



# "TOKUSHU TOKAI PAPER" PRODUCE CLEAN PAPER "TT - CLEAN"

INSERTING TYPE 50g/m<sup>2</sup>  
100g/m<sup>2</sup>

"TT - CLEAN" has the specialty at low dusting utilizing acquired manufacturing techniques of speciality papers which shall be introduced to the clean room of electronics industry for packing, inserting and other various purposes.

## SPECIALTY OF "TT-CLEAN"

### KEY POINT 1. High performance in low dusting

Special technique with original chemical treatment allowed the greatest level in low dusting as below.

#### Test result of low dusting (External test data)

Test method	Target particle size	TT-CLEAN INSERTING TYPE 50	Competitor A	Competitor B
Rubbing test	≥0.1μm	73	173	1,297
	≥0.3μm	46	93	795
Grind test	≥0.1μm	15	81	55
	≥0.3μm	11	58	39
Tear rubbing test	≥0.1μm	664	586	1,910
	≥0.3μm	452	369	1,208

Inspection methods follow SEMI G67-0996.

### KEY POINT 2. Special production condition

It is produced under the specially controlled clean condition which can protect the products from dust, contamination and others.

Also the production machine is located at the 5th floor of factory which can be avoid from the bugs and insects.



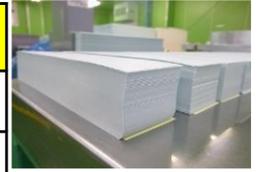
The machine is located in cleanliness controlled floor.



Double layer shutter to protect the floor from the direct air coming from outside when the materials coming in and products shipping out.

### KEY POINT 3. 2 kinds of thickness with various size for your needs

SPEC		TT-CLEAN INSERTING TYPE 50	TT-CLEAN INSERTING TYPE 100
Basis weight	g/m <sup>2</sup>	51.1	100.1
Thickness	μm	65	118
Rigidity by direction	Machine	4.94	10.30
	Cross	3.83	6.23
Bekk smoothness	second	36	34
Roll Supply	----	Available	Available



The data is measured value, but not the specification.

### KEY POINT 4. Reduction of blocking

Considerable reduction of blocking was realized by our high technique and special production process.

#### Test result of blocking comparison

Temperature	TT-CLEAN INSERTING TYPE 50	Competitor High Grade	Competitor Low Grade
50°C	N/D	Few Times	N/D
100°C	N/D	Several Times	N/D

Test method

- Cut paper to 10mm × 145mm as test piece (size equivalent to 1/4 of A4)
- Test pieces are stacked by front and reverse side, then they are sandwiched with normal papers.
- Heat treatment on "2. Test pieces" with stacked heat press machine to make blocking test sample.  
Heat treatment under below condition.  
Temperature: 50°C or 100 °C . Pressure :150kg/cm<sup>3</sup>, Heat treatment: 15min.

### KEY POINT 5. Limited residual ion

Superiority in limitation of residual ion especially CL<sup>-</sup> was realized for "TT-CLEAN" process paper which can be introduced to electronic industry including semiconductor production.

Inspection item	Unit	TT-CLEAN INSERTING TYPE 50	Competitor A	Competitor B
CL <sup>-</sup>	mg/kg	22.85	39.83	166.19
No <sub>3</sub> <sup>-</sup>	mg/kg	9.88	7.23	11.64
SO <sub>4</sub> <sup>-</sup>	mg/kg	113.16	34.30	211.85
Na <sup>+</sup>	mg/kg	111.47	63.01	61.91
K <sup>+</sup>	mg/kg	19.32	10.23	134.65
paper surface pH	mg/kg	5.8	5.6	6.2
hot water extract pH	mg/kg	7.5	7.2	9.0