Drawing

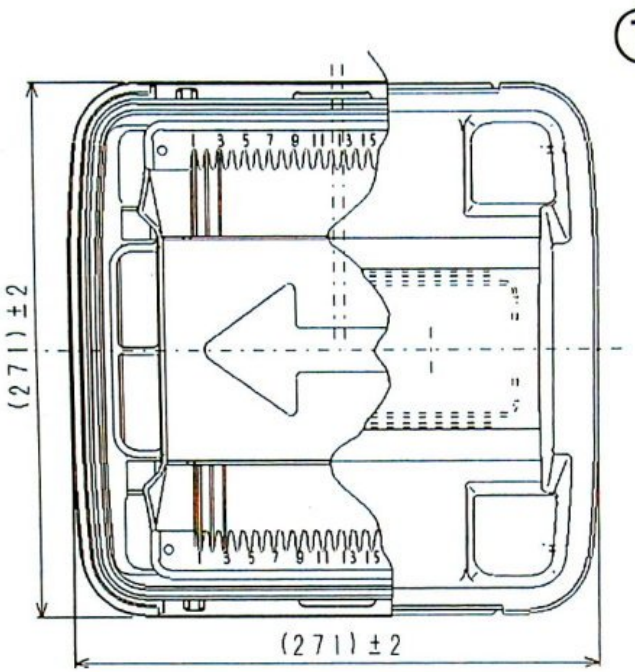
Σ200

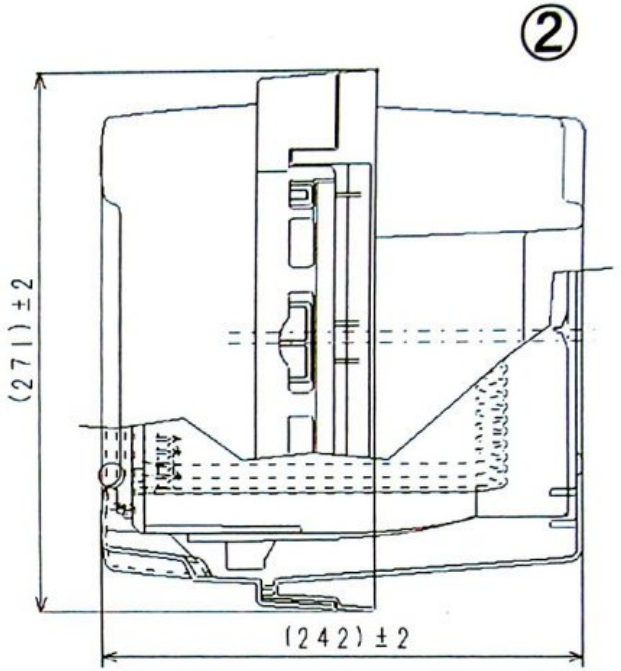
Shipping Box

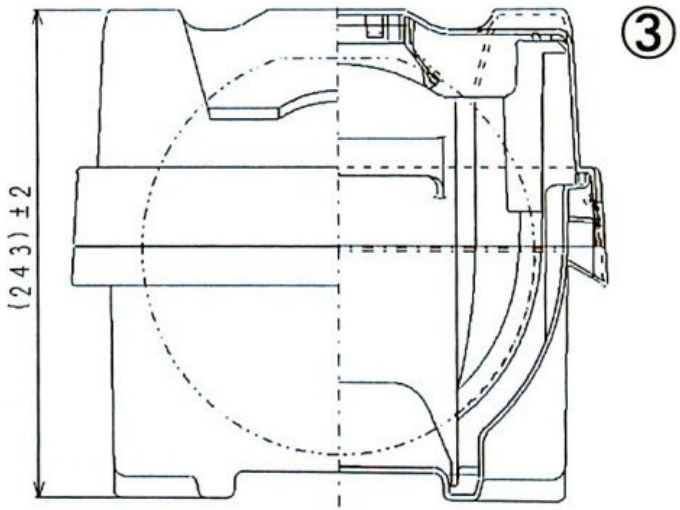
①Top View

②Front View

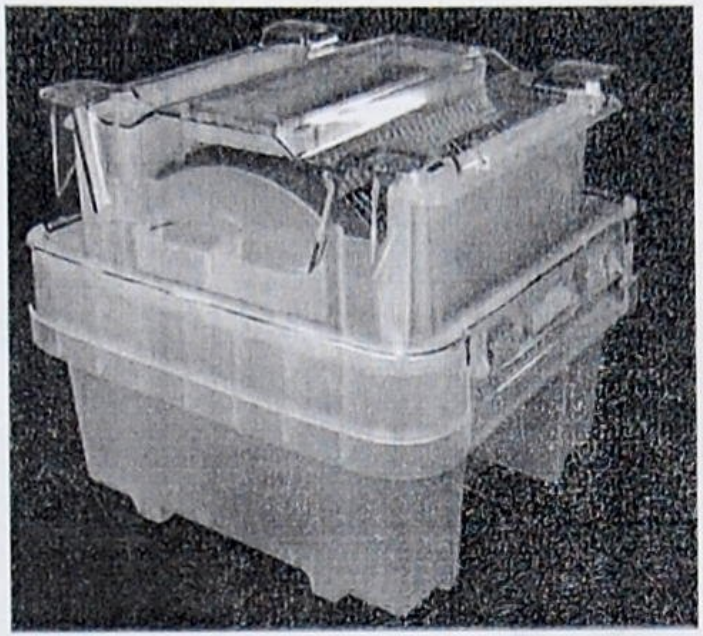
③Side View



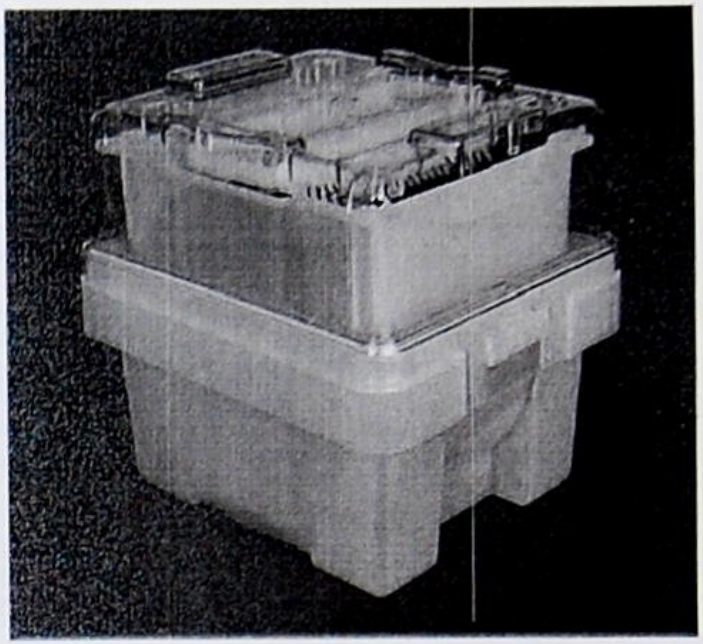




Vantec Shipping Box

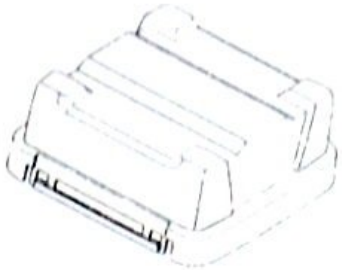


Σ−200



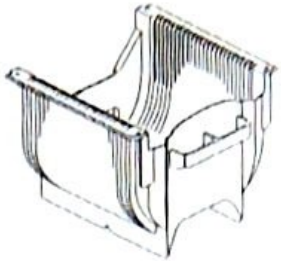
Σ−150

Component Materials
Σ 200mm



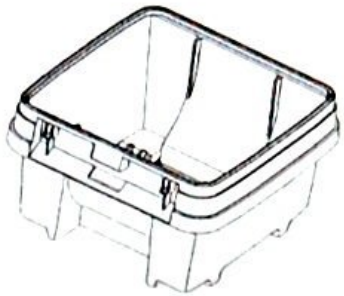
Cover (Polycarbonate)

Cushion (Polypropylene)



Cassette (Polypropylene)

Gasket (Elastomer)



Bottom (Polypropylene)

The All Kinds of Φ200mm Shipping Boxes Size & Weight

Type			Dimension	Σ200	α200
Ass'y	Weight		g	1976	1855
	Size	length	mm	271	271
		width	mm	271	271
		height	mm	243	249
Cassette	Weight		g	678	←
	Size	A3	mm	219.30	←
		B3	mm	152.04	←
		C5(No.1)	mm	203.64	←
		(No.25)	mm	203.37	←
		C6(Pin)	mm	183.67	←
		(Hole)	mm	183.79	←
		D1	mm	25.52	←
		D4a	mm	114.60	←
		D6(No.1)	mm	115.20	←
		(No.13)	mm	115.21	←
		(No.25)	mm	115.25	←
		thickness	mm	2.60	←

EVALUATION TEST OF WAFER ORGANIC CONTAMINATION

1. Purpose

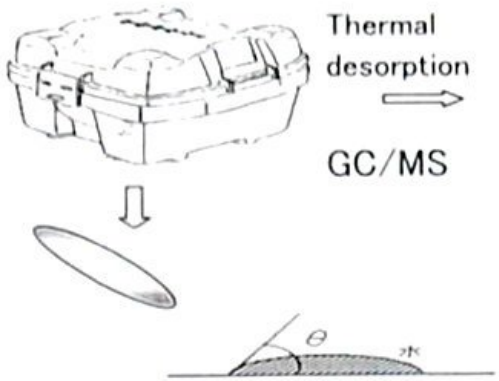
To investigate contact angle and organic contamination content on wafer surface during long term storage.

2. Testing method

(1) Contact angle : After clean wafer is stored in cassette for a given period of time, pure water is dropped, and the contact angle is to be measured by contact angle meter.

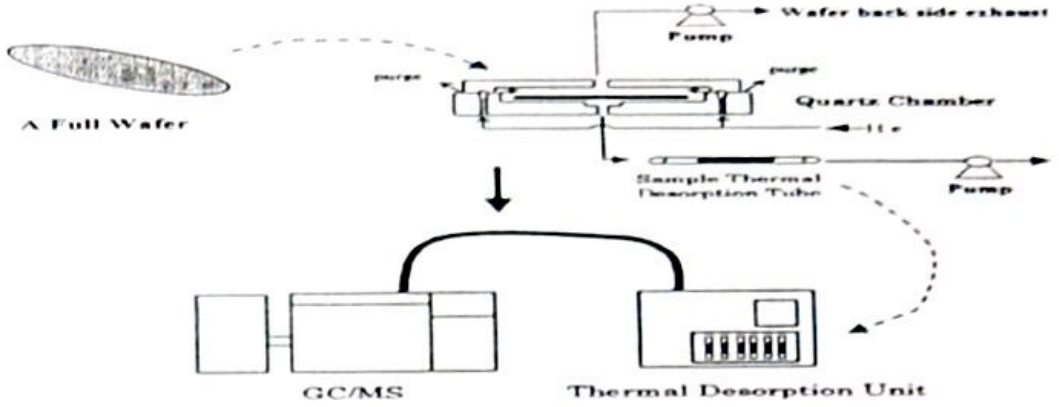
(2) Organic contact rate : After clean wafer is stored in cassette for a given period of time, out gas content deposited is to be measured by thermal desorption GC/MS method.

Wafer storage



Contact angle

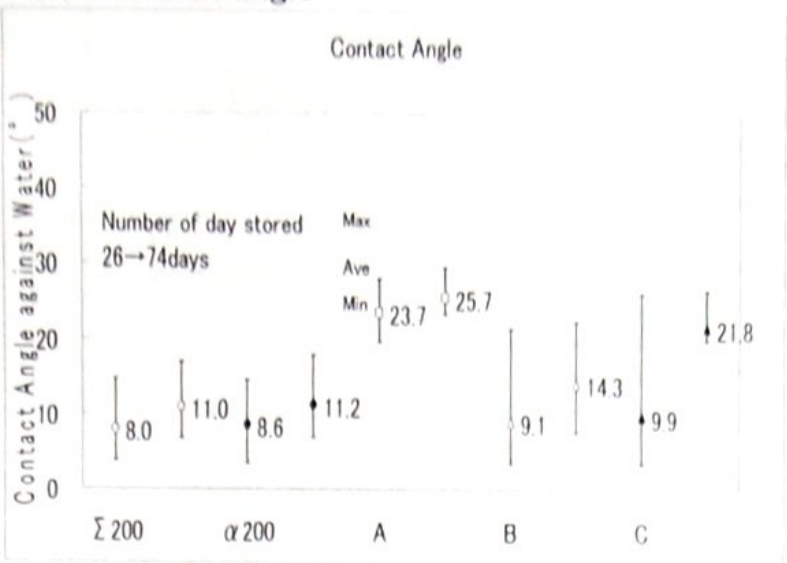
・Hydrophilic or hydrophobic

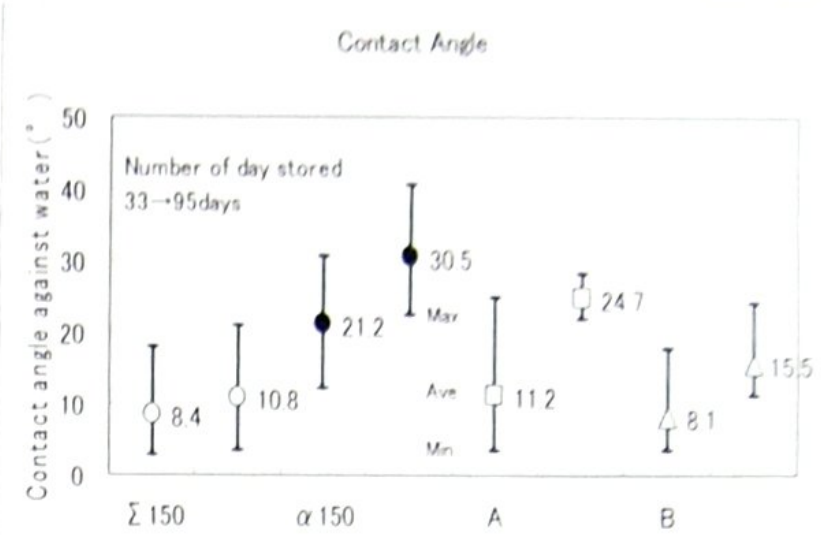


Thermal desorption GC/MS method

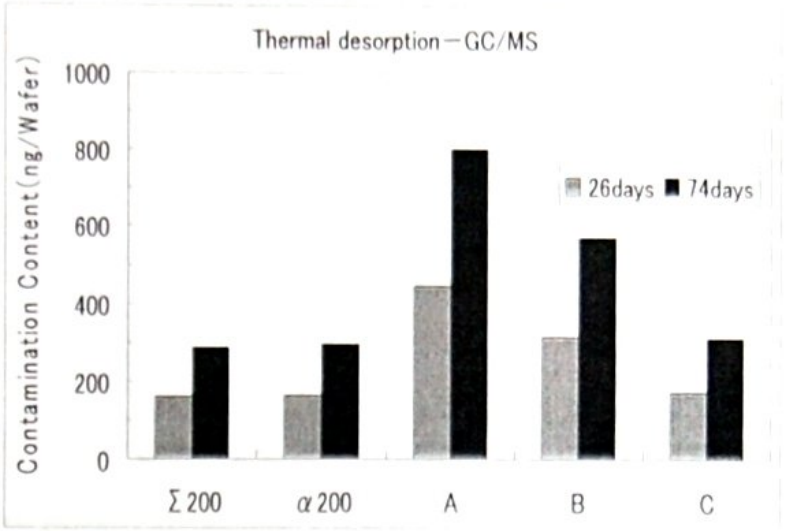
4. Test result

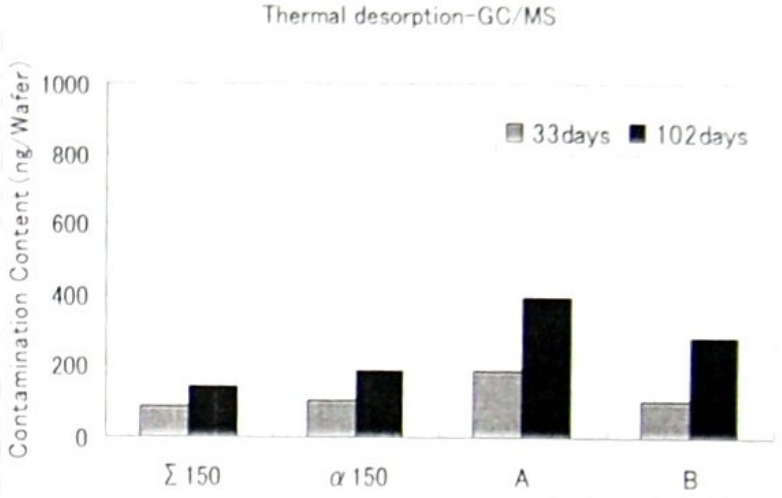
(1) Contact angle





(2) Organic contamination content





Metal and ion Analysis

1. Purpose
To measure metal and ion content from Σ200.

2. Analyzing method (ion)
(1) The cassette is filled with pure water of 100ml, and closed by the heat seal after it is put in a polyethylene bag.
(2)And then the cassette is soaked in hot water at 50°C for 3 hours and vibrated 100times in amount in the four directions.
(3)After the cassette is left at room temperature for 1 hour, it is analyzed quantitatively by Ion-exchange chromatography.

3. Analyzing method (Metal)
After specimen is wet decomposed by nitric acid and then measured, quantitative analysis is to be performed by ICP-MS.

4. Measurement result

(1) Metal

	Σ200	A
Na	3.2	10
Ca	4.7	86
Fe	<0.1	0.1
Al	0.2	2.2
Mg	0.3	2.5
K	1.8	—
Cu	<0.1	—
Ni	<0.1	—
Cr	<0.1	—
Zn	0.7	—
Ti	<0.1	—

(Unit; ppb)

(2) Cation & Anion

	Σ200
Li^+	<0.1
Na^+	<0.4
NH_4^+	<10
K^+	<0.4
Mg^{2+}	1
Ca^{2+}	6
Cl^-	<10
NO_2^-	<20
Br^-	<50
NO_3^-	<40
PO_4^{3-}	<80
SO_4^{2-}	<50

(Unit; ppb)

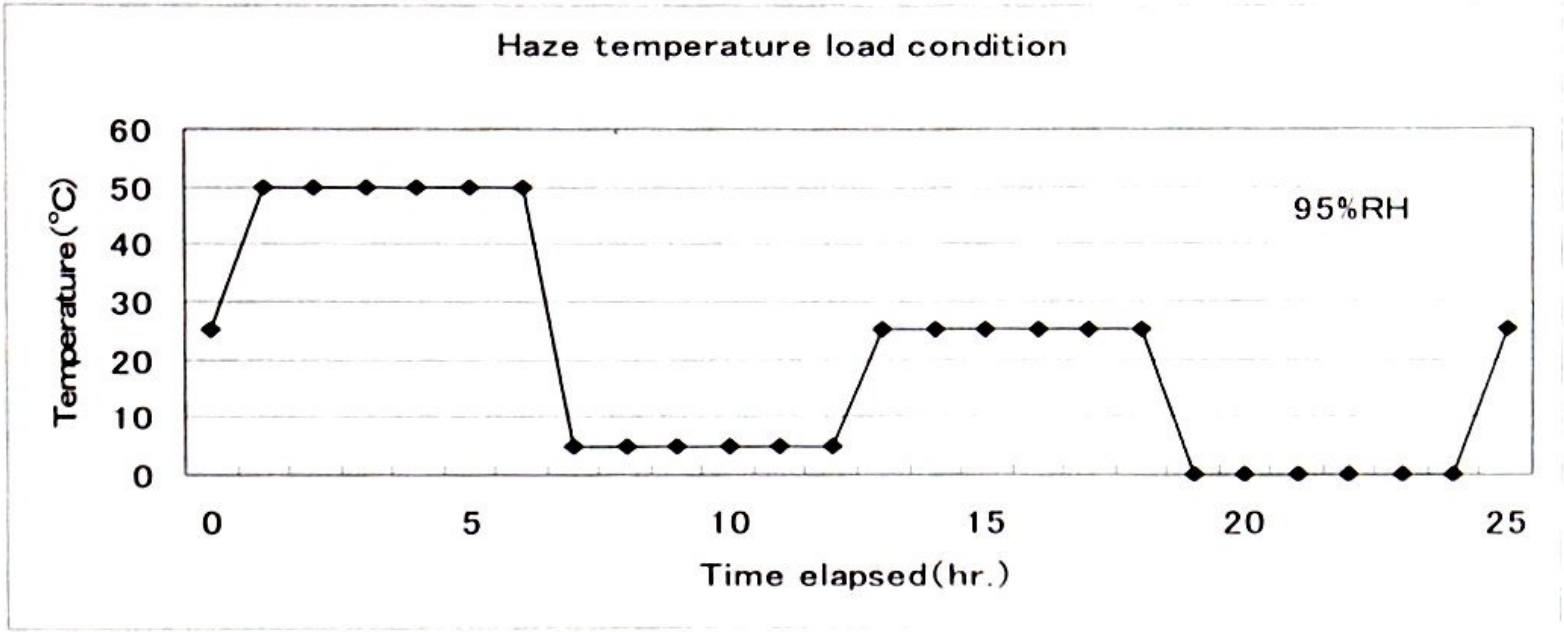
HAZE TEST

1. Purpose

To investigate Haze generation ratio on wafer surface when thermal load is applied to wafer cassette.

2. Testing method

Haze generation on wafer surface is to be visually checked when the following thermal load is applied to wafer cassette (with 5 wafers).



3. Test result

Haze generation ratio

Σ200	α200	A	B
0/5	0/5	0/5	1/5

AIR TRANSPORT TEST

1. Purpose
   (1) To investigate time until pressure in wafer cassette is recovered up to atmospheric pressure after air transport.
   (2) To investigate increased particle content on wafer surface before and after air transport.

2. Testing method
   (1) Clamp runout after air transport
   It is to be checked whether clamp is run-out or not after air transport.
   (2) Recovery time of pressure in wafer cassette
   Deformation rate at a given place of wafer cassette is to be measured, and the pressure in the cassette is to be calculated.
   (3) Increased particle on wafer surface
   Number of particle on wafer surface before and after air transport is to be measured by particle counter.

3. Testing condition
   (1) Transport route : Return trip between Vantec Chiba Works and Miyazaki
   (2) Packing style : Packaging box (2 cassettes contained 25 wafers were loaded)

4. Test result

(1) Clamp runout after air transport

Σ200	α200
0/2	0/2

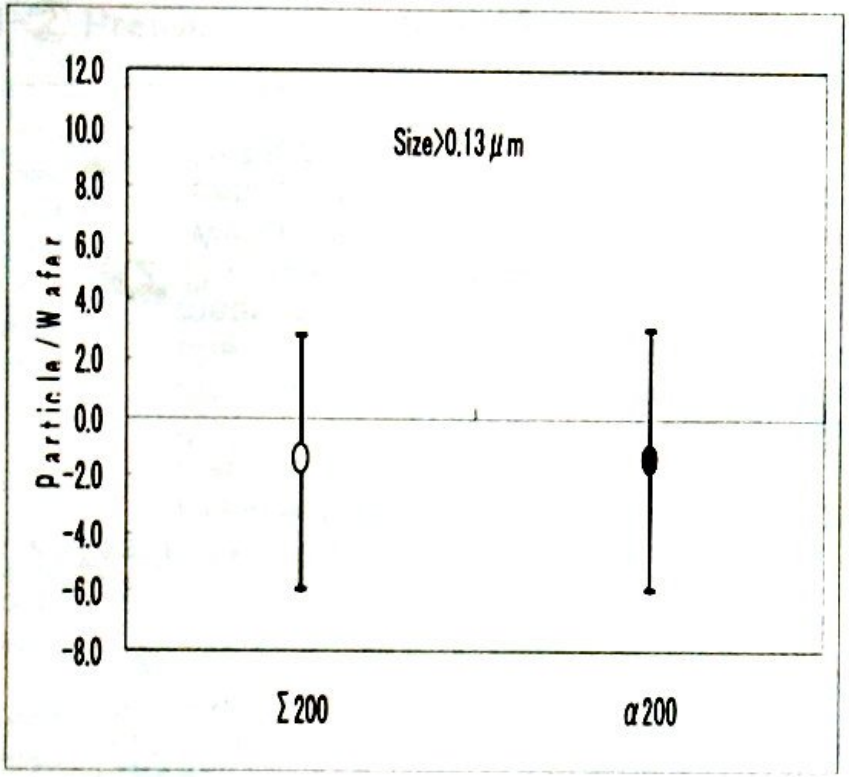
(2) Recovery time of pressure in wafer cassette

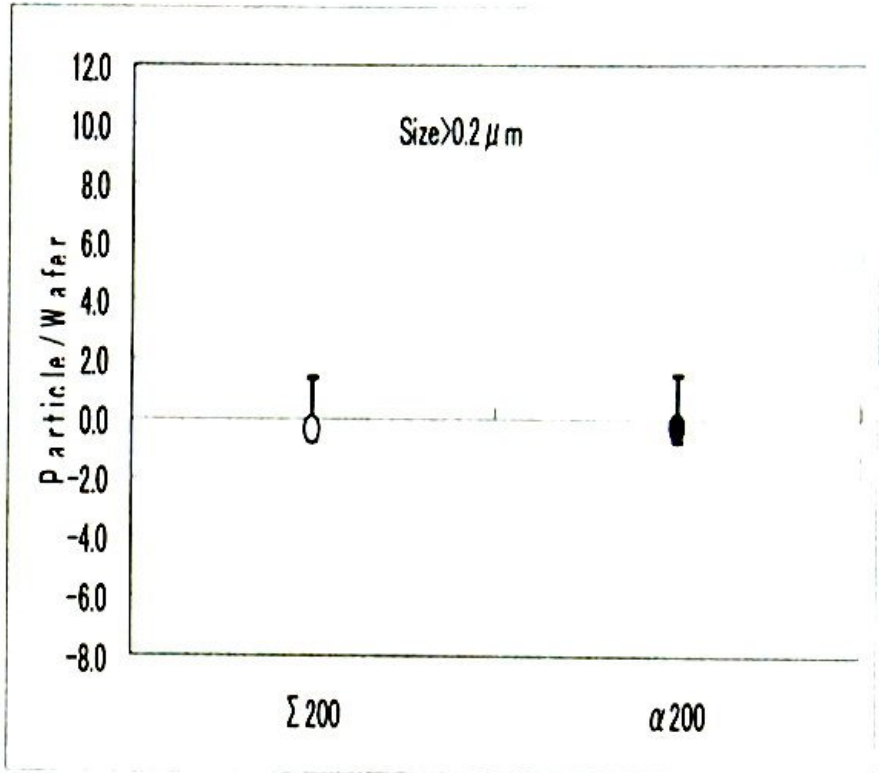
Σ200	α200
0～5	5～10

(Unit : hour)

(Note) Table at the left shows that the pressure returned to atm.pressure within figures.

(3) Increased particle content on wafer surface





PRESSURE TEST

1. Purpose

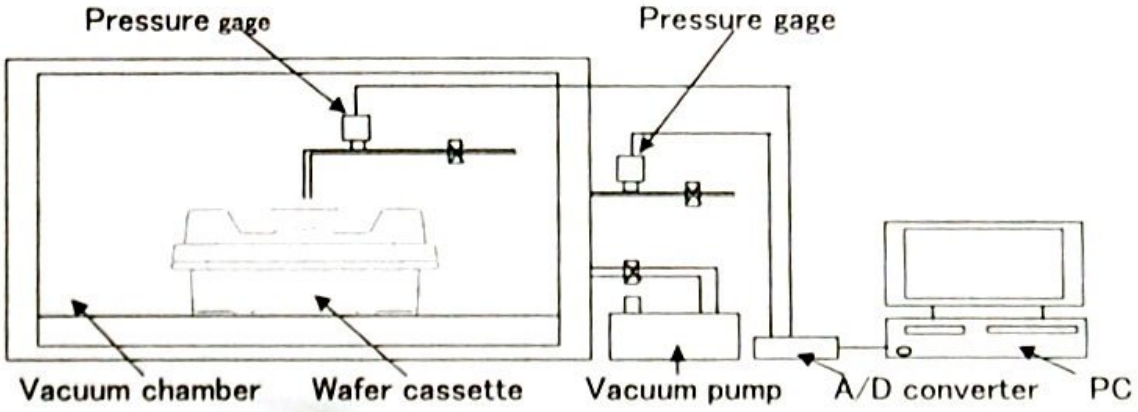
(1) To investigate pressure change in wafer cassette after pressure reduction (air transport assumed).

(2) To investigate pressurization performance of wafer cassette.

2. Testing method

(1) Pressure change in wafer cassette after pressure reduction (air transport assumed)
Wafer cassette (with wafer) is to be placed in vacuum chamber, and after pressure in the chamber is reduced by 0.02MPa, the pressure chamber in the cassette until recovery to atmosphere is to be measured.

(2) Pressure performance of wafer cassette
Wafer cassette (without wafer) is dipped into water, and when the cassette is pressurized, the pressure at the time of bubbling start is to be measured.



Testing device (Pressure change in wafer cassette after pressure reduction)

3. Test result

(1)-① Pressure recovery time in wafer cassette after pressure reduction

(Unit: hr.)

Σ200	α200	A	B	C
2.3	6.0	0*	−**	0*

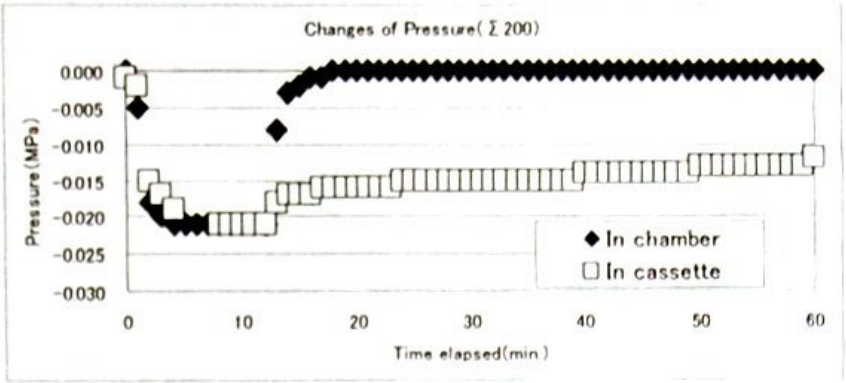
(Unit: hr.)

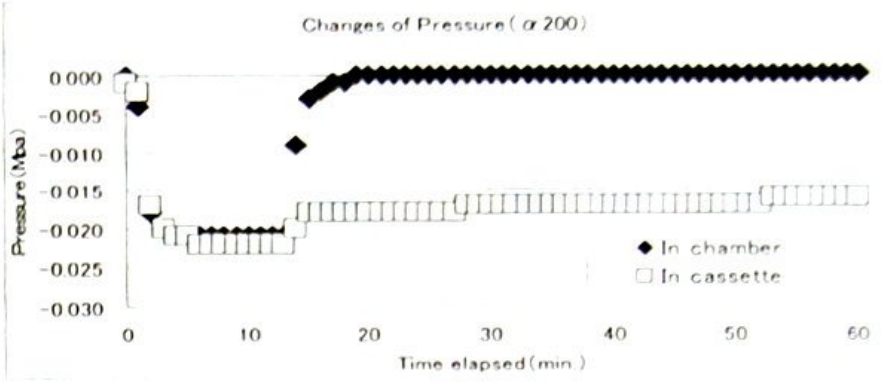
Σ150	α150	A	B
0.5	12.0	0*	−**

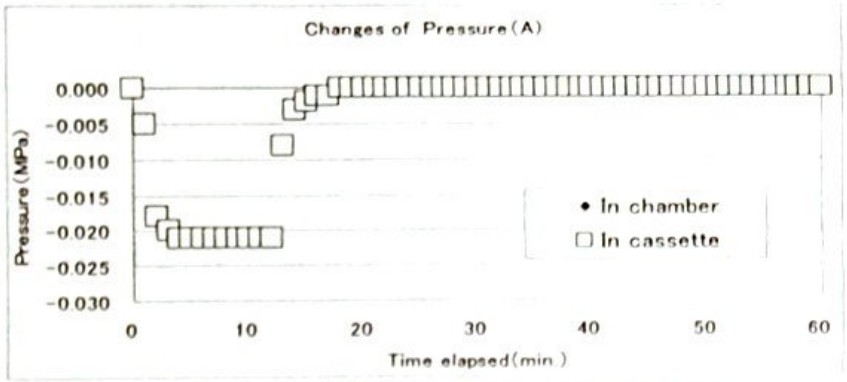
(*) No change of pressure

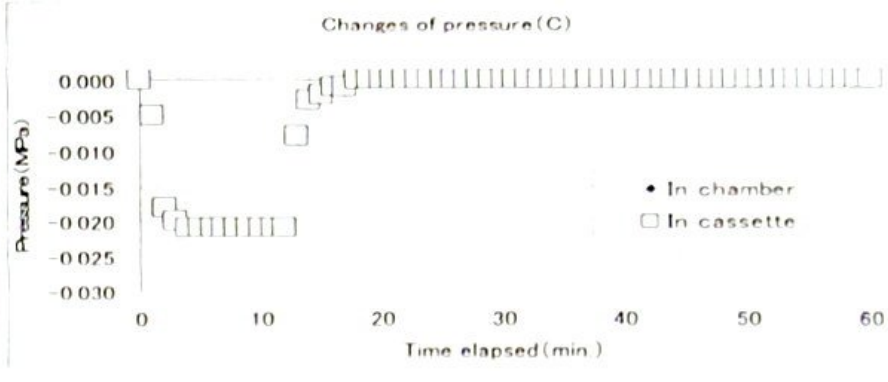
(**) Not evaluate because of no gasket

(1)-② Pressure change in wafer cassette after pressure reduction (Φ200)



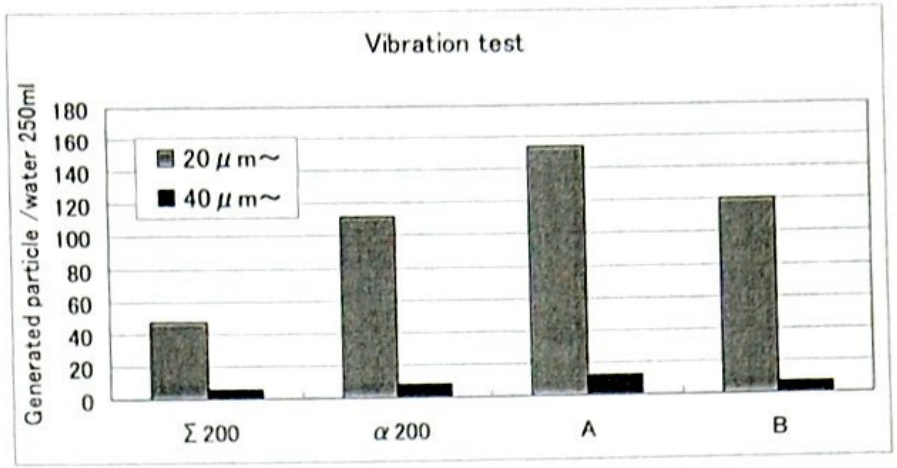


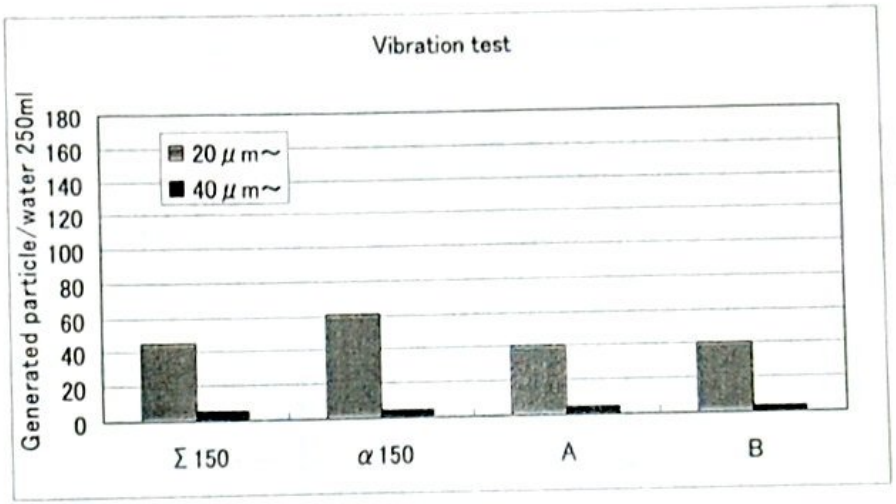




4. Test result

(1) Number of particle generated





4. Test result

(2) Wafer rotation

Σ200	α200	A	B
0/50	0/50	0/50	—

Σ150	α150	A	B
13/50	19/50	23/50	—

(3) Generation ratio of wafer dispersion

Σ200	α200	A	B
0/50	0/50	0/50	—

Σ150	α150	A	B
0/50	0/50	0/50	—

DROP TEST

1. Purpose

To investigate generated particle content, wafer rotation, wafer dispersion, wafer break and cassette break when drop shock is applied.

2. Testing method

(1) Generated particle content

1) Pure water of 500ml is filled into the cassette dropped, and the cassette is tilted by 90° in four directions. (5 times per one (1) direction, 20 times in total. The mber of particle in pure water is measured in advance)

2) Of pure water of 500ml, 250ml is moved to clean glass container, and leaves it.

3) The number of particle contained in the pure water left is to be measured by the submerged particle counter.

(2) Wafer rotation : Wafer displacement before and after dropping is to be measured by steel scale.

(3) Wafer dispersion : Wafer dispersion after dropping is to be visually chekked.

(4) Wafer cassette break: Wafer cassette after dropping is to be visually checked.

3. Testing condition

(1) Dropping height : 150cm

(2) Dropping direction : Vertical dropping with package bottom directed

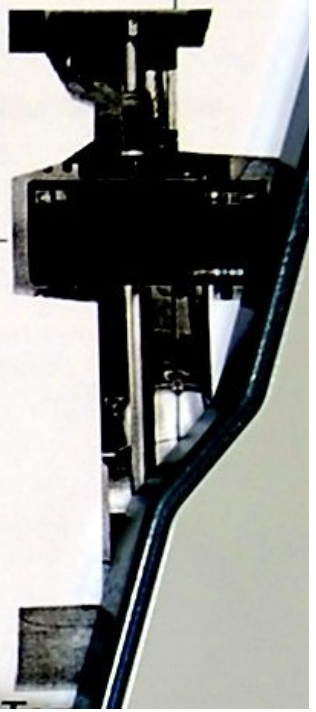
(3) Dropping surface : Steel plate (10mm thickness)

(4) Dropping frequency: 1 time

(5) Packing style : Packaging box

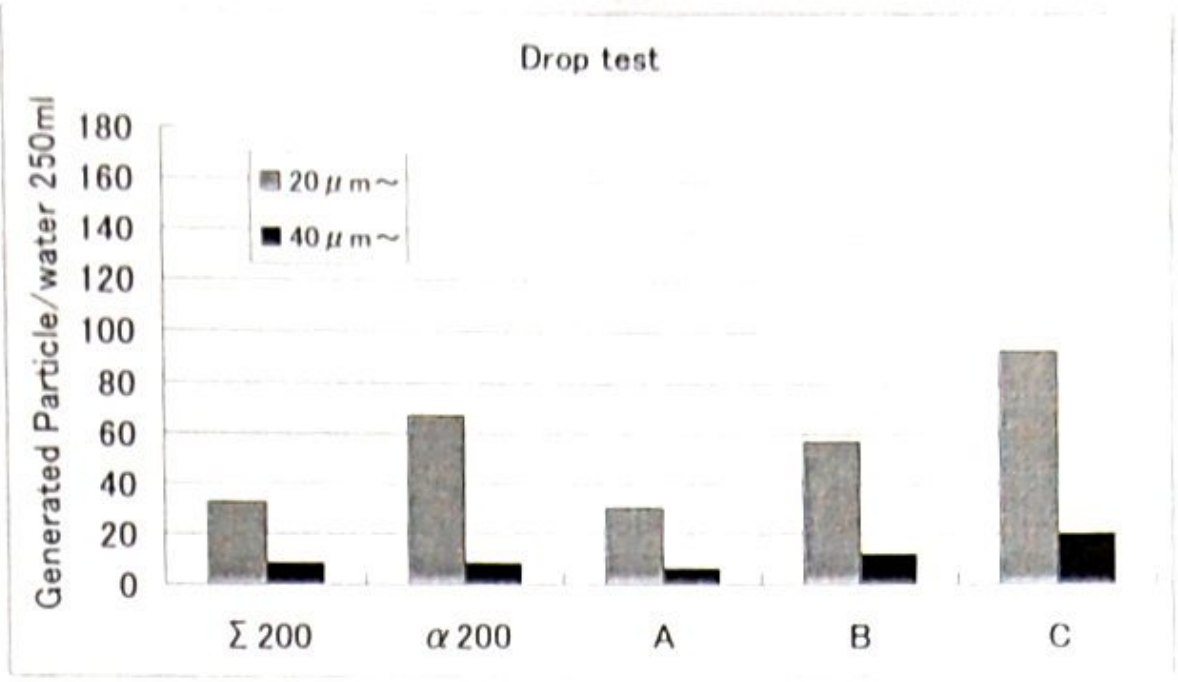
(*φ200...2 cassettes contained 25 wafers were loaded)

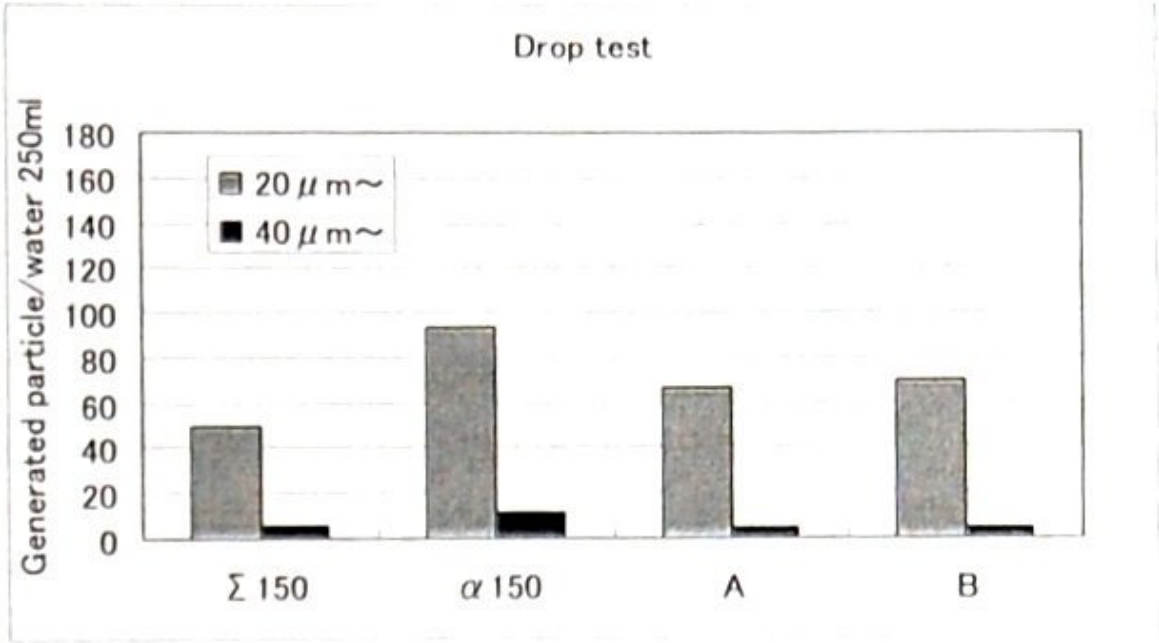
(*φ150...4 cassettes contained 25 wafers were loaded)



4. Test result

(1) Number of particle generated





(2) Wafer rotation

Σ200	α200	A	B	C
0/50	0/50	0/50	—	0/50

Σ150	α150	A	B
0/50	0/50	0/50	—

(3) Generation ratio of wafer dispersion

Σ200	α200	A	B	C
0/50	0/50	0/50	—	0/50

Σ150	α150	A	B
0/50	0/50	0/50	—

(4) Wafer break ratio

Σ200	α200	A	B	C
0/50	0/50	0/50	0/50	0/50

Σ150	α150	A	B
0/100	0/100	0/100	0/100

(5) Cassette break ratio

Σ200	α200	A	B	C
0/2	0/2	0/2	0/2	0/2

Σ150	α150	A	B
0/4	0/4	0/4	0/4

WAFER HOLDING STRENGTH TEST

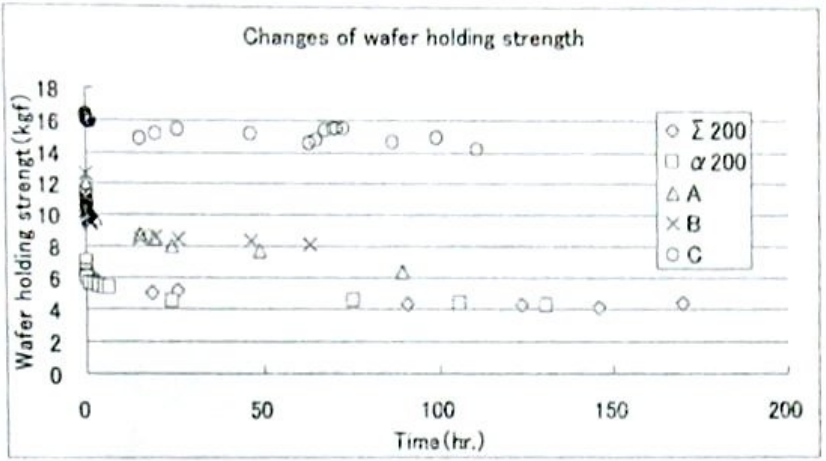
1. Purpose

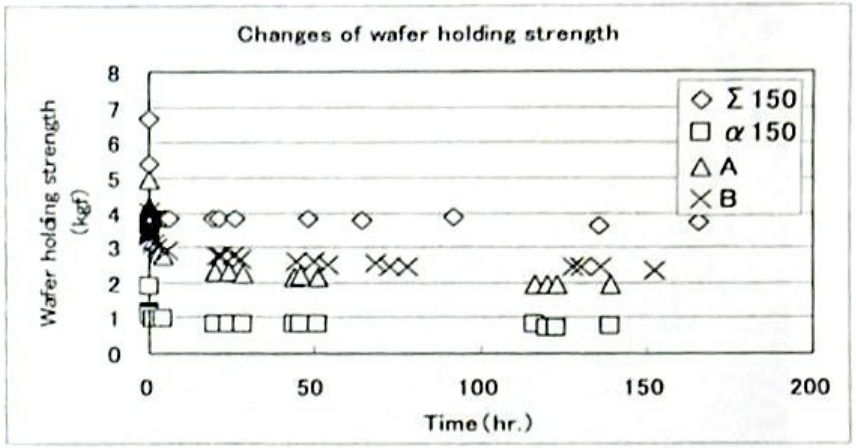
To investigate changes of wafer holding strength.

2. Testing method

Cover, cushion, cassette (with 25 wafers) are to be set as follows, and changes of wafer holding strength is to be measured by load sensor.

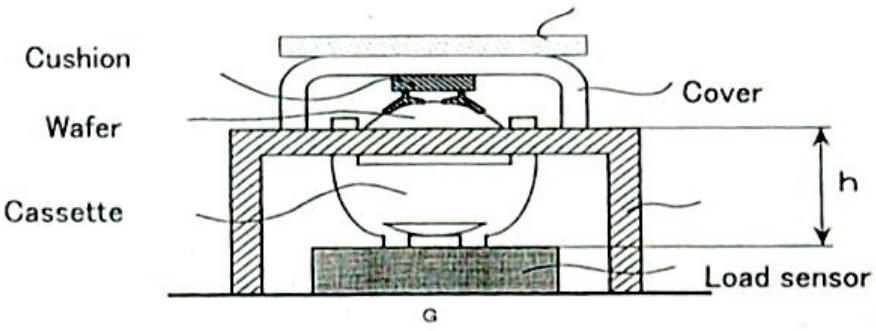
3. Test result





4. Consideration

The wafer holding strength of Σ 200 is equivalent to α 200.



Testing machine