

## HALOGEN-FREE SERIES

1. Halogen-free single-sided FCCL / RA
2. Halogen-free double-sided FCCL/ RA
3. Halogen-free Cover Layer
4. Halogen-free PI Stiffener
5. Halogen-free (Bonding Sheet)



### 1. Halogen free Single-sided FCCL / RA :

Product Properties :

1. Halogen and Stibium free
2. Good Migration Ability
3. Good Dimensional Stability
4. UL-94V0 certified

Product Number		THKS050513	THKS100520	THKS101020
		Cu 1/2 OZ AD 13 um PI 1/2 mil	Cu 1 OZ AD 13 um PI 1 mil	Cu 1 OZ AD 20 um PI 1 mil
Product Properties	unit			
Peel strength (kgf/cm)	A	≥0.5	≥0.7	≥0.7
MIT(0.8*0.5kg)	次	≥500	≥150	≥200
Dimensional Stability(%)	MD	≤±0.2	≤±0.2	≤±0.2
	TD	≤±0.2	≤±0.2	≤±0.2
Solder Float Resistance	300°C×10sec	300°C×10sec	300°C×10sec	300°C×10sec
Insulation Resistance	R	1.0E+11	1.0E+11	1.0E+11
	RS(Ω)	1.0E+14	1.0E+14	1.0E+14
	RV(Ωcm)	1.0E+15	1.0E+15	1.0E+15
Flammability	94-V0	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>
	10%HCl	OK	OK	OK
	10%NaOH	OK	OK	OK
Chemical Resistance	Acton	OK	OK	OK
	IPA	OK	OK	OK
	Dichloromethane	OK	OK	OK
	Dichloroethane	OK	OK	OK

### 2. Halogen free Double-sided FCCL/RA :

Product Properties :

1. Halogen and Stibium free
2. Good Migration Ability
3. Good Dimensional Stability
4. Pending UL-94V0 Certification

Product Number		THKD050513	THKD100520	THKD101020
		Cu 1/2 OZ AD 13 um PI 1/2 mil AD 13□m	Cu 1/2 OZ AD 20 um PI 1/2 mil AD 20□m	Cu 1 OZ AD 20 um PI 1 mil AD 20□m
Product Properties	unit			

		Cu 1/2 oz	Cu 1/2 oz	Cu 1 oz
Peel strength (kgf/cm)	A	$\geq 0.5$	$\geq 0.7$	$\geq 0.7$
MIT(0.8*0.5kg)	Times	$\geq 500$	$\geq 150$	$\geq 200$
Dimensional Stability(%)	MD	$\leq \pm 0.2$	$\leq \pm 0.2$	$\leq \pm 0.2$
	TD	$\leq \pm 0.2$	$\leq \pm 0.2$	$\leq \pm 0.2$
Solder Float Resistance		300°C×10sec	300°C×10sec	300°C×10sec
Insulation Resistance	R( $\Omega$ )	1.0E+11	1.0E+11	1.0E+11
	RS( $\Omega$ )	1.0E+14	1.0E+14	1.0E+14
	RV( $\Omega$ cm)	1.0E+15	1.0E+15	1.0E+15
Flammability	94-V0	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>
	10%HCl	OK	OK	OK
	10%NaOH	OK	OK	OK
	Acton	OK	OK	OK
Chemical Resistance	IPA	OK	OK	OK
	Dichloromethane	OK	OK	OK
	Dichloroethane	OK	OK	OK

### 3. Halogen free Cover Layer :

Product Properties :

1. Halogen and Stibium free
2. Good Dimensional Stability
3. Pending UL-94V0 Certification

Product Number		FHK0515	FHK0525
Product Properties	unit	PI 1/2 mil AD 15um Release Paper	PI 1/2 mil AD 25um Release Paper
Product Thickness	um	27	38
Resin Flow	mm	< 0.2	< 0.2
Peel Strength (90 Degree Peel)	Kgf/cm	$\geq 0.7$	$\geq 0.9$
Solder Float Resistance		300°C/10sec	300°C/10sec
Insulation Resistance	$\Omega$	$Rs1 \times 10^{12}$	$Rs1 \times 10^{12}$
		$Rv1 \times 10^{14}$	$Rv1 \times 10^{14}$
Shelf Life	Month	0°C/ 6 Month	0°C/ 6 Month
		10°C/ 3 Month	10°C/ 3 Month
Dimensional Stability	MD%	$\pm 0.2$	$\pm 0.2$
	TD%	$\pm 0.2$	$\pm 0.2$
Flammability	94-V0	Pass	Pass

Product Number		FHK1025	FHK1035
Product Properties	unit	PI 1 mil AD 25um Release Paper	PI 1 mil AD 35um Release Paper
Product Thickness	um	50	60
Resin Flow	mm	< 0.2	< 0.2
Peel Strength (90 Degree Peel)	Kgf/cm	$\geq 1.0$	$\geq 1.0$
Solder Float Resistance		300°C/10sec	300°C/10sec
Insulation Resistance	$\Omega$	$Rs1 \times 10^{12}$	$Rs1 \times 10^{12}$
		$Rv1 \times 10^{14}$	$Rv1 \times 10^{14}$

Shelf Life	Month	0°C/ 6 Month	0°C/ 6 Month
		10°C/ 3 Month	10°C/ 3 Month
Dimensional Stability	MD%	± 0.2	± 0.2
	TD%	± 0.2	± 0.2
Flammability	94-V0	Pass	Pass

\* Special specification and inquiry, please contact Taiflex Scientific sales office.

Lamination material: laminate with 35um of copper foil on the drum side

#### 4. Halogen free Stiffener :

Product Properties :

- 1. Excellent Peel Strength
- 2. Good Thermo-Stability
- 3. Halogen Free
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Product Number		RHT2025AL	RHT5025AL	RHT7025AL
		PI 50 um AD 25um Release Material	PI Composite Material125 um AD 25um Release Material	PI Composite Material165 um AD 25um Release Material
Product Properties	unit			
Peel Strength (180 Degree Peel)	PI Side Peel	≥1.0	≥1.0	≥1.0
	Copper Side Peel	≥1.0	≥1.0	≥1.0
Solder Float Resistance		300°C×30sec	300°C×30sec	300°C×30sec
Resin Flow	mm	<0.3	<0.3	<0.3
Product Thickness	um	75	150	190
Electrical Characteristics	Volume Resistance (Ω)	>1.0E+12	>1.0E+12	>1.0E+12
	Surface Resistance (Ωcm)	>1.0E+14	>1.0E+14	>1.0E+14

Product Number		RHT8025	RHT9025
		PI 200 um AD 25um Release Material	PI Composite Material225 um AD 25um Release Material
Product Properties	unit		
Peel Strength (180 Degree Peel)	PI Side Peel	≥1.0	≥1.0
	Copper Side Peel	≥1.0	≥1.0
Solder Float Resistance		300°C×30sec	300°C×30sec
Resin Flow	mm	<0.3	<0.3
Product Thickness	um	225	250
Electrical Characteristics	Volume Resistance (Ω)	1.0E+12	1.0E+12
	Surface Resistance (Ωcm)	1.0E+14	1.0E+14

#### 5. Halogen free Bonding Sheet(Bonding sheet) :

Product Properties :

- 1. Good Release Operation
- 2. Low Resin Flow
- 3. Halogen Free
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Product Number

**BH10**  
Release Film

**BH15**  
Release Film

Product Properties	Unit	AD 10um Release Paper	AD 15um Release Paper
Product Thickness	um	10	15
Resin Flow	mm	0.1	0.1
Peel Strength (90 Degree Peel)	Kgf/cm	$\geq 1.0$	$\geq 1.0$
Solder Float Resistance		300°C/60sec	300°C/60sec
Insulation Resistance	$\Omega$	$Rs1 \times 10^{12}$	$Rs1 \times 10^{12}$
		$Rv1 \times 10^{14}$	$Rv1 \times 10^{14}$
Shelf Life	Month	0°C/ 6 Month	0°C/ 6 Month
		10°C/ 3 Month	10°C/ 3 Month
<b>Product Number</b>		<b>BH25</b>	<b>BH50</b>
Product Properties	Unit	Release Film AD 25um Release Paper	Release Film AD 50um Release Paper
Product Thickness	um	25	50
Resin Flow	mm	0.1	0.1
Peel Strength (90 Degree Peel)	Kgf/cm	$\geq 1.0$	$\geq 1.0$
Solder Float Resistance		300°C/60sec	300°C/60sec
Insulation Resistance	$\Omega$	$Rs1 \times 10^{12}$	$Rs1 \times 10^{12}$
		$Rv1 \times 10^{14}$	$Rv1 \times 10^{14}$
Shelf Life	Month	0°C/ 6 Month	0°C/ 6 Month
		10°C/ 3 Month	10°C/ 3 Month