

Dry oxide process control T2 OXIDE

Tool name:	T2-Oxide 1250C	Recipe name:	T2-900S
Purpose:	950 °C Wet oxide recipe		
Restrictions:	Clean Si wafer for test		
Description:	Procedure for determining Wet oxidation thickness (1000 Å)		
Procedure:	See below		

1. Procedure

Process control shall be done regularly of the Thermco furnace. Standard recipes shall be run with full loaded (25 wafers) boat. The process control shall be done at least once each quarter.

2. Process

2.1 Prefurnace clean

The test wafers shall be cleaned from oxide in HF. The wafers shall then be cleaned before the process, using the standard pre-furnace clean.

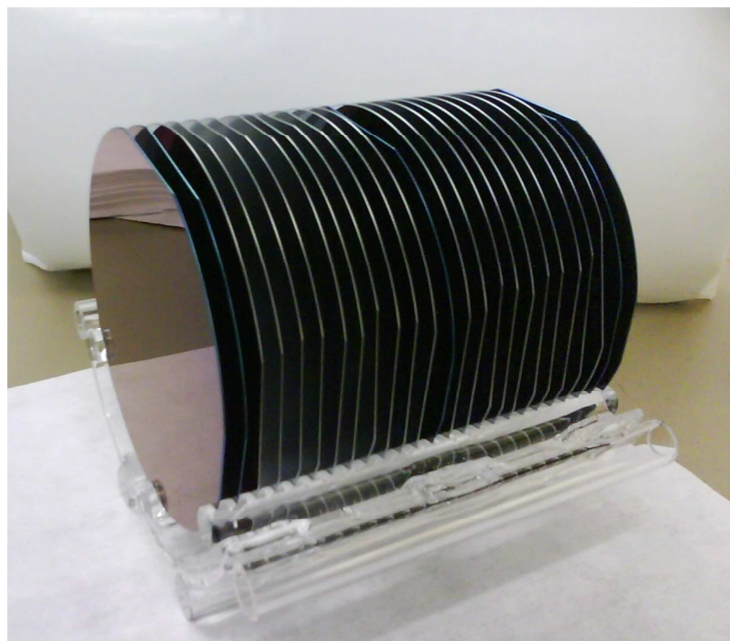
Step 1	H2SO4:H2O2 > 80 °C	5 min
Step 2	Rinse	5 min
Step 3	IMEC clean · 7 L H2O · 70 mL HF 50% · 70 mL Propanol	100 sec
Step 4	Rinse	5 min
Step 5	Dry	

Figure 1 Pre-furnace clean.

2.2 Loading

The boat shall be loaded with 25 wafers. Wafers in position 1, 2, 13, 24 and 25 shall be test wafers, i.e. clean wafers with no oxide. The rest of the wafers shall be clean dummy wafers.

The test wafers shall be loaded in the boat with the flat of the wafers up and the back side of the wafer pointing into the tube, see picture.



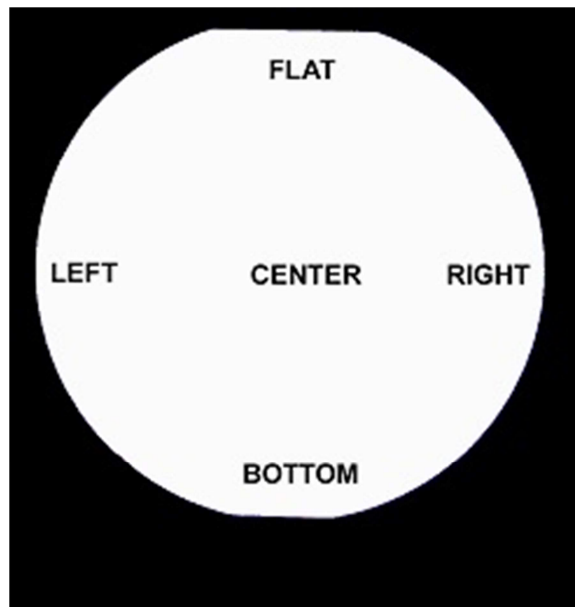
Picture 1. Boat loaded with test wafers with flat up and front side of wafers pointing into the tube.

2.1 Dry oxidation

A standard recipe, T2-900S shall be used. The recipe is described below.

T2-900S								
Step	Temp (°C)	Time hh:mm	N2 (L)	O2 (L)	H2 (L)	N2O (L)	DCE (L)	Comments
Standby	625	-						
Boat in	625	-	10	-	-	-	-	
Stabil	625	00:10	10	-				
Ramp up	950	00:38	10	-	-	-	-	Ramp rate 8 °C/min
Stabil	950	00:20	10	-	-	-	-	
O2 start	950	00:02	10	5				MFC O2 start
Wet ox start	950	00:02	10	5	8	-	-	MFC H2 start/MFC N2 stop
Wet oxidation	950	23:30	-	5	8	-	-	Oxidation
Wet ox stop	950	00:02	10	5	-	-	-	MFC H2 stop
O2 stop	950	00:10	10	-	-	-	-	MFC O2 stop/MFC N2 start
Ramp down	625	01:30	10	-	-	-	-	Ramp rate 4 °C/min
Hold	625	-	10	-	-	-	-	Waiting for Boat out
Boat out	625	-	10	-	-	-	-	

2.2 "T2-900S" results protocol



Picture 2. Measurement positions.

Date:			Oxide thickness (Å)			
Wafer	Pos 1 CENTER	Pos 2 RIGHT	Pos 3 FLAT	Pos 4 LEFT	Pos 5 BOTTOM	Comments
1						
2						
13						
24						
25						

Appendix

T2-900S – 950 °C, Wet oxidation 1000 Å

T2-900S

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PHASE 950WET
GOSUB INITCON
GOSUB S-SAFE2
GOSUB BOAT IN
GOSUB R625T950
GOSUB SETGASW
DELAY 00:23:30
GOSUB GASOFFW
GOSUB R950T625
HOLD
GOSUB BOAT OUT
END
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