SEMICONDUCTOR

Tools & Material Technology

DOU YEE
ENTERPRISES

DOU YEE ENTERPRISES

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 45 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) , France and Poland 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.

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

Certificate SG96/07721

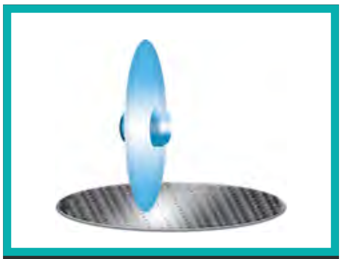

SINGAPORE HQ


DOU YEE MANUFACTURING

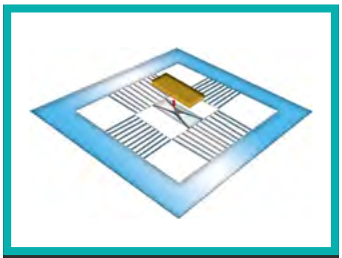

DOU YEE SUZHOU


EUROSTAT, FRANCE

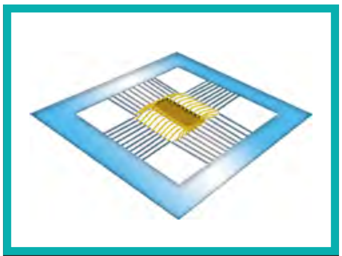

EUROSTAT, POLAND



Wafer Dicing

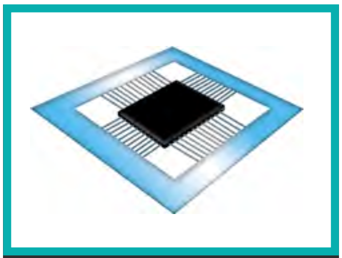


Chip Mounting



Wire Bonding

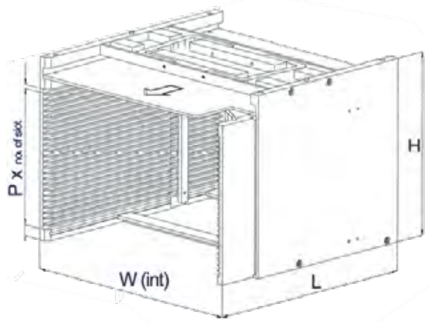
SEMICONDUCTOR PROCESS

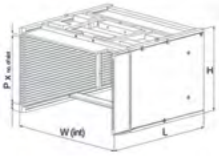
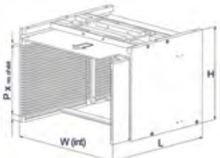
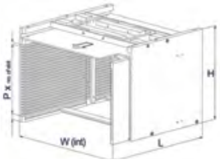
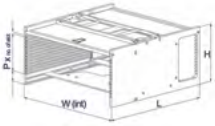


Molding

Packaging

WAFER FRAME
CASSETTE



Dou Yee P/N	L	W	H	Px no. of slot	Remarks
 **DY-WFC-003**	206	216	143	4.75 x 24 slots	for 6” wafer frame (DY-WFR-003)
 **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)

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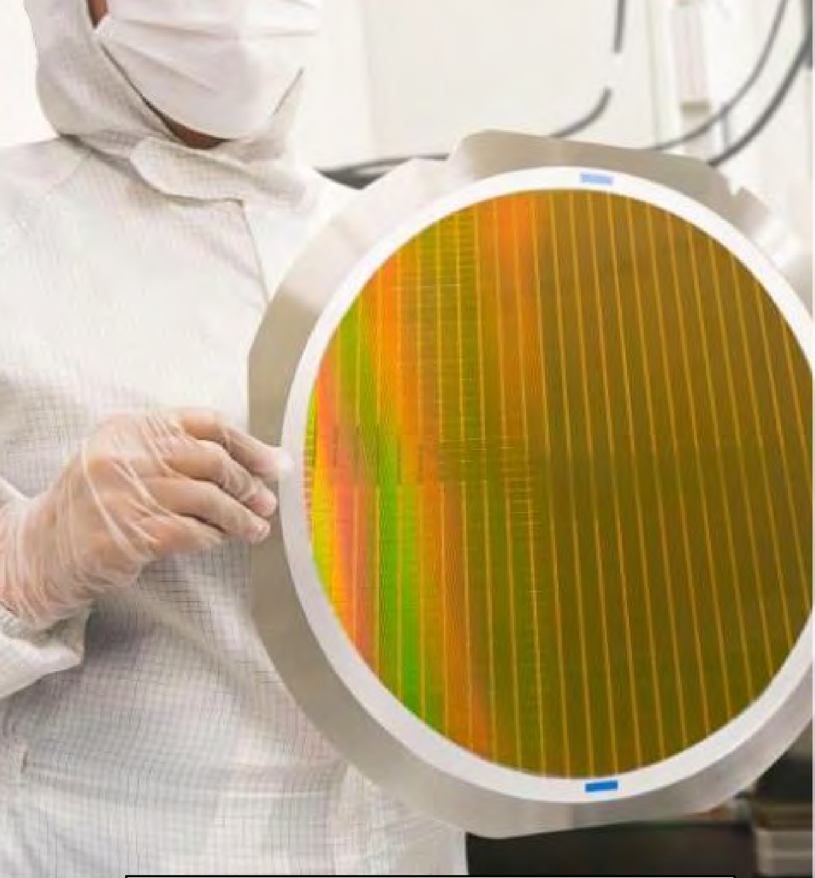
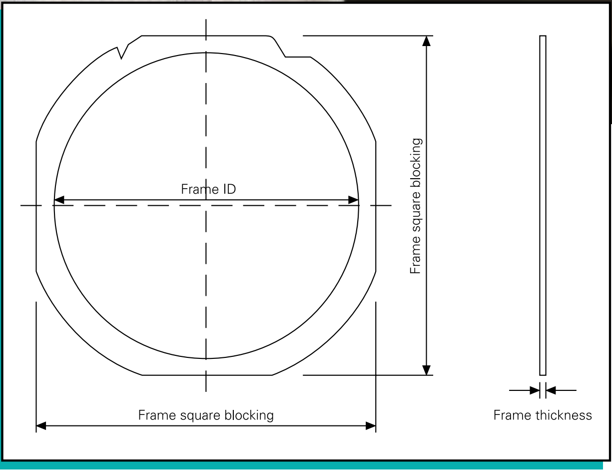


WAFER FRAME

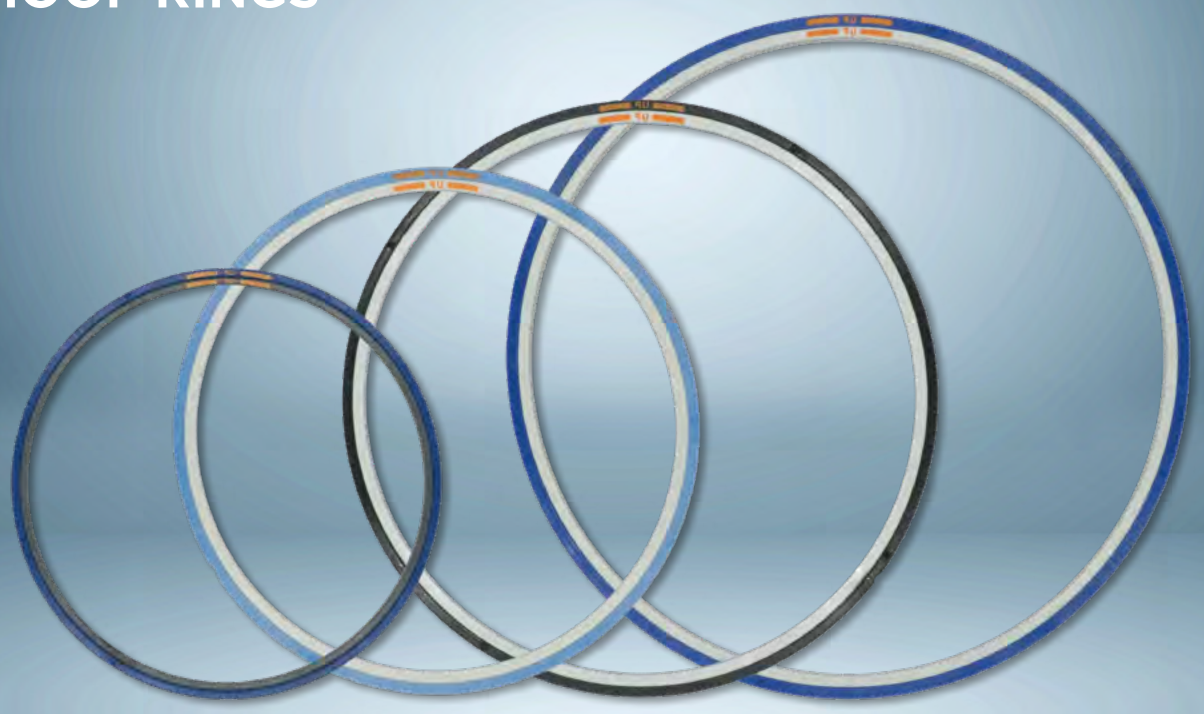
Our Wafer Frames are manufactured using the latest state-of-the-art technology. Strict in-process control is maintained throughout the various manufacturing stages with minimal handling. This ensures consistency in the quality of our wafer frames.



- **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

PLASTICS GRIP RINGS / HOOP RINGS



FEATURES

Top and Bottom Indicator Marking

……

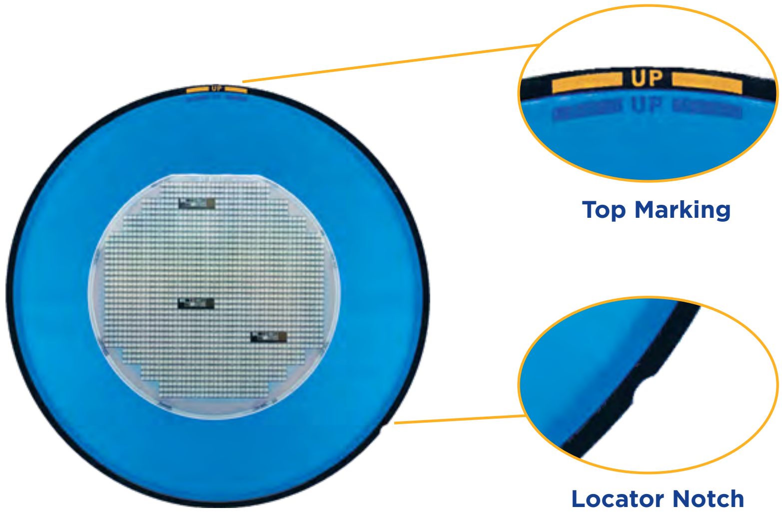
Full Range of Sizes, Customized Colours Available

……

Design and Produce to Exact Tolerance

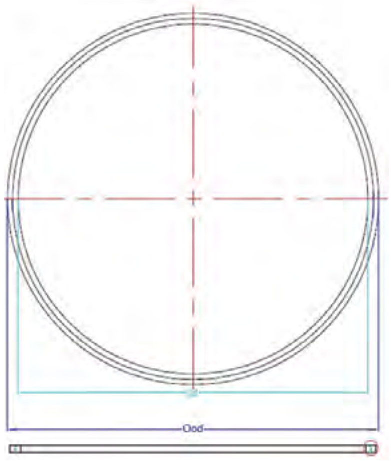
……

Durable and Heat Resistant



SPECIFICATION

Wafer Size (In)	Ring ID (mm)	Ring OD (mm)	Thickness (mm)
6	140	152	6
7	170	186	6
8	195	210	6
10	225	241	6



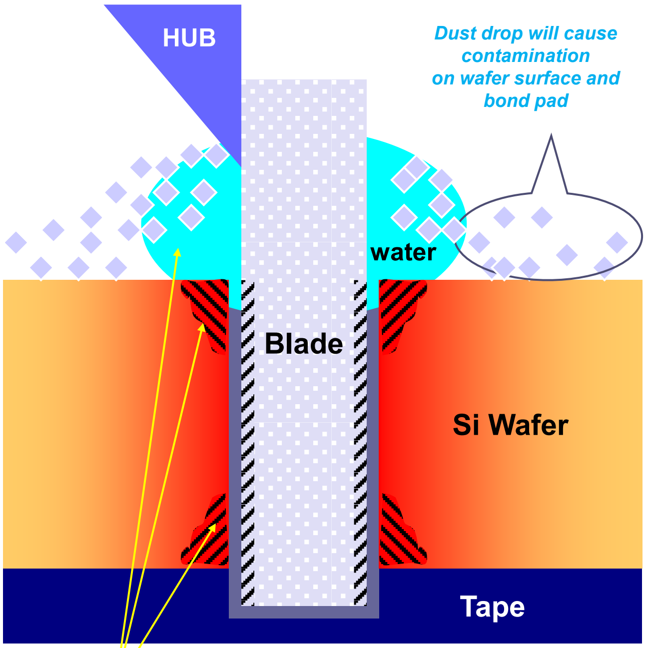
SEMICONDUCTOR WAFER-DIE SEPARATION SOLUTIONS

UDM Systems® , 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.

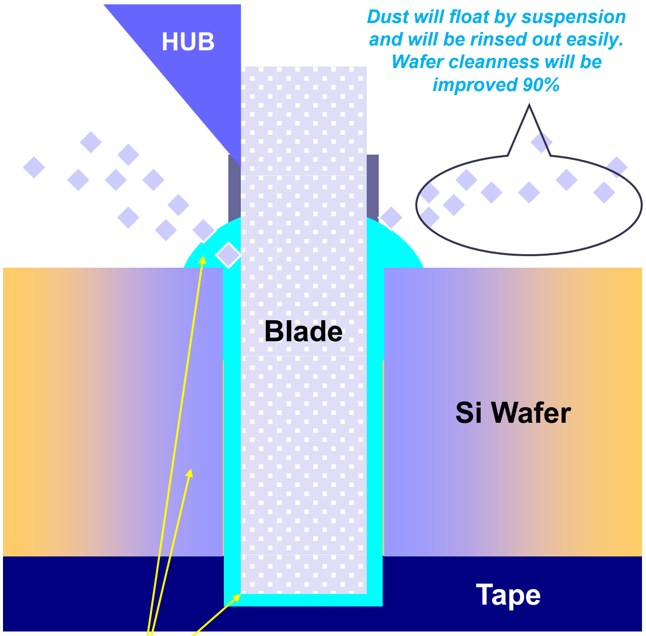
We strive to provide the best suited product to our customers as well as onsite support for process development and troubleshooting of process issues for new and existing customers.

ADD VALUE TO YOUR DIE-SEPARATION PROCESS

UDM Systems® , 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.

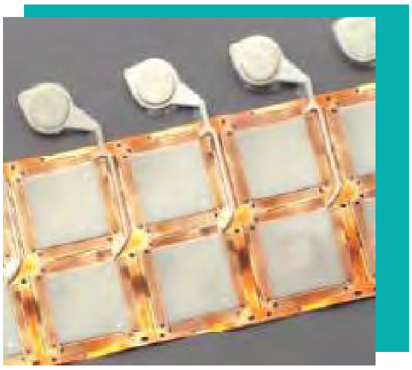
NIKALET ECR comes in two types:
Transfer Type - Circular Cylinder Pellets
Compression Type - Parallelepiped Tablets.

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.

We can provide various size for cleaning based on epoxy molding compound.



Glade	CC	PF	CL	CP	GR
Property	Standard	Environmental	High Ability	High Cycle	For Green Compound
Cure speed	Standard	Standard	Slow	Fast	Standard
Size	For Conventional Type Machine Φ40mm-50g.Φ48mm-75g.55mm-90g				
	For Auto Mold Type Machine Φ9.8mm.ϕ11mm.13mm.14mm.16mm.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-C (COMPRESSION TYPE)

NIKALET ECR-C is Compression type melamine based mold cleaner.

Appearance	White Ivory
Specific Density of Tablet	1.0g-1.3g/cm³
Specific Gravity of Molded Cleaner	1.4-1.6
Flow	80-100mm [a]
Hardness after Curing	>70 [b]
Application	Runner Gate, Cavity, Air-vent, Parting-area

a) Analyzed by JIS K6911 method
b) Analyzed using Shore-hardness Meter D (Mold temp., 170ºc Molding pressure, 6.9Mpa)
Size : 73mm(L)×38mm(W)×7mm(H) Weight : 20g

NIKALET ECR-C KU (CONDITIONER)

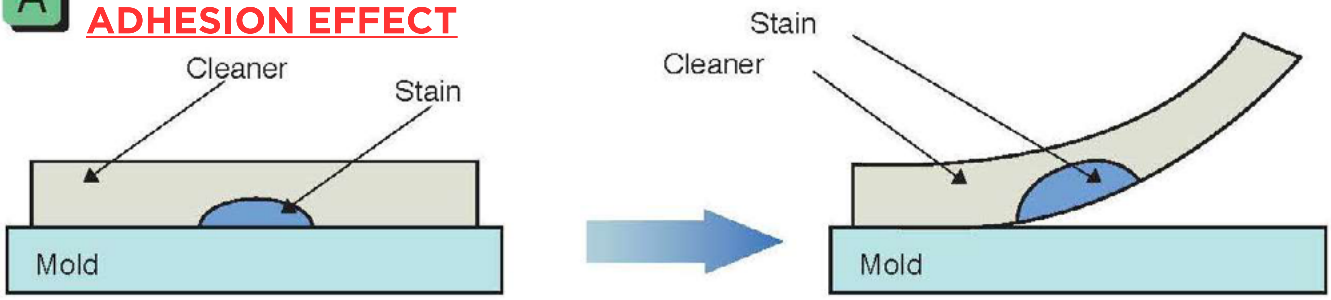
NIKALET ECR-C KU is Compression type melamine based mold conditioner.

Appearance	Light Ivory
Specific Density of Tablet	1.0g-1.3g/cm³
Specific Gravity of Molded Cleaner	1.4-1.6
Flow	90-100mm [a]
Hardness after Curing	>70 [b]
Application	Runner Gate, Cavity, Air-vent, Parting-area

a) Analyzed by JIS K6911 method
b) Analyzed using Shore-hardness Meter D (Mold temp., 170ºc Molding pressure, 6.9Mpa)
Size : 73mm(L)×38mm(W)×7mm(H) Weight : 20g

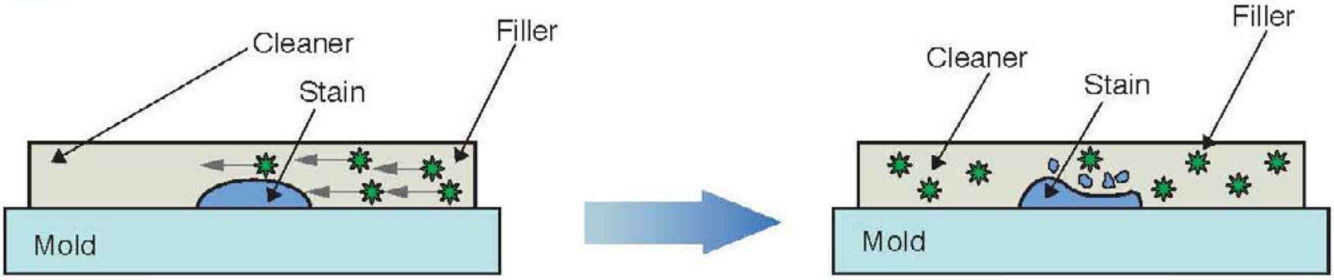
3 Cleaning Effects:

A ADHESION EFFECT



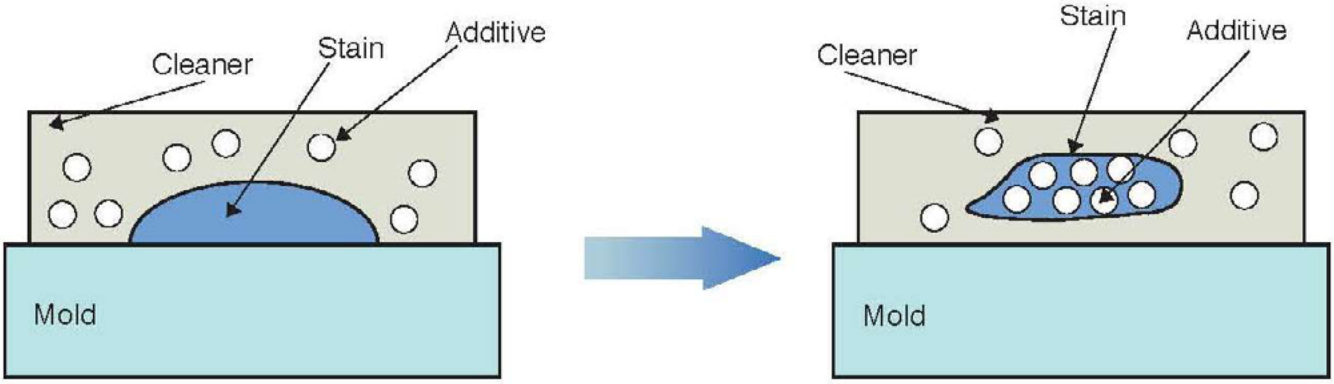
- Cleaner adheres to the stain and peels it off from the surface of mold.

B GRINDING EFFECT



- Filler in the cleaner grinds the stain off.

C PENETRATING EFFECT



- Additives in the cleaner penetrate into the stain and swell it.
- 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 (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		white	white	white
Specific Gravity		1.1-1.2	1.1-1.2	1.0-1.1
Molding Method		compression	compression	compression
Viscosity [1]	M	45-55	75-85	65-75
Releasability [2]	1-5	4	5	4
Odor [3]	1-5	4	4	1
Expansion [4]	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 ϕ36mm, 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 [1]	M	70-85	75-90
Releasability [2]	1-5	4	5
Odor [3]	1-5	3	2
Expansion [4]	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

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END OF LINE TOOLS & EQUIPMENT

TRANSFER MOLD

The Feature of TAKARA is the development capability for mold and molding equipment. TAKARA can manufacture mold for lots of kind of Sensor packages and silicon transfer molding.

CONVENTIONAL MOLD DIE

MGP MOLD DIE

MOLD SEALING SYSTEM

TAKARA has many types of system equipment, like R&D and mass production. And all the parts of it, is all customizable, which is able to concern your products status to add options, such as auto-taping system, auto release agent spray system or high-level vacuum system. It's all about your needs.

TRIM & FORM DIE

TAKARA has experience of trim & form die for short pitch package and different types of Sensors. Even for some special pin forms, TAKARA also has experience of them which can mold without pressuring the package.

STAMPING DIE

The quality of lead frame plays an important role in QA. TAKARA can keep the quality of lead frame, and also give lead frame layout advise to client concerning post processes (Molding, Trim & Form and singulation).

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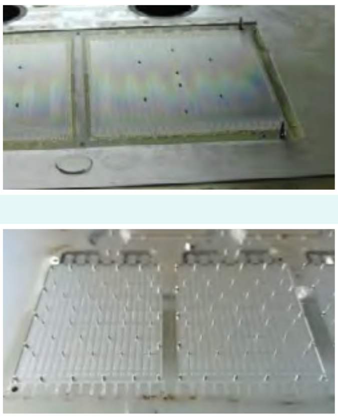
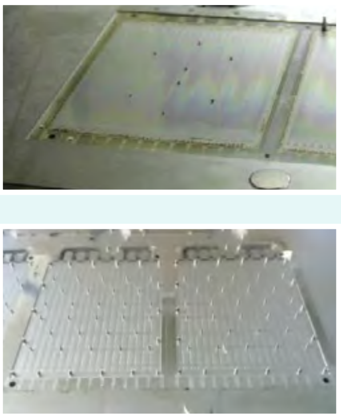
HIGH RELEASE FC COATING


H-CR


FC

A BETTER SURFACE COATING FOR GREEN COMPOUND

In spite of the fact that Epoxy is still the mainstream of molding material, considering environmental awareness, the needs of green compounds has been increasing day by day.

According to the poor release condition of Greed Compound cause long delays and increases the Cycle time, TAKARA recommended FC surface coating. It's not only can keep the equal roughness level to H-Cr, but also improve release condition. As a consequence, the total productivity would be improved.

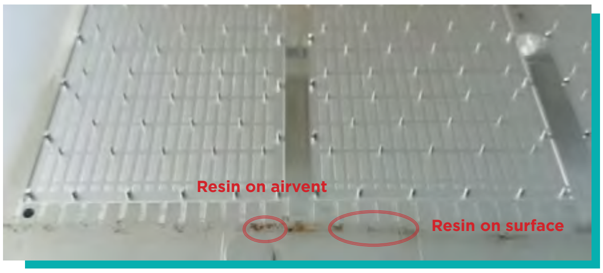
FC FEATURES

- Surface roughness level is equal to H-CR (Can also apply Satin~ mirror surface)
- Improve 50% releasing performance
- Surface hardness : 1100~1200HV
- Wetting angle ~ 105°

COMPARISON

- Reduce cleaning frequency around 32%
- Improve the total productivity around 3%

	H-CR	FC
Coating Hardness (HV)	800 - 1000	1100 - 1200
Thickness (μm)	5-Mar	5-Feb
Dynamic Friction Coefficient (μ)	0.9	0.25
Water Repellence Wetting Angle 1°	30	105



H-Cr (after 250 shots)

FC (after 250 shots)

EVALUATION TEST

Shot	Mold Surface Condition		Airvent Section	
	H-CR	FC	H-CR	FC
1	Good	Good	Good	Good
⋮				
200	Resin Adhesion		Resin Adhesion	
250		Good		Good

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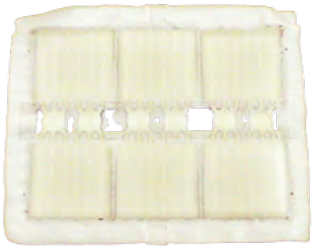
MOLDING LINER

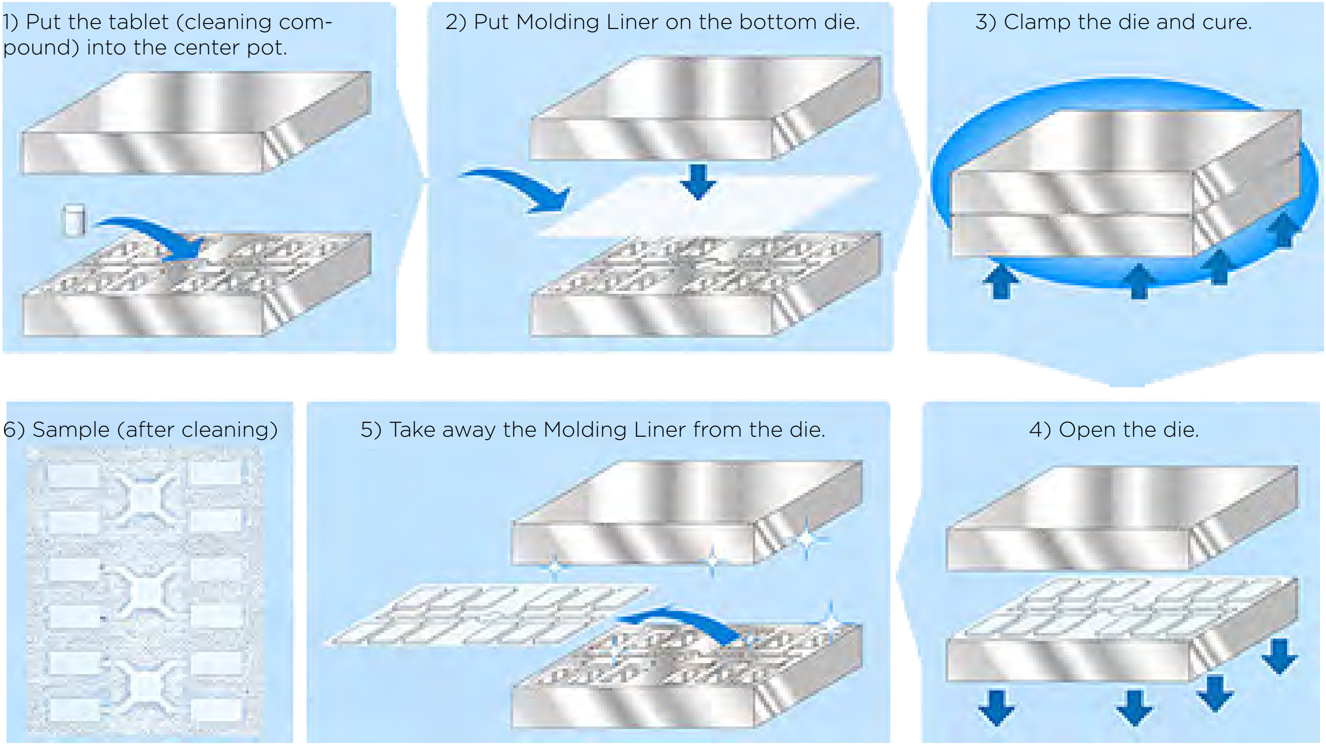


CHARACTERISTICS OF MOLDING LINER

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.



1) Put the tablet (cleaning compound) into the center pot.

2) Put Molding Liner on the bottom die.

3) Clamp the die and cure.

4) Open the die.

5) Take away the Molding Liner from the die.

6) Sample (after cleaning)

Specification	Article No	Weight (g/m²)	Thickness (mm)	Mesh	DRY (N/50mm) Tensile Strength (dry-N50mm)		DRY (%) Breaking Elongation (Dry. %)	
					M.D	C.D	M.D	C.D
Thin Type	PO500	50	0.2	-	57.34	24.89	4.6	6.1
Standard Type	BA839	82.5	0.47	90	118.03	38.29	27.3	93.9

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MOLD CLEANING PAPER LEADFRAME

Paper Lead Frame is specially designed to be used as alternative to costly metal lead frames or costly substrate in the melamine transfer mold cleaning process.

Benefits of using Paper Frames in the transfer mold cleaning:

- Maintain current molding temperature and parameters.
- Cleaning as effective as using frames or better.
- Easy de-molding.
- Inert material with no reaction to tool surface.

TYPES OF PAPER LEADFRAME

3 Layer SOT
Paper Leadframe

2 Layer SOT
Paper Leadframe

Epoxy
Leadframe

Multiple Stack Paper
Leadframe

LOC Paper
Leadframe

Paper Leadframe

Mold Paper Frame

Multiple
Thickness Paper
Leadframe

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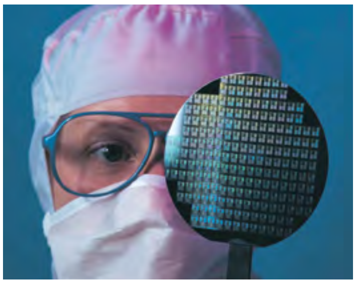
RBS DETERGENT

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.



ELECTRONIC / SEMICONDUCTORS

Cleaning electronic component, circuit board, assemblies, screens, parts, ceramic insulators & components, silicon wafer, mold dies and cavities

Mild alkaline / **RBS IND 700, RBS IND 740**
Manual, ultrasonic cleaning, soak 1-2%; 50-60°C

GLASS / OPTIC

Cleaning flat glass, optics & lenses, glass sheet, quartz

Mild alkaline low foam / **RBS IND 500, RBS IND 750**
Part washer, power wash , spraying, brush system 1-2%; 45-60°C

METAL WORKING

Cleaning stainless steel parts, chrome steel ...
Low concentration, temperature and
short contact time are recommended for soft metals.

Alkaline / **RBS IND 705, RBS IND 743**
Manual, soak, circulation 0.5-2%; 40-70°C

PLASTIC

Cleaning parts and surfaces made of resistant plastics.
Not recommended for polycarbonate (PC).

Alkaline low foam / **RBS IND 756**
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.

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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 non-ionic surfactant, phosphates and polyphosphates, hydrates and chlorinated agents.

DIRECTIONS FOR USE:

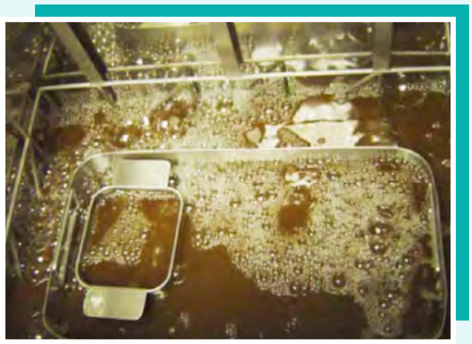
Soaking

- Solution with water (recommended temperature of 50ºc- 70ºc
- 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.

Ultrasonic Cleaner

- Ultrasonic machines
- Concentration of 2% to 5% is generally sufficient.

Parts placed in basket



Parts immersed in RBS 35 solution in ultrasonic tank set around 60ºc temperature

Mold cavity bar before cleaning

Mold cavity bar after cleaning

DESICCANT

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

Product Code	Size	Packing
DY-OP-BR1-5-60X60MM-P01-3S	60 x 60 mm	1400 bags/tin
DY-OP-BR1-10-70X60MM-P01-3S	70 x 60 mm	800 bags/tin
DY-OP-BR1-40-110X75MM-P01-3S	110 x 75 mm	300 bags/ctn
DY-OP-BR1-50-120X100MM-P01-3S	120 x 100 mm	150 bags/tin

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

MOLECULAR SIEVE

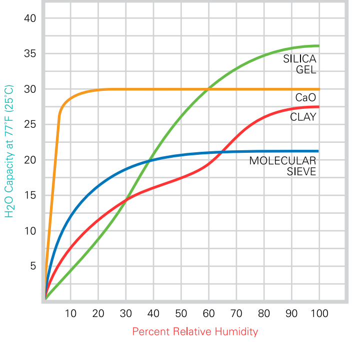
Product Code	Size	Packing
DY-TY1-MS-15-90X75MM-P04-3S	90 x 75 mm	500 bags/ctn
DY-TY-MS-25-100X54MM-P63-PL	100 x 54 mm	400 bags/ctn
DY-TY-MS-30-110X54MM-P64-PL	110 x 54 mm	500 bags/tin
DY-TY-MS-45-115X100MM-3S	115 x 100 mm	300 bags/tin

PACKING MTRL OPTION: TY1/NW1/MP

Dou Yee can supply desiccants bagged in different materials depending on your requirements.

- Tyvek®
- Non-women Fabric
- Translucent Static Shielding Film
- Clear PP/OPP Film
- Kraft paper

Packing Materials



Equilibrium Capacity (H2O) of Various Absorbents

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DESICCANT FOR AUTO-PACKING

With the current trend of automation in manufacturing capabilities, there is an improvement in automation technologies by introducing self-optimization, self-configuration and self-diagnosis system in which businesses are creating intelligent networks along the entire value chain than can control each other autonomously.

Automating desiccant results in decreased in production times and increasing manufacturing efficiency. Therefore, it is necessary for a customization of our descant product to fit with our customer's automation.

DOU YEE with the collaboration of several customers have developed our customised descant in spool/reel form. Spool design will be based on the desiccants bag size. The quantities of the pouches in a spool will be defined by the total weight that the spool can withstand and most importantly practicability handling by operators.

Type of Detection	Eye-mark or Punched Hole Detection	
Type of Flange Material	Corrugated Material (Blue/Black)	
Standard Flange Diameter	Ø 18" or Ø 20"	
Standard Thickness of Flange	4mm - 8mm	
Standard Weight of Flange	650gsm, 1700gsm	
Standard Type of Core	Paper Core	Plastic Core
Standard Core Diameter	ID: 76.2mm, OD: 106.2mm	ID: 76.2mm, OD: 82.0mm
	ID: 78.5mm, OD: 98.5mm	

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CONTAINER DESICCANT HI-DRY

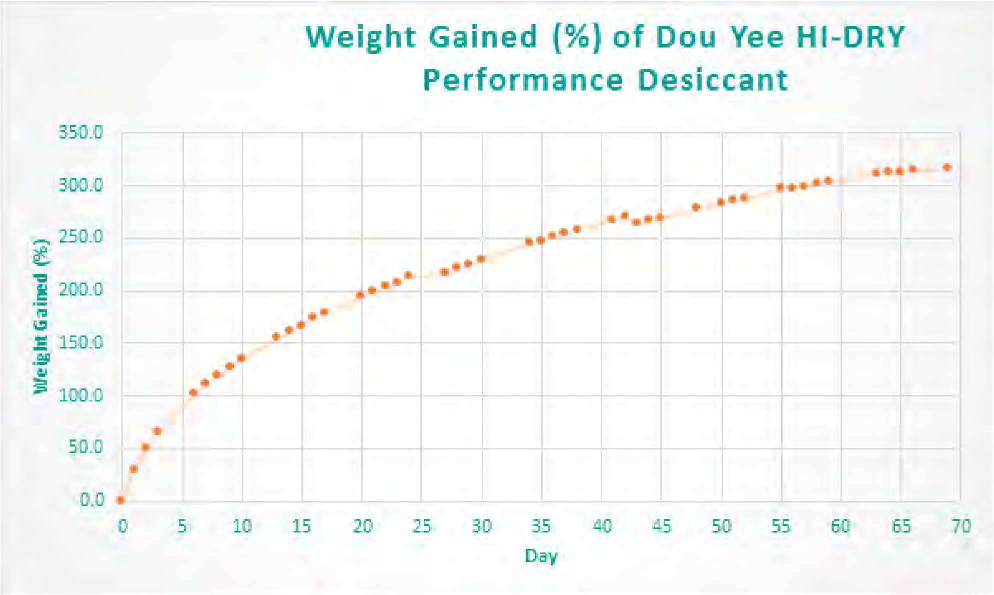
Dou Yee HI-DRY High Performance Desiccant uses super absorbent with catalyst.

It is a highly efficient super-absorbent packed in a strong, tough breathable film. When the desiccant absorbed moisture, it turns into a gel eliminating any possibility of leakage at saturation.

Dou Yee HI-DRY has a high absorption capacity which is able to absorb 250%-300% of its own weight depending on the formulation.

Dou Yee HI-DRY is highly suitable for bulk packaging and long distance shipment where humidity levels fluctuate irregularly.

HI-DRY	Silica Gel
25°C ; 90% RH	
250%-350%	30%-35%



VARIETY OF APPLICATIONS

Industrial / Electronic	Automotive, Home Appliances
Transportation /Distribution	Point to point Inland Transport, Container Storage
Home	Mildew-proofing for Closet, Drawer and Shoe Box

HUMIDITY INDICATOR CARD

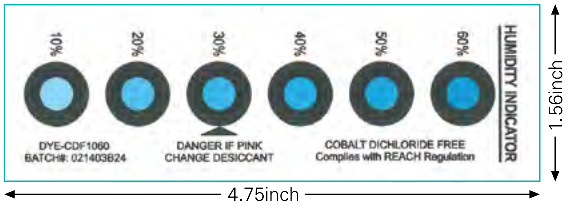
Humidity indicator cards are used in dry packing for detecting the humidity level in the dry packed environment. The indicating spots on the card are impregnated with a moisture sensitive chemical which will change color upon absorbing moisture.

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

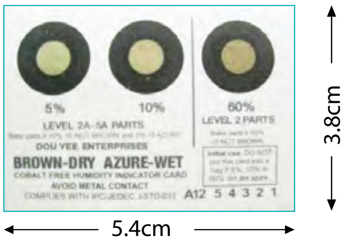
DESCRIPTION	CHARACTERISTICS
Indicates	10%, 20%, 30%, 40%, 50%, 60% relative humidity
Material	Blotting Paper
Dimensions	10.5cm x 3.8cm
Indicating Spots	5%, 10%,60% (left to right)
Printing	Heavy Black On White
Packaging	200 pcs per pint can
Approx. Shipping Weight	20oz. per can
Standards	Meets Mil-1-8835 & REACH Regulation

DYE-CDF1060



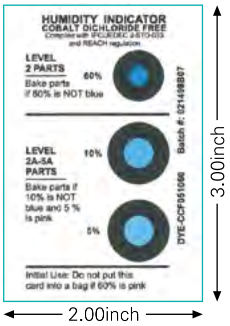
DESCRIPTION	CHARACTERISTICS
Indicates	10%, 20%, 30%, 40%, 50%, 60% relative humidity
Material	Blotting Paper
Dimensions	1.56inch x 4.75inch
Indicating Spots	10% – 60% RH
Printing	Heavy Black On White
Packaging	200 pcs per pint can
Approx. Shipping Weight	20oz. per can
Standards	Meets Mil-1-8835 & Mil-P-116

HI-051060



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-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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PALLET
CUSHION & SPACER

PREVENT COSTLY SHOCK DAMAGE

PALELT CUSHION have Brown, Green, Yellow, Blue, Orange 5 different colors, shockproof balls of different colors represent different bearing.

Parts No.	Color		Load Capacity	Fixing	Unit Weight
WY- 60035	Brown		9.6-15. 9kg/ 21. 16-35. 05Lb	M8 T-Nut	0. 12kg±5g
WY- 60050	Green		13. 6- 22. 7kg/29. 98- 50. 04Lb	M8 T-Nut	0. 13kg±5g
WY- 60080	Yellow		20.4- 36.3kg/44. 97- 80. 03Lb	M8 T-Nut	0. 15kg±5g
WY- 60125	Blue		31.8- 56. 7kg/70. 11 - 125Lb	M8 T-Nut	0. 16kg±5g
WY- 60225	Orange		56. 7-102kg/125-224.87Lb	M8 T-Nut	0. 17kg±5g
PALLET CUSHION PACK: 60/Box					
WY- 20509	Black		Spacer	PACK : 100/Box	

BENEFITS:

- Reduce packaging design & assembly time and cost.
- Eliminate costly damage from handling hazards during shipment.
- Reduce costs associated with shock and vibration damage.
- Provide protection during loading/unloading.
- Eliminate the need for expensive air-ride vans.
- Permit 4-way pallet entry design.
- Easily add shock protection to crates/pallets.
- PALLET CUSHION+ SPACER fits most pallet jacks worldwide.

SPECIFICATION:

- Material: LDPE
- Size: 150*70mm
- With Metric M8 Option
- Temperature : Cushions Are Suitable For Use Between -40 F And + 130F (-40 C To +54 C).
- Chemical Resistant : Cushions are made of polyethylene a chemically inert material.
- Durable & Tough: Under the maximum load, cushions can endure 3000 feet (914 meters) of dragging over concrete and floor joints.
- Recyclable : Every cushion is environmentally friendly and reusable.

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SHIPPING INDICATOR LABEL

IMPACT LABEL

Length X Width	G (Value)	Drop height at which expect label activation
97×97mm (3.82×3.82in)	25G	15 ~ 30cm

Length X Width	G (Value)	Drop height at which expect label activation
97×97mm (3.82×3.82in)	37G	20 ~ 40cm

Length X Width	G (Value)	Drop height at which expect label activation
97×97mm (3.82×3.82in)	50G	30 ~ 60cm

Length X Width	G (Value)	Drop height at which expect label activation
97×97mm (3.82×3.82in)	75G	60 ~ 90cm

Length X Width	G (Value)	Drop height at which expect label activation
97×97mm (3.82×3.82in)	100G	> 90cm

Impact label can easily to detect whether the goods are subjected to a impact/ strong force during transportation that are beyond the specific G force. It is widely used for monitoring goods during the process of transportation, which enables the operator to load and unload the goods with extra caution.

BENEFITS:

- Reducing the cost of damaged goods up to 70%.
- Combining with the Track Goods System can identify the responsible party.
- Providing useful evidence.
- Enabling the goods to be treated with caution.
- Enhancing the company's image.

SHIPPING INDICATOR LABEL

LEANING LABEL

LEANING LABEL PLUS

LEANING LABEL

LEANING LABEL II

Leaning Label can easily to detect whether the goods are tilted, placed horizontally or upside down in transit of loading or unloading. Leaning Label is widely used for monitoring goods during the process of the transportation, which enables the operator to load or unload of the goods carefully.

Length x Width x Height	Activation Angle
74×60×5mm (2.95×2.36×0.35in)	80°±5°

BENEFITS:

- Reducing the cost of damaged goods up to 70%.
- Combining with the Track Goods System can identify the responsible party.
- Providing useful evidence.
- Enabling the goods to be treated with caution.
- Enhancing the company's image.

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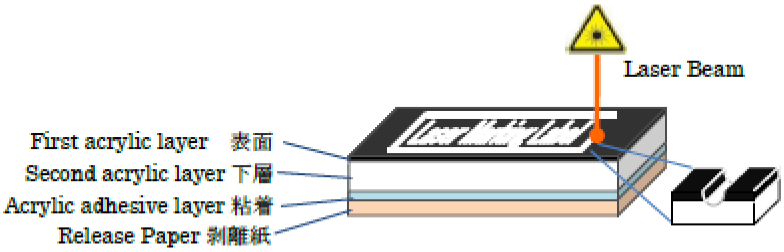
LASER MARKING LABEL MATERIALS

Hi-S CaL AX Series

Hi-S CaL laser marking label materials are brittle acrylic double-layered film with different colors. By laser beam, first layer of label is engraved, and marked with high contrast and resolution by desired multi label format. With the first layer of uniform thickness, the laser prints stably and cannot be erased. In case of CO2 laser, marking and cutting can be executed by one step.



HIGH DENSITY INFORMATION

With small letters, barcodes or two-dimensional barcodes(QR code, Data matorix), a large amount of information can be placed on a small area.

DURABILITY

Since the heat resistance of the label is high, it withstands the high temperature solder reflow process and the temperature inside the automobile engine room.

Weather resistant SWOM 3000hr. Excellent solvent and chemical resistance.

ON DEMAND PRINTING

Designed multiple labels are marked with high contrast and high resolution with on demand.

SECURITY FEATURES

BRITTLE LABEL

When the film is peeled off, the film is broken up and proved to be peeled off.

HIDDEN SECURITY PRINTING

Customized watermark logo design improves security performance by hidden security printing.

UV FOOTPRINT

If label is removed, the evidence proof up by irradiation with an ultraviolet lamp.

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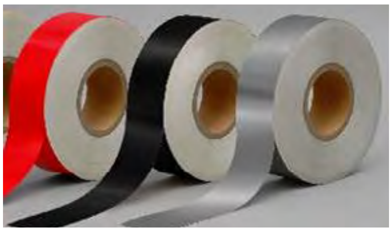
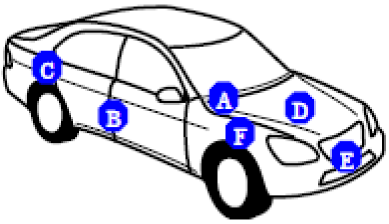
PRODUCT STRUCTURE

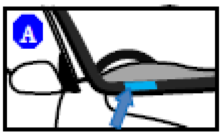
The structure of the product is two layers of black / white, white / black, silver/ black. Product specifications are 120 mm widths and 100 meter long .

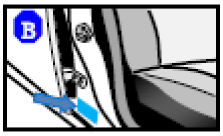


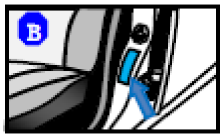
APPLICATIONS

- Automotive Tamper evident VIN (Vehicle Identification Number) Labels
  - A Dashboard
  - B Center B post
  - C Fuel filler cap
  - D Engine parts
  - E Frontend
  - F Fender





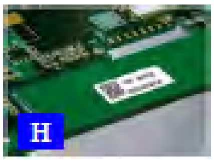




- Auto Parts

  EV, HV and PHV parts: Battery, Motor, Inverter, Power Control Unit(PCU)
  Autonomous driving system: Camera unit, Ultrasonic sensor unit, Light Detection and Ranging(LiDAR) sensor unit, Gyro Sensor unit

- Product name Label G
- Process control labels for electronic substrates H
- Warranty label
- Caution label
- Product ID label
- ID label for Smart Meter (Electric Power and Gas)



GENERAL PROPERTIES

SUBJECT	TEST METHOD	RESULT
Heat Stability	150 c x 1000hr	Performance unchanged
Weather Resistance	S-WOM 3000hr	Performance unchanged
Fuel Oil	Gasoline dipping 30min	Performance unchanged

STORAGE & SHELF LIFE

Hi-S CaL films should be stored in cool dry place and should not be exposed to direct sunlight. Suitable ambient temperature is less than 35 °C.

The quality guaranteed period is 12 months after delivery if the above storage conditions have been satisfied.

CAUTION

We recommend using a dust collector with a deodorizing device for gas and dust generated during laser marking.

More than 45 offices across *North America, Europe and Asia Pacific*

- Manufacturing Plants -

Singapore • Malaysia • China • France • Poland

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E-Catalogue

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