

# SEMICONDUCTOR Tools & Material Technology



### **COMPANY PROFILE**

Dou Yee Enterprises is the premier total industrial solutions provider in the Asia Pacific region, serving with distinction in the semiconductor, data storage, electronics and biomedical industry since 1982.

We have 44 international branch offices strategically located around the world to give customers the fastest and most accessible products and services.

Our manufacturing plants, located in Singapore, Malaysia (Seremban), China (Suzhou) and France are governed by consistent quality systems with ISO 9001:2015 and ISO 14001:2015 certifications.

You can rely on us for products and services that are comprehensive in range, reliable in quality, accessible in location, and backed up by our many years of experience and expertise.

Dou Yee, your preferred partner in the industrial world.



SINGAPORE HQ



DOU YEE SUZHOU

### **Stream of Products & Services**

- Electrostatic Discharge Control
- Micro Contamination Control
- Dry Packaging / Electronic Packaging Materials
- Electronic Equipment and Tools
- Bio Medical
- Chemicals for Electronics Industry
- Personal Protective Equipment
- Nano Composite Materials



DOU YEE MANUFACTURING



EUROSTAT, FRANCE



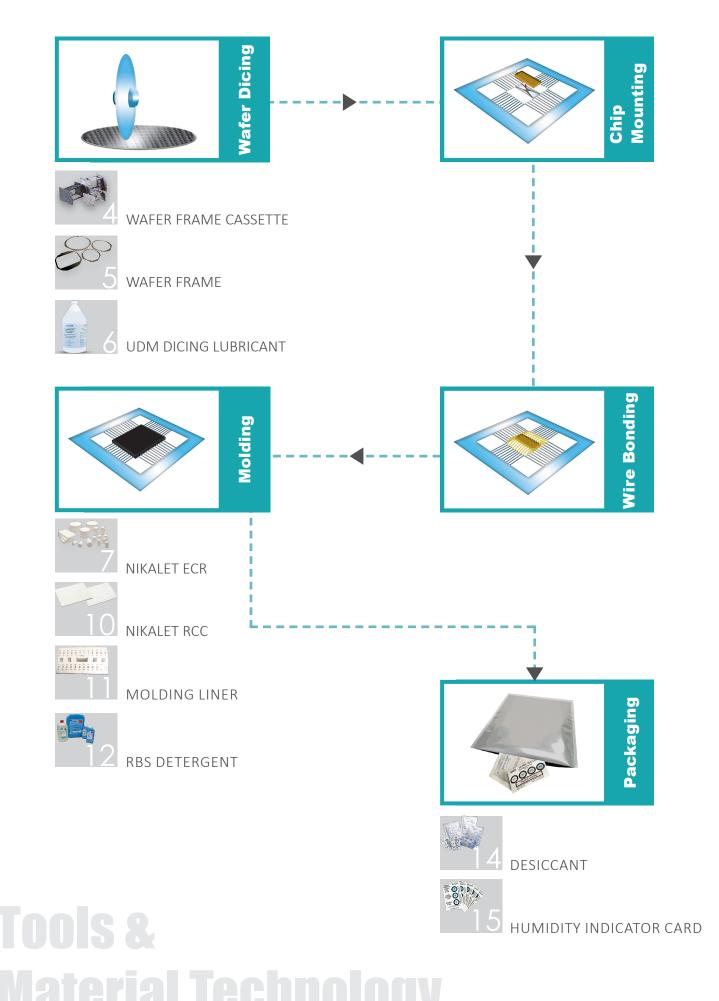
Certificate SG96/07721



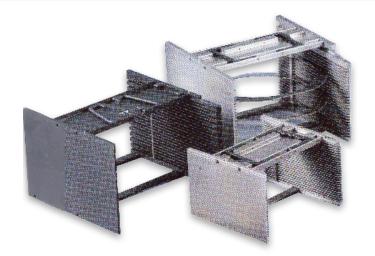
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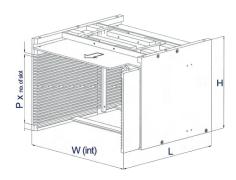


### **SEMICONDUCTOR PROCESS**



### **WAFER FRAME CASSETTE**

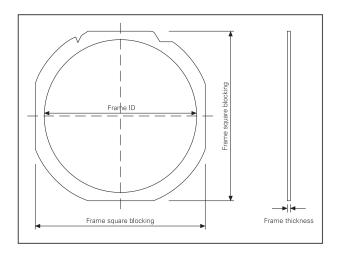




Dou Yee P/N	L	W	н	Px no. of slot	Remarks
DY-WFC-003	206	216	143	4.75 x 24 slots	for 6" wafer frame (DY-WFR-003)
W(00) DY-WFC-001M	276	279.2	205.6	6.35 x 24 slots	for 8" wafer frame (DY-WFR-001M)
DY-WFC-007B	274.1	268.7	142.8	4.75 x 24 slots	for 8" wafer frame (DY-WFR-007B)
DY-WFC-041	387.5	382.9	182	10 x 12 slots	for 12" wafer frame (DY-WFR-041)
DY-WFC-043	389	383	187	10 x 12 slots	for 12" wafer frame (DY-WFR-043)

## WAFER FRAME

Our Wafer Frames are manufactured using the latest state-of-the-art technology. Strict in-process control is maintained throughout the various manufacturing stages with minimal handling. This ensures consistency in the quality of our wafer frames.





5" Wafer Frame 6" Wafer Frame 8" Wafer Frame 12"Wafer Frame Customized Wafer Frames

Industrial Standards	Dou Yee Part No.	Wafer Size (inch)	Frame Square Blocking (mm)	Frame ID (mm)	Frame Thickness (mm)
DISCO					
2-12-1	DY-WFR-041	12"	380	350	1.5
2-8-1	DY-WFR-001	8″	275.2	250	1.2
2-8-1	DY-WFR-001A	8″	276	250	1.2
2-6-1	DY-WFR-003	6"	212	194	1.2
K&S					
350-104	DY-WFR-007B	8″	266.7	242.4	1.5
350-103	DY-WFR-008	6"	216	192.6	1.2
350-102	DY-WFR-010	5″	184.15	165.1	1.2
TSK	DY-WFR-016	8"	276	255	1.2

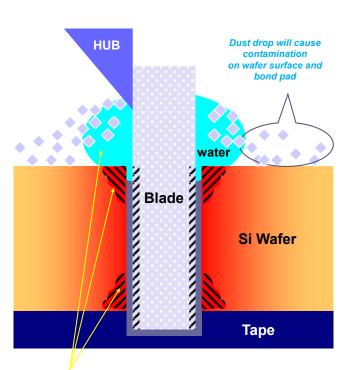
# SEMICONDUCTOR WAFER-DIE SEPARATION SOLUTIONS

UDM Systems<sup>®</sup>, LLC products are specifically designed for use in multiple applications in semiconductor manufacturing industries. Both our consumable products and dispensing equipment are specially designed to be environmental friendly, as well as a robust and easy to use technology. We strive to provide the best suited product to our customers as well as onsite support for process development and troubleshooting of process issues for new and existing customers.

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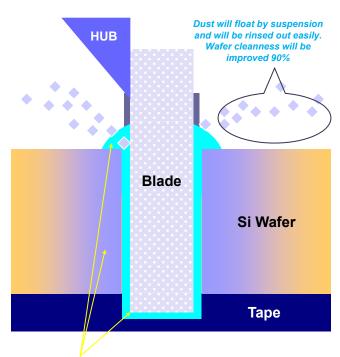
#### Add Value to Your Die-Separation Process

UDM Systems<sup>®</sup>, LLC semiconductor lubricants represent the best technology for your wafer dicing needs. Our products are specifically designed to enhance lubrication, prevent galvanic corrosion, dissipate heat and eliminate topside and bottom side chipping in a clean and effective way, no matter what your individual specifications are.



Without UDM Lubricant

With UDM Lubricant



DI water surface tension stop water cooling the blade in dicing street.

It will cause: Heat, High friction, topside or backside chipping, short blade life, ESD damage

DI water surface tension is reduced to 28-33 dynes/cm. Water can penetrate into dicing interface between blade and Si.

In this way, it will:

- Improve heat dissipation effectively
- Reduce the topside and backside chipping
- Longer blade life
- Minimize / Eliminate ESD damage

# NIKALET ECR

NIKALET ECR is a melamine based mold cleaner developed by Nippon Carbide Industries Co., Inc. It is specially designed for cleaning of epoxy mold tools in semiconductor manufacturing.

By using NIKALET ECR, customer can clean the mold surface in the same process as the epoxy molding without detaching the mold tool and this improves productivity.

Various kind of epoxy molding compound have been developed by maker with changes in package for semiconductor,NIKALET ECR exhibits high cleaning ability for any kind of epoxy molding stains.



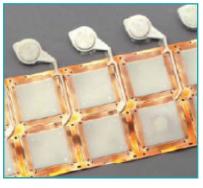
NIKALET ECR comes in two types, <u>Transfer Type</u> - Circular Cylinder Pellets and <u>Compression Type</u> - Parallelepiped Tablets. The compression type includes a cleaning material and a releasability conditioner material.

#### NIKALET ECR-T (Transfer Type)

ECR-T is Transfer type melamine based mold cleaner.

The optimum cleaning material can be select according to the epoxy molding compound and design of molding tool. And we can provide various size for cleaning based on epoxy molding compound.





Gla	ade	CC	PF	CL	СР	GR
Prop	perty	Standard	Environmental	High Ability	High Cycle	For Green Compound
Cures	speed	Standard	Standard	Slow	Fast	Standard
Si		F	or Conventional Type	е Machine Ф40mm-5	0g.Ф48mm-75g	.55mm-90g
51	Ze	For Auto	Mold Type Machine	Φ9.8mm.φ11mm.	13mm.14mm.16	mm.18mm.20mm

#### **Grade Property**

CC Grade : Standard type.

PF Grade : Environmentally-grade containing less than 1% of free phenol.

CL Grade : High performance grade of slow cure type having high fluidity and high cleaning ability.

CP Grade : High cycle grade of quick-curing type which can reduce cleaning time.

GR Grade : High function grade for green materials developed to solve the problem of mold contamination.

## NIKALET ECR

#### NIKALET ECR-C (Compression Type)

NIKALET ECR-C is Compression type melamine based mold cleaner. Customer can clean without using lead flame / substrate and clean parting areas including air-vents by using ECR-C.



Appearance	white ivory
Specific Density of Tablet	1.0g-1.3g/cm <sup>3</sup>
Specific Gravity of Molded Cleaner	1.4-1.6
Flow	80-100mm <sup>a)</sup>
Hardness after Curing	>70 <sup>b)</sup>
Application	Runner Gate, Cavity, Air-vent, Parting-area

a) Analyzed by JIS K6911 method

b) Analyzed using Shore-hardness Meter D (Mold temp., 170°c Molding pressure, 6.9Mpa) SIZE : 73mm(L)×38mm(W)×7mm(H) Weight : 20g

#### NIKALET ECR-C KU (Conditioner)

NIKALET ECR-C KU is Compression type melamine based mold conditioner.





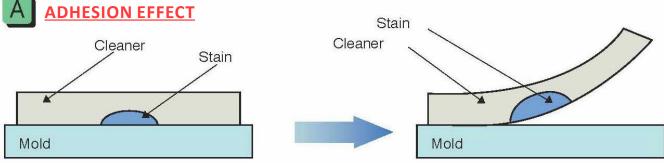
Appearance	Light Green
Specific Density of Tablet	1.0g-1.3g/cm <sup>3</sup>
Specific Gravity of Molded Cleaner	1.4-1.6
Flow	90-100mm <sup>a)</sup>
Hardness after Curing	>70 <sup>b)</sup>
Application	Runner Gate, Cavity, Air-vent, Parting-area

a) Analyzed by JIS K6911 method

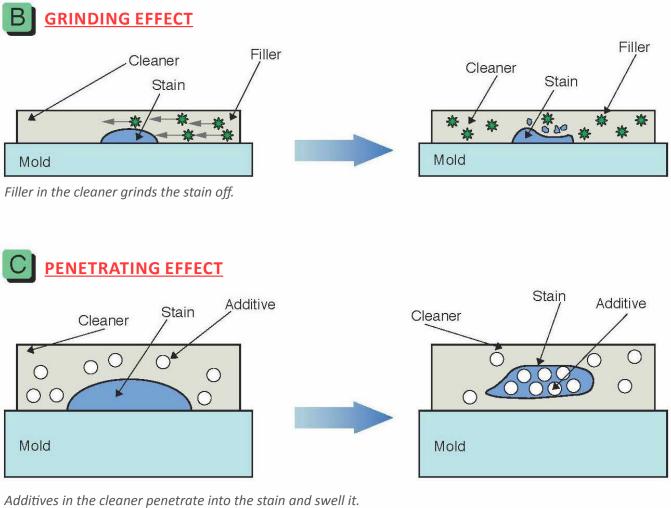
b) Analyzed using Shore-hardness Meter D (Mold temp., 170°c Molding pressure, 6.9Mpa) SIZE : 73mm(L)×38mm(W)×7mm(H) Weight : 20g

### NIKALET ECR

Nikalet ECR has the three cleaning effects shown here.



Cleaner adheres to the stain and peels it off from the surface of mold.



The phase boundary force between the stain and mold is reduced and the stain is removed with the cleaner. The cleaning ability is augmented by the combination with adhesion effect of A.

### NIKALET RCC

#### NIKALET RCC (Rubber Type Cleaner)

The cleaning sheet NIKALET RCC is a rubber type mold cleaner for the removal of mold stains which accumulates during the molding of epoxy for encapsulation of semiconductors such as integrated circuits, diodes, transistors, etc.



		ID	IE	IJ	
Appearance	Appearance		white	white	
Specific Gravity		1.1-1.2	1.1-1.2	1.0-1.1	
Molding Method		compression	compression	compression	
Viscosity <sup>1)</sup>	М	45-55	75-85	65-75	
Releasability <sup>2)</sup>	1-5	4	5	4	
Odor <sup>3)</sup>	1-5	4	4	1	
Expansion <sup>4)</sup>	mm		90-110		

1) Viscosity : Mooney Viscometer SMV-300RT(SHIMADZU) , Temp : 100°c Mooney time 4min, Rotor Speed 2.0rpm, Preheat Time 1min

2) Releasability : It evaluated by five stages. 5th is easy remove.

3) Odor  $\,:$  It evaluated by five stages. 1st is few smell, 5th is strong odor.

4) Evaluation method : Disk flow, Sample size \$\phi36mm, 7mm (thickness), Temp : 175°c Clamping pressure: 30kg/cm2, Cure time : 300sec

#### NIKALET RCC (Rubber Type Conditioner)

The rubber type conditioner is a mold conditioning compound for the mold dies after cleaning process in molding for EMC encapsulations of semiconductors.

		LG	LF
Appearance		grey	grey
Specific Gravity		1.0-1.1	1.0-1.1
Molding Method		compression	compression
Viscosity <sup>1)</sup>	М	70-85	75-90
Releasability <sup>2)</sup>	1-5	4	5
Odor <sup>3)</sup>	1-5	3	2
Expansion <sup>4)</sup>	mm	90-110	80-100



1) Viscosity : Mooney Viscometer SMV-300RT(SHIMADZU), Temp : 100°c Mooney time 4min, Rotor Speed 2.0rpm, Preheat Time 1min

2) Releasability : It evaluated by five stages. 5th is easy remove.

3) Odor : It evaluated by five stages. 1st is few smell, 5th is strong odor

4) Evaluation method : Disk flow, Sample size φ36mm, 7mm (thickness), Temp : 175°c , Clamping pressure: 30kg/cm2, Cure time : 300sec

### **MOLDING LINER**

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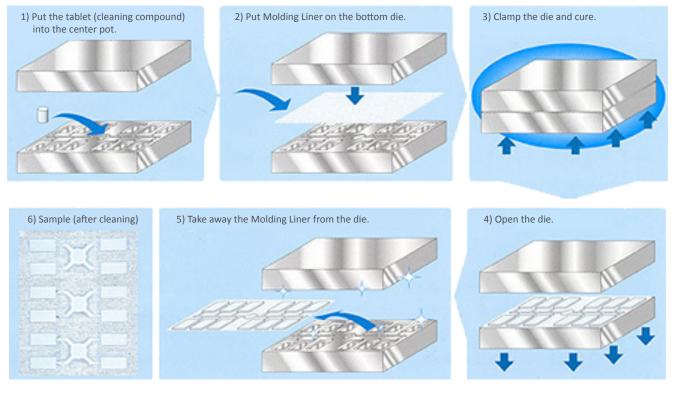
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### **Characteristics of Molding Liner**

Contribute to:	
Cost reduction	-one sheets will be equivalent with 2 dummy frames or substrates
Time saving	-reduce handling time for cleaning process
Cleaning effect	-cleaning cavity, air-vent, gate, etc
Process simplification	-one sheet approximate placement only
Easy disposal	-no separation into frame and compound
Standardization	-one size can be used for different designed die sets
Unskilled	-minimal scraping of remaining compound

#### How to use

This sheet can be used without dummy frame, typically will not require change of condition for cleaning process.



Specification	Article No.	Weight	Thickness	Mesh	DRY (N Tensile Strengt	<b>1/50mm)</b> h (dry-N50mm)		<b>(%)</b> gation (Dry. %)
		(g/m²)	(mm)		M.D	C.D	M.D	C.D
Thin Type	PO500	50.0	0.20	-	57.34	24.89	4.6	6.1
Standard Type	BA839	82.5	0.47	90	118.03	38.29	27.3	93.9

### **RBS DETERGENT**

Precision manufacturing involves surface preparation for bonding, coating or exposure to a special processing and environment that are highly sensitive to residues. Key concerns in selecting detergent for precision manufacturing are efficiency in cleaning and non-use of volatile solvents, strong acids and other hazardous chemicals.

RBS aqueous detergents perform as well as or better than solvent cleaning agents in removing residues without the harmful environmental side effects. RBS cleaning solutions are suitable for various high performance cleaning processes in precision manufacturing of glass, plastics, metal parts, electronics, ceramics, optics, medical devices. It can be easily rinsed off residues free.





Applications	RBS Product
<b>Electronic, semiconductors</b> : Cleaning electronic component, circuit board, assemblies, screens, parts, ceramic insulators & components, silicon wafer, mold dies and cavities	
<b>Glass, optic</b> : Cleaning flat glass, optics & lenses, glass sheet, quartz	Mild alkaline low foam <b>/ RBS IND 500, RBS IND 750</b> Part washer, power wash , spraying, brush system 1-2%; 45-60°C
<b>Metal working</b> : Cleaning stainless steel parts, chrome steel Low concentration, temperature and short contact time are recommended for soft metals.	Heavy duty cleaning: Alkaline / <b>RBS IND 710, RBS IND 743</b> Manual, soak, circulation 0.5-2%; 40-70°C
<b>Plastic :</b> Cleaning parts and surfaces made of resistant plastics. Not recommended for polycarbonate (PC).	Alkaline low foam / <b>RBS IND 755</b> spraying, part washer 0.5-1%; 45-60°C

Removal of conductive residues, resins, rosins, fluxes, particulates, greases, oils, silicon oils, heavy fatty residues, cutting fluids, mold release agents, buffing compounds, waxes, polishing slurries, epoxy and organic residues.

## **RBS DETERGENT**

### **RBS 35 Concentrated Surfactant (for cleaning mold cavity bars)**

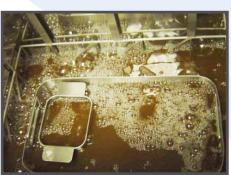
RBS 35 is a concentrated cleaning agent which is foaming, alkaline and odorless. It is made up of anionic and nonionic surfactant, phosphates and polyphosphates, hydrates and chlorinated agents.



Parts placed in basket.



Mold cavity bar before cleaning .



Parts immersed in RBS 35 solution in ultrasonic tank set around 60°c temperature.



Mold cavity bar after cleaning.

#### **Directions for use:**

- a) Soaking
- Solution with water (recommended temperature of 50°c- 70°c) Recommended concentration of 2% to 5%. (eg. 20ml to 1 litre of DI water.)
- Immerse work piece to be cleaned in solution completely for few minutes to 24 hours (depending on solution temperature and tenacity of stain).
- Rinse immediately with distilled or deionized water.
- Regular renewal of the solution ensures effective cleaning.

#### b) Machine Washing

- Automatic or ultrasonic machines
- Concentration of 2% to 5% is generally sufficient.



# DESICCANT

Dou Yee supply molecular sieve, clay or silica gel in various packing material depending on individual applications and requirements. Our desiccants can be used widely for protecting your goods against harmful effect of moisture and for preventing corrosion. Areas of application includes dry packaging for ICs, medical instruments, machine parts, electronic components, optical equipment, tools documents, cameras.



**Bentonite Clay** 

Product Code	Size	Packing
DY-TY1-CL-0.50U-85X75MM-P40-3S	85 x 75 mm	500 bags/ctn
DY-TY1-CL-1U-115X75MM-P62-3S	115 x 75mm	400 bags/ctn
DY-TY1-CL-2UNIT-5.5X4IN-P27-3S	5.5 x 4 in	150 bags/tin
DY-TY1-CL-4UNIT-6.5X4IN-P28-3S	6.5 x 4 in	70 bags/tin

PACKING MTRL OPTION: TY1/NW1



Silica Gel

Size	Packing
60 x 60 mm	1400 bags/tin
70 x 60 mm	800 bags/tin
110 x 75 mm	300 bags/ctn
120 x 100 mm	150 bags/tin
	60 x 60 mm 70 x 60 mm 110 x 75 mm

Size

90 x 75 mm

100 x 54 mm

110 x 54 mm

115 x 100 mm

PACKING MTRL OPTION:OP/SF/TY1/NW1/MP SILICAGEL TYPE OPTION: SGW/BR1/OG1/SW1

**Product Code** 

DY-TY1-MS-15-90X75MM-P04-3S

DY-TY-MS-25-100X54MM-P63-PL

DY-TY-MS-30-110X54MM-P64-PL

DY-TY-MS-45-115X100MM-3S

PACKING MTRL OPTION: TY1/NW1/MP

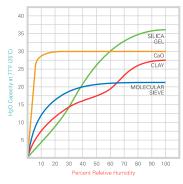


**Molecular Sieve** 

Dou Yee can supply desiccants bagged in Tyvek<sup>®</sup>, Non-women Fabric, Translucent Static Shielding Film, Clear PP/OPP Film and Kraft paper depending on your requirements.



**Packing Materials** 



Packing

500 bags/ctn

400 bags/ctn

500 bags/tin

300 bags/tin

Equilibrium Capacity (H2O) of Various Absorbents

# HUMIDITY INDICATOR CARD

Humidity indicator cards are used in dry packing for detecting the humidity level in the dry packed environment. The indicating spots on the card are impregnated with a moisture sensitive chemical which will change color upon absorbing moisture.

Our new range of humidity indicator cards are carcinogen-free. The indicating spots contain a proprietary chemical which, in the dry state is brown in color. Upon absorbing moisture, the target brown color spot changes to azure. Specifications will be provided upon request.

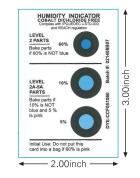
HI-1060		
0% 20%	30%   DANEER IF AZURE   GMANEE DESIGCANT   E   BROWN-DRY   AZURE-WET   HUMIDITY INDICATOR CARD   Avoid Metal Contact	
← 10.5cm →		
DESCRIPTION	CHARACTERISTICS	
Indicates	10%, 20%, 30%, 40%, 50%, 60% relative humidity	
Material	Blotting Paper	
Dimensions	10.5cm x 3.8cm	
Dimensions Indicating Spots	10.5cm x 3.8cm 5%, 10%,60% (left to right)	
2		
Indicating Spots	5%, 10%,60% (left to right)	
Indicating Spots Printing	5%, 10%,60% (left to right) Heavy Black On White	

HI-051060	
5.4 cm	
DESCRIPTION	CHARACTERISTICS
Indicates	5%, 10%, 60% relative humidity
Material	Blotting Paper
Dimensions	5.4cm x 3.8cm
Indicating Spots	5%, 10%,60% (left to right)
Printing	Heavy Black On White
Packaging	200 pcs/MBB/CAN
Approx. Shipping Weight	15 oz /MBB
Standards	Meets Mil-1-8835 & REACH Regulation

DYE-CDF1060 DYE-CDF1060 BATCH#: 021403B24 4.75inch

DESCRIPTION	CHARACTERISTICS
Indicates	10%, 20%, 30%, 40%, 50%, 60% relative humidity
Material	Blotting Paper
Dimensions	1.56inch x 4.75inch
Indicating Spots	10% – 60% RH
Printing	Heavy Black On White
Packaging	200 pcs per pint can
Approx. Shipping Weight	20oz. per can
Standards	Meets Mil-1-8835 & Mil-P-116

# DYE-CCF051060



DESCRIPTION	CHARACTERISTICS
Indicates	5%, 10%, 60% relative humidity
Material	Blotting Paper
Dimensions	2.00inch x 3.00inch
Indicating Spots	60%,10%,5% (top to bottom)
Printing	Heavy Black On White
Packaging	125pcs per pint can
Approx. Shipping Weight	8oz. per can
Standards	Meets JEDEC J-STD-033



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