#### 1. For Protection Film ①

#### **《Feature》**

- Low peel strength (Initial and After heating)
- Good wet ability

		OP-1420V10
	Appearance	Slightly yellow clear liquid
Liquid property	NV	35–45 %
	Viscosity (mPa•s/23 °C)	2000~5000
	Transmittance	> 90 %
	Haze	0.8 %
DCA	Initial peel strength	6 (gf/25mm)
PSA property	After heating (150 °C × 90 min)	12 (gf/25mm)
	Wet heat resistance (60°C90 % × 720 h)	13 (gf/25mm)
	Heat resistance (80 ℃ × 720 h)	13 (gf/25mm)

Peel speed: 300 mm/min

Adherend: Hard coated PET (Aica Z-770UH) / PSA  $10 \mu$  / PET  $50 \mu$  (Toyobo A-4100)



#### 2. For Protection Film<sup>2</sup>

#### **《Feature》**

- Low peel strength even at high speed peeling
- Good wet ability

			OP-1460-2
		Appearance	Slightly yellow clear liquid
Liquid property		NV	40-50 %
	Viscos	ity (mPa•s/23 °C)	1000~5000
	Т	ransmittance	> 90 %
	Haze		0.8 %
	Peel strength (180° Peel)	Peel speed (300mm/min)	1 (gf/25mm)
		Peel speed (20M/min)	18 (gf/25mm)
PSA property		Peel speed (30M/min)	24 (gf/25mm)
	Peel strength	Peel speed (300mm/min)	2 (gf/25mm)
	After 150°C1hr	Peel speed (20M/min)	23 (gf/25mm)
	(180º Peel)	Peel speed (30M/min)	29 (gf/25mm)

Glass/ PSA  $20\,\mu$  / PET  $50\,\mu$  (Toyobo A-4100)



#### 3. For Protection Film ③

#### **《Feature》**

- •Even acrylic PSA is middle peel strength for fluorine glass
- Good wet ability

			OP-1470	OP-1470-3
	App	earance	Slightly yellow clear liquid	Slightly yellow clear liquid
Liquid property		NV	45-55%	50-60%
ргорегсу	Viscosity	(mPa•s/23 °C)	1000~4000	500 <b>~</b> 1000
	Tran	smittance	> 90 %	> 90 %
PSA		Haze	0.8 %	0.8 %
property	Peel strength	AF-glass	24 (gf/25mm)	125 (gf/25mm)
	(180º Peel),	SUS304	550 (gf/25mm)	-

Peel speed: 300 mm/min

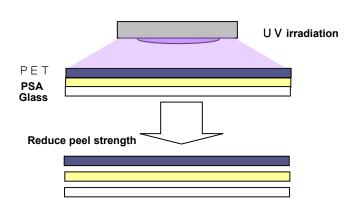
Adherend : AF-glass / PSA  $20\,\mu$  / PET  $25\,\mu$  (Toyobo A-4100) Adherend : SUS304 / PSA  $20\,\mu$  / PET  $25\,\mu$  (Toyobo A-4100)



#### 4. For Dicing tape

#### **《Feature》**

- Reduce peel strength by UV irradiation
- -H is high peel strength type, L is low peel strength type
- -We can adjust the peel strength to your request peel strength.



	ltem		OP-3800LL	OP-3800LL-2	ОР-3800НН	OP-3800HL
	Appearance		Slightly yellow clear liquid	Slightly yellow clear liquid	Slightly yellow clear liquid	Slightly yellow clear liquid
Liquid	NV (%	)	35 - 45	40 - 50	40 - 50	40 - 50
property	Viscosity (mPa • s/23°C)	- s/23°C)	1500 - 4500	2000 - 6000	1000 - 5000	1000 - 5000
	Base poly	/mer	Acrylic polymer	Acrylic polymer	Acrylic polymer	Acrylic polymer
	Peel strength *1	Before UV	400	200	1300	800
PSA property	(gf/25mm)	After UV *3	10	10	10	10
	Elongation *2 (%)	After UV *3	-	30	20	50

Peel speed : 300 mm/min

Adherend : SUS304 / PSA 10  $\mu$  / PO 80  $\mu$ 

Recommend UV condition: High pressure mercury lamp, 200 mJ/cm2, 150 mW/cm2



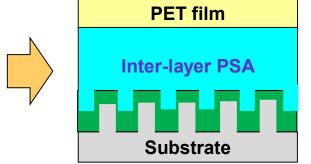
### 5. For BG tape

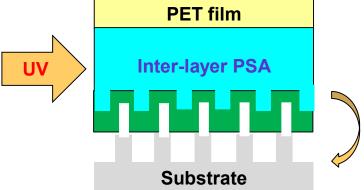
**PET film** 

**Inter-layer PSA** 

**UV PSA** 

Release film





			OP-9303	OP-3840-1
			Inter-layer PSA	UV PSA
	Solv	vent	Ethyl Acetate	Ethyl Acetate
Liquid Properties	N	V	40 - 50	30 - 40
1 100011100	Vis		1,000 - 5,000	1,000 - 4,000
	F	Т	90 μ	10 μ
_	Step Absorp	tion (40μ) <sup>*1</sup>	0	K
PSA Properties	Holding	Power *2	No (	Gap
	Peel strength *3	Before UV	800	
	(gf/25mm)	After UV *4	1	0

<sup>\*1: 50</sup>µPET/PSA100µ/40µ Print Glass



<sup>\*2: 50</sup>µPET/PSA100µ, 25 × 25mm/Glass, Load 1kg at 23°C for 24hr

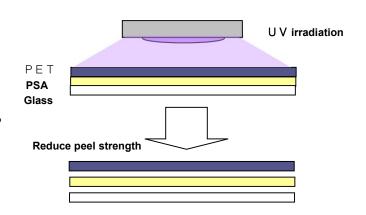
<sup>\*3: 50</sup>µPET/PSA100µ/SUS, 180°Peel, 300mm/min

<sup>\*4:</sup> High pressure mercury lamp, 200mJ/cm<sup>2</sup>, 150mW/cm<sup>2</sup>

#### 6. For Process Protection

#### **《Feature》**

- -Rise peel strength by UV irradiation
- -We can adjust the peel strength to your request peel strength.



		OP-3900
	Appearance	Slightly yellow clear liquid
Liquid property	NV	50-60 %
	Viscosity (mPa•s/23 °C)	1,000-3,000
	Peel strength (Initial)	7 gf/25mm
PSA Property	Peel strength (after UV)	1100 gf/25mm

Peel speed : 300 mm/min

Adherend : Glass / PSA 13 $\mu$  / PET 75 $\mu$  (Toyobo A-4100)

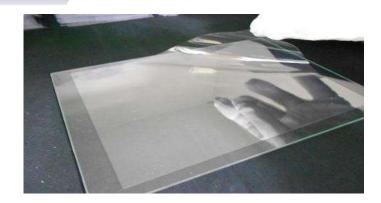
Recommend UV condition: LED-UV lamp, 2,000 mJ/cm2, 100 mW/cm2



# 7. High peel strength type for ASF

#### **《Feature》**

- Good Anti-scattering for Glass
- High peel strength
- Good repair ability



		OP-3510-2	OP-3511
	Appearance	Slightly yellow clear liquid	Slightly yellow clear liquid
Liquid property	NV	40-50 %	40-50 %
property	Viscosity (mPa•s/23 °C)	4,000 - 7,000	4,000 - 7,000
	Peel strength (after 30min)	11 N/25mm	20N/25mm
	Peel strength (after 24hr)	25N/25mm	25N/25mm
PSA property	Humidity resistance (85℃85 %×72 h)	Non bubble Hz 0.30 → 0.32	Non bubble Hz 0.27 → 0.28
	Elastic modulus (G')1Hz/25℃	0.57 MPa	1.3 MPa
	Remarks	Good Rework	High Initial strength

Peel speed 300mm/min

Adherend : Glass / PSA25 $\mu$  / 50 $\mu$  PET (Toyobo A-4100)



### 8. Thin thickness type for ASF

#### **《Feature》**

- Good Anti-scattering for Glass
- High peel strength at thin thickness
- Good repair ability



		OP-3511	OP-3511-9	OP-3511-10
	Appearance	Slightly yellow clear liquid	Slightly yellow clear liquid	Slightly yellow clear liquid
Liquid property	NV	42-46 %	40-50 %	35-45 %
property	Viscosity (mPa·s/23 ℃)	4,500 - 6,500	2,000 - 6,000	2,000 - 6,000
	Peel strength (after 24hr), 10umt	17 N/25mm	21 N/25mm	25 N/25mm
PSA <sub>.</sub>	Humidity resistance (85℃85 %×72 h)	Non bubble	Non bubble	Non bubble
property - -	Elastic modulus (G')1Hz/25°C	1.3 Mpa	6.2 MPa	5.0 MPa
	Feature	S.t.d.	Higher Modulus	Higher Peel strength

Peel speed 300mm/min, Adherend : Glass / PSA /  $50\,\mu\,\mathrm{PET}$  (Toyobo A-4100)



#### 9. Acid free for OCA

#### **《Feature》**

- High refractive index adhesive
- Good adhesion to Glass and high peel strength

		OP-5100	
	Appearance	Slightly yellow clear liquid	
Liquid property	NV (%)	35 - 45	
	Viscosity (mPa·s/23°C)	2,000 - 4,000	
	Peel strength (gf/25mm)	2050	
	Haze (%)	0.11	
PSA property	Wet heat resistance (85°C85% × 72h)	Non bubble Haze Initial 0.11% → After test 0.20 %	
	Refractive index n <sub>D</sub> <sup>25</sup>	1.51	

Peel speed 300mm/min

Adherend: Glass/PSA20µ/50µPET



## 10. Hot melt type for OCA

#### **《Feature》**

Excellent property of absorbing level difference when you put on a adherend at high temperature (Recommend adhesion condition: Auto clave 0.05MPa, 70°C×5min)

		0P-9300
I the state of the state of	NV	40 - 50 %
Liquid property	Viscosity (mPa•s/23 °C)	2, 000 - 6, 000
	Peel strength (PET / PSA100μ/ Glass)	16 N/25mm
DSA property	Elastic modulus (G') 1Hz/25°C	2. 0×10 <sup>5</sup>
PSA property	Property of absorbing level difference (Glass / PSA100 $\mu$ / 30 $\mu$ Printed glass)	0
	Peel strength (PET / PSA100μ/ Glass)	23 N/25mm
	Gel rate	85 %
	Dielectric constant (1MHz)	3. 6
After UV	Wet heat resistance (Glass / PSA 100 μ / Glass, 85°C85 %×168 h)	Non bubble Haze Initial 0.34 → After test 0.38 %
	Q-UV (340nm, 0.63 W/m2, 60°C 4h exposure→4h stay ×12 cycles	Non bubble

After UV condition: High pressure mercury lamp 2000mJ/cm2(150mW/cm2)

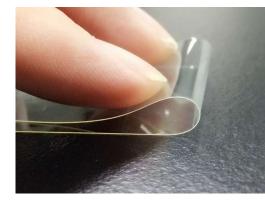


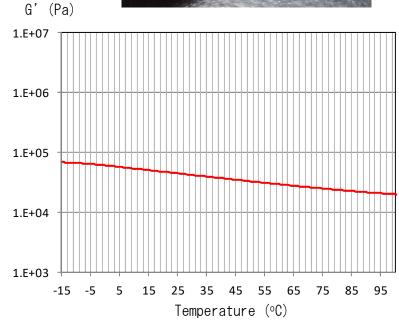
#### 11. OCA with less temp. dependence

#### **《Feature》**

- Little temperature dependence of Elastic modulus
- Acid free type

		0P-4	4800
	Appearance	Slightly yellow liquid	
Liquid	NV	20 -	30 %
property	Solvent	Ethyl <i>i</i>	Acetate
	Viscosity (mPa•s/23 °C)	2, 000 -	- 6, 000
PSA property *1	Peel strength (PET/ PSA50 $\mu$ / Glass)	11N/25mm	
	Temperature	G'	Tan δ
	<b>-</b> 15 ℃	0.07 <b>M</b> Pa	0. 59
Storage	0 ℃	0.06 <b>M</b> Pa	0. 54
modulus *2	25 ℃	0.04 <b>M</b> Pa	0. 39
	50 °C	0.03 <b>M</b> Pa	0. 32
	85 °C	0.02 <b>M</b> Pa	0. 30





\*1 : C. H. S. 300mm/min

\*2 : DMA (f=1Hz. FT:400-500um)



#### 12. For Heat resistance tape

#### **《Feature》**

- Good heat resistance Acrylic PSA
- Can be peeled off without adhesive residue after High temperature process
- Non-silicone type

			OP-1	480-3
	Арг	Appearance		w clear liquid
Liquid property		NV	20-3	80 %
property	Viscosity(mPa·s/23°C)		1,000 - 4,000	
	Peel strength *1 -	Initial*2	0.6N/25mm	No residue
PSA		After 200°C × 1h*3	0.7N/25mm	No residue
property		After 220°C × 1h*3	0.7N/25mm	No residue
		After $250^{\circ}C \times 1h^{*3}$	0.5N/25mm	No residue

<sup>\*1: 180°</sup>Peel, 25µ PI(Kapton 100H)/PSA 5µ/SUS



<sup>\*2:</sup> After 0.5h from lamination

<sup>\*3:</sup> After 0.5h from lamination  $\rightarrow$  heating  $\rightarrow$  Cool to r.t.

## 13. Containing Acidic Group for PSA

#### **《Feature》**

- High peel strength even immediately after lamination
- OP-7000T: High Biomass Degree

		OP-7000V12		OP-7000T1		OP-7000T2	
Liquid property	Appearance	Slightly yellow clear liquid		Slightly yellow clear liquid		Slightly yellow clear liquid	
	NV	25 - 35 %		30 - 40 %		30 - 40 %	
	Viscosity (mPa·s/23°C)	3,000 - 8,000		1,000 - 4,000		1,000 - 5,000	
PSA property	Adherend	Glass	SUS	Glass	SUS	Glass	SUS
	Peel strength*1 (initial)	13N/25mm	10N/25mm	30N/25mm	27N/25mm	27N/25mm	20N/25mm
	Peel strength*1 (after 24hr)	15N/25mm	13N/25mm	31N/25mm	29N/25mm	29N/25mm	24N/25mm
	Repair ability	0		×		0	
	Wet heat resistance (85°C85 %×72 h)	Non bubble		Non bubble		Non bubble	
	Biomass degree*2	0%		35 - 40%		30 - 35%	

<sup>\*1: 180°</sup>Peel, 300mm/min, 50µ PET/PSA 25µ/Glass or SUS



<sup>\*2:</sup> Calculated value