$ t x g/L

C_0 g/L

u m/d

D_L m²/d

erfc

2

n u

D_L

1 n

- n

0.18

2 u

1.5m/d

2

$$u = KI / n = 0.017 \text{ m/d}$$

$$D_L$$

L

10m

7-14

7-14

	k m/d	I	n	u m/d	m^2/d
	1.5	2	0.18	0.017	0.17

3

7-15

7-15

mg/L		m	m
8.26	100	6	15
	1000	31	59
	3650	85	142
	7300	155	237
69.63	100	19	24
	1000	73	90
	3650	168	201
	7300	273	315

19m

24m	1000d	73m	90m	10	168m
201m	20	273m	315m		

08J333

1

7.4

7.4.1

75~95dB(A)

60~75dB(A)

3 3-8

7-16

700m

7-16

	(m) × ×	m			
	216×78×10	47	/	165	/
	408×108×16	/	27	/	136
	96×50×5	/	38	107	/
	60×40×6	31	/	/	/

200m

7.4.2

7.4.2.1

A_{div}

A_{atm}

A_{gr}

A_{bar}

A_{misc}

$L_P(r) = L_P(r_0) - (A_{div} + A_{atm} + A_{gr} + A_{bar} + A_{misc})$

7.4.2.2

$L_p(r) = L_p(r_0) - 20\lg(r/r_0)$

$A_{div} = 20\lg(r/r_0)$

7.4.2.3

$L_p(r) = L_p(r_0) - 10\lg(r/r_0)$

$A_{div} = 10\lg(r/r_0)$

7.4.2.4

7.4.2.5

200m

22:00~6:00

7-17		dB(A)		
1		48.3	65	
2		54.6		
3		43.5		
4		53.4		

7-17

GB 12348-2008 3

7-3

7.5

7.5.1

3-9 3-10

7.5.2

120m²

GB18597-2001

1m

GB18597-2001

6.2 6.3.1 6.3.9 6.3.11

8

8.1

8.1.1

COD 50000mg/L
(HJ169-2018) B

8-1

		CAS	/t
1		1330-20-7	10
2		/	10

8.1.1

8-2

8-2

1						
2						

8.2

8.2.1 P

8.2.1.1 Q

Q

8-3

8-3 Q

			CAS	/t	/t	Q
1		COD	/	330	10	33

2			1330-20-7	3.24	10	0.324

8.2.1.2 M

(HJ169-2018) C C.1
M=5

M4

8.2.1.3 P

(HJ169-2018) C C.2 8-3

M4

P4

8-4

P

Q	M			
	M1	M2	M3	M4
Q 100	P1	P1	P2	P3
Q 100	P1	P2	P3	P4
Q 10	P2	P3	P4	P4

8.2.2 E

8.2.2.1 E

1-1

(HJ169-2018) D D.1 5km 81670

E1

8.2.2.2 E

E3

8.2.2.3 E

(HJ169-2018) D D.5

G3

D2

E3

8.2.3

8-5

E	P			
	P1	P3	P3	P4
E1				
E2				
E3				

8-5

8.2.4

HJ169-2018

8-6

				a

a

8.3

8.3.1

8.3.2

8-7

8-7		
1		
2		0.2m

A.

8-8

8-8

È"52P5hl

B.

GB50183-2004

10^{-6} 1970 1992 22

7.75×10^{-4}

C.

53.5

14.1 16.9 5.3

25%

a.

b.

8.3.4

1

19747mg/m^3

50L	1.0g/mL		5
		15	
		$G_s = 5.38 + 4.1u \quad P_H F M^{1/2}$	
G_s		g/h	
u	m/s		
F		m^2	$5m^2$
M			106
P_H		mmHg	
4.5mmHg		0.054kg/min	
GBZ 2.1-2007			15

8-9			
	mg/m ³	m	m
	3637	2	0
	GBZ 2-2002	m	
	100	50	

8.4

8.4.1

	C30	
$1.0 \times 10^{-10} \text{cm/s}$	GB18599-2001	
		100~150mm

200~250mm

2.0mm

300g/m²

2

220m³

20L/s

8.5

8.6

8.6.1

8.6.2

8.6.3

A.

B.

C.

D.

E.

a.

b.

c.

d.

e.

f.

F.

a.

120

b.

c.

d.

G.

H.

8.6.4

A.

B.

8.7

8-10

8-10					
	1				
	2			1	119
	3				
	4				119
	5				119
	6				119

8.8

8-11

8-11			
1			
2			2
3		220 m ³	25
4		200m ³	10

C.

9.1.3

A.

B.

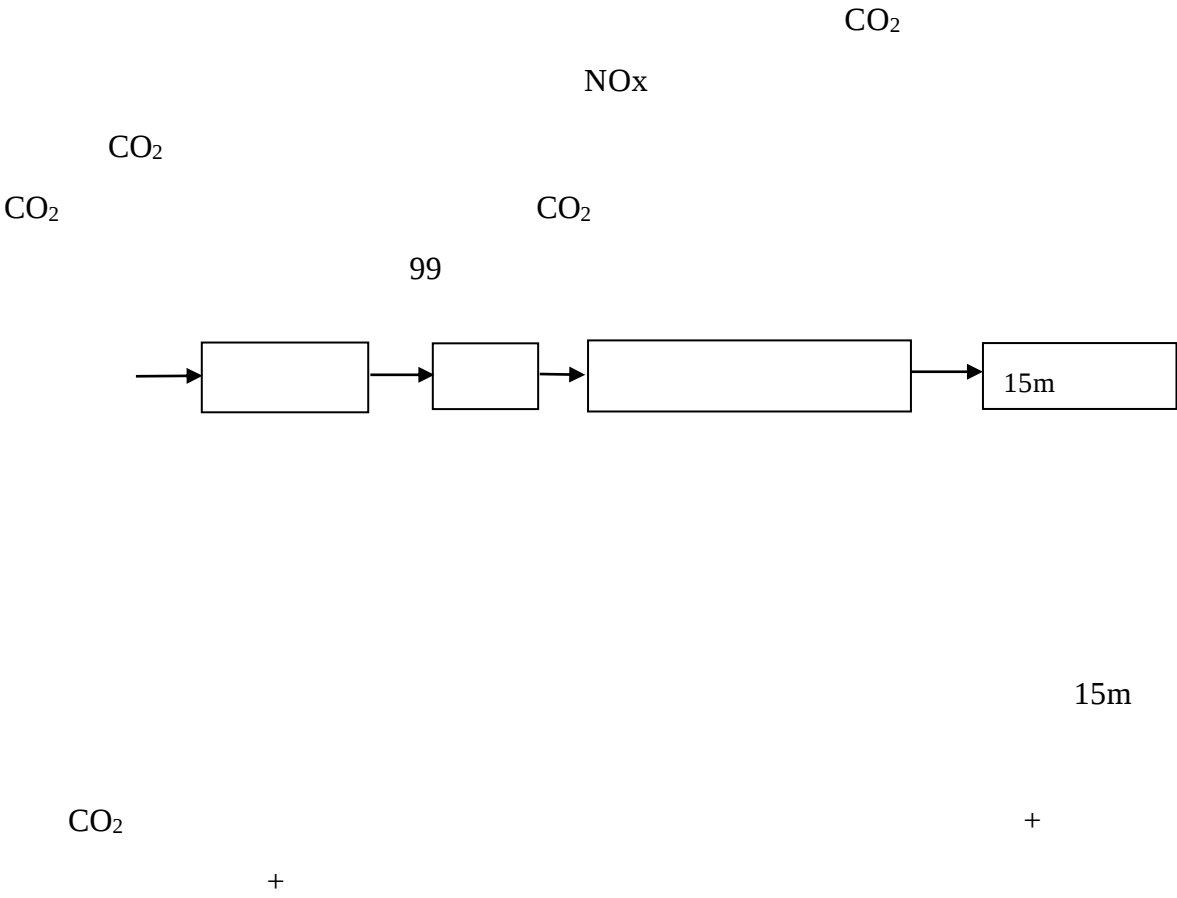
C.

9.1.4

9.1.5

9.2

9.2.1



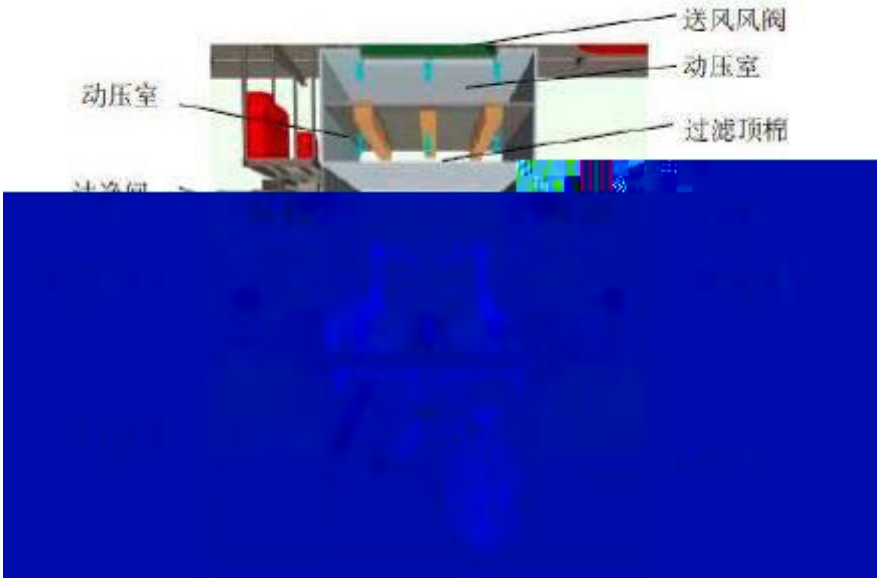
GB16297-1996

9.2.2

9.2.2.1

70% B1

B2



9-1

98%

+

35m

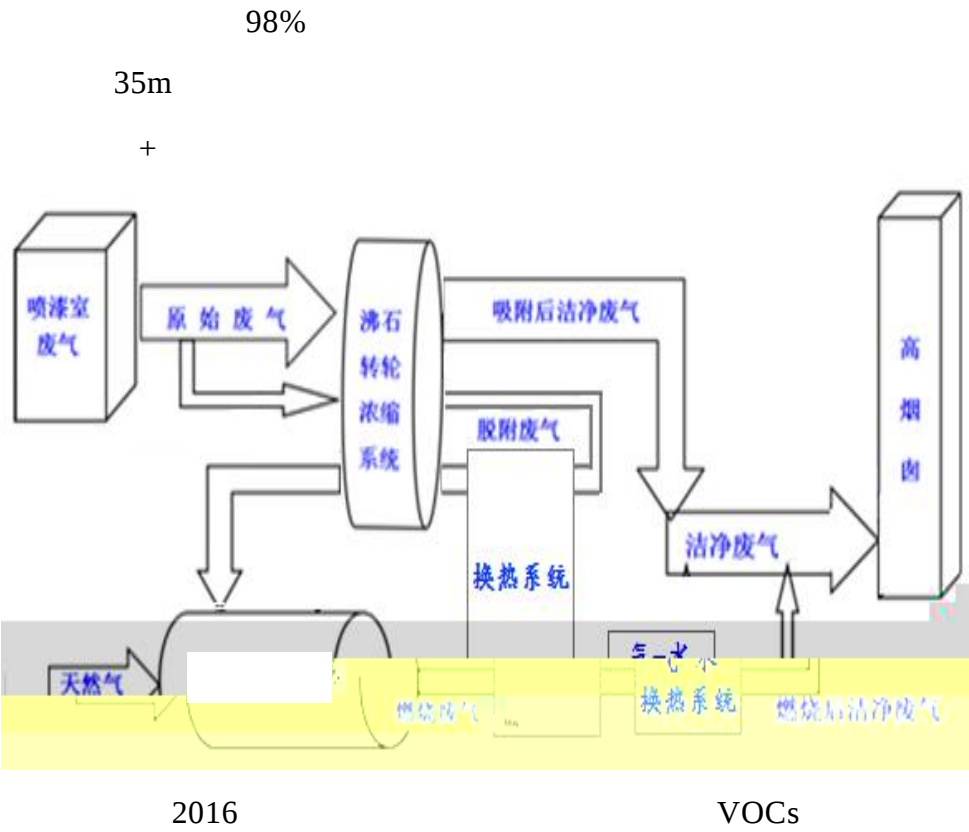
A.

92%

35m

1~6

B.



GB16297-1996 2 VOCs

DB12/ 524-2014 2

9.2.2.2

1.5t/a

5 3 1 1

80% 1 35m

1 15m

80%

VOCs

DB12/ 524-2014 2

9.2.2.3

TNV

350 650 760

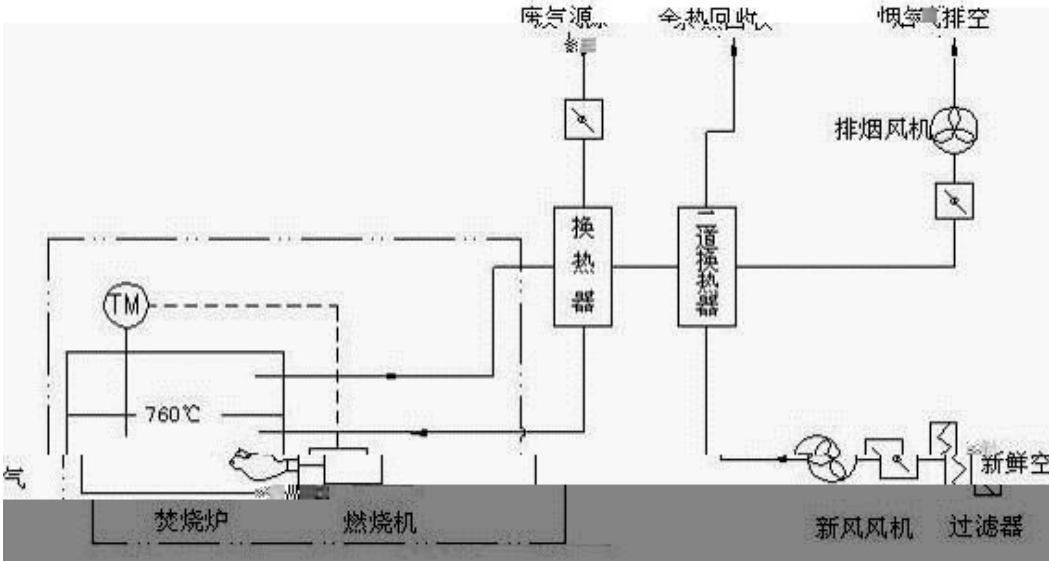
CO₂ H₂O

98%

27m

TNV

TNV



GB16297-1996

2

VOCs

9.3.2

9.3.2.1

1

A

9-2

9-2

		m ³	m ³	
1		350	205	
2		300	215	
3		450	330	
4		320	200	
5		240	90	
6		310	90	
7		726	/	

B.

a.

				pH
1	pH	10~11	PAC	PAM
		1		Ni Zn
COD				pH
1	pH	6~9		GB8978-1996
1				

b.

pH	3	pH		pH	8~9
		PAC		PAM	

c.

			pH	4		PAC	PAM		
	2				SS	COD		pH	2
pH	6~9	pH	2						

C.

SBR

SBR

PAC PAM

D.

75%~80%

9.3.2.2

A.

COD

Ca(OH)₂

A.

COD

Ca(OH)_2

$$3\text{HPO}_4^{2-} + 5\text{Ca}^{2+} + 4\text{OH}^- \rightarrow 5(\text{OH})(\text{PO}_4)_3 + 2\text{O}$$
$$\text{Ni}^{2+} + 2\text{OH}^- \xrightarrow{\text{pH}} \text{Ni(OH)}_2$$
$$\text{Zn}^{2+} + 2\text{OH}^- \xrightarrow{\text{pH}} \text{Zn(OH)}_2$$

$\text{Ni}^{2+} + 2\text{OH}^-$

2

pH

pH

Ni

pH

Zn

B.

C.

COD SS

D.

SBR

SBR

SBR

E.

0.5mg/L

SBR

PAC PAM

90%

0.5mg/L

3

3-10 3-11

9-3

9-3

			(m³/d)	mg/L							
				SS	COD		Zn	Ni		BOD ₅	
1			150.94	120.17	251.96		32.18	29.76	190.47		
				19	123		0.32	0.30	1.90		
	PH 1			84%	51%		99%	99%	99%		

9-3

			(m³/d)	mg/L							
				SS	COD		Zn	Ni		BOD₅	
2			57.74	1095	8411	374.44					
				164	2103	56.17					
				85%	75%	85%					
				212	1476	57.01					
4			341.76	42	369						

PH 2

H.

COD

9.4

9.4.1

1

2

9-2

9-4

		+HDPE GB18599-2001 -10cm/s
		GB15562.2-1995 GB18597-2001 +HDPE -10cm/s
		+ -10cm/s S8
		+HDPE 1.0×10^{-10} cm/s
		+ -10cm/s
		-7cm/s

9.4.2

1

9-2

9-5

9-5

1				pH	1 /	

9.4.3

9.4.4

9.5

75~105dB(A)

GB12348-2008 3

9.6

9.6.1

3-9 3-10

9.6.2

9.6.3

		1	120m ²
240	50L	0.09m ²	3
	7.2m ²	2.23t	
	7		

0.5m

10⁻¹⁰cm/s

14

44.6t/

GB18597-2001

HJ2025 -2012

9-6

9-6

1				120m ²		100t	14

9.7

9-7

9.8

9-7

	CO ₂	+15m 1 m ³ /h	1	40	2 2
		15m 3000m ³ /h	1	2	
		+	30	60	
		+ m ³ /h +40m 38.5	1	4500	2 2
		+27m 7.7 m ³ /h	3	280	
		+27m 1.2 m ³ /h	4	20	
				150	
		+27m 2 m ³ /h	1	5	2
				30	
				5087	
		40m ³	1	2.5	GB8978-1996 4
		50m ³	1	2.5	
		15m ³ /h pH 2 2 pH	1	80	
		10m ³ /h pH	1	30	
		30m ³ /h pH pH	1	100	
		30m ³ /h SBR	1	110	
			4	40	
			3	90	

9-7

				1	30
				1	460
				1	60
				1	10
					1005
					35
					10
					70
					35
		6			/
					150
					200
				3	6
					/
					/
					/
		120m ²		1	10
		125000m ²			28.44
					6486.44

10

10.1

10.1.1 2011 2013

2011

2013

2011 2013

2013

10.1.2 2009

2009

2009

10.1.3

[2017]53

10

10.1.4

2017 1055

10.1.5

2012-2020

[2012]22

2012 6 28

2012-2020

2015

50

2020

200

500

2012-2020

2012-2020

10.1.6

[2014]35

2014 7 21

[2014]35

	30%		
		[2014]35	
10.1.7			
		3.	VOCs
	2		
VOCs			
	90%	80%	
B1 B2		B1 B2	
	98%		
TNV		98%	
		90%	
10.1.8			[2018]83
	VOCs		
	GB16297-1996	2	VOCs
2019-3	158	SCIVIC	

[2018]83

10-1

1			
2			
3			
4	80%	87.38%	5%

10-1			
11		300m	

12

10.2.2

10-1

2007 9 8

2007 574

10-2

10-2

1	1		
2	2		
3	32007		

	2010 2007 50%	70%	
4	4		

11

11.1

COD

SO₂

NO_x

VOCs

11.2

11-1

11-1

t/a

	m ³ /a	181949.8	0	181949.8
		109.57	106.58	2.99
SO ₂		2.32	0	2.32
NO _x		10.84	0	10.84
VOCs		377.21	368.90	8.31

VOCs 136.322t/a

11.4

11.4.1

73512.93m³/a

14457.5m³/a

(135925m³/a)

223895m³/a COD

150mg/L 0.75mg/L 0.05mg/L COD 24.64t/a
0.102t/a 0.007 t/a

11.5

100%

+TNV

TNV

12.3

10

199

2328

12.4

12.4.1

506111

6486.44

1.3%

9-7

12.4.2

1

4 TNV

5

1

TNV

4 TNV

321.1 m³/

3.65 /m³

0.7	3800h			
	47.67	11.92	0.56	
1			750 /	1
	3750			
		135925t/a	2 /	
		27.2		
		12-2		

12-2		
		/
1	1	47.67
2	4 TNV	1172
3	5	0.38
4	1	11.92
5		27.2
6		10
7		1269.17

12.4.3

12.4.4

12.5

13

13.1

13.1.1

13.1.2

8 3 2
2

13-1

13-1

	1 2 3 4
	1 2 3 4 5 6
	ISO14001

13.1.3

1

2

3

4

5

6

7

8

13.1.4

13.1.4.1

13-2

2-1

13-3

13-2

			m²	
			146400	
			81000	
			136000	
			13000	
			2268	
			30095.46	
			1000	
	3		79680	
			8050	
		3600		

13-2

16		t/a	139	PAC
				PAM
17		m ³ /a	271	
18		m ³ /a	150	
19		m ³ /a	115	
20		m ³ /a	64	
21		m ³ /a	400	
22		m ³ /a	800	
23		t/a	80	
24		/	10	
25		/	10	
26		/	10	
27		/	10	
28		/a	10	
29		/a	10	

13.1.4.2

13-4

13-4

mg/m

		mg/m ³ mg/L	t/a	mg/m ³ mg/L	
		7.12	0.78	1 GB8978-1996	20
		0.07	0.007		0.5
		0.11	0.012		5.0
		0.1	0.011		1.0
		0.93	0.102		15
	BOD ₅	5.12	0.56		160
		8,21	0.12		100

13.1.4.3

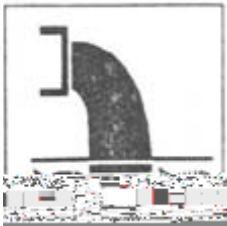
9-7

13.1.4.4

GB15562.1.1995

13-5

13-5

1					
2					
3					

13.2

13.2.1

HJ 819-2017

14-6

13.2.2

HJ 819-2017

13-6

13-6					
		CO ₂		/	GB16297-1996 2 DB12/ 524-2014 2
			VOCs SO ₂ NO _x	/	
			VOCs SO ₂ NO _x	/	
				/	
					GB8978-1996 1
			SS pH COD	/ COD	GB8978-1996 4
			pH	1 /	GB/T14848-2017
			Leq	1 /	(GB12348-2008)3 4

13.2.3

14

14.1

128.4hm²(1926) 506111

10

14.2

2011

2013

2009

2012-2020

2017 1055

[2016]114

14.3

14.4

14.5

14.5.1

1 90%

90%

1 15m

B1

B2

98%

 $+$

92%

TNV

98%

4

80%

TNV

35m

TNV

98%

1 20m

9

80%

15m

1 15m

GB16297-1996

2

DB12/ 524-2014

2

GB13271-2014

3

14.5.2

GB 8978-1996

1

GB 8978-1996

4

14.5.3

GB12348-2008 3 4

14.5.4

120m²

14.6

SO ₂	NO _x	2.32t/a	10.84t/a	VOCs
			8.31 t/a	
COD		24.64t/a	0.102t/a	

GB 18918-2002 A

14.7

14.7.1

		2017	SO ₂	CO		
	PM ₁₀				NO ₂	O ₃
PM _{2.5}						

2018 10

	0.395~0.538mg/m ³	0.198~0.269		
14.7.2			LAS	
			GB3838-2002	
14.7.3				
			GB/T14848-2017	
14.7.4				
			GB3096-2008	3 4a
14.7.5				
		GB36600-2018		
14.8				
14.8.1				
			SO ₂	NO ₂
			SO ₂	NO ₂
		GB3095-2012		
		HJ2.2-2018	D.1	
	0.2mg/m ³			
	2.0mg/m ³			
		GB16197-1996		
			DB12/ 524-2014	5
2019-3	182	SCIVIC		

300m

1 GB/T 18075.1-2012
