

十四五 国家重点研发计划 高端功能与智能材料 重点专项2022年度项目申报指南

()

1. 先

	85%		10%	100c ²
AM1.5G				
20%	100c ²			
20W/g	AM1.5G	3000h		90%
	/	10000		0.5c

90%

W

/

-50 80
0.2C
95%

-50 80
1C
500

80%
-120

50% 90% 100%
80%

1 10^{-3} S/c
2000
60% 80 1C
300Wh/ g

-50 70%
80% -50
-50 300
12

100	0-4.8		1
/	20	0.8	
		1 /10	300
3%			75MPa
400	2.5	/	
		1	
		7	150MPa
	6	120MPa	5
10%			
200	300	/	
			6

			80%
1000h		1	
	15%	99%	20 /
			6.0 %
	>75 g H ₂ / m ³	250	
2.0MPa	2000	4.5 %	
	2.5 %	50	2000
	1.8 %		

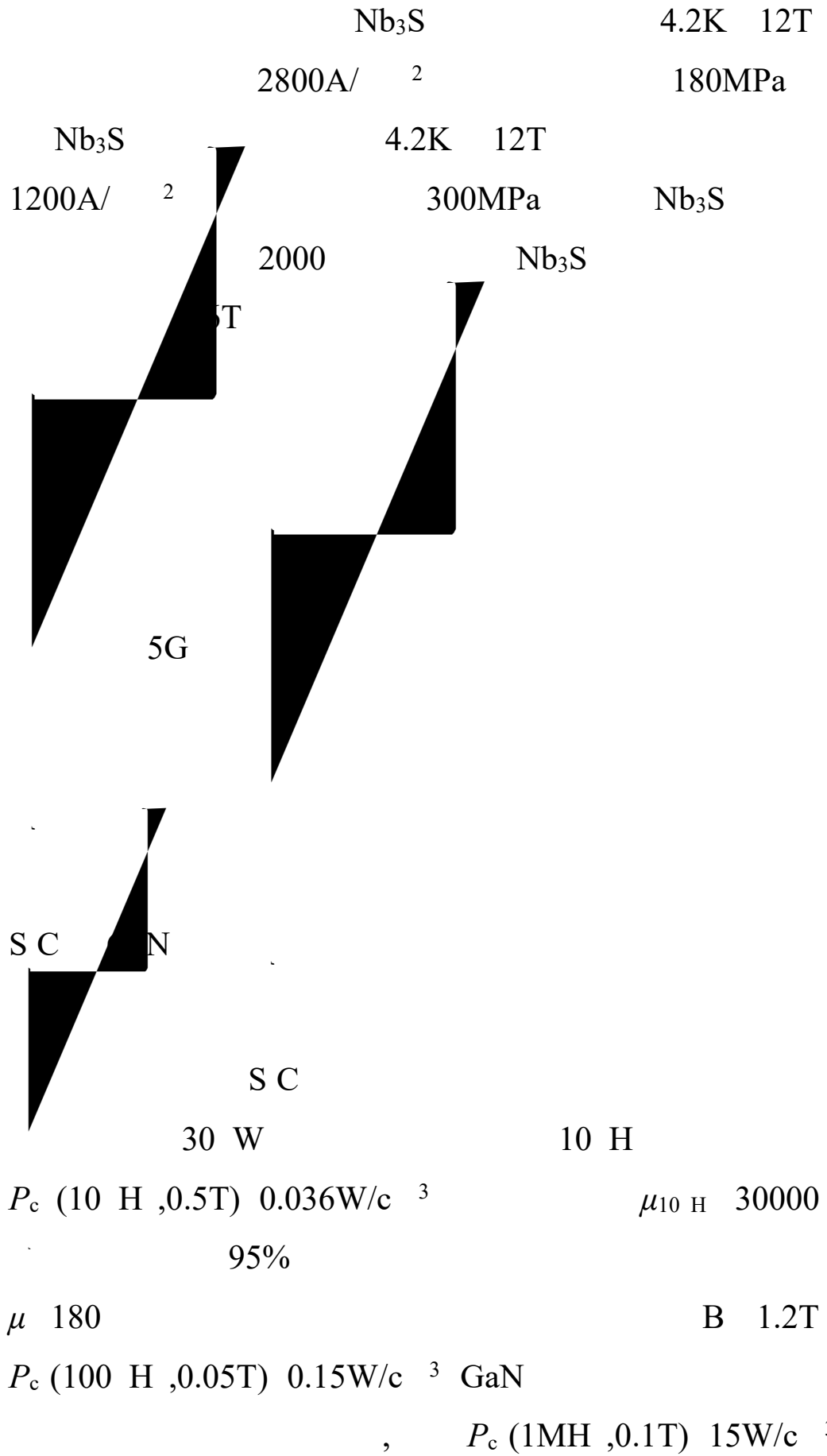
95%

/

			3.5 %
50	5.0MPa		1.0MPa
	95%	/	20MPa
	70	H ₂ /	
2 %	10	/	10
	300	/	

5G

	250-400K	ZT 1.4
	100	1-2
	250-400K	ZT 0.8
		3 W/ K ²
1000	5%	3K
		0.2 c ²
20MPa		
73		100W/c ²
		Nb ₃ S
		Nb ₃ S
Nb/S /C		
	Nb ₃ S	
		Nb ₃ S
	- - -	
Nb ₃ S		



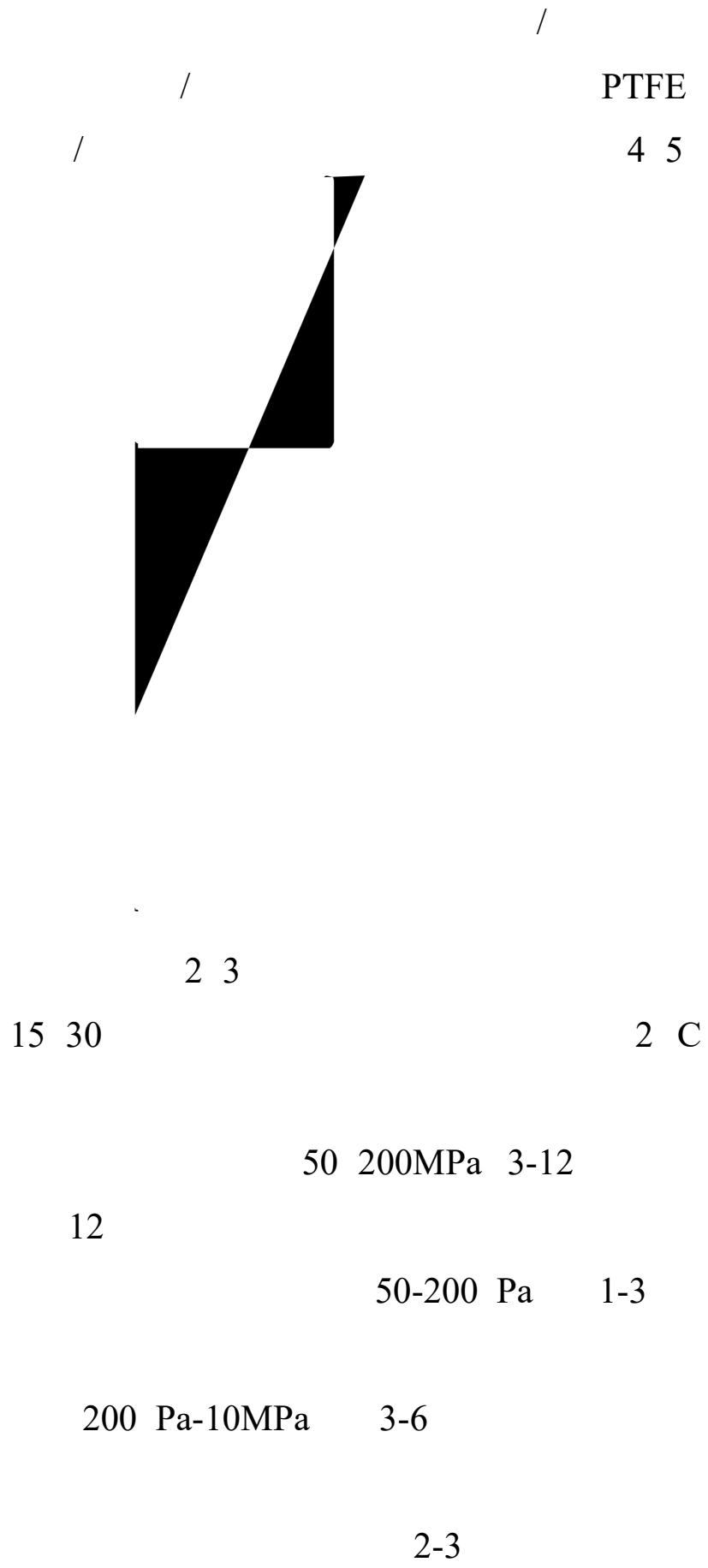
$\mu_{1\text{MH}} 30$ DC-b a 100 Oe 60% B 1.0T
 , 65W 5MH
 $P_c (5\text{MH}, 0.05\text{T}) 4.5\text{W}/\text{c}^3 \mu 800$
 50%
 5G

2. 关 与

PTFE

PTFE

			0.1 5
		>25000	/9 Pa
6000 g/(² d)		4	
KN95	100Pa	KN99	150Pa
180d	PTFE		0.2 0.5
0.3			90%
25Pa			
99%	99%		/



4

2

/

/

3 5

80 Pa

50 Pa

90%

20%

1 3 Pa

0.04 0.6 Pa

10

50%

90%

2 3

>1c

>1c

3D

3D

55%

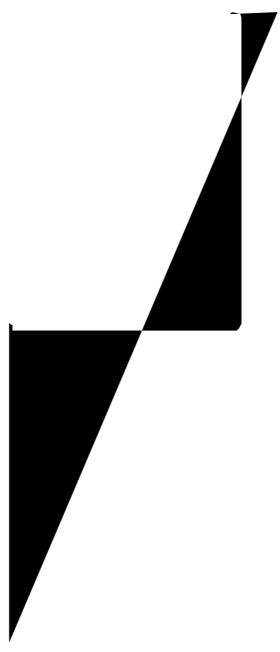
300%

5 Pa

10 J⁻²

1 2

/



6 8

/

<0.1

10%

20%

90%

5

20

14

1h

70%

50

2 3

10

-



5 8
2
1
2 20 Da <1.5
<10 -
20 40 Da <1.2
50 200 <0.2
>95% <12h
30
3 5
T/C(%)<5%

CDT

100 80%
20% 10% 3 5
/
0.001 5

-

0.1 10

50% 30 150

2000J/g

1 W/ ² 2.2 g/(² h)

1000 h

1 g/L

30 150 1000L/(² h ba)

99.5% 1000h 20%

300N ³/(² h Pa)

99.5% 1000h 10%

U

2 3

135

30

150

1000h

60

1.5

99.5%U "i g

•

U .: i8Q46 LV"SP

7

20e 0j47@U. Jf Q-c@U"gl 2 @N-t OLT O c@N.20J. H J

4

=•=}

J

$10 \text{ H}^+/\text{M}^{2+}$ $50(\text{M}^{2+} = \text{L}^+/\text{Mg}^{2+} + \text{C}^-/\text{SO}_4^{2-})$ $8 \text{ Na}^+/\text{Ca}^{2+}$
 1000 15 10%

4 2
 6 2
 10%

0.1S/c (25 100%)
 30 45MPa 10%
 80 3h 2
^{2/} 1.0W/c ²
 3000h 60 A/c ²
 90% 80% 1

PET

2-3 3-10
 3 20% 5000 g
 2500 2

PET

1/3

1/2

PET

2000h

- -

3-5

1

<400

99.9%

50%

2-3

1000h

10%

120 g/ ³

NO 30 g/ ³

50 g/L

90%

4 CO₂
 2
 10 L/h 0.1² CO₂ >40%
 >85% >80% >98%
 500h

2 3 2 3
 500 / 1000 /
 30 99%
 90% 2 3
 200 /

4. 仿

H 4D - - / /

10% 100%

0.01% 0.998 100

100

/

4

10

20 g/g 10

20 g/g 20

3

0.9 40%

10W/ ²

0.3 5.0TH
 5 /V
 1
 290K
 488 780
 3dB/10
 3D
 3-4 /
 0.1H
 0.1H -5000H -20dB
 1-80 J/ 2 0.2-0.6

9 11GH

/

0.5%

1/20

/

1/1000

2 18GH

500MH

0.90

0.80

/

1

5. 前 功

-

-

-

-

15

6 /

g/c²

250 2500

0.99

-20 +20

0.20

0.30

-

0.20

4

2

-

-

-

-

1

VOC

15g/L

2500h

15

200h

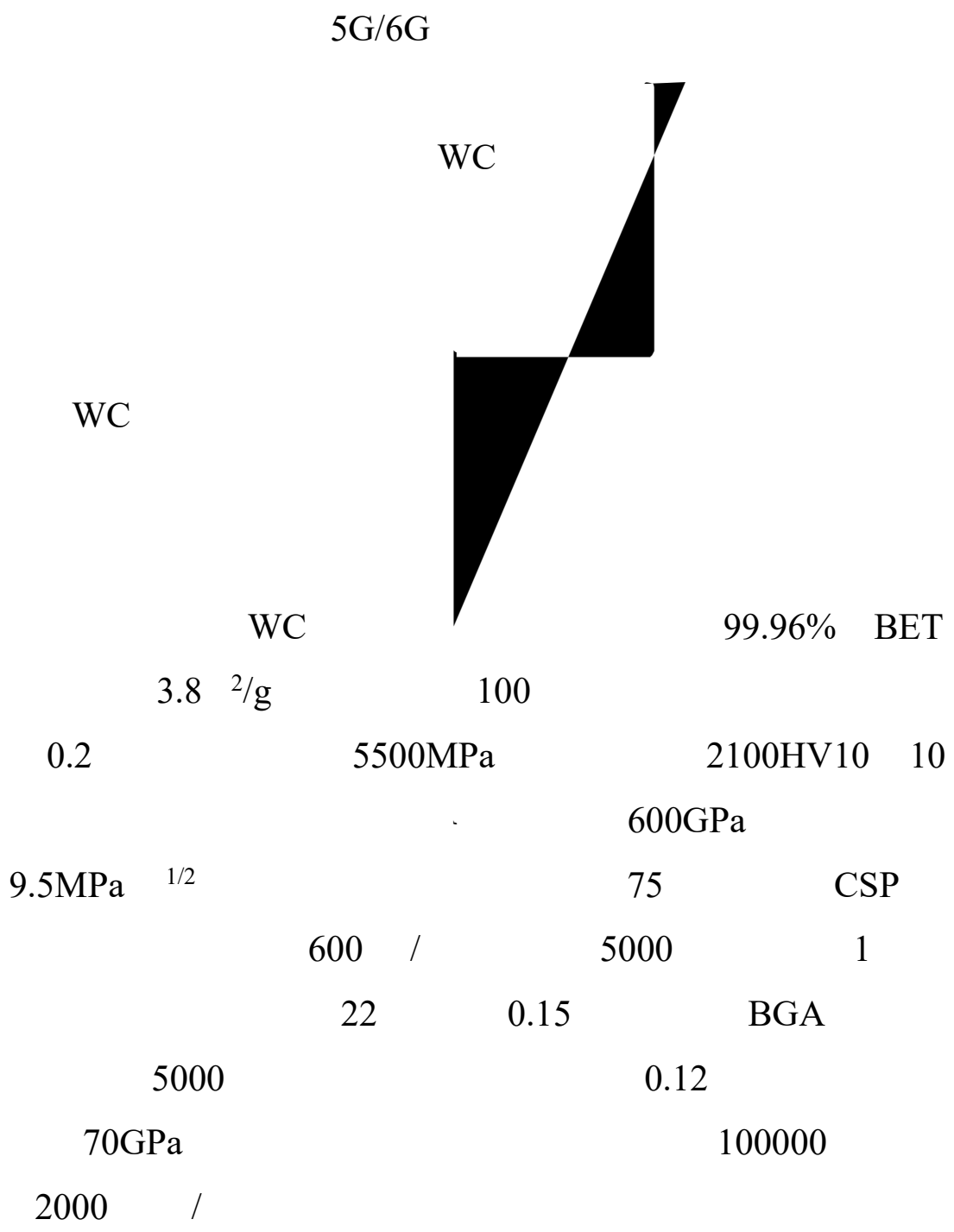
10MPa

2500h

120

1

>0.5W/ K
 18 32
 20%
 >50%
 50%
 6000 ²
 PSPI
 PSPI
 PSPI 20L
 350 C >140MPa >40% Tg>270 C
 20 70 5 /5 (/
 1 200 400 J/c ²)



/
 /
 4
 2
 2.5 /g / 10
 3 /g
 / 6
 200 C
 99.5% 98.0%

10GH 0.0008 2.0N/ 10 b
 Df 10GH 0.0012 (80) 1.50W/ K
 X/Y/Z CTE (-55 288) 20,20,40 /
 1.5N/

/

200 /g 20 g/g 25 10 g/g
 1% 80%

6.

1

90% 1 DFT

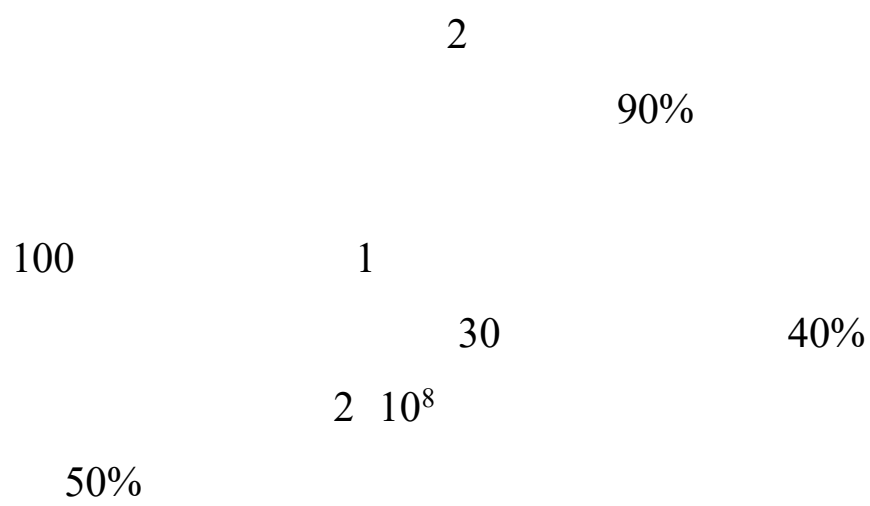
GW

10000 DFT 1000 GW 1

1

95%

15000 3 5



- -

/

10^3 3
 5 c⁻² 20
 4.5
 215 Ah/g 1000
 80%
 1400 Ah/g 600 Ah/g
 1000 80% 10Ah
 350Wh/ g 1C 1000
 -40 C 50%

7.

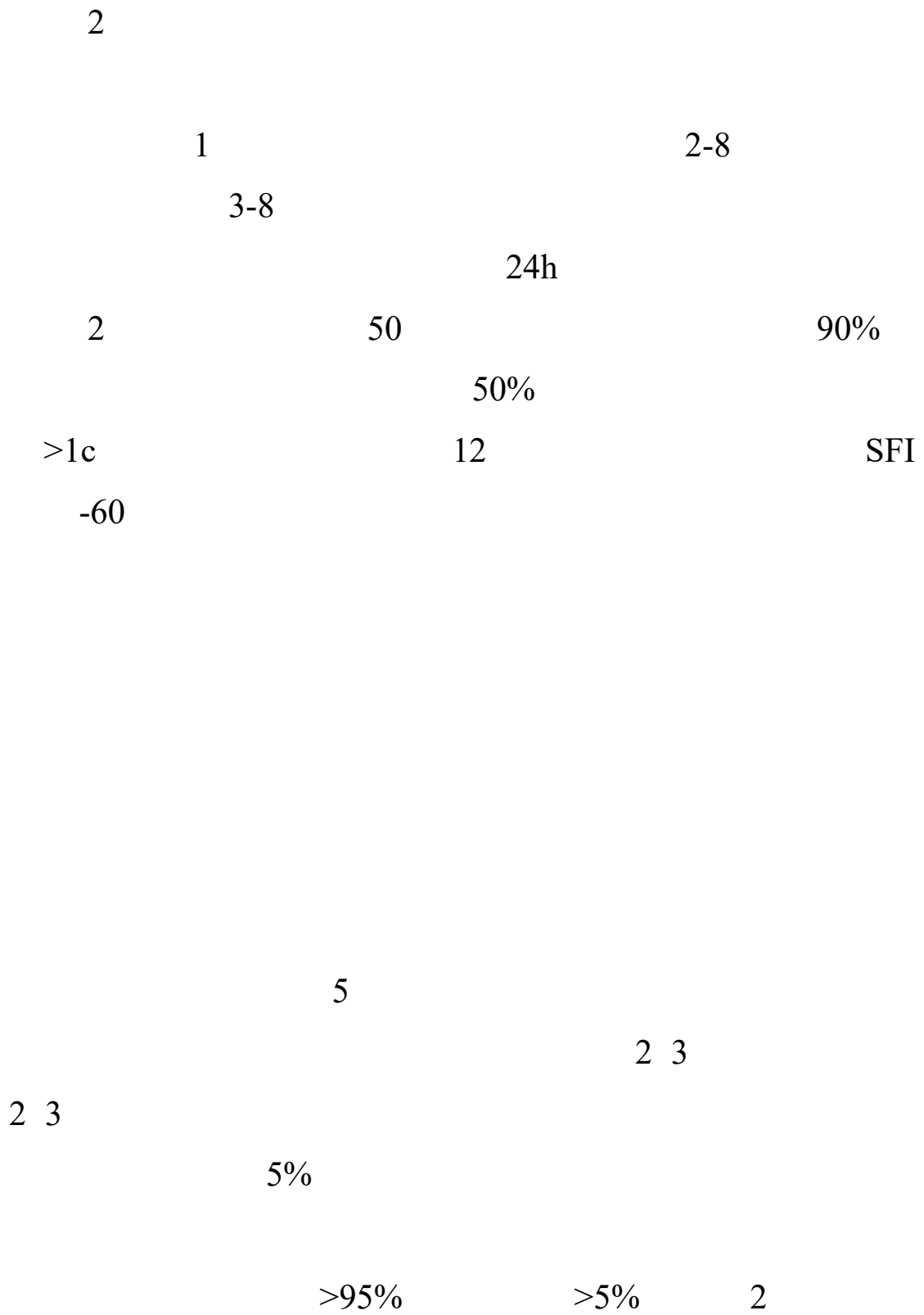
14 MGOe

-40 70

10 /
-0.005%/

3 4

0.1 10 Pa



100 g

100

10

100

5

4

>95%

1

<25

80

>90%

3 5

>95%

3 5

400 1

1 20 Pa

>90%

>90%

>70%

3

<10%

4

>60%

2

500 2/ 3

>4N

100GPU

2

2

40 c

/

0.2V/ Pa

0.5 Pa 50 Pa

50

5

98%

10

98%

10

2 3

2 3

-

-

2 3

-196

+100

5%

20000

1

95%

/ >5000 256
2 40GPa
2.5MPa ^{1/2} 1100 C

8.

1		10000	100MPa
	65MPa		300%
	20MPa	3	80%
2			
	90%		
3			
	3 5		
4			
			90



3 5

90

1 2