2019 07

1. 30 (
)
2.
3.
4.
5.

6.

7.
8.

1 70%

* 700.5

	CAS 7664-39-3	HF 20 -83.1 19.52 (=1) 1.15		LD_{50} LC_{50} 1044 g/ ^{3}( )
	CAS 7697-37-2	HNO_3 1.503(25) 1.41(20)(68%) -41.59 83 120.5 (68%)		
	CAS 1310-73-2	NaOH 318.4 1390 =1 2.12		
	-	100 g/c ^{3} 0.9-1.2 23		LD_{50} 1000 g/ g
$[C_7H_{12}O]$	CAS 141-32-2	128.17 -64.6 145.7 37 (=1)0.89 1.33K a (35.5)		LD_{50} 900 g/ g( ) LC_{50} 14305 g/ ^{3} 4 ( )
$[C_4H_6O_2]$	CAS 108-05-4	86.09 -93.2 71.8-73 -8 (=1)0.93 13.3K a(21.5)		LD_{50} 2900 g/ g( ) LC_{50} 14080 g/ ^{3} 4 ( )
	CAS 7440-59-7	He 4.00 -272.1 -268.9 (=1)0.15 -271 =1 0.14		
	CAS 7727-37-9	N_2 28.013 -211.4 -195.8 1.25g/L 0 1		

	CAS 7782-39-0	D_2 4.032 -254.42 -249.5 (=1)0.139	75% 5%	
	CAS 7440-37-1	A 39.95 -189.2 -185.7 (=1)1.40(-186) (=1)1.38		
	CAS 124-38-9	CO_2 44.01 -56.5 171.3g/c ^{3} 0 (=1)1.977		

1-3

1	/	8	3	11
2		32	0	32
3	DWCDAT-50/3000	32	0	32
4	LIS-G+NCTM+CM5	32	0	32
5	/			

20		/	3	0	3
21		/	15	0	15
22		/	4	0	4
23		/	1	1	2
24	LED	/	1	0	1
25		YP-JIZHONG-ZTT	2	1	3
26		/	4	0	4
27		/	5	0	5
28		HC-F500GSG-S 500RT/	5	0	5
29		/	3	0	3
30		300 ^{3}/h	5	0	5
31		/	3	0	3
32	ABB	/	4	0	4
33		/	1	0	1
34		/	110	0	110
35		/	46	0	46
36		/	1	0	1
37		/	1	0	1
38		/	1	0	1
39		/	1	0	1
40		3 /h	2	0	2
41		/	2	0	2
42	UPS	/	1	0	1
43		/	1	0	1
44		/	2	0	2
45	DDC	/	1	0	1
46		/	2	0	2
47		NTH408-70A	3	0	3
48		/	2	0	2
49		/	1	0	1
50		/	1	0	1
51		/	1	0	1
52		PK2880	3	0	3
53		OTDR8000	6	0	6
54		PK2300	6	0	6
55		OTDR8000I	1	0	1
56		CD500	3	0	3

57		PK2311	3	1	4
58		/	16	0	16
59		5 3/ i	3	0	3
60		/	1	0	1
61		/	22	0	22
62		DV3TLVTJ0	13	0	13
63		/	1	0	1
64	OTDR	MT9083B2	1	0	1
65		50 3 10 3 5 3	3	0	3
66		300 2/	3	0	3
67		/	8	0	8
68		/	8	0	8
69		/	20	0	20
70		/	5	0	5
71		/	5	0	5
72		/	4	0	4
73		/	1	0	1
74		/	8	0	8
75		/	13	0	13
76		/	23	0	23
77		FTP1000-0501600S-LCF	4	3	7
78		/	2	0	2
79		/	16	0	16
80		/	18	0	18
81		/	6	0	6
82		/	10	0	10
83		/	17	0	17
84		/	0	3	3
85		PT-2500	0	3	3
86	f e g h a i	/	0	2	2
87	fibe a a i e	2300AG	0	3	3
88	UV		0	1	1
89		/	0	3	3
90		/	0	3	3
91			0	6	6
92		/	0	3	3

93		TF-3000	0	24	24
94	DDC	/	0	1	1
95		/	0	1	1
96		/	0	1	1
97	UV		0	1	1
98		/	0	2	2

2015 10

1000 2016 12

[2016]112 2017 8 27

([2017]5

2017 11 16

[2017]15

15000

62961 ^{2} 21424.21 ^{2}

32 3

187.5 / 400 /

R5 280 /

(ULB125)70 / ULB80 50 /

2018 11 14

6 [2018]82

682

2019 5

(2011) 2013

2 16 < (2011)>

28

<

2012 > ([2013]183)

28

(2012)

2012

2012

2018 74

15

1-4

1			3600		

3600

5

2017 1

24 NO_2 24

PM_{10} 24 CO 24 $PM_{2.5}$24 O_3

8 $PM_{2.5}$

GB096-2008 3

GB3838-2002

1

HF FQ1

15

FQ3 42

2

+

GB8978-1996 4

3

3

HF

FQ1 15

FQ3 42

1-5

1	2011	2011
2	2012	2012
3	2012 2012	2012 2012

4	2013 2013	2013 2013

2017 55

VOC 4. VOC

VOC VOC

2019 VOC

VOC

VOC

[C3832]

[2018]22

	[C3832]

2012

2013 9

2012

2020 0.4 2013 183

2020

2 2018

2007

[C3832]

2020

VOC

2018

2019 2020

3	
VOC VOC VOC VOC VOC 2020 VOC 2015 10%	
2020 2018 VOC 45 VOC 2019	

2020 2018 2019 2020	

[C3832]

188

15000 20 0.13%

320 24

300 7200h

32 3

2000 / 187.5 /

400 /

R5 280 / (ULB125)70 /

ULB80 50 / 1-7

32		2000	1812.5	-187.5	7200h
		0	400	+400	
		2000	2212.5	212.5	

1-8 10

	5 1	dB	1550 0.10 1625 0.40
	1310	dB/	1310 0.32
	1550	dB/	1550 0.18
	1310		8.8 0.4
			1300 1324
	22		1260
			125 1.0
			245 7
		%	1.0
	/		0.5
	/		10

	7.5 200	dB	1550 0.10
	5 10	dB	1550 0.05
	1550	dB/	1550 0.23
	1625	dB/	1625 0.25
	1550		8.4 0.6
			1530
			125 1.0
		%	0.8
	/		0.5

	5 200	dB	1550 0.10
	2.5 10	dB	1550 0.02
	1550	dB/	1550 0.35
	1625	dB/	1625 0.38
	1550		6.4 0.6
			1530
			80 1.0
		%	0.8
	/		0.5

1

3792.5 /a

2

1788 /a 101.3 /a +

GB8978-1996 1840 /a

GB18918-2002 A

3

3 2500KVA

4

5 1.06

^{3}/ i 4 1 4 8 g 2 1

25.46 ^{3}/ i 15.78 ^{3}/ i 9.68 ^{3}/ i

3.16 ^{3}/ i

5

5 1900 /h

1200 /h 24 /h

5 R22 11021

7329 3692 1466

6

1-11

		52.64 ^{3}	
		15.81 ^{3}	
		10.53 ^{3}	
		50L	
		10.53 ^{3}	

1-12

	3	32 3 2000 / 187.5 / 400 /	
			/
		1690 ^{2}	
		920 ^{2}	
		60.16 ^{2}	
		52.64 ^{3} 1 15.81 ^{3} 10.53 ^{3} 50L	
		10.53 ^{3}	
		2500 KVA 3 3600 /	
		3792.5 /a	

		46	
		3729.3 /a	+
		5 1.06 3/ i 4 8 g 25.46 3/ i 15.78 3/ i 9.68 3/ i	3.16 3/ i
		5 1900 /h 1200 /h	24 /h
		5 11021 7329 3692	1466
		2 3 /h 1 /h	0.6 /h
		2	
		+42 2	
		1 9000 3/h	
		48 /d	
		6 2	
		20 2	

20 0.13%

1-13

		1	/		
		1	/		
		2	/		
	+42	2	/		
		1	8		

		/	12		
		/	/		
		/	/		
	/	/	20	/	

188

1

2

3

2015 10

1000 2016 12

[2016]112 2017 8 27

([2017]5)

2017 11 16

[2017]15 1-14

16		1000	1000	[2016]112	[2017]5
16		1000	1000	[2017]15	

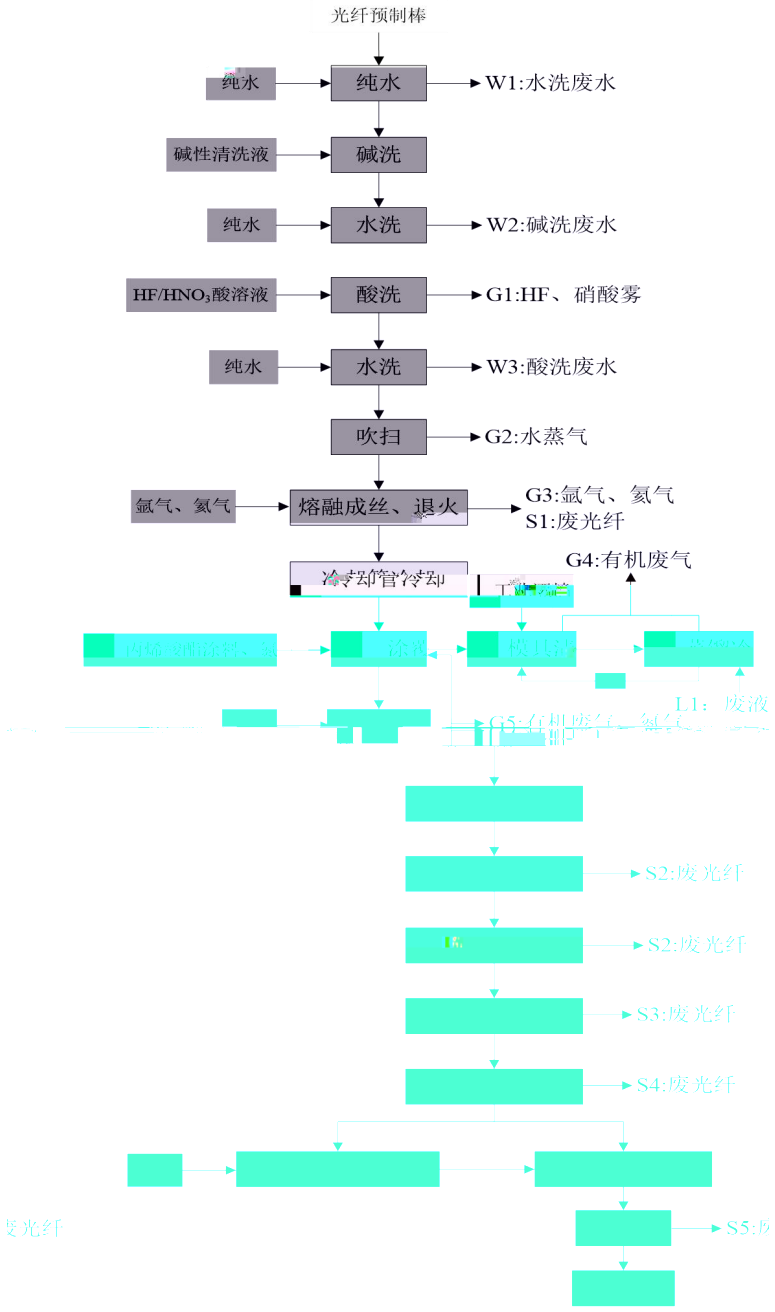
1-15

		1000 1000	
		-	
		1690 ^{2}	
		920 ^{2}	
		60.16 ^{2}	
		52.64 ^{3} 1 15.81 ^{3} 10.53 ^{3} 50L	
		10.53 ^{3}	
		301446 /a	
		15613.76 /a	
		5 1.06 ^{3}/ i 4 8 g	
		46	
		5	R22
		5	-
		3 /h 2	50%
		2500 KVA 3 3600 /	
		/	
		+15 2	
		+42 2	
		48 /d	
		4 ^{3}	
		25dB(A)	
		20 ^{2}	
		6 ^{2}	

		%NaOH	0.6L	0.6L	1.2L	0.2L		
5		30%-50% 30%-50% G¨ 5%-10% 1%-5%	442 /a	442 /a	884 /a	8	1 ^{3}	/
6		96%	0.62 /a	0.62 /a	1.12 /a	0.2		/
7			0.1 /a	0.1 /a	0.2 /a	0.2		/
8		/	67	67	134	/	/	/
9		/	67	67	134	/	/	/
10		/	1965 /a	1965 /a	3930 /a	40	52.64 ^{3}	/
11		/	542 /a	542 /a	1084 /a	6	15.81 ^{3}	/
12		/	55951 ^{3}/ a	55951 ^{3}/ a	111902 ^{3} /a	5000 ^{3}	5000 ^{3}	
13		/	500 ^{3}/a	500 ^{3}/a	1000 ^{3}/a	0.013 4	50L	/
14		/	159.7 /a	159.7 /a	319.4 /a	10.53	10.53 ^{3}	/

5		/	47	0	47
6		/	16	16	32
7		/	5	0	5
8		/	16	16	32
9		/	16	0	16
10	LED	/	16	16	32
11	LED	/	16	16	32
12		/	8	8	8
13		/	0	23	23
14	/	/	1	1	2
15		/	0	10	10
16		/	1	1	2
17		/	0	1	1
18		/	0	8	8
19		/	0	1	1
20		/	0	3	3
21		/	0	15	15
22		/	0	4	4
23		/	0	1	1
24	LED	/	0	1	1
25		/	1	1	2
26		/	0	4	4
27		/	3	2	5
28		HC-F500GSG-S 500RT/	3	2	5
29		/	3	0	3
30		300 ^{3}/h	3	2	5
31		/	3	0	3
32	ABB	/	2	2	4
33		/	1	0	1
34		/	60	50	110
35		/	38	30	68
36		/	0	1	1
37		/	0	1	1
38		/	0	1	1
39		/	0	1	1
40		3 /h	1	1	2
41		/	0	2	2
42	UPS	/	0	1	1
43		/	0	1	1
44		/	1	1	2
45	DDC	/	0	1	1

46		/	1	1	2
47		NTH408-70A	2	1	3
48		/	1	1	2
49		/	0	1	1
50		/	0	1	1
51		/	0	1	1
52		PK2800	0	3	3
53	OTDR8000	OTDR8000	3	3	6
54	PK2300	PK2300-2302-MFD	3	3	6
55		OTDR8000I	1	0	1
56		CD500	3	0	3
57		PK2311	3	0	3
58		/	16	0	16
59		5 3/ i	3	0	3
60		/	1	0	1
61		/	22	0	22
62		DV3TLVTJ0	13	0	13
63		/	1	0	1
64	OTDR	MT9083B2	1	0	1
65		50 3 10 3 5 3	3	0	3
66		300 2/	3	0	3
67		/	8	0	8
68		/	8	0	8
69		/	20	0	20
70		/	5	0	5
71		/	5	0	5
72		/	4	0	4
73		/	1	0	1
74		/	8	0	8
75		/	13	0	13
76		/	23	0	23
77		/	4	0	4
78		/	2	0	2
79		/	16	0	16
80		/	18	0	18
81		/	6	0	6
82		/	10	0	10
83		/	17	0	17


光纤预制棒
纯水
纯水
W1:水洗废水
碱性清洗液
碱洗
纯水
水洗
W2:碱洗废水
HF/HNO3酸溶液
酸洗
G1:HF、硝酸雾
纯水
水洗
W3:酸洗废水
吹扫
G2:水蒸气
氩气、氦气
熔融成丝、退火
G3:氩气、氦气
S1:废光纤
G4:有机废气
S2:废光纤
S2:废光纤
S3:废光纤
S4:废光纤
S5:

W1

NaOH

NaOH NaOH

NaOH

50

5

NaOH NaOH NaOH

W2

HF/HNO_3

NaOH HF/HNO_3

HF/HNO_3

HF/HNO_3

HF/HNO_3

HF/HNO_3 HF/HNO_3

50

5

HF/HNO_3

HF/HNO_3 HF/HNO_3

HF/HNO_3 HF

HNO_3 G1

HF/HNO_3

W3

G2

2200

S1 G3

52-55 CO_2

30c 50c 30c

G4

LED

LED LED

LED

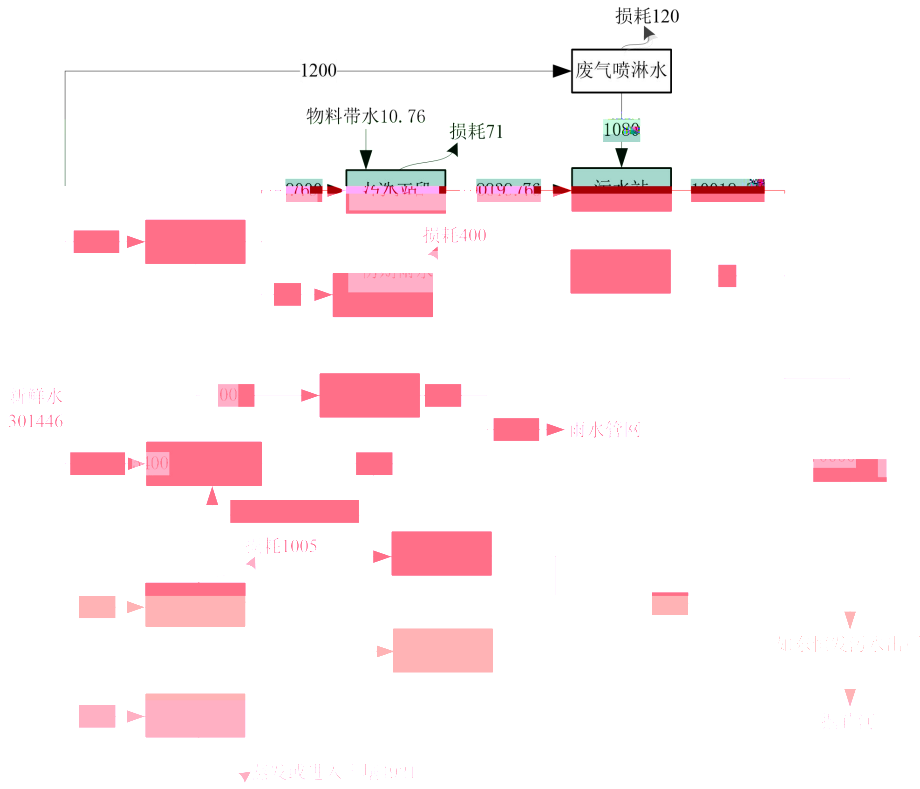
LED

LED LED

40-50

OH-

S5



HF

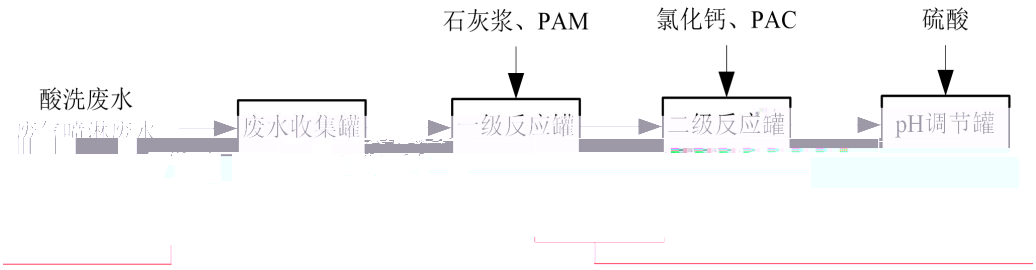
FQ1 15

VOC FQ3

42

+

GB8978-1996



2016

2016

RO

GB12348-2008 3

2017 8 27 ([2017]5

1000

2017 2017 4 6 4 7 2017 6 21 6
22

H	7.21	7.14	7.23	6 9		
	226	243	238	236		L
	52	48	54	51		L
	0.206	0.218	0.221	0.215		L
	3.88	3.91	3.79	3.86		L
	1.18	1.20	1.38	1.25		
	32	32	35	37	/	
	18	17	15	16	/	
	4.345	4.195	4.146	4.229	/	g/L
	0.118	0.118	0.118	0.118	/	g/L
	0.054	0.055	0.050	0.053	/	g/L
	36	31	33	33		g/L
	12	11	13	12		g/L
H	7.14	7.25	7.18	6 9		/
	249	2184	222 (		□	

236 g/L 51 g/L 0.220 g/L 3.86 g/L 1.25 g/L

GB8978-1996 4

N1	1	9:01	46.6	22:11	43.9	9:32	46.4	22:15	43.0
N2	1	9:15	46.0	22:26	44.8	9:41	46.3	22:24	42.9
N3	1	9:30	47.2	22:42	46.2	9:53	45.1	22:36	43.7
N4	1	9:47	48.0	22:58	43.6	10:09	48.7	22:50	43.4

GB12348-2008 3

4

2016

2016

RO

1000

[2016]112

[2016]112

1-22

	HF	0.191	0.191	0.382
		0.081	0.081	0.162
		0.078	0.078	0.156
		0.078	0.078	0.156
	VOC	1.083	1.083	2.166
		7723.88	7889.88	15613.76
	COD	1.853	0.977	2.83
	SS	1.037	0.676	1.713
		0.086	0.086	0.172
		0.092	0.1008	0.1928
	TP	0.011	0.012	0.023
		0	0.072	0.072

G652

15000

32 3

400 FTTX R5

2212.5

RO

HF

97%

RO

3/16 HF

90% 97%

		HF	0.191	0.191	0.279	0.103
			0.081	0.081	0.015	0.147
			0.078	0.078	0.015	0.141
			0.078	0.078	0.015	0.141
		VOC	1.083	1.083	0.203	1.963
			9783.88	9709.88	1820.60	17673.16
		COD	0.7827	0.7768	0.146	1.414
		SS	0.9393	0.9321	0.175	1.697
			0.0020	0.0019	0.0004	0.004
			3.7277	3.6995	0.694	6.733
			2640	2880	0	5520
		COD	0.792	1.008	0	1.8
		SS	0.660	0.576	0	1.236
			0.092	0.1008	0	0.193
		TP	0.011	0.012	0	0.023
			0	0.072	0	0.072
			0	0	0	/
			0	0	0	/

*

121 25 40 121 54 30 31 41 06

32 16 19

		39.1
		-10.6
		14.9
		ESE NW
	/	4.1
	/	20
		1044.7
		1533.4
		236.8

1

5 25 1976

60500

2665

36863

30200

28011

2

250 380

1.2

1992 38.12 ^{2}

2007 8

2008 10 [2008]259

2014 10

2016 2 [2016]14

1

1612.55 42.30%

193.41

413.64

164.31

115.39

725.8

4.0

^{3}/d 3 ^{3}/d

[2017]38

( )

10 ^{3}/d 2.5 3/d

5 ^{3}/d 10 ^{3}/d

2.5 ^{3}/d

2

MSBR- -

d1200

d400

100%

2020 50 20 120

d1000 d500

36

110KV 63000KVA/2
110KV 40000KVA/1 110KV
110KV 150000KVA/3 110KV
150000KVA/3

188 3 75 /h 2 15MW

DN300

DN200-300

1800 /d

2002 2004 6 29
2013 11 5 [2013]212
13000 /a

13000 /a

19000 /a 10000 /a 2500 /a

HW02 HW03 HW04 HW05

HW06 HW08

HW09 / / HW11 HW12

HW13 HW16 HW17 336-067-17 336-068-17

336-069-17 336-101-17 HW35 HW39 HW40

HW45 HW49 #900-039-49 900-041-49

900-042-49 900-044-49 900-047-49 900-999-49 HW50 #263-013-50

#275-009-50 276-006-50 261-151-50

103

24 20 10

1 GB3095-2012

2

GB3838-2002 SS

SL63-94

3 GB3096-2008 3

2017 1

		g/ 3	g/ 3		
SO_2		30	60	0.00	
	24 98	23	150	0.00	
NO_2		21	40	0.00	
	24 98	58	80	0.00	
PM_{10}		60	70	0.00	
	24 95	79	150	0.00	
$PM_{2.5}$		39	35	0.11	
	24 95	53	75	0.00	
O_3	8 90	118	160	0.00	
CO	24 95	627	4000	0.00	

PM_{10} SO_2 NO_2 CO O_3

GB3095-2012 $PM_{2.5}$

GB3095-2012 0.11

GB3095-2012

2017 9.28-9.29

3-2

	TVOC	0.0212-0.0270	0.6	-	-	-	-
		0.0009 0.0010	0.02	0	-	-	-

2016 7 27 2016 7 29

CODc TP

GB3838-2002 2017 9 27

3-3

1500 N32 21 31 E121 11 36	H	7.41-7.47	
		16	g/L
		0.78	g/L
	TP	0.16	g/L
		0.03	g/L
		0.165	g/L
1000 N32 22 52 E121 11 12	H	7.27-7.39	
		17	g/L
		0.744	g/L
	TP	0.16	g/L
		0.02	g/L
		0.16	g/L

GB3838-2002

GB096-2008

2019 7 27 2019 7 28

4

N_1	1	54.3	48.6
N_2	1	53.6	48.4
N_3	1	54.4	49.6
N_4	1	53.2	48.5
		65	55
N_1	1	53.8	48.9
N_2	1	53.6	48.3
N_3	1	54.3	47.8
N_4	1	53.8	47.6
		65	55

GB3096-2008 3

3-5

	327047	3580988				NE	1100
	327820	3581202				NE	1800
	327928	3581392				NE	1900
	328062	3581182				NE	2100
	327547	3582005				NE	2100
	328396	3580318				E	2200
	328392	3580544				E	2200
	328328	3579620				SE	1700
	327320	3579409				SE	1500
	327661	3579525				SE	1600
	328116	3579544				SE	1900
	327614	3578645				SE	2200
	328013	3578917				SE	2400
	326474	3578966				S	1400
	325976	3578122				S	2200
	324212	3579613				WS	2300
	324403	3580196				W	1400
-	326758	3576537				S	3600

			E	3600	3680	-123	-1	E	3976	3965	-12	
			W	829	-807	-178	0	W	905	-847	-328	/
			E	12	12	0	0	E	15	15	0	
			S	75	-75	0	1	S	236	14	-234	/

GB3095-2012

HF TJ36-79

SO_2		60	g/ 3	GB3095-2012
	24	150		
	1	500		
NO_2		40		
	24	80		
	1	200		
NO [1]		50		
	24	100		
	1	250		
PM_{10}		70		
	24	150		
$PM_{2.5}$		35		
	24	75		
TSP		200		
	24	300		
CO		4000		
	1	10000		
O_3	8h	160		
	1	200		
		20		TJ36-79
		7		
		5000		
		5000		
	1	2000		
[2]		80		
[3]		80		

[1]

[2]

10 g/ 3

C =0.470 C -3.595

[3]

GBZ2.1-2007 10 g/ 3

C =0.47 C -3.595

GB3838-2002 SS SL63-94

4-2

	6 9	20	4	1.0	1.0	0.2	30	0.05
	GB3838-2002 SS (SL63-94)							

GB3096-2008 3 4-3

	3	65	55
	GB3096-2008		

1

(GB16297-1996) 2

GB/T3840-91

VOC

DB12/524-2014 GB14554-93

4-4

	9.0	15	0.10		0.02	(GB16297-1996)
	240	15	0.77		0.12	2
	/	/	/		25	
	/	42	4.38		0.4	GB/T3840-91
	/	42	4.38		0.4	
VOC	80	42	23.84		2.0	DB12/524-2014
	/	/	/		20	GB14554-93

[1] (GB/T 3840-91)

Q=C R Ke Q g/h C

g/ 3 R

GB/T 3840-91 4 40

58 50 90 Ke 0.5 1.5 0.85

[2] (GB16297-1996)7.3

[3]

4

GB8978-1996 4

GB/T31962-2015 1 B

(GB18918 2002) A

COD 40 g

4-5

	6 9	6 9
	300	50
	150	10
	45	5
	20	/
	8	0.5

GB12348-2008 3

4-6

3	65	55	

GB18599-2001

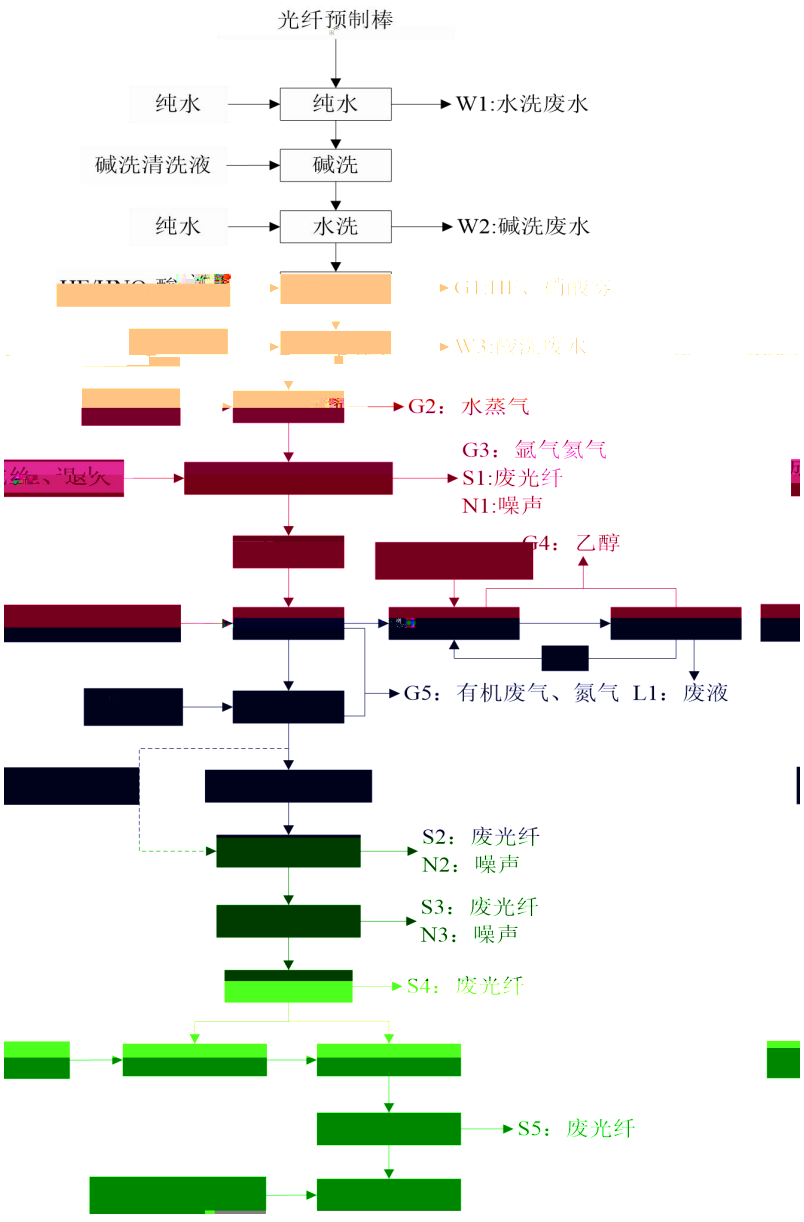
GB18597-2001

HJ2025-2012

		HF	0.		0.	
			0.1620	0.0150	0.1779	+0.0159
			0.1560	0.0150	0.1861	+0.0301
			0.1560	0.0150	0.1861	+0.0301
		VOC	2.1660	0.2030	2.3967	+0.2307
			0.0178	0	0.0178	0
		^{3}/a	25013.76	1820.60	26922.41	+1908.65
		COD	3.3600	0.1460	3.5123	+0.1523
		SS	3.1080	0.1750	3.3388	+0.2308
			0.1928	0	0.1928	0
		TP	0.0230	0	0.0230	0
			0.0044	0.0004	0.0365	0
			7.4270	0.6940	8.2050	+0.7780
			0.0720	0	0.0720	0
			0	0	0	0
			0	0	0	0
			0	0	0	0

1 0.0159 /a

32 3


光纤预制棒
纯水
纯水
W1:水洗废水
碱洗清洗液
碱洗
纯水
水洗
W2:碱洗废水
G2：水蒸气
G3：氩气氦气
S1:废光纤
N1:噪声
G4：乙醇
G5：有机废气、氮气 L1：废液
S2：废光纤
N2：噪声
S3：废光纤
N3：噪声
S4：废光纤
S5：废光纤

+ +

W1

NaOH

NaOH NaOH

NaOH

50

5

NaOH NaOH NaOH

W2

HF/HNO_3

NaOH HF/HNO_3

HF/HNO_3

HF/HNO_3

HF/HNO_3

HF/HNO_3 HF/HNO_3

50

5

HF/HNO_3 HF/HNO_3 HF/HNO_3

HF/HNO_3

HF HNO_3 G1

HF/HNO_3

W3

G2

2200

ULB80

S1 N1

G3

ULB80

ULB125 R5

SiO_2

ULB80

ULB125 R5

35-55 CO_2

30c 50c 30c

L1 G4

UV

UV UV UV

UV

UV 200

N_2 CO_2

G5

PMD

PMD

ULB80

PMD

S2 N2

S3 N3

S4

OH-

ULB80 ULB125

1.5%

S5

5-1

	W1		PH COD SS		
	W2		PH COD SS		
	W3		PH COD SS		
	G1		HF		
	G2				
	G3				
	G4				
	G5				
	L1				
	S1				
	S2				
	S3				
	S4				
	S5				
	N1				/
	N2		Le A		/
	N3				/

R5 F

F

1360 -1450

ULB125

ULB80

CO_2

1

50% 70% 20

HF HNO_3

4h

G =M(0.000352+0.000786U) P F

G -- g/h

M--

U-- /

0.2 0.5 / 0.2 /

P-- Hg

20 50%HF 2 Hg 70%

0.27 Hg

F-- ^{2} 1 10 ^{2}

HF =20 (0.000352+0.000786 0.2) 2 10=0.204 g/h

HNO_3 =63 (0.000352+0.000786 0.2) 0.27 10=0.087 g/h

HF 0.244 /a 0.104 /a

99% HF

0.242 /a 0.1029 /a HF 97%

70% HF 0.0073 /a 0.0061 g/h

1.008 g/ ^{3} HNO_3 0.031 /a 0.0257 g/h 4.287 g/ ^{3}

FQ1 15 HF 0.00244 /a 0.0010 /a

2 UV

52-55

VOC ( )

177 /a 40%

0.45% 0.45% 99.1%

0.2% VOC 1%

VOC 0.1416 /a 0.1416 /a

1.77 /a

UV UV

UV

UV

200

VOC (

)

200

0.45% VOC

400

2017 021 1#

0.37 g/ 3 0.00171 g/h

400

VOC 1.5%

VOC 0.3186 /a

0.3186 /a 2.655 /a

VOC 0.4602/a 0.4602 /a 4.4250 /a

98%

VOC 0.4510 /a 0.4510 /a 4.3365 /a 90%

VOC 0.04510 /a 0.04510 /a

0.43665 /a 0.00626 g/h 0.00626 g/h 0.06023 g/h

0.602 g/ 3 0.602 g/ 3 5.791 g/ 3 FQ3 42

VOC 0.0092 /a 0.0092 /a 0.0885 /a

3

1000

[2017]5

1000

2%

0.0154 /a

4 CO_2

CO_2

5-2 3 6

5-4 5 7

50% 5-8

	6000	HF	33.667	0.202	0.2420		97	1.008	0.0061	0.0073	9.0	0.15	15	0.4	25	1200
			14.291	0.086	0.1029		70	4.287	0.0257	0.0310	240	1.2	15	0.4	25	1200
	10400		6.023	0.0626	0.4510		90	0.602	0.00626	0.04510	/	4.38	42	0.4	25	7200
			6.023	0.0626	0.4510			0.602	0.00626	0.04510	/	4.38	42	0.4	25	7200
		VOC	57.913	0.6023	4.3365			5.791	0.06023	0.43365	80	23.48	42	0.4	25	7200

	FQ1	6000	HF	2.56	0.015	0.1106	9.0	0.15	15	0.4	25	7200
				4.11	0.025	0.1777	240	1.2				
	FQ2	10400		2.49	0.026	0.1865	/	4.38	42	0.4	25	7200
				2.49	0.026	0.1865	/	4.38				
			VOC	32.01	0.333	2.3966	80	23.48				
	FQ3	9000		1.65	0.015	0.0178	2.0	/	/	/	/	1200

	HF	0.00034	0.00244	15	8	8	7200
		0.0001	0.0010				
		0.0013	0.0092	68	12	15	
		0.0013	0.0092				
	VOC	0.0123	0.0885				
		0.0021	0.0154	4	5	8	

		HF	0.0102	0.0731	120	8	7200
			0.0044	0.0319			
			0.0053	0.0382	720	15	
			0.0053	0.0382			
		VOC	0.0679	0.4891			
			0.0902	0.6498	20	8	

1	FQ1	HF	1.008	0.0061	0.0073
2			4.287	0.0257	0.0310
3	FQ3		0.602	0.00626	0.04510
4			0.602	0.00626	0.04510
5		VOC	5.791	0.06023	0.43365
					0.56198
1	/	/	/	/	/
			/		/
		HF			0.0073
					0.0310
					0.04510
					0.04510
		VOC			0.43365
					0.56198

1			HF		(GB16297-1996) 2	0.02	0.0024
2						0.12	0.0010
3					GB/T3840-91	0.4	0.0092
4						0.4	0.0092
5			VOC		DB12/524-2014	2.0	0.0885
6					GB/T3840-91	25	0.0154

1			HF	17.3077	0.104			
2				9.289	0.056			
3				3.313	0.034	0.25	0.1	
4				3.313	0.034			
5		50%	VOC	31.852	0.331			

3792.5 /a

+

(GB18918 2002)

A

1

4500 /a 140.1 /a 1800 /a

0.67% W1 W3 1788 ^{3}/a

H SS

2

112.5 /a 10%

101.3 /a H SS

3

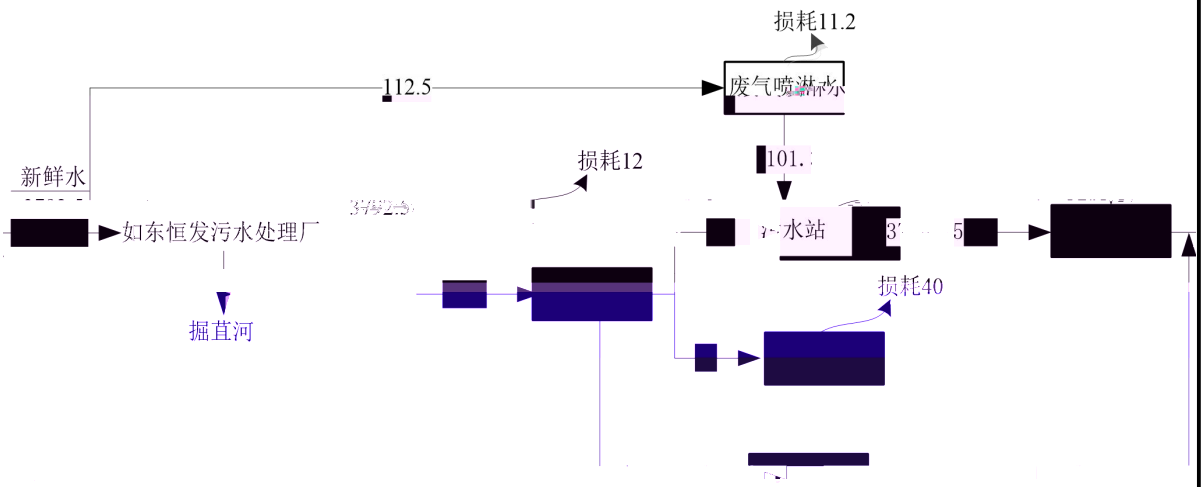
1 2 /h

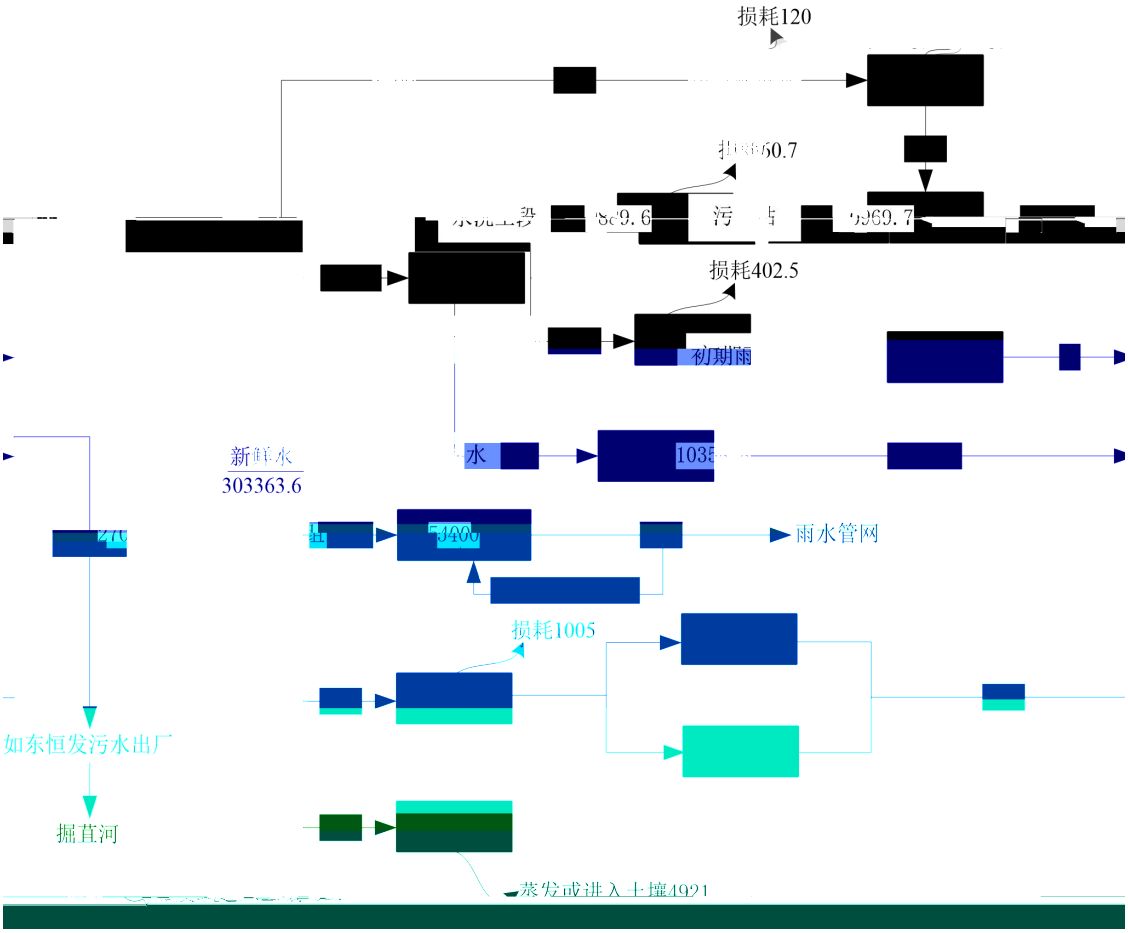
1800 /a 40 /a

1840 /a 50% 3680 /a 1840 /a

H SS

	1840	COD	80	0.1472		COD	80	0.1472	
		SS	200	0.3680		SS	200	0.3680	
			800	1.4720			800	1.4720	
	1788	COD	80	0.1430		COD	80	0.1511	
		SS	120	0.2146		SS	20	0.0378	
			716	1.2802	+		17.2	0.0325	
	101.3	COD	80	0.0081		/	/	/	
		SS	130	0.0132		/	/	/	
			2037	0.2062		/	/	/	
	3729.3	COD	80	0.2983		COD	80	0.2983	
		SS	160	0.5958		SS	109	0.4058	
			399	1.4864			8.7	0.0325	
			395	1.4720	+		395	1.4720	





1		COD SS			/			DW 001	☑ ☐	☑ ☐ ☐ ☐ ☐

1	DW001	121.15 3788	32.3456 56	3729.3			/		H	6 9
									COD	50
									SS	10
										5
										/
										0.5

1	DW001	PH	GB8978-1996	6 9
		COD		300
		SS		150
				20
		NH_3-N	GB/T 31962-2015	45

1	DW001		/	12.43	89.74	3729.3	26922.4
		COD	80	0.0010	0.0117	0.2983	3.5123
		SS	109	0.0014	0.0111	0.4058	3.3388
			8.7	0.0001	0.0001	0.0325	0.0365
			395	0.0049	0.0274	1.4720	8.2050
			35	0	0.0006	0	0.1928
		TP	4	0	0.0001	0	0.0230
			25	0	0.0002	0	0.0720

RO

1

2.8 /a

2 RO

RO

0.1 /a RO 0.05 /a

3

2 /a

5

0.07 /a

6

0.01 /a

7

0.04 /a

5-11

					/a
1					2.80
2					0.1
3	RO			RO	0.05
4					2
5					0.07
6					0.04
7					0.01
					5.07

1

GB34330-2017

2018 18 5-12

1						4.1-(a)	5.1-(c)
2						4.3-( )	5.1-(a)/(b)
3	RO			RO		4.3-( )	5.1-(a)/(b)
4						4.2-(e)	5.1-(c)
5						4.1-(h)	5.1-(a)/(b)
6						4.1-(h)	5.1-(a)/(b)
7						4.1-(c)	5.1-(e)

5-13 5-14

1		HW11	900-013-11	0.07				
2		HW08	900-218-08	0.01				
3		HW49	900-041-49	0.04				
4		HW49	900-041-49	0.1				
5	RO	HW49	900-041-49	0.05			RO	
6		/	/	2				
				2.27				

1					2.80	
	/	/	/	/	2.80	/

75 80dB A 5-15

1		3	85		60		25
2		3	85		52		25
3		3	75		52		25
4		3	80		50		25

5-16

0.2420	0.2347	0.0073	0.0073
0.1029	0.0720	0.0310	0.0310
0.4510	0.4059	0.04510	0.04510
0.4510	0.4059	0.04510	0.04510
4.3365	3.9029	0.43365	0.43365
0.00244	0	0.00244	0.00244
0.0010	0	0.0010	0.0010
0.0092	0	0.0092	0.0092
0.0092	0	0.0092	0.0092
0.0708	0	0.0708	0.0708
0.0015	0	0.0015	

		HF	0.3820	0.0073	0.2790	0.1103	-0.2717
			0.1620	0.0309	0.0150	0.1779	+0.0159
			0.1560	0.04510	0.0150	0.1861	+0.0301
			0.1560	0.04510	0.0150	0.1861	+0.0301
		VOC	2.1660	0.43665	0.2030	2.3967	+0.2307
			0.0178	0	0	0.0178	0
		^{3}/a	19493.76	3729.25	1820.60	21402.41	+1908.65
		COD	1.5600	0.2983	0.1460	1.7123	+0.1523
		SS	1.8720	0.4058	0.1750	2.1028	+0.2308
			0.0044	0.0325	0.0004	0.0365	+0.0321
			7.4270	1.4720	0.6940	8.2050	+0.7780
		^{3}/a	5520	0	0	5520	0
		COD	1.8000	0	0	1.8000	0
		SS	1.2360	0	0	1.2360	0
			0.1928	0	0	0.1928	0
		TP	0.0230	0	0	0.0230	0
			0.0720	0	0	0.0720	0
		^{3}/a	25013.76	3729.25	1820.60	26922.41	+1908.65
		COD	3.3600	0.2983	0.1460	3.5123	+0.1523
		SS	3.1080	0.4058	0.1750	3.3388	+0.2308
			0.1928	0	0	0.1928	0
		TP	0.0230	0	0	0.0230	0
			0.0044	0.0325	0.0004	0.0365	0
			7.4270	1.4720	0.6940	8.2050	+0.7780
			0.0720	0	0	0.0720	0
			0	0	0	0	0
			0	0	0	0	0
			0	0	0	0	0

			HF	33.667	0.202	0.2420	1.008	0.0061	0.0073	FQ1
				14.291	0.086	0.1029	4.287	0.0257	0.0310	
				6.023	0.0626	0.4510	0.602	0.00626	0.04510	FQ3
				6.023	0.0626	0.4510	0.602	0.00626	0.04510	
			VOC	57.913	0.6023	4.3365	5.791	0.06023	0.43365	
			HF	/	0.00034	0.00244	/	0.00034	0.00244	
				/	0.0001	0.0010	/	0.0001	0.0010	
				/	0.0013	0.0092	/	0.0013	0.0092	
				/	0.0013	0.0092	/	0.0013	0.0092	
			VOC	/	0.0123	0.0885	/	0.0123	0.0885	
				/	0.0002	0.0015	/	0.0002	0.0015	
				3729.3	/		3729.3	/	
			COD	0.2983	80	COD	0.2983	80	
			SS	0.5958	160	SS	0.4058	109	
				1.4864	399		0.0325	8.7	
				1.4720	395		1.4720	395	
				2.80	2.80	0	0		
				0.1	0.1	0	0		
			RO	0.05	0.05	0	0		
				2	2	0	0		
				0.07	0.07	0	0		
				0.04	0.04	0	0		
				0.01	0.01	0	0		
			/						

CO_2

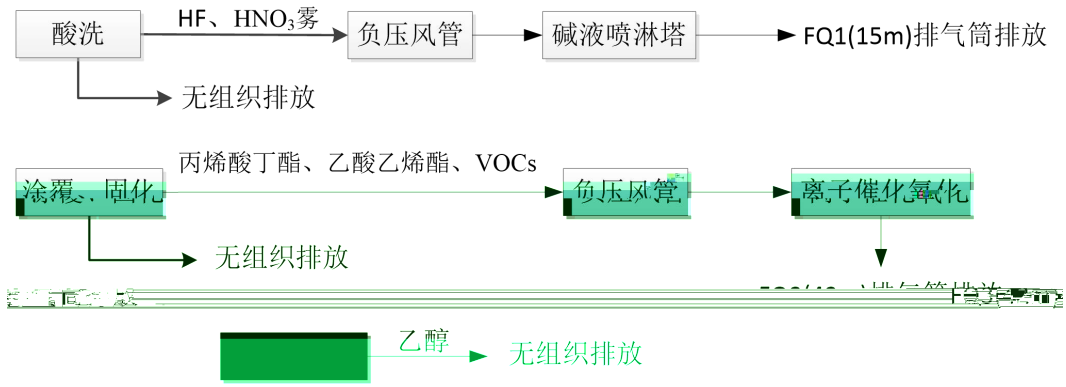
	HF	
	VOC	

FQ1 15

FQ3 42

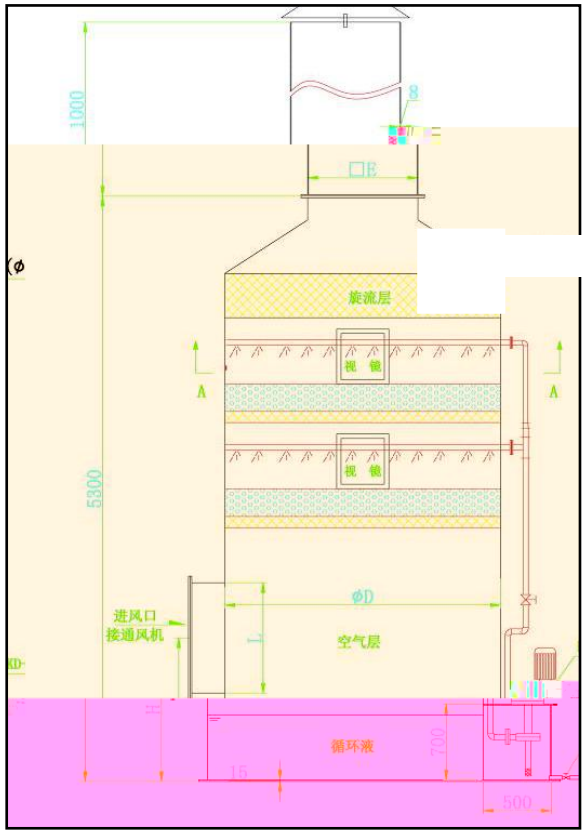
HF

VOC



PH

7-2



7-2

1		1100 6000 Q=3000 ^{3}/h PP 8S 450 a	2
2		3000 ^{3}/h 700 a 3	2
3		Q=20 ^{3}/h H=30 P=4	3 2 1
4		/	2
5	H	0 14 0 60 HI-LO 4 20 A	2
6		1L/ i 0.5MPa	2
7		1 ^{3}	2

HF 95%

70% HF

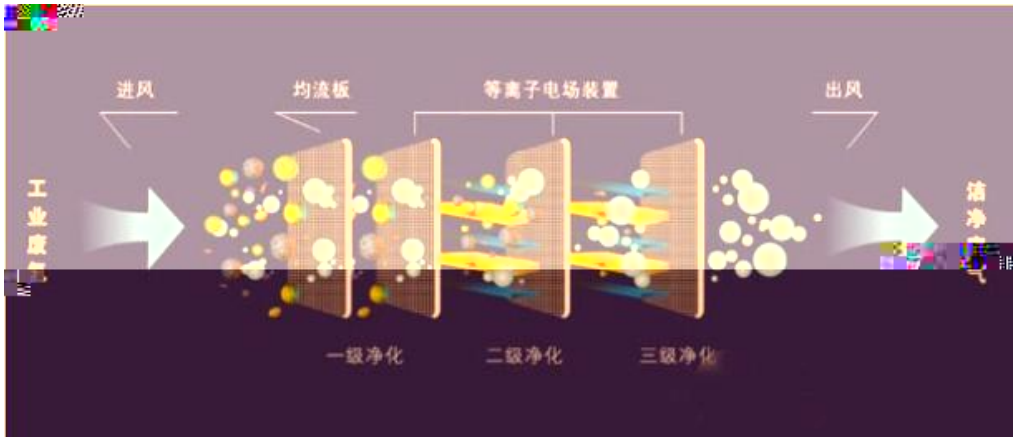
HF 1.52 g/ ^{3} 39 g/ ^{3}

6.46 10^{-3} g/h 0.186 g/h

5eV H_2O (OH)

(O_2^-)

H_2O CO_2



$O_2+e \quad O_2$ ( )

$O_2+2e \quad 2\ O$

$O_2+\ O \quad O_3+e$

$H_2O+2e \quad H + OH$

$H_2O+\ O + e \quad 2\ OH$

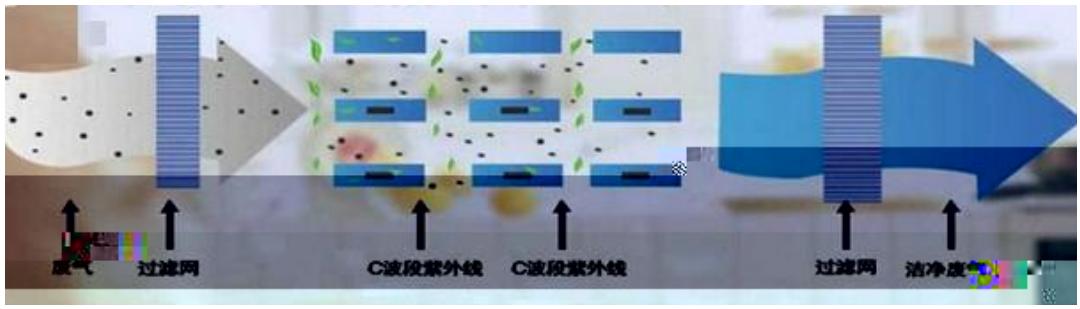
$H +O_2+e \quad O+ OH$

$C\ H\ O + OH \quad CO_2+ H_2O$

$C\ H\ O + O_2^- \quad CO_2+ H_2O$

$C\ H\ O +O_3 \quad CO_2+H_2O$

H_2O CO_2



TiO_2 + $^+$ +e

O_2+e O_2 ( )

$^+$ +H_2O OH+H^+

$^+$ +OH^- OH

C H O + OH CO_2+ H_2O

C H O + O_2^- CO_2+ H_2O

1	/	1 2 560 1780 1270 3 304 4 PLC 5 200 - 300 Pa	1
2		1 2 850 1780 1270 3 304 4 5 W 5 60 6 PLC 7 200 - 300 Pa 9 2.2 / , 1.8	1

3		1 2 930 1780 1270 3 304 4 12 W 6 PLC 7 100 - 200 Pa 8 90 9 2.2 / , 1.8	1
4		12000 ^{3}/h 2000Pa 7.5KW	1
5		PP 10	1
6			1

VOC

0.776 g/ ^{3} 2.90 10^{-3}Kg/h 412

DB12/524-2014

10 37

FQ1 15 FQ3 42

GB16297-1996

HJ2.2-2018

AERSCREEN

HF			20.0	GB3095-2012
			250.0	GB3095-2012
			270.0	- (HJ611-2001) C
			2000.0	DB13/1577-2012
			80.0	
			80.0	
			5000.0	CH245-71

/	/	
/		40.0 C
/		-10.0 C
	/	/
	/	
	/	

1	FQ1	121.150616	32.347673	2	15	0.4	11	25	7200		0.015	0.025	/	/	/
2	FQ3	121.150067	32.347446	2	24	0.4	11	25	7200		/	/	0.026	0.026	0.333

1		121.149772	32.347728	2	15	8	-	8	7200		0.00034	0.00001	/	/	/	/
2		121.149873	32.347386	2	12	68	-	15	7200		/	/	0.0013	0.0013	0.0098	/
3		121.149861	32.347182	3	5	4.	-	8	7200		/	/	/	/	/	0.0123

AERSCREEN

50.0	0.9595	4.8	1.5991	0.64
100.0	1.3994	7.0	2.3323	0.93
200.0	1.379	6.89	2.2983	0.92
300.0	1.1925	5.96	1.9875	0.79
400.0	0.9491	4.75	1.5818	0.63
500.0	0.7618	3.81	1.2697	0.51
600.0	0.7364	3.68	1.2273	0.49
700.0	0.7013	3.51	1.1689	0.47
800.0	0.6572	3.29	1.0954	0.44
900.0	0.6116	3.06	1.0193	0.41
1000.0	0.5677	2.84	0.9461	0.38
1200.0	0.5154	2.58	0.8589	0.34
1400.0	0.47	2.35	0.7833	0.31
1600.0	0.4273	2.14	0.7121	0.28
1800.0	0.3888	1.94	0.648	0.26
2000.0	0.3548	1.77	0.5913	0.24
2500.0	0.3054	1.53	0.509	0.2
	1.4679 82	7.34	2.4465 82	0.98
	/		/	

50.0	0.7657		0.7657	
100.0	1.9615		1.9615	
200.0	1.3565		1.3565	
300.0	0.9882		0.9882	
400.0	0.7919		0.7919	
500.0	0.668		0.668	
600.0	0.6143		0.6143	
700.0	0.5787		0.5787	
800.0	0.537		0.537	
900.0	0.4953		0.4953	
1000.0	0.4563		0.4563	
1200.0	0.3888		0.3888	
1400.0	0.3345		0.3345	
1600.0	0.3033		0.3033	
1800.0	0.286		0.286	
2000.0	0.2811		0.2811	
2500.0	0.2596		0.2596	
	1.9628 98	2.45	1.9628 98	2.45
	/		/	

50.0	9.8059	0.49
100.0	25.122	1.26
200.0	17.372	0.87
300.0	12.657	0.63
400.0	10.142	0.51
500.0	8.5549	0.43
600.0	7.8675	0.39
700.0	7.4113	0.37
800.0	6.8771	0.34
900.0	6.344	0.32
1000.0	5.8444	0.29
1200.0	4.9791	0.25
1400.0	4.2842	0.21
1600.0	3.8849	0.19
1800.0	3.6631	0.18
2000.0	3.6003	0.18
2500.0	3.3244	0.17
	25.138 98	1.26
	/	

50.0	0.4876	2.44	0.1434	0.06
100.0	0.3145	1.57	0.0925	0.04
200.0	0.2066	1.03	0.0608	0.02
300.0	0.1635	0.82	0.0481	0.02
400.0	0.1384	0.69	0.0407	0.02
500.0	0.1215	0.61	0.0357	0.01
600.0	0.1091	0.55	0.0321	0.01
700.0	0.0915	0.46	0.0269	0.01
800.0	0.0849	0.42	0.025	0.01
900.0	0.0793	0.4	0.0233	0.01
1000.0	0.0701	0.35	0.0206	0.01
1200.0	0.0629	0.31	0.0185	0.01
1400.0	0.057	0.29	0.0168	0.01
1600.0	0.0522	0.26	0.0153	0.01
1800.0	0.0481	0.24	0.0142	0.01
2500.0	0.0407	0.2	0.012	0.0
	1.2708 9	6.35	0.3738 9	0.15
	/		/	
50.0	0.6222	0.78	0.6222	0.78
100.0	0.6395	0.80	0.6395	0.80
200.0	0.3991	0.50	0.3991	0.50
300.0	0.2979	0.37	0.2979	0.37
400.0	0.2425	0.30	0.2425	0.30
500.0	0.2069	0.26	0.2069	0.26
600.0	0.1818	0.23	0.1818	0.23
700.0	0.163	0.20	0.163	0.20
800.0	0.1483	0.19	0.1483	0.19
900.0	0.1364	0.17	0.1364	0.17
1000.0	0.1267	0.16	0.1267	0.16
1200.0	0.1114	0.14	0.1114	0.14
1400.0	0.0999	0.12	0.0999	0.12
1600.0	0.091	0.11	0.091	0.11
1800.0	0.0837	0.10	0.0837	0.10
2000.0	0.0778	0.10	0.0778	0.10
2500.0	0.0665	0.08	0.0665	0.08
	0.6533 88	0.82	0.6533 88	0.82
	/		/	

50.0	5.888	0.29	3.0627	0.06
100.0	6.0513	0.3	1.9549	0.04
200.0	3.7765	0.19	1.2818	0.03
300.0	2.8188	0.14	1.0101	0.02
400.0	2.2946	0.11	0.8549	0.02
500.0	1.9576	0.1	0.7506	0.02
600.0	1.7201	0.09	0.6738	0.01
700.0	1.5421	0.08	0.5652	0.01
800.0	1.4032	0.07	0.5245	0.01
900.0	1.2912	0.06	0.4897	0.01
1000.0	1.1987	0.06	0.4331	0.01
1200.0	1.0541	0.05	0.3886	0.01
1400.0	0.9457	0.05	0.3524	0.01
1600.0	0.8609	0.04	0.3223	0.01
1800.0	0.7924	0.04	0.2974	0.01
2500.0	0.7359	0.04	0.2513	0.01
	6.1827 88	0.31	15.082 4	0.3
	/		/	

FQ1

HF 1.4679 g/ 3 7.34%

2.4465 g/ 3 0.98% FQ2

25.138 g/ 3 1.26% 1.9628 g/ 3

2.45% 1.9628 g/ 3 2.45%

HF 1.2708 g/ 3 6.35%

0.3738 g/ 3 0.15%

0.6533 g/ 3 0.82%

0.6533 g/ 3 0.82%

6.1827 g/ 3 0.31%

15.082 g/ 3 0.3% HJ/2.2-2018

	P a 10%
	1% P a 10%
	P a 1%

GB/T3840 91

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

Q_c g/h C

g/ ^{3} L

A B C D

7-10

		L 1000			1000 L 2000			L 2000		
A	<2	400	400	400	400	400	400	80	80	80
	2-4	700	470*	350	700	470	350	380	250	190
	>4	530	350	260	530	350	260	290	190	140
B	<2	0.01			0.015			0.015		
	>2	0.021*			0.036			0.036		
C	<2	1.85			1.79			1.79		
	>2	1.85*			1.77			1.77		
D	<2	0.78			0.78			0.57		
	>2	0.84*			0.84			0.76		

*

	HF	3.067	50	100
		0.036	50	
		0.938	50	
		0.938	50	
	VOC	0.295	50	
		0.110	50	

Qc/C

100 50 100 1000 100

Qc/C

100

100

100 100

8

		=50	5 50			=5
	SO_2 +NO	2000 /a	500 2000 /a			500 /a
		/ HF		$PM_{2.5}$ $PM_{2.5}$		
				D		
		2017				
		AERMOD	ADMS	AUSTAL2000	EDMS/AEDT	CALPUFF
		50	5 50			=5

					$PM_{2.5}$ $PM_{2.5}$	
		100%			100%	
			10%		10%	
			30%		30%	
	1 h	h	100%		100%	
		20%			20%	
		HF VOC				
		HF VOC			1	
		SO_2 /a	NO 0.031 /a		/a	VOC 0.4367 /a

3792.5

		Q 20000 W 600000
A		Q 200 W 6000
B		-

3792.5 ^{3}/a COD SS

5.98 ^{3}/d

B B

H SS

18 CaF_2 15.6 g/L F^- 7.6 g/L

F^- 7.6 g/L Ca^+

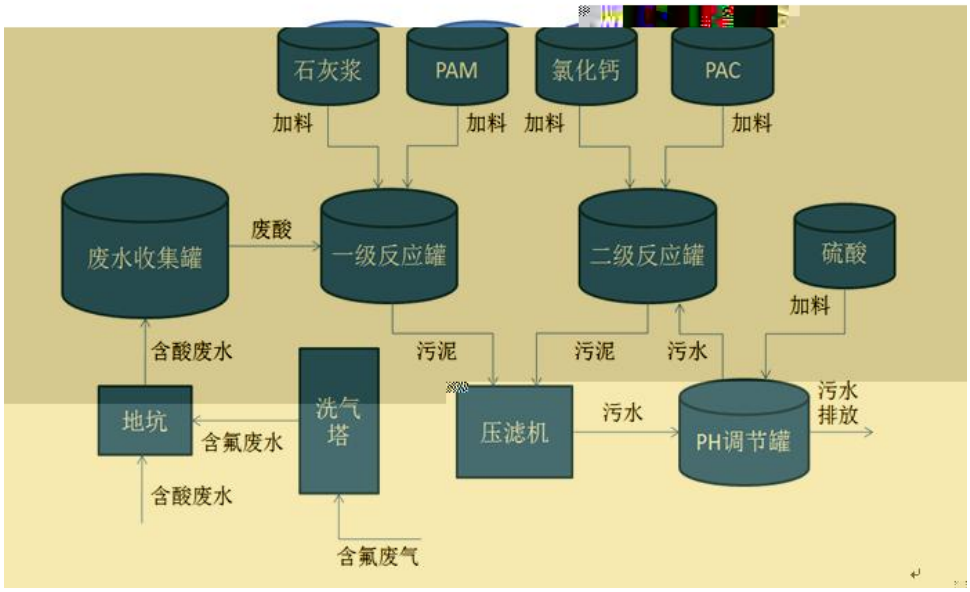
CaF_2 < > $Ca^{2+} + 2F$ CaF_2

F^- PAC

PAM CaF_2 100 g/L

48 /d 17 /d

31 /d


石灰浆
PAM
氯化钙
PAC
加料
加料
加料
加料
废水收集罐
废酸
一级反应罐
二级反应罐
硫酸
加料
含酸废水
污泥
污泥
污水
地坑
洗气塔
压滤机
污水
PH调节罐
污水排放
含氟废水
含酸废水
含氟废气

1 PH

2

.

PH : PH □

6 2 3 /

0.5 1.5 / 1 /

UPVC

7 HF

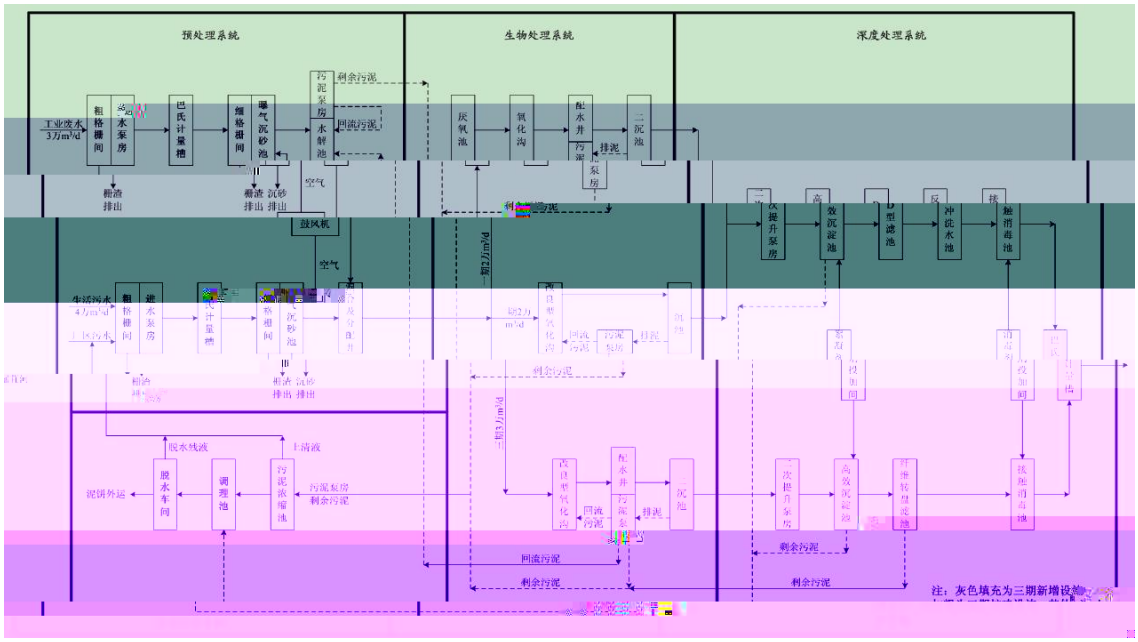
4.345 g/L

GB8978-1996

7 ^{3}/d 3 ^{3}/d

4 ^{3}/d 3 ^{3}/d 1 ^{3}/d

2 ^{3}/d 2017 38



GB18918-2002 A

3792.5 ^{3}/a 12.64 ^{3}/d

		H	

		A B	
	40%	40%	
		PH COD SS	1
			2
		H COD SS	
			2

		/ /a	/ g/L
	COD SS	0.14336 0.1729 0.0003 0.6850	80 96 0.2 381

				/ /a	/ g/L

	3/ 3/ 3/

			H COD SS

10-20

10-2 A

\ N© r` 睅PÐP 0;

1

1		
2		Mb 1.5 K 10^{-7}c /
3		
4		
5		Mb 6.0 K 10^{-7}c /
6		

7-17

1			HW12	264-013-12		6 [2]	
2			HW08	900-218-08			
3			HW49	900-041-49			
4			HW49	900-041-49			
5		RO	HW49	900-041-49			
6			/	/			

HJ 2025-2012

a GB18599-2001

b

RO

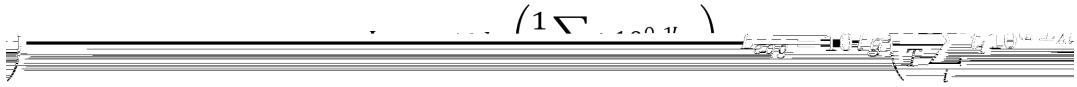
8

c

75 85dB A

25dB(A)

a



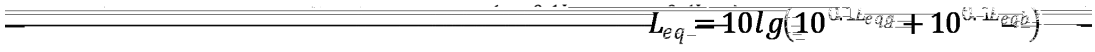
L_{eg} dB(A)

L_{Ai} i A dB(A)

T

i i T

b



L_{eg} dB(A)

L_{eb} dB(A)

7-18

1			11.21	17.59	19.49	24.43
2			12.88	17.52	16.54	25.68
3			3.42	8.56	9.02	15.58
4			7.51	11.71	12.39	21.02
			16.1	21.3	22.0	29.1
			54.3	53.6	54.4	53.2
			48.6	48.4	49.6	48.5
			53.8	53.6	54.3	53.8
			48.9	48.3	47.8	47.6
			57.1	56.6	57.4	56.5
			51.76	51.4	51.8	51.1
			65	65	65	65
			55	55	55	55

GB3096-2008 3

[C3832]

HJ 964-2018 A

IV (HJ964-2018)

4.2.2 IV

GB18597-2001

1	HF	120	/	/	LC_{50} 1044	/	/	
2	HNO_3	86	/	/	/	/	/	
3		/	/	/	LD_{50} 500-5000	/	/	/
4		78.3	12	3.3/19.0	83776/5628		/	/
5		-195.6	/	/	/	/	/	/
6		-185.7	/	/	/	/	/	/
7		-268.9	/	/	/	/	/	/
8		-249.5	/	5/75	/		/	/
9		-78.5	/	/	/	/	/	/

HF

(HJ/T169-2018) A.1

A.

HF /HNO_3

B.

1 ,

2

3

	+			
				a
a				

P

HJ169-2018 B

HF HNO_3

Q 7-21

1	HF	7664-39-3	0.8	1	0.8
2	HNO_3	7697-37-2	0.4	7.5	0.0533
3		141-32-2	0.0144	10	0.00144
Q					0.85474

Q Q 1

Q

E.

7-23

/HF

/HF

/HF

320623-2017-049-L

	FQ1	HF	
	FQ3	VOC	
		HF VOC	

	H COD SS	
	COD SS	

1	A	

a.

H COD SS

3 500 500 1500

b.

HF VOC

1

15000	0.13%

	FQ1	HF	+15	(GB16297-1996) 2
	FQ3		+42	GB/T3840-91
		VOC		DB12/524-2014
		HF VOC		
		COD SS	+	
		COD SS		
		COD SS		
		RO		

		FQ1	HF	+15	(GB16297-1996) 2	
		FQ3		+42	GB/T3840-91	
			VOC		DB12/524-2014	
			COD SS		+ (GB18918 2002) A	
					25dB	
			RO			

		/	
	HF 97% RO		

2015 10

1000 2016 12

[2016]112 2017 8 27

([2017]5 2017

11 16 [2017]15

15000

62961 ^{2} 21424.21 ^{2}

32 3

187.5 / 400 /

R5 280 /

(ULB125)70 / ULB80 50 /

2018 11 14

6 [2018]82

(2011)

2013 2 16 < (2011)>

28

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2012 > (

[2013]183) 28

(2012)

2012 2012

2012 2012

2012 5 23

3

RO

RO

4

0.0159 /a 0.0301 /a 0.0301 /a VOC 0.2307 /a

HF

+

1908.65 /a COD 0.1523 /a SS 0.2308 /a 0.0321 /a 0.7780 /a

1908.65 /a COD 0.1523 /a SS 0.2308 /a 0.0321 /a 0.7780 /a

RO

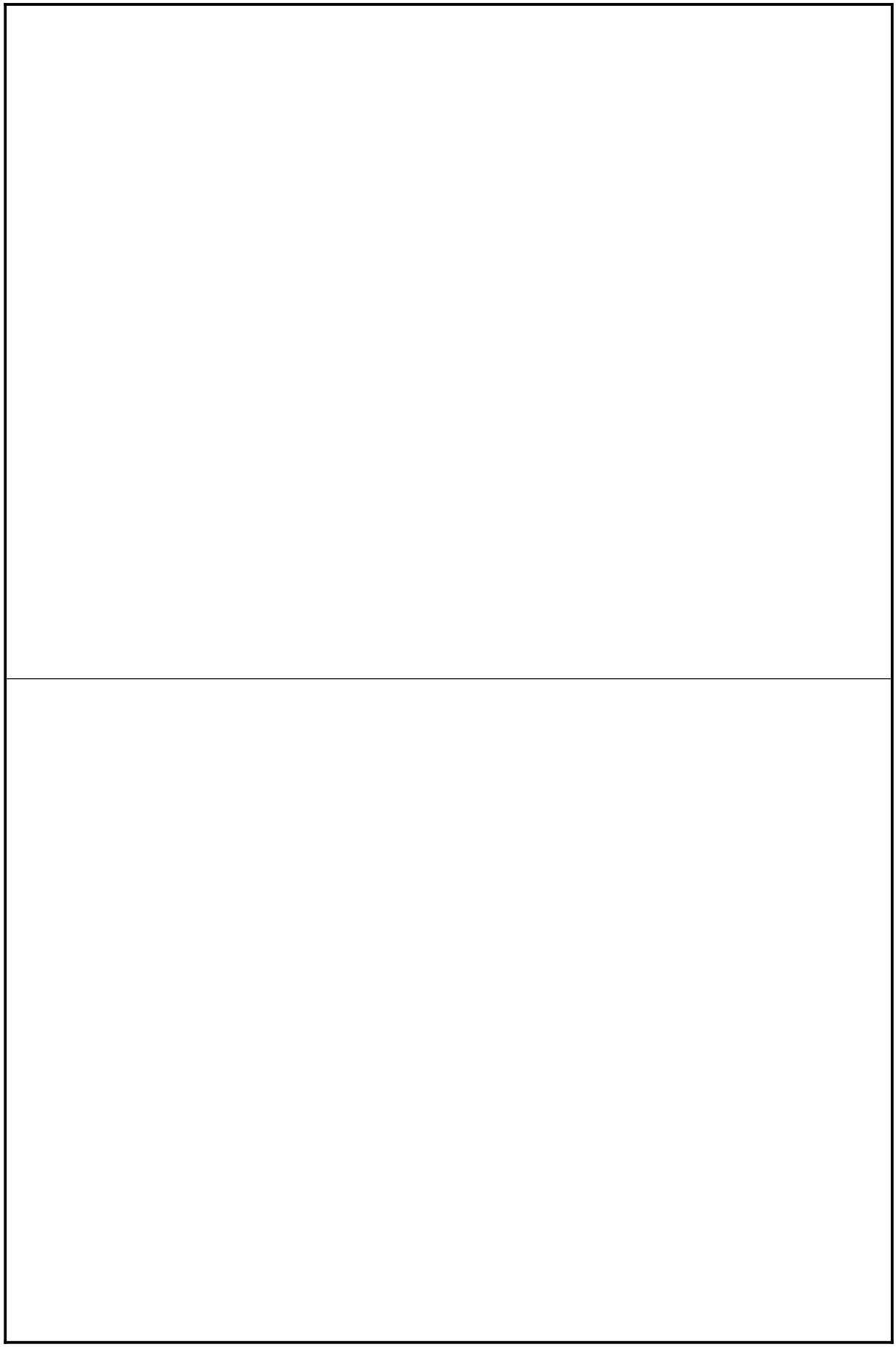
1

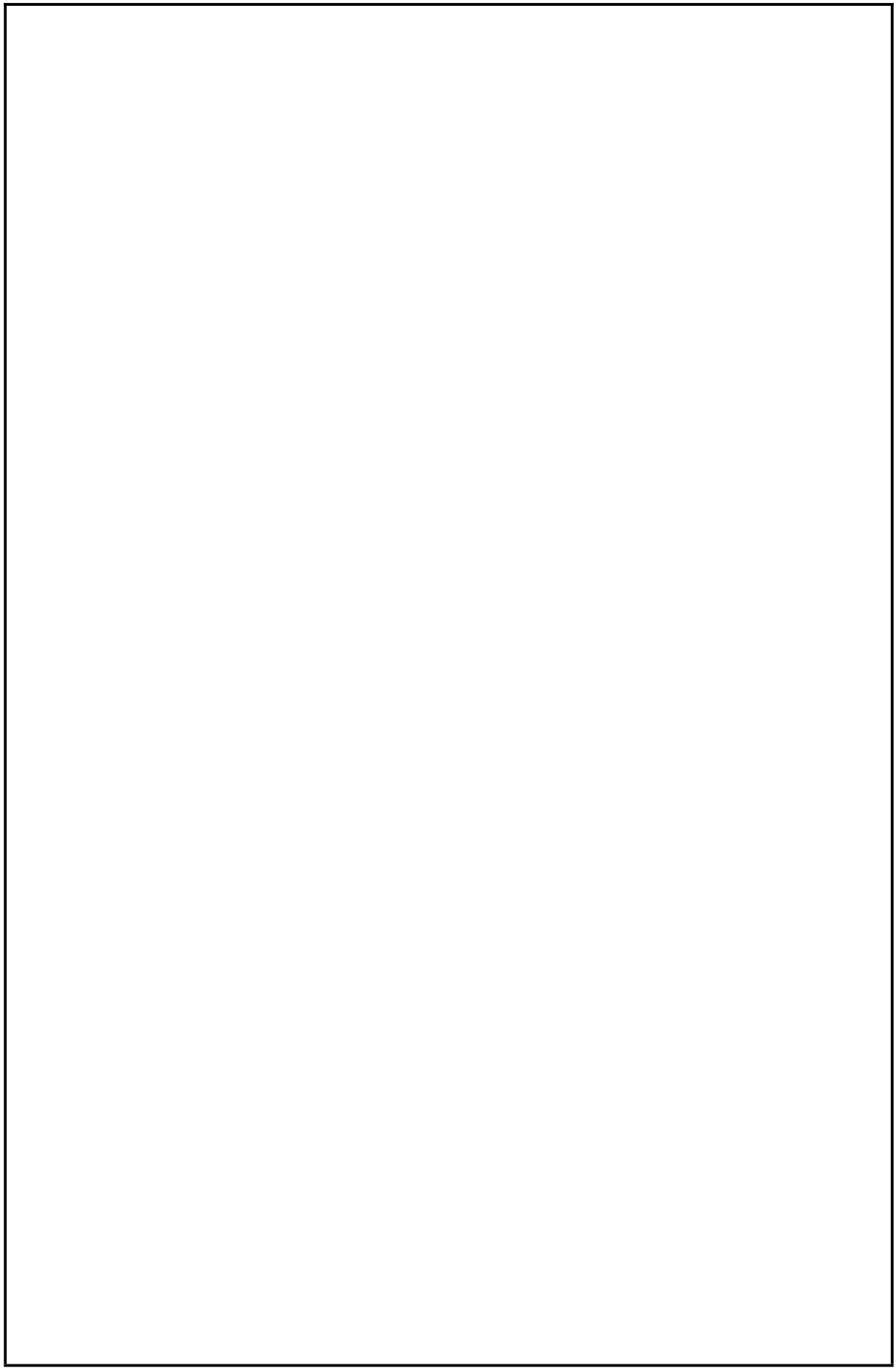
2

3

4

(GB/T18883-2002)





1
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