'TORAY'
Innovation by Chemistry

Effective : 2011/9

P!CASUS.

P!CASUS®

'TORAY'
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Metal Free

Metallic Luster

Formability

- ✓ Radio wave transmission
- ✓ Environment Friendly
- ✓ Insert molding is possible
- ✓ Various Functions and design
- ✓ Lightweight

Film design

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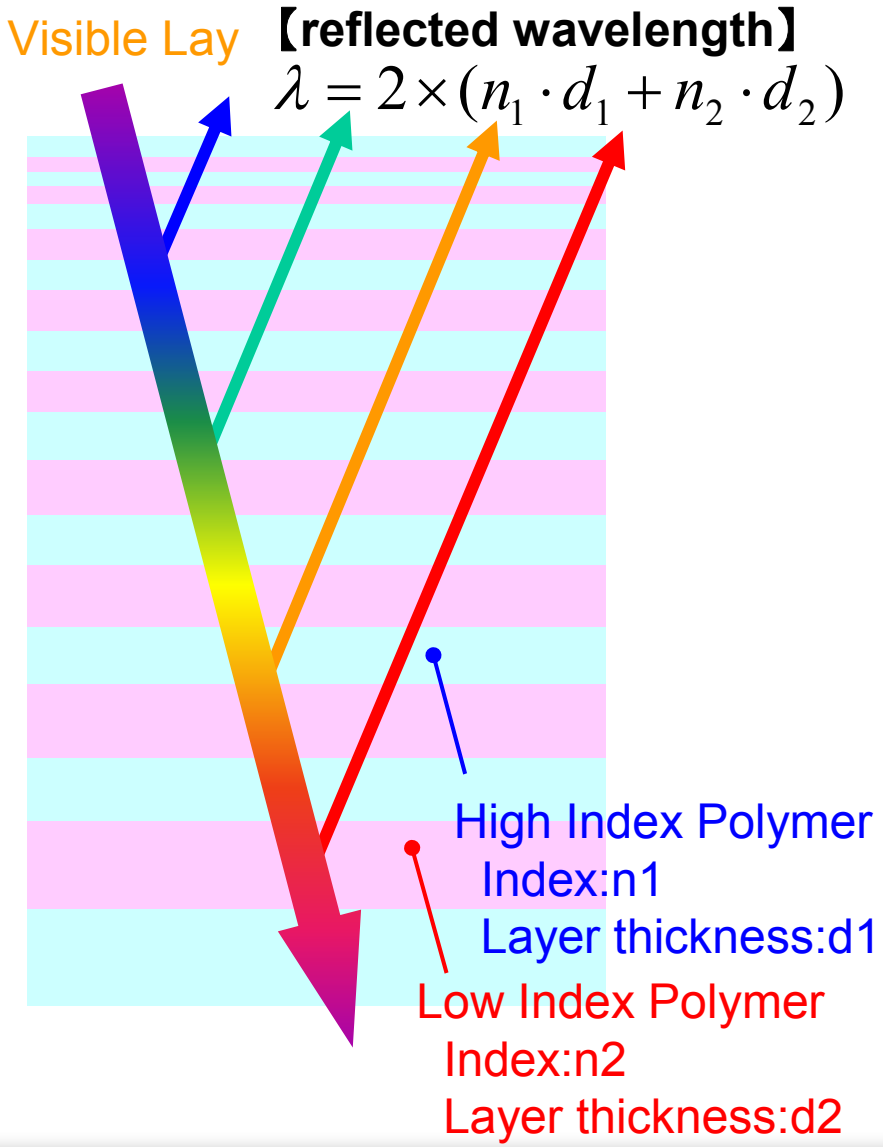
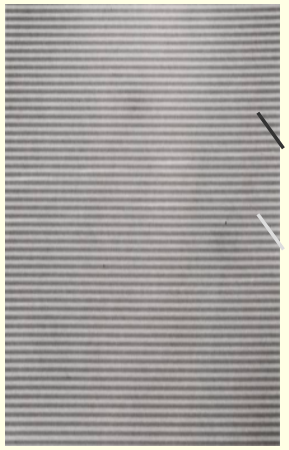


Nano-Multilayer

- Control of the layer thickness of all several hundred layers with very high precision



TEM (Cross section of film)

Polymer design

- Control of refractive index
- Adhesive strength between the layer

Application

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- ✓ Radio wave transmission
- ✓ Environment
- ✓ Insert Forming
- ✓ Functions and design
- ✓ Lightweight

Decoration Material with New Function

- Mobile Phone
- Automotive
- MP3 Player
- PC
- Home appliances
- Amusement
- IC Card

<Customer's Merit>

- A circuitry easily (wireless communication)
- New design
- Recycling
- Process simplified

Application of Smart phone

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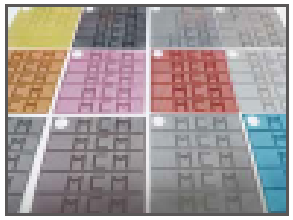
IR window

effect: metallic luster,
penetration of IR

Speaker net

effect: High gross
decreasing noise, Anti-rust

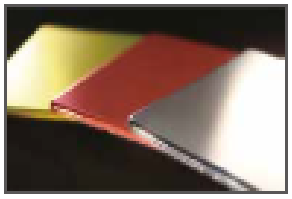


Mirror protective film

effect: for capacitive TP
High-gross & High-transmittance
(Compact mirror)

Back face decoration

effect : RW transmission
New design



Touch pad

effect : Stability of operation
High gross
Durability improvement

A representative adoption example

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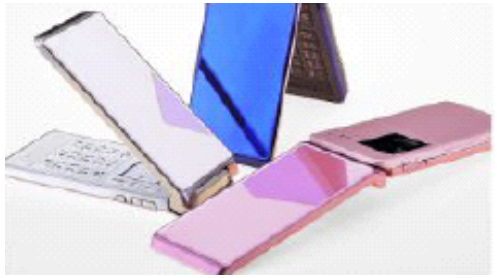
Mobile Phone –Lamination –



PMMA
OCA
PICASUS
Printing

Adoption example : Almost Japanese mobile phone maker
(Advantage : cost , color variation , short Lead time)

Home appliances – IML –

PICASUS
Printing
ABS

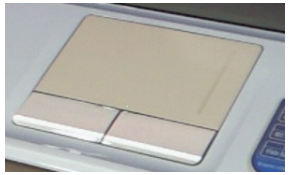
Adoption example : home appliance
(Advantage : cost , high gloss , transmittance , Anti-rust)

PC A cover – IML –

Color HC
PICASUS
Printing
GF-PC/ABS

Adoption example : Major PC maker

Sub Parts – IML, punching –



HC
PICASUS
Printing
PC/ABS

PICASUS
Printing
Tape

Adoption example : Major PC maker, ODM etc

Lineup

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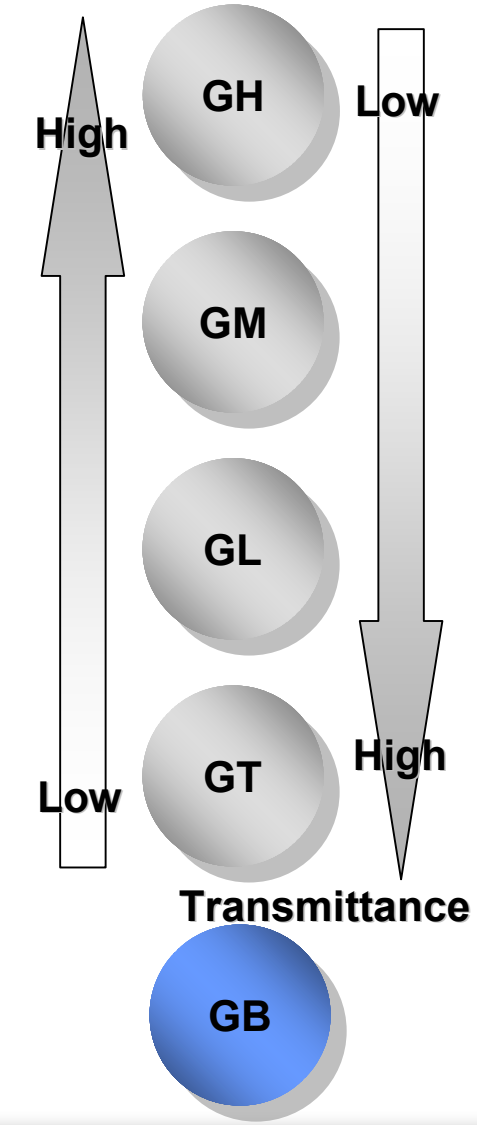

Grade	Type name	Thickness	Brightness color tone	Total luminous transmittance	Adhesion (For ink, HC)
		μ	L	%	
GH	GH10	100	88	30	Both A
	GH22				A & B
	GH10L	210	85	35	Both A
	GH20L				Both B
GM	GM10	100	75	50	Both A
	GM22				A & B
GL	GL10	100	64	65	Both A
	GL22				A & B
GT	GT10	100	42	85	Both A
	GT22				A & B
GB	GB10L	145	55	75	Both A
	GB22L				A & B

Types & Properties

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		100GH10	210GH10L	100GM10	100GL10	100GT10	145GB10L
Thickness (*1)	μm	100	210	100	100	100	145
Brightness Color tone (*2)	L* a*,b*	88 -1.0 , -0.5	85 -2.0, 4.0	75 -4.0 , 5.0	64 -4.0 , 6.5	42 -2.0, 4.0	55 -33, -27
Total luminous transmittance (*3)	%	30	35	50	65	85	75
Stress @ break point (MD/TD)(*4)	MPa	140/150	120/140	130/150	140/160	160/190	180/210
Elongation @ break point (MD/TD) (*4)	%	190/130	190/130	200/130	200/130	180/130	180/110
Heat Shrinkage (*5)	%	1.0/0.5	0.9/0.4	1.0/0.4	1.1/0.5	1.1/0.7	1.0/0.6
Loss @ 2.4GHz (*6)	dB	<1	<1	<1	<1	<1	<1
Adhesion (for ink, HC)	side	Both	Both	Both	Both	Both	Both

<Method of measurement>
*1) Micrometer (JIS C2151), *2) CIE L*a*b*(JIS Z8722, refection),
*3) Haze meter (JIS K7105) , *4) Tensilon (JIS C2151), *5) 150℃ × 30min(Toray Method)
*6) Coaxial tube type Effect of shield measurement system (ASTM D4935)

This properties is representative values and may be changed without a notice.

Electromagnetic wave transmission

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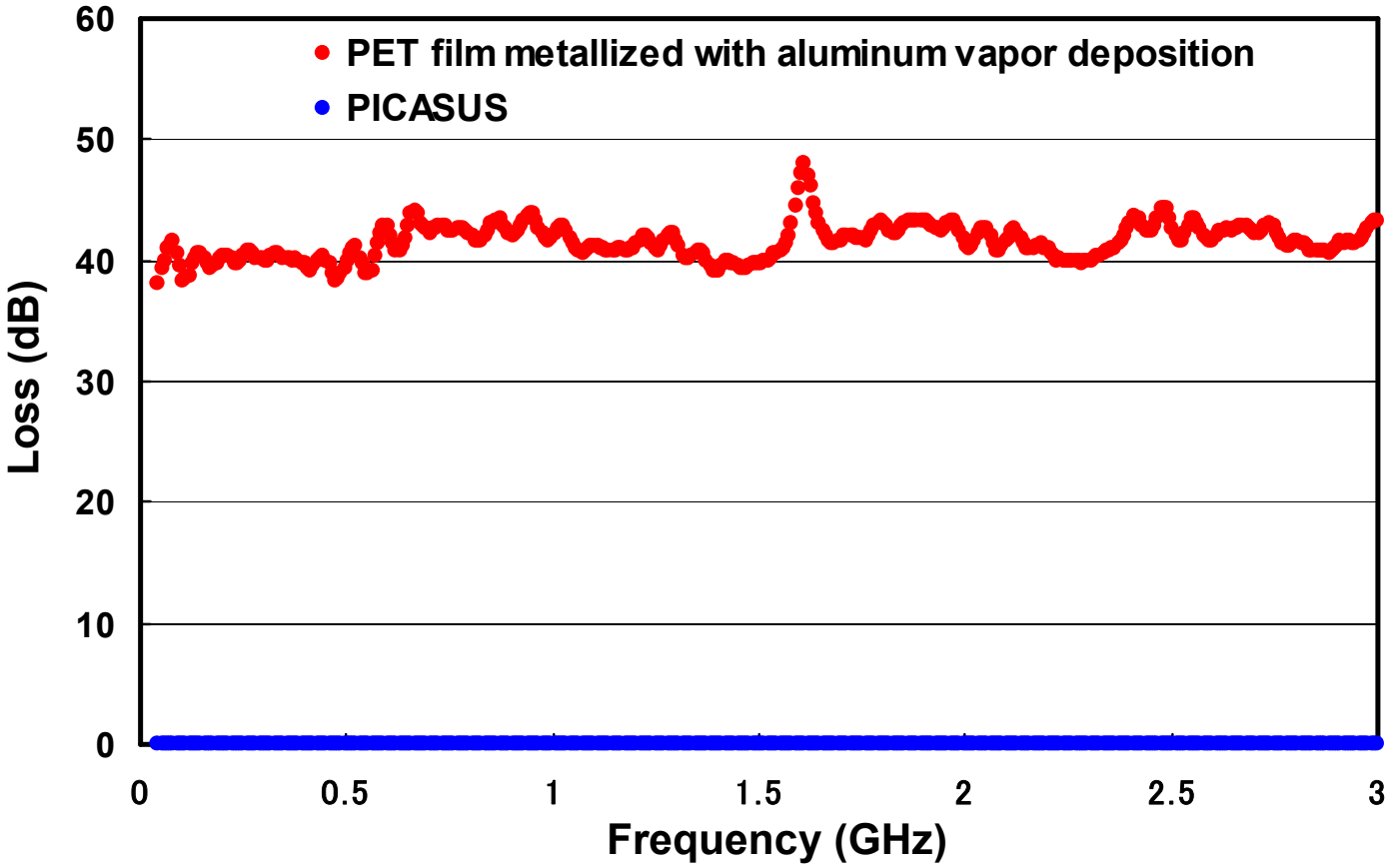

PICASUS has does not reflect nor absorb radio wave,

and thus have high radio wave transmission

Features Comparison

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		Sn-NCVM Film	Al-VM Film	PICASUS				
				100GH10	210GH10L	100GM10	100GL10	100GT10
Transmittance（%）(*1)	550nm	16	23	26	33	55	68	83
	950nm	31	13	13	26	41	53	78
Touch Panel Sensitivity(*2)		OK	NG	OK	OK	OK	OK	OK
Specular gloss (*3)		208	524	769	764	612	480	259
Brightness Color tone (*4)	L*	65.4	80.5	87.3	84.1	75.0	63.7	41.6
	a*	-1.4	-0.1	-0.9	-1.4	-3.9	-3.9	-1.8
	b*	3.4	2.9	-0.1	4.0	5.0	6.4	4.4

This properties is representative values and may be changed without a notice.

<Method of measurement>

*1) spectral photometer, *2) Stick the film on iPhone4 and check the operation,

*3)JIS K7105 60° , *4)CIE L*a*b*(JIS Z8722, refection)

➢PICASUS has higher specular gloss and higher transmittance.

Formability

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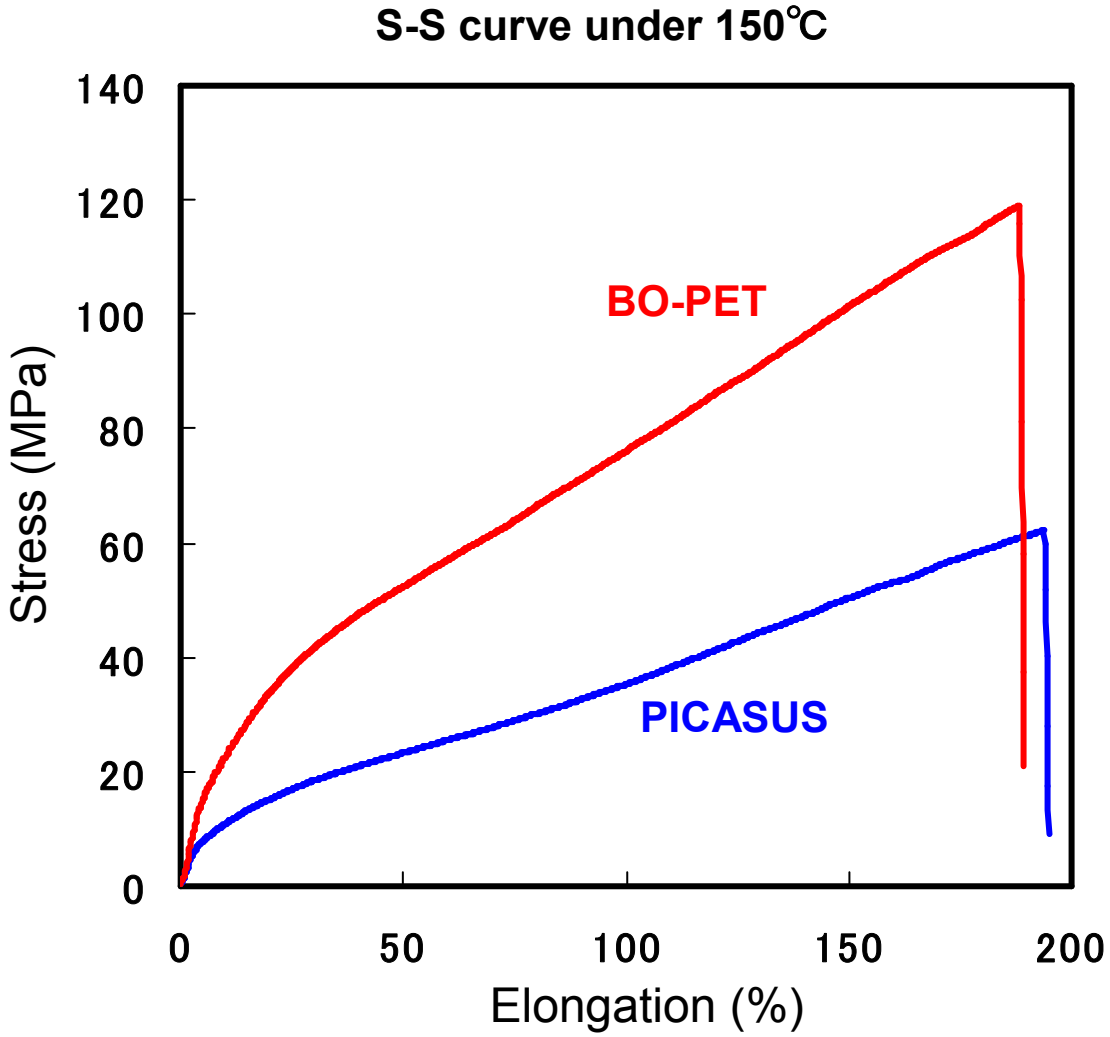

PICASUS has high formability.

How to make (IML)

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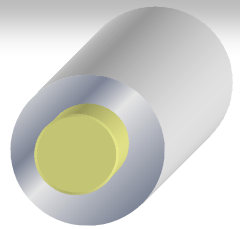
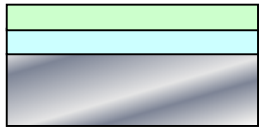
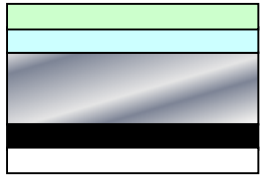
PICASUS
(1000m/RL)

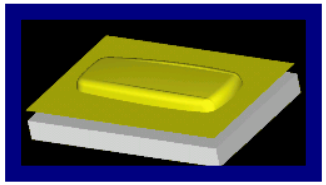


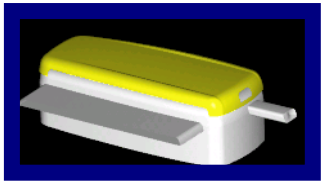
Protect Film
HC
PICASUS

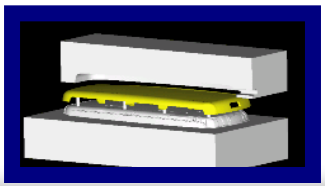


Protect Film
HC
PICASUS
Print
Binder









PICASUS

HC、Protect Film

Printing

Pre-forming

Trimming

In-molding

Screen printing ink for insert forming.
Ex. Teikoku ink IPX or INQ
Binder for insert forming.
Ex. Teikoku ink IMB-003

a. Vacuum / Pressure forming
film temp. : ~ 230℃
pressure : vacuum / 0.5MPa<
b. Press forming
die Temp. : 60 ~ 100℃
pressure : 2.0MPa
pressure time : 10 ~ 15s

Resin : PC, ABS, PMMA etc.

After molding, separate the protect film.

P!CASUS® IML design method

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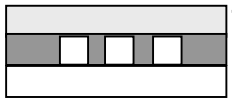
		GH	GM	GL	GT	GB
Metallic	 Film printing resin	Al、Cr、SUS effect		Ceramic metalizing effect		Dichroic
	 Color HC film printing resin	Color metallic				
	 UV texture film printing resin	Hair-line, Matte				Hair-line Matte
High-gross design	 film printing（screen、ink-jet） resin	Marble, wood, geometry				
3D	 film UV printing, UV mold resin	Visual effect				
	 UV mold film printing resin	Hologram				
Transmittance	 film Design printing Clear resin	Hidden letter, Half mirror display				

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http://www.toray.jp/films