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Methacrylic Resin Casting Sheet

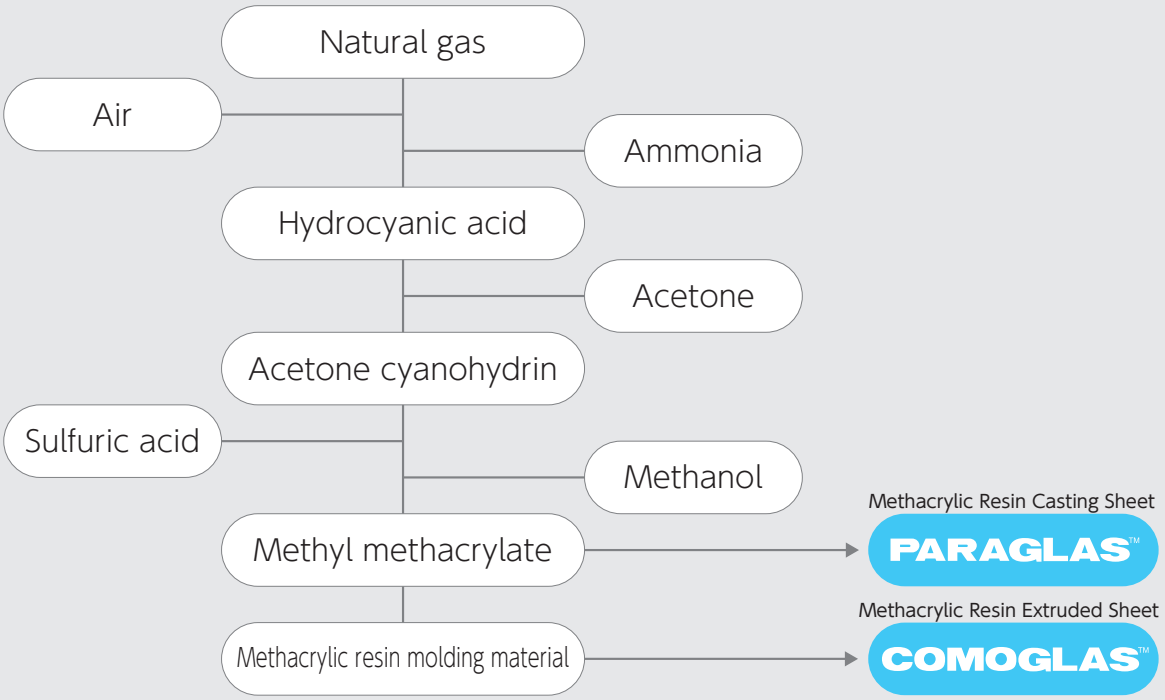
PARAGLAS™

Methacrylic Resin Extruded Sheet

COMOGLAS™

This catalog based on a translation of the Japanese language catalog.

Production Process for PARAGLAS™ and COMOGLAS™



Features of PARAGLAS™ and COMOGLAS™

Crystal-like transparency and an elegant luster
The light transmittance of the colorless and transparent products exceeds that of glass.

Excellent weather resistance among all resins
With little discoloration and deterioration, they can withstand long-term outdoor use.

Light and hard-to-break materials
The specific gravity is half that of glass. The products are strong enough and will not crack with ease, even if dropped.

Vivid color sheets in a wide variety
You can choose the color that matches your favorite image.

Developing your image to creation
You can process the products with ease by bonding, cutting, and molding.

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PARAGLAS™ Size

PARAGLAS™ P (Transparent)

Size			Sheet thickness															
No.	Nominal	Displayed	2	3	4	5	6	8	10	13	15	18	20	25	30	35	40	50
#2	1300×1100	1380×1100	○	○	○	○	○	○	○									
	1300×1050	1300×1050								○	○	▲						
	1250×1000	1250×1000											○	○	○	○	○	○
#6	1350×1350	1380×1380	○	○	▲	○	▲	▲	▲									
#3	1830×915	1860×920	○	○	○	○	○											
		1830×915						○	○	▲	▲	▲	▲					
#4	2000×1000	2010×1040	○	○	○	○	○	○	○									
		2000×1000								○	○	▲	○	○	○	○	○	○
#46	1830×1220	1880×1240	○	○	○	○	○			▲	▲							
		1830×1220						○	○									
#7	1525×1525	1550×1550	○	○	▲	○	▲											
#8	2200×1350	2200×1400	○	○	▲	○	▲	○	○									
#66	1830×1830	1880×1850	○	○	▲	○	▲											
		1830×1830						○	○									
#48	2440×1220	2480×1240	▲	○	▲	○	▲											
		2440×1220						○	○									
#58	2440×1525	2480×1550	○	○	▲	○	▲											
		2440×1525						○	○									
#68	2440×1830	2485×1880	○	○	▲	○	▲											
		2440×1830						○	○									
#69	2745×1830	2800×1860		○	▲	○	▲											
		2780×1840						○	○									
		2760×1825								▲	▲							
		2750×1810										▲	▲					
#0	1900×1380	1900×1380		○	▲	○	▲	○	○									
#0	2760×1380	2760×1380		○	▲	○	▲	▲	▲									
#90	3000×2000	3180×2060		○	○	○												
		3150×2030					○	○	○									
		3100×2020								▲	○	▲	○					
#0	1550×1230	1550×1230	○	○	▲	○	▲	○	○									
#0	1630×1380	1630×1380		○	▲	○	▲											
#0	1880×1550	1880×1550		○	▲	○	▲	○	○									
#0	2060×1560	2060×1560		○	▲	○	▲	○	○									
#0	2060×2050	2060×2050		○	▲	○												
		2060×2030					▲	○	○									
		2060×2020								▲	▲							
#0	2510×1380	2510×1380		○	▲	○	▲	○	○									
#0	2800× 925	2800× 925		○	▲	○	▲	○	○									
#0	2800×1550	2800×1550		○	▲	○	▲	▲	▲									
#0	3180× 485	3180×485		○	▲	○												
		3150×485					▲	▲	▲									
#0	3180×1030	3180×1030		○	▲	○												
		3150×1015					○	○	○									
		3100×1010								▲	▲							
#0	3180×1380	3180×1380		○	▲	○												
		3150×1380					▲	▲	▲									
#0	3180×1575	3180×1575		○	▲	○												
		3150×1575					▲	▲	▲									
#0	3180×1860	3180×1860		▲	▲	▲												
		3150×1860					▲	▲	▲									

* Products with dimensions of 1800 × 1050 × 16 mm (for basket board use) are standard stock items.

PARAGLAS™ K (Color (1))

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	○	○	▲	○	▲		
		1300×1100						▲	▲
#3	1830×915	1840×920	○	○	▲	○	▲	▲	▲
#4	2000×1000	2030×1040	▲	▲	▲	▲	▲		
		2000×1000						▲	▲

Color numbers: Standard: 102K, 105K, 219K, 235K, 257K, 306K, 315K, 558K, 559K, 993K
Manufactured upon request: 119K, 157K, 202K, 206K, 212K, 215K, 302K, 310K, 313K, 317K, 353K, 365K, 367K, 369K, 377K, 545K, 992K

PARAGLAS™ K (Color (2))

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	○	○	▲	○	▲		
		1300×1100						▲	▲
#3	1830×915	1840×920	○	○	▲	○	▲	▲	▲
#4	2000×1000	2030×1040	▲	▲	▲	▲	▲		
		2000×1000						▲	▲

Color numbers: 502K, 530K, and 550K

PARAGLAS™ H Matte Sheet

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#33	915×915	915×915	○	○	▲	○			
#3	1830×915	1830×915	○	○	▲	○	▲	○	○

Color numbers: Standard: P, M, 422L, 432L, 502K, 558K, 559K, 9902K, 9903K, 9904K, 9905K, 9930K, 9931K, and 9933K
Manufactured upon request: 530K, 550K, 9912K, 9913K, and 9920K
* Sheet thicknesses of 8 mm and 10 mm are prepared for #3 transparent products only.
* All #33 products are transparent.

PARAGLAS™ M (White)

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	○	○	○	○			
		1300×1100					○	○	○
#6	1350×1350	1380×1380	▲	▲	▲	▲	▲		
#3	1830×915	1860×920	○	○	○	○	○		
		1830×915						○	○
#4	2000×1000	2010×1040	○	○	○	○	○		
		2000×1000						○	○
#46	1830×1220	1880×1240	○	○	▲	○	▲		
		1830×1220							
#7	1525×1525	1550×1550	○	○	▲	○	▲		
#8	2200×1350	2200×1440	○	○	▲	○	▲		
#48	2440×1220	2480×1240	▲	○	▲	○	▲		
#58	2440×1525	2480×1550		○	▲	○	▲		
#69	2745×1830	2800×1860		○	▲	○	▲		

* Products with dimensions of 1830 × 1220 × 15 mm (for basket board use) are standard stock items.

PARAGLAS™ 432L (Milky White Translucent)

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	○	○	○	○	▲	○	○
#6	1350×1350	1380×1380	○	○	▲	○	▲	▲	▲
#3	1830×915	1860×920	○	○	○	○	▲		
		1830×915						○	○
#4	2000×1000	2010×1040	○	○	○	○	▲	○	○
#46	1830×1220	1880×1240	○	○	▲	○	▲		
		1830×1220						▲	▲
#7	1525×1525	1550×1550	○	○	▲	○	▲	▲	▲
#8	2200×1350	2200×1400	○	○	▲	○	▲	○	○
#66	1830×1830	1880×1850	○	○	▲	○	▲		
		1830×1830						○	○
#48	2440×1220	2480×1240	○	○	▲	○	▲		
		2440×1220						○	▲
#58	2440×1525	2480×1550	○	○	▲	○	▲		
		2440×1525						○	○
#68	2440×1830	2485×1880	○	○	▲	○	▲		
		2440×1830						○	○
#69	2745×1830	2800×1860		○	▲	○	▲		
		2780×1840						▲	▲
#0	1900×1380	1900×1380	○	○	▲	○	▲	▲	▲
#0	2760×1380	2760×1380	○	○	▲	○	▲	▲	▲
#90	3000×2000	3180×2060		○	▲	○			
		3150×2030					▲	○	○
#0	1550×1230	1550×1230	○	○	▲	○	▲	▲	▲
#0	1630×1380	1630×1380		▲	▲	▲			
#0	1880×1550	1880×1550		○	▲	○	▲	▲	▲
#0	2060×1560	2060×1560		○	▲	○	▲	▲	▲
#0	2060×2050	2060×2050		○	▲	○			
		2060×2030					▲	○	○
#0	2510×1380	2510×1380		▲	▲	▲	▲	▲	▲
#0	2800× 925	2800× 925		○	▲	○	▲	▲	▲
#0	2800×1550	2800×1550		○	▲	○	▲	▲	▲
#0	3180× 485	3180×485		○	▲	○			
		3150×485					▲	▲	▲
#0	3180×1030	3180×1030		○	▲	○			
		3150×1015					▲	○	○
#0	3180×1380	3180×1380		▲	▲	▲			
		3150×1380					▲	▲	▲
#0	3180×1575	3180×1575		○	▲	○			
		3150×1575					▲	▲	▲
#0	3180×1860	3180×1860		▲	▲	▲			
		3150×1860					▲	▲	▲

PARAGLAS™ 422L (Milky White Translucent)

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	○	○	▲	○			
#3	1830×915	1860×920	○	○	▲	○			
#4	2000×1000	2010×1040	○	○	▲	○			

PARAGLAS™ 430L (Milky White Translucent)

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	▲	○	▲	○			
#3	1830×915	1860×920	▲	○	▲	○			
#4	2000×1000	2010×1040	▲	○	▲	○			
#68	2440×1830	2485×1880	▲	○	▲	○			
#69	2745×1830	2800×1860		○	▲	○			
#0	1900×1380	1900×1380		○	▲	○			
	2760×1380	2760×1380		○	▲	○			
#90	3000×2000	3180×2060		▲	▲	○			

PARAGLAS™ 431L (Milky White Translucent)

Size			Sheet thickness						
No.	Nominal	Displayed	2	3	4	5	6	8	10
#2	1300×1100	1400×1100	▲	○	▲	○			
#3	1830×915	1860×920	▲	○	▲	○			
#4	2000×1000	2010×1040	▲	○	▲	○			

PARAGLAS™ Sheet Thickness Tolerance

Nominal thickness	(a)	(b)
2	+0.5mm	+0.6mm
	−0.3mm	−0.4mm
3, 4	±0.5mm	±0.5mm
5	±0.6mm	±0.6mm
6	±0.7mm	±0.7mm
8	+0.9mm	+0.9mm
	−0.6mm	−0.6mm
10	+1.1mm	+1.1mm
	−0.6mm	−0.6mm
13, 15	+1.5mm	+1.5mm
	−1.3mm	−1.3mm
20	+1.7mm	+1.7mm
	−1.5mm	−1.5mm
25	+1.8mm	+1.8mm
	−1.6mm	−1.6mm
30	+2.0mm	+2.0mm
	−1.7mm	−1.7mm
35, 40	+2.5mm	+2.5mm
	−2.1mm	−2.1mm
50	+3.0mm	+3.0mm
	−2.6mm	−2.6mm

* Figures in column (a) apply to products with a size of two square meters or below.
* Figures in column (b) apply to products with a size above two square meters.

Unit: mm
Symbol description: ○: Standard stock items
▲: Manufactured upon request

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COMOGLAS™ Size

COMOGLAS™ P (Transparent)

Size			Sheet thickness									
No.	Nominal	Displayed	1.0	1.5	1.8	2.0	2.5	2.8	3.0	3.8	4.0	4.8	5.0
#0	1860×660	1860×660			▲	▲			▲				
#0	2800×660	2800×660			▲	▲			▲				
#2	1300×1100	1300×1100	◎	○	○		▲	▲			○	▲	
		1380×1100				◎			◎				◎
#0	1500×1100	1500×1100				○			○				○
#3	1830×915	1830×915	◎	○	○		▲	○		○	○	○	
		1860×930				◎			◎				◎
#4	2000×1000	2000×1000	◎	○	○			▲			○	▲	
		2040×1010				◎			◎				◎
#0	2000×1100	2000×1100				▲			▲				▲
#6	1350×1350	1350×1350				▲			▲				▲
#46	1830×1220	1830×1220		▲	▲	○		▲	○	▲	▲	▲	○
#0	1830×1350	1830×1350				▲			▲				▲
#8	2200×1350	2200×1350				▲			▲				▲
#48	2440×1220	2440×1220							○				○
#0	3000×1350	3000×1350							○				○

COMOGLAS™ P (Transparent) Thick Sheet

Size			Sheet thickness					
No.	Nominal	Displayed	6.0	8.0	10.0	13.0	15.0	20.0
#2	1300×1100	1300×1100	▲	○	○	▲	○	○
#3	1830×915	1830×915	○	◎	◎	▲	○	○
#4	2000×1000	2000×1000	▲	○	○	▲	○	○
#46	1830×1220	1830×1220		▲	▲			

* Only products with thicknesses of 13 mm, 15 mm, and 20 mm are provided with polyethylene masking protection.

COMOGLAS™ P (Transparent) Large-sized

Size			Sheet thickness	
No.	Nominal	Displayed	3.0	5.0
#0	3000×2150	3000×2150	○	○
#0	4000×2150	4000×2150	○	○

* Provided with polyethylene masking protection only.

COMOGLAS™ L (Milky White Translucent)

Size			430L				432L				452L			
No.	Nominal	Displayed	2.0	3.0	4.0	5.0	2.0	3.0	4.0	5.0	2.0	3.0	4.0	5.0
#0	1860×660	1860×660									▲	▲		
#0	2800×660	2800×660									▲	▲		
#2	1300×1100	1350×1100	▲	▲		▲	○	○		○	○	○		○
#3	1830×915	1830×915	▲	○	▲	○	○	○	▲	○	○	○	▲	○
#4	2000×1000	2000×1000	▲	○		○	○	○		○	○	○		○
#6	1350×1350	1350×1350									▲	▲		▲
#46	1830×1220	1830×1220					▲	▲		▲	▲	▲		▲
#8	2200×1350	2200×1350						▲		▲		▲		▲
#48	2440×1220	2440×1220						○		○				
#0	1850×1350	1850×1350										▲		▲
#0	2800×1350	2800×1350										▲		▲
#0	3000×1350	3000×1350		○		○		○		○		○		○

COMOGLAS™ L (Milky White Translucent) Large-sized

Size			430L		432L	
No.	Nominal	Displayed	3.0	5.0	3.0	5.0
#0	3000×2150	3000×2150	○	○	○	○
#0	4000×1350	4000×1350	○	○	○	○
#0	4000×2150	4000×2150	○	○	○	○

* Products with a width of 2150 mm are provided with polyethylene masking protection only.

COMOGLAS™ M (White)

Size			Sheet thickness					
No.	Nominal	Displayed	2.0	3.0	4.0	5.0	8.0	10.0
#2	1300×1100	1300×1100	○	○	▲	○	○	○
#3	1830×915	1830×915	○	○	▲	○	○	○
#4	2000×1000	2000×1000	○	○	▲	○	○	○
#46	1830×1220	1830×1220	▲	○	▲	○	▲	▲

COMOGLAS™ K (Color (1))

Size			Sheet thickness				
No.	Nominal	Displayed	2.0	3.0	5.0	8.0	10.0
#2	1300×1100	1300×1100	○	○	○	○	○
#3	1830×915	1830×915	○	○	○	○	○
#4	2000×1000	2000×1000	○	○	○	○	○
#46	1830×1220	1830×1220	▲	○	○	▲	▲

Color numbers: 148K, 502K, 530K, and 550K
* Only 148K products in size #46 with thicknesses of 3 mm and 5 mm are standard stock items.

COMOGLAS™ K (Color (2))

Size			Sheet thickness				
No.	Nominal	Displayed	2.0	3.0	5.0	8.0	10.0
#3	1830×915	1830×915	○	○	○	▲	▲

Color numbers: 120K, 125K, 130K, 135K, 144K, 145K, 150K, and 155K

COMOGLAS™ Pearl Sheets

Size			Sheet thickness		
No.	Nominal	Displayed	2.0	3.0	5.0
#2	1300×1100	1300×1100	○	○	○

Color numbers: 9041K (White pearl) and 9053K (Gray pearl)

COMOGLAS™ DFA2 (Double-sided Matte)

Size					Sheet thickness				
Color tone	Symbol	No.	Nominal	Displayed	2.0	3.0	5.0	8.0	10.0
Transparent	P	#3	1830×915	1830×915	○	○	○	○	○
		#46	1830×1220	1830×1220	○	○	○		
Milky white translucent	446L	#3	1830×915	1830×915	○	○	○		
		#46	1830×1220	1830×1220	▲	▲	▲		
White	M	#3	1830×915	1830×915	○	○	○		
Color	502K	#3	1830×915	1830×915	○	○	○		
	148K	#3	1830×915	1830×915	▲	○	○	▲	▲

* Products with thicknesses of 8 mm and 10 mm are provided with polyethylene masking protection only.

COMOGLAS™ HI (Impact Resistant Sheet) (HI30, HI50, and HI70)

Size			Sheet thickness				
No.	Nominal	Displayed	1.0	1.8	2.0	3.0	5.0
#2	1300×1100	1300×1100	▲	▲	▲	▲	▲
#3	1830×915	1830×915	○	▲	○	○	▲
#4	2000×1000	2000×1000	▲	▲	○	○	○

* HI30 and HI50 in all sizes and thicknesses are products manufactured upon request.

COMOGLAS™ UV40 (UV Protection Sheet)

Size			Sheet thickness		
No.	Nominal	Displayed	2.0	3.0	5.0
#2	1300×1100	1300×1100	▲	▲	▲
#3	1830×915	1830×915	○	▲	▲
#4	2000×1000	2000×1000	▲	▲	▲
#46	1830×1220	1830×1220			

COMOGLAS™ SC (Static Control Sheet)

Size					Sheet thickness					
Color tone	Symbol	No.	Nominal	Displayed	2.0	3.0	5.0	6.0	8.0	10.0
Transparent	P	#2	1300×1100	1300×1100	▲	▲	▲	▲	▲	▲
		#4	2000×1000	2000×1000		○	○	▲	▲	▲
		#48	2440×1220	2440×1220		○	○	▲	▲	▲
Color	K	#4	2000×1000	2000×1000		○	○	▲	▲	▲

Color number: 2014K (Orange), 3009K (Yellow), and 7048K (Brown smoke)

COMOGLAS™ KHC2 (Double-sided Hard Sheet)

Size					Sheet thickness						
Color tone	Symbol	No.	Nominal	Displayed	2.0	3.0	4.0	5.0	6.0	8.0	10.0
Transparent	P	#2	1300×1100	1300×1100		▲		▲			
		#3	1830×915	1830×915	▲	▲	▲	▲	▲	▲	▲
		#4	2000×1000	2000×1000	▲	▲	▲	▲	▲	▲	▲
Milky white translucent	L	#3	1830×915	1830×915	▲	▲		▲			
		#4	2000×1000	2000×1000	▲	▲		▲			
Color	K	#3	1830×915	1830×915	▲	▲		▲			
		#4	2000×1000	2000×1000	▲	▲		▲			

COMOGLAS™ KHC1 (Single-sided Hard Sheet)

Size					Sheet thickness						
Color tone	Symbol	No.	Nominal	Displayed	2.0	3.0	4.0	5.0	6.0	8.0	10.0
Transparent	P	#2	1300×1100	1300×1100		▲		▲			
		#3	1830×915	1830×915	▲	▲	▲	▲	▲	▲	▲
		#4	2000×1000	2000×1000	▲	▲	▲	▲	▲	▲	▲
Milky white translucent	L	#3	1830×915	1830×915	▲	▲		▲			
		#4	2000×1000	2000×1000	▲	▲		▲			
Color	K	#3	1830×915	1830×915	▲	▲		▲			
		#4	2000×1000	2000×1000	▲	▲		▲			

COMOMIRROR™ CM

Size					Sheet thickness		
Color tone	Symbol	No.	Nominal	Displayed	2.0	3.0	5.0
Transparent	P	#2	1300×1100	1300×1100	○	○	○
		#3	1830×915	1830×915	○	○	○
		#4	2000×1000	2000×1000	○	○	○
Color	K	#2	1300×1100	1300×1100	○	○	
		#3	1830×915	1830×915	○	○	

Color numbers: 209K (Gold) and 665K (Bronze smoke)

COMOGLAS™ Sheet Thickness Tolerance

Nominal thickness	Tolerance
0.5	±0.1mm
1.0	±0.1mm
1.5	±0.2mm
1.8	±0.2mm
2.0	±0.2mm
2.5	±0.2mm
2.8	±0.2mm
3.0	±0.2mm
3.8	±0.2mm
4.0	±0.2mm
4.8	±0.2mm
5.0	±0.2mm
6.0	±0.3mm
8.0	±0.3mm
10.0	±0.3mm
13.0	±0.7mm
15.0	±0.7mm
20.0	±1.0mm

Unit: mm
Symbol description: ◎: Standard stock items (Paper masking and polyethylene masking protection)
○: Standard stock items (Paper masking protection)
▲: Manufactured upon request

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kuraray

Color Lineup

PARAGLAS™

P Tt=92≦%
Clear

430L Tt=30%
Opal

431L Tt=45%
Opal

432L Tt=61%
Opal

422L Tt=78%
Opal

M Tt=10%
White

102K Tt=15%
Carmine

105K Tt=10%
Red

119K Tt=7%
Vermilion

157K Tt=4%
Rose pink

202K Tt=50%
Orange clear

206K Tt=31%
Orange

212K Tt=73%
Lemon clear

215K Tt=27%
Lemon yellow

219K Tt=13%
Ivory

235K Tt=22%
Chrome yellow

257K Tt=15%
Orange madder

302K Tt=22%
Cobalt blue

306K Tt=5%
Marine blue

310K Tt=77%
Light blue

313K Tt=13%
Blue

315K Tt=15%
Navy blue

317K Tt=9%
Ultramarine

353K Tt=30%
Green clear

365K Tt=13%
Emerald

367K Tt=7%
Viridian

369K Tt=6%
Chrome green

377K Tt=9%
Violet

502K Tt=0%
Black

558K Tt=0% ⇧
Brown

559K Tt=0% ⇧
Chocolate

530K Tt=18% ⇧
Gray smoke

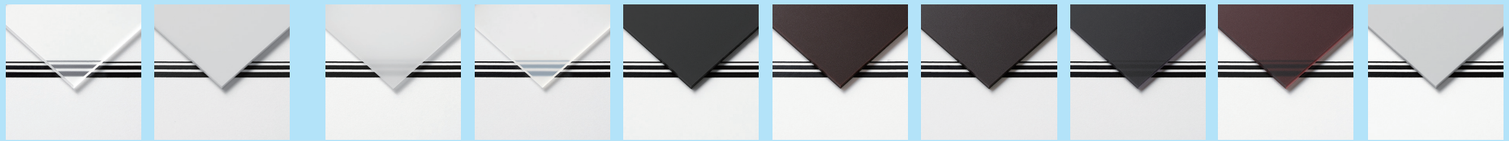
545K Tt=68% ⇧
Misty smoke

550K Tt=28% ⇧
Sepia smoke

992K Tt=51% ⇧
Fluorescent orange

993K Tt=78% ⇧
Fluorescent green

PARAGLAS™ one-side matte series (H1)



H1 P Tt=90%
Clear

H1 M
White

H1 432L Tt=57%
Opal

H1 422L Tt=76%
Opal

H1 502K
Black

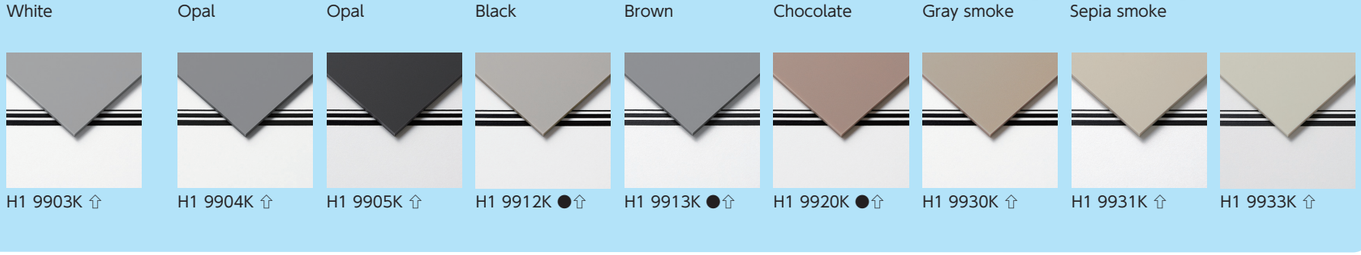
H1 558K ⇧
Brown

H1 559K ⇧
Chocolate

H1 530K Tt=18% ●⇧
Gray smoke

H1 550K Tt=25% ●⇧
Sepia smoke

H1 9902K ⇧



H1 9903K ⇧

H1 9904K ⇧

H1 9905K ⇧

H1 9912K ●⇧

H1 9913K ●⇧

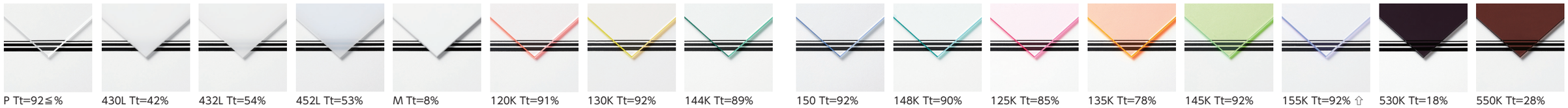
H1 9920K ●⇧

H1 9930K ⇧

H1 9931K ⇧

H1 9933K ⇧

COMOGLAS™



P Tt=92≦%
Clear

430L Tt=42%
Opal

432L Tt=54%
Opal

452L Tt=53%
Opal

M Tt=8%
White

120K Tt=91%
Pink

130K Tt=92%
Yellow

144K Tt=89%
Green

150 Tt=92%
Blue

148K Tt=90%
Glass color

125K Tt=85%
Fluorescent pink

135K Tt=78%
Fluorescent orange

145K Tt=92%
Fluorescent green

155K Tt=92% ⇧
Fluorescent violet

530K Tt=18%
Gray smoke

550K Tt=28%
Sepia smoke

502K Tt=0%
Black

9041K
White pearl

9053K
Gray pearl

COMOGLAS™ both-side matte series (DFA2)

DFA2 P Tt=89%
Clear

DFA2 446L
Tt=61%
Opal

DFA2 M Tt=8%
White

DFA2 148K
Glass color

DFA2 502K
Black

●=Colors ordered by the client ⇧=Colors for indoor use only
1) Total light transmittance is a measured value, not a guaranteed value.
2) Tt next to the color number indicates total light transmittance.
3) The thickness of the plate photo is 2mm.

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Methacrylic Resin Casting Sheet

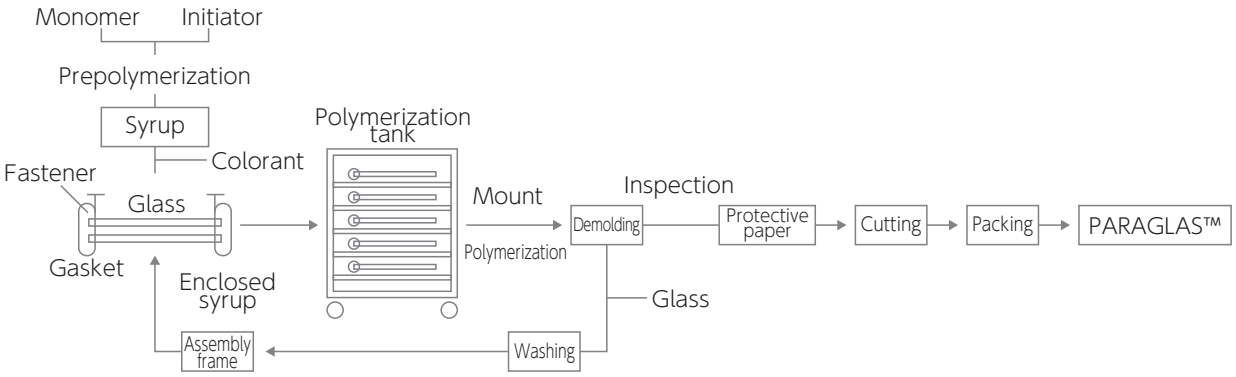
PARAGLAS™

This product is a casting sheet with excellent surface properties and of high purity produced in our unique method in which a liquid monomer is injected between two pieces of glass and cured directly. Our batch production method ensures easy color adjustment and offers a wide variety of color sheets.

- **Application examples: Billboards, displays, store fixtures, lighting covers, nameplates, glazing, and optical products**

Standard grade	
Two-color sheet	D100
Optical property sheet	UV00 (Ultraviolet ray transmitting sheet) IR74 (Visible-light blocking sheet)
Matte sheet	H matte
Sanitary grade	SG
Alcohol resistant grade	AT

■PARAGLAS™ Manufacturing Process Diagram (Cell Cast Method)



Methacrylic Resin Extruded Sheet

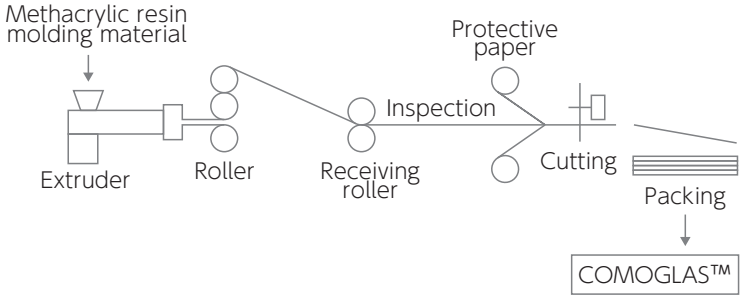
COMOGLAS™

This product is an extruded sheet that is continuously produced using our original technology. It produces excellent, accurate sheet thickness and is bonded and heat molded with ease.

- **Application examples: Billboards, displays, store fixtures, lighting covers, nameplates, glazing, and optical products**

Standard grade	
Impact-resistant sheet	HI70, HI50, and HI30
Matte sheet	DFA2
Optical property sheet	UV40 (UV Protection Sheet) TH1 (surface-emitting sheet)
Scratch-resistant sheet	KH
Static Control	SC (Static control sheet)
High UV ink adhesion sheet	DMP2
Amended Food Sanitation Act-compliant sheet	SE

■COMOGLAS™ Manufacturing Process Diagram (Extrusion Method)



Methacrylic Resin Extruded Mirror Sheet

COMOMIRROR™

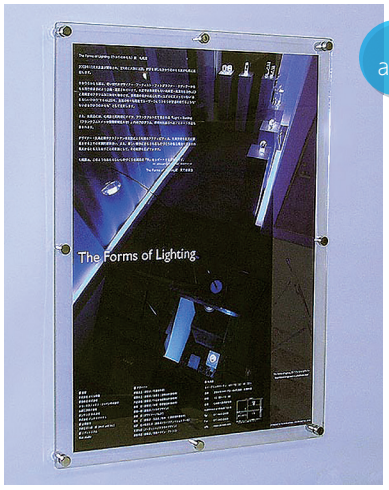
This product is a mirror sheet made by vacuum-depositing aluminum on COMOGLAS™.

Application Examples

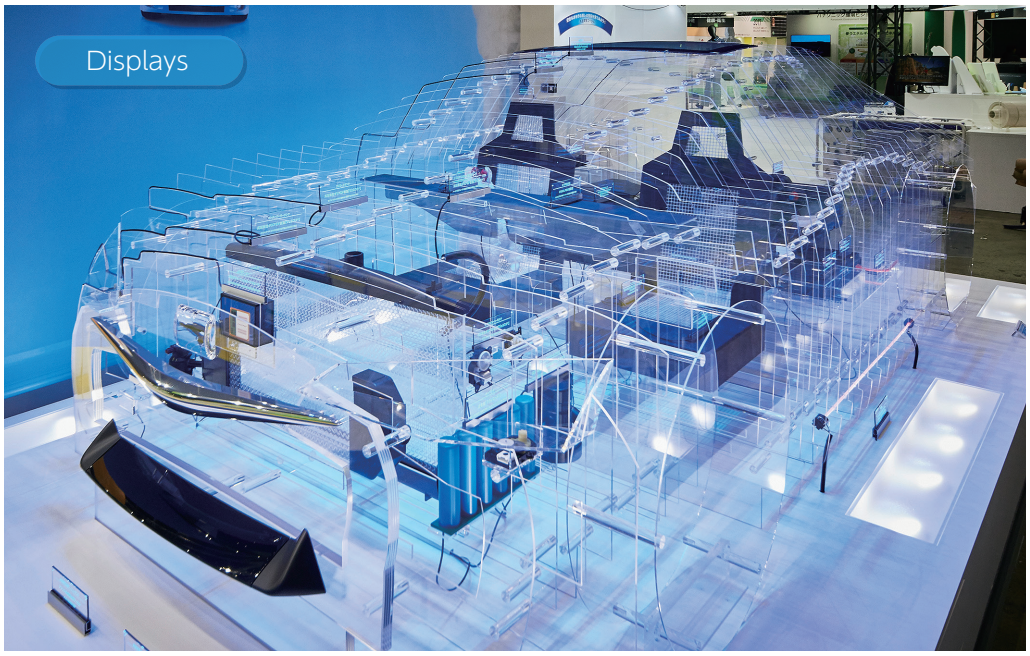
Miscellaneous goods and stationery

Home appliances

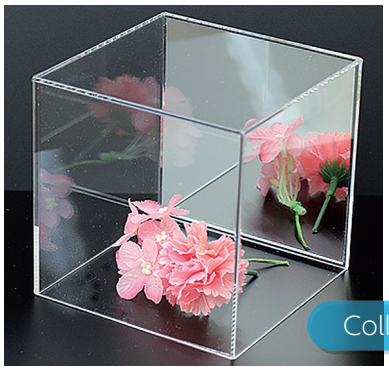
Store fixtures



Poster panels and picture frames



Displays



Collection cases

Terrarium

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Basic Physical Properties

Physical property values according to new JIS standards

	Item	Test method	Unit	PARAGLAS™ Standard grade	COMOGLAS™ Standard grade	COMOGLAS™ KHC2	COMOGLAS™ HI70
General physical properties	pecific gravity	JIS K7112	—	1.19	1.19	1.19	1.17
	Water absorption rate	JIS K7209	%	0.3	0.3	0.3	0.3
	Combustion quality	JIS K6911 (Method A)	—	Flammable	Flammable	Flammable	Flammable
		UL94	—	HB	HB	—	HB
Optical properties	Total light transmittance	JIS K7361-1	%	92≦	92≦	92≦	91≦
	Haze	JIS K7136	%	0.2	0.2	0.2	1.0
	Refractive index	JIS K7142	—	1.49	1.49	1.49	1.49
Mechanical properties	Tensile strength	JIS K7161	MPa	76	73	73	49
	Tensile breaking strain	JIS K7161	%	6	5	5	20
	Flexural strength	JIS K7171	MPa	120	113	113	74
	Flexural modulus	JIS K7171	MPa	3200	3200	3200	2200
	Rockwell hardness	JIS K7202-2	M scale	100	97	97	61
	Charpy impact strength (No notches)	JIS K7110	KJ/m^2	18	17	17	80
Thermal properties	Specific heat capacity	JIS K7123	J/g•℃	1.5	1.5	1.5	1.5
	Deflection temperature under load	JIS K7191-2 (Method A)	℃	105	96	96	84
	Coefficient of linear expansion	JIS K7197	$℃^{-1}$	7×10^{-5}	7×10^{-5}	7×10^{-5}	8×10^{-5}
Electrical properties	Surface resistivity	JIS K6911	Ω	$>10^{16}$	$>10^{16}$	$>10^{16}$	$>10^{16}$
	Charge half time	JIS L1094	sec	∞	∞	∞	∞
Durability	Taber wear*1	JIS K7204	Haze (%)	18	20	5	—
	Falling sand wear	ASTM D673	Haze (%)	50	52	3	—

* The above values are typical and are not guaranteed values.
1 MPa = 10.2 kgf/cm^2
*1: The haze value was measured after rotating a cylindrical grindstone (CS-10F) with a load of 500 g, 100 times, on the product.

Weatherability

An accelerated exposure test was conducted to represent the discoloration in the initial stage of material deterioration by Hunter color difference (△E). There is little discoloration of PARAGLAS™ and COMOGLAS™, as shown in the table below.

Material	Accelerated exposure period			
	200hr	400hr	1000hr	2000hr
PARAGLAS™(transparent)	0.05	0.27	0.45	1.50
COMOGLAS™(transparent)	0.05	0.21	0.40	1.42
Hard polyvinyl chloride (transparent)	0.91	1.74	2.30	—
Hard polyvinyl chloride (milky white translucent)	1.84	2.00	2.22	—
Polystyrene	1.40	1.65	1.76	—
Polycarbonate	1.77	3.16	4.89	—
Polyester	1.30	1.65	1.75	—

△E expression method

△E value	Sensory expression of visual sensitivity	△E value	Sensory expression of visual sensitivity
0～0.5	Almost not discolored	3.0～6.0	Noticeably discolored
0.5～1.5	Slightly discolored	6.0～12.0	Considerably discolored
1.5～3.0	Discolored	12.0以上	Extremely discolored

Optical Properties

PARAGLAS™

Surface condition	Color tone	Product number	Sheet thickness	Total light transmittance rate	Scattered light transmittance rate	Nomination	Outdoor use possible
Glossy	Transparent	P	3mm	93%	—	Clear	○
Glossy	Milky white translucent (with diffuser)	422L	2mm	78%	73%	Opal	○
			3mm	73%	69%		○
			5mm	64%	60%		○
		430L	2mm	30%	28%	Opal	○
			3mm	30%	28%		○
			5mm	23%	22%		○
		431L	2mm	45%	43%	Opal	○
			3mm	45%	42%		○
			5mm	39%	36%		○
		432L	2mm	61%	58%	Opal	○
			3mm	57%	54%		○
			5mm	50%	47%		○
			6mm	46%	44%		○
			8mm	39%	37%		○
			10mm	39%	37%		○
Glossy	White	M	2mm	10%	9%	White	○
			3mm	7%	7%		○
			5mm	5%	5%		○
Matte	Transparent	H-P	2mm	90%	79%	Clear	○
			3mm	89%	80%		○
			5mm	89%	78%		○
			8mm	88%	80%		○
			10mm	89%	77%		○
Matte	Milky white translucent	H-422L	2mm	76%	75%	Opal	○
			3mm	70%	69%		○
			5mm	55%	54%		○
		H-432L	2mm	57%	57%	Opal	○
			3mm	51%	50%		○
			5mm	46%	40%		○
Matte	Smoke	H-530K	2mm	18%	16%	Gray smoke	
			3mm	18%	16%		
			5mm	18%	16%		
		H-550K	2mm	25%	21%	Sepia smoke	
			3mm	26%	23%		
			5mm	29%	26%		
Glossy	Color	102K	3mm	15%	—	Carmine	○
		105K	3mm	10%	—	Red	○
		119K	3mm	7%	—	Vermilion	○
		157K	3mm	4%	—	Rose pink	○
		202K	3mm	50%	—	Orange clear	○
		206K	3mm	31%	—	Orange	○
		212K	3mm	73%	—	Lemon clear	○
		215K	3mm	27%	—	Lemon yellow	○
		219K	3mm	13%	—	Ivory	○
		235K	3mm	22%	—	Chrome yellow	○
		257K	3mm	15%	—	Orange Madder	○
		302K	3mm	22%	—	Cobalt blue	○
		306K	3mm	5%	—	Marine blue	○
		310K	3mm	77%	—	Light blue	
		313K	3mm	13%	—	Blue	○
		315K	3mm	15%	—	Navy blue	○
		317K	3mm	9%	—	Ultramarine	○
		353K	3mm	30%	—	Green clear	
		365K	3mm	13%	—	Emerald	○

Surface condition	Color tone	Product number	Sheet thickness	Total light transmittance rate	Scattered light transmittance rate	Nomination	Outdoor use possible
Glossy	Color	367K	3mm	7%	—	Viridian	○
		369K	3mm	6%	—	Chrome green	○
		377K	3mm	9%	—	Violet	○
		502K	3mm	0%	—	Black	○
		530K	3mm	18%	—	Gray smoke	
		545K	3mm	68%	—	Misty smoke	
		550K	3mm	28%	—	Sepia smoke	
		558K	3mm	0%	—	Brown	
		559K	3mm	0%	—	Chocolate	
		992K	3mm	51%	—	Fluorescent orange	
		993K	3mm	78%	—	Fluorescent green	

* The above values are typical and are not guaranteed values.

COMOGLAS™

Surface condition	Color tone	Product number	Sheet thickness	Total light transmittance rate	Scattered light transmittance rate	Nomination	Outdoor use possible
Glossy	Transparent	P	3mm	93%	—	Clear	○
Glossy	Milky white translucent (with diffuser)	430L	2mm	42%	40%	Opal	○
			3mm	31%	29%		○
			5mm	19%	18%		○
		432L	2mm	54%	51%	Opal	○
			3mm	48%	45%		○
			5mm	37%	35%		○
		452L	2mm	53%	51%	Opal	○
			3mm	51%	48%		○
			5mm	46%	44%		○
Glossy	White	M	2mm	8%	6%	White	○
			3mm	7%	6%		○
			5mm	5%	5%		○
Matte	Transparent	DFA2-P	2mm	89%	51%	Clear	○
			3mm	88%	58%		○
			5mm	84%	51%		○
Matte	Milky white translucent	DFA2-446L	2mm	61%	53%	Opal	○
			3mm	48%	42%		○
Glossy	Edge plate	120K	3mm	91%	—	Pink edge	○
		130K	3mm	92%	—	Yellow edge	○
		144K	3mm	89%	—	Green edge	○
		150K	3mm	92%	—	Blue edge	○
		148K	3mm	90%	—	Glass color	○
		125K	3mm	85%	—	Fluorescent pink	○
		135K	3mm	78%	—	Fluorescent orange	○
		145K	3mm	92%	—	Fluorescent green	○
		155K	3mm	92%	—	Fluorescent violet	
	Smoke	530K	3mm	18%	—	Gray smoke	○
		550K	3mm	28%	—	Sepia smoke	○
	Black	502K	3mm	0%	—	Black	○

* The above values are typical and are not guaranteed values.

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Solvent Resistance

Dissolves	Chloroform, acetone, benzene, toluene, xylene, dichloroethane, ethyl acetate, butyl acetate, amyl acetate, glacial acetic acid, methanol, allyl alcohol, carbon tetrachloride, butyl chloride, carbon disulfide, butylaldehyde, acetonitrile, dimethyl ether, cyclohexane, phenol, cresol, monochlorobenzene, aniline, and benzaldehyde
Hard to dissolve at room temperature, but prone to swelling or cracking.	Ethanol, butanol, isopropanol, octane, butyl stearate, and ethylene dibromide
Not affected at room temperature.	Hexane, petroleum ether, paraffin, glycerin, methylamine, and olive oil

Source: P. 85-89, Plastic Material Course (12), Acrylic Resin (1970), Takashi Asami, Nikkan Kogyo Shimbun

Acid Resistance and Alkali Resistance

A. Acid Resistance

Acids	20°C 14 days	60°C 14 days
Nitric acid	Not affected at a max. dilution of 10%	Slightly affected at a dilution of 10%
Hydrochloric acid	Not affected at a max. dilution of 31%	Not affected at a max. dilution of 31%
Phosphoric acid	Not affected at a max. dilution of 50%	Not affected at a max. dilution of 25%
Sulfuric acid	Not affected at a max. dilution of 25%	Not affected at a max. dilution of 20%
Acetic acid	Not affected at a max. dilution of 50%	Not affected at a max. dilution of 10%
Citric acid	Not affected by a saturated solution	Not affected by a saturated solution

The above test was conducted on the products in a state of sheets. The results may differ from those of the products in practical use due to external pressure and internal strain.

B. Alkali Resistance

The products are not affected by sodium carbonate, caustic soda, or caustic potash at 20°C to 60°C.
The products are not affected by ammonia at a dilution of 30% at 20°C. However, the surface becomes cloudy at a dilution of 10% at 60°C.

C. Effect of Gas

The products are not affected by air, oxygen, nitrogen, hydrogen, ozone, or sulfurous acid gases.
Dry chlorine gas only slightly corrodes the surface as does moist chlorine gas.

Own-weight Deflection of Four-side-supported Methacrylic Resin Sheet (Flat Sheet)

Unit: mm

Calculation conditions		Elastic modulus 2900 [MPa]			
Sheet thickness	Short side "a"	Long side "b"/Short side "a" ratio			
		1	Symbol	2	Symbol
2	450	1.7	○	4.2	
	600	3.8		6.6	
	900	8.0		13.6	
	1,200	12.6		20.2	
	1,500	17.4		29.0	
	1,800	22.0		34.0	
3	450	0.9	◎	2.7	
	600	2.4	○	6.3	
	900	7.2		13.5	
	1,200	12.0		19.5	
	1,500	17.1		27.6	
	1,800	21.0		36.0	
5	450	0.2	◎	1.2	○
	600	0.9	◎	3.3	
	900	4.1	○	10.5	
	1,200	9.5		18.5	
	1,500	14.3		26.5	
	1,800	20.5		33.5	
8	450	0.0	◎	0.2	◎
	600	0.2	◎	1.5	◎
	900	1.9	◎	6.6	
	1,200	5.6	○	15.2	
	1,500	11.2		22.8	
	1,800	16.4		32.0	
10	450	0.0	◎	0.1	◎
	600	0.1	◎	0.7	◎
	900	1.0	◎	5.0	
	1,200	4.0	○	12.0	
	1,500	8.2		21.0	
	1,800	14.0		30.0	

・The above values show the short-term own-weight deflections of the four-side-supported products calculated from the following large-deflection solution formula based on the calculation conditions specified above.

$$\frac{P}{E} \times \frac{(a\hat{}2 \times b\hat{}2)}{t\hat{}4} = 22\left(\frac{\delta}{t}\right) + 3.9\left(\frac{\delta}{t}\right)^3$$

P: Own-weight pressure [N/m²]
E: Elastic modulus (calculation premise) [MPa]
a: Short-side length [mm]
b: Long-side length [mm]
t: Sheet thickness [mm]
δ: Max. deflection [mm]

・The amount of deflection is about twice as much in the long term.

・It is generally said that the deflection is less noticeable at 1/200 or less of the short-side length.
Circles (○) in the table indicate the imposition of short-term stress, and double circles (◎) indicate the imposition of long-term stress both at 1/200 or less of the short-side length.

・CAD calculation by a design expert is required to calculate product defection in the large-deflection solution formula.

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Processing Method/Precautions for Use

PARAGLAS™ and COMOGLAS™ are thermoplastic resins with excellent workability. With simple tools and equipment, you can perform machining, including cutting, drilling, molding, and bonding.

Machining	You can cut straight lines and curves with circular saws, band saws, jigsaws, routers, and drill and engrave with drills, engraving machines, etc.
Bending	For heat bending at any angle, you can use a pipe heater to heat the part that needs to be bent.
Heat	You can uniformly heat and soften a sheet in a heating furnace and mold it by pressing or pneumatically using a male and female mold. You can mold a wide variety of shapes, ranging from simple shapes to complex ones. COMOGLAS™ has a lower thermal deformation temperature than PARAGLAS™ and softens earlier but has excellent mold transferability.
Adhesive	The products are bonded with ease with solvents, including solvent-type, solution-type, and polymerization-type adhesives.

Temperature	The maximum continuous operating temperature of PARAGLAS™ is 80°C, and that of COMOGLAS™ is 65°C. The products have high cold resistance and can withstand even -40°C.
Scratches	The surface hardness is about the same as aluminum. In the case of a shallow scratch, the products can be refinished by polishing.
Expansion	The products expand and contract due to temperature changes, and expand and contract from 0.7 to 0.8 mm per meter of length when the temperature changes by 10°C. Furthermore, the products expand and contract due to moisture absorption and drying. Therefore, it is necessary to check the clearance when installing.
Solvent	Fine cracks may occur on the surface, depending on the type of solvent. Do not store in places where the products will come into contact with solvent vapor.
Combustion	The combustibility of the product is about the same as that of wood. A general fire extinguishing method is available.
Dust removal	Like other plastics, the products are easily charged with static electricity and become dusty. To remove dust, wipe off the surface with a soft cloth dampened with a 1% aqueous solution of a neutral detergent. Applying Kuraray's New Paracleaner™ prevents static electricity and dust from sticking to the product for a long time.
Usage restrictions	Do not use these products for medical appliances and implants that come in contact with human tissue or items babies may put into their mouth or swallow. Call our representative if using these products for medical goods, toys, cosmetics, safety devices, food containers/packaging, or similar products.

* The above values are typical and are not guaranteed values.

■Storage Precautions

For upright storage, tilt the products by about 10° so that the entire sheets are in close contact together. In that case, the total sheet thickness should be 30 cm or less. When placed horizontally, make sure that the smaller size is on the top, and the larger size is on the bottom. The stacking height should be 50 cm or less. Stack the sheets of the same size as much as possible.

Frequently Asked Questions

Q What is the difference between PARAGLAS™ and COMOGLAS™?

A PARAGLAS™ is manufactured in a cell cast method, in which a monomer is passed through two pieces of glass.
COMOGLAS™ is manufactured in an extrusion method.
There is a massive difference in molecular weight due to the difference in manufacturing methods. (The molecular weight of COMOGLAS™ is about 1/15 of that of PARAGLAS™.)
There is not much difference in their physical properties at room temperature, but there is a slight difference at high temperatures (110°C to 170°C).

Q What is the forced bending of the methacrylic resin sheet?

A As a guideline, 250 times the sheet thickness for outdoor use and 190 times for indoor use.

Q How do you calculate the weight of a methacrylic resin sheet?

A The specific gravity of the methacrylic resin sheet is about 1.2.
Example: Dimensions of 1830 mm × 915 mm × 3 mm
183 cm (long side) × 91.5 cm (short side) × 1.2 (specific gravity) × 0.3 cm (thickness) = 6.0 kg

Q What is the compliant status of various standards of PARAGLAS™ and COMOGLAS™?

A For the compliance status of various standards, check the compliance status of various standards on the website (http://www.paraglas.jp/art/status.html (Japanese language only)).

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PARAGLAS™ Special Brand

Brand	Name symbol (color number)	Feature	Main application
Matte sheet	H matte	The H matte is a matte, non reflective matte sheet shaped by figured glass. Transparent, opaque, and multiple earth-colored lineups are available.	Partitions, signboards, displays, and blindfolds
Optical property sheet	UV00	UV transmitting sheet: This product transmits Uultraviolet rays of 260 nanometers or more.	Polymerization adhesion using ultraviolet rays
	IR74	The IR74 cuts visible light and transmits only near-infrared rays of 740 to 1100 nanometers.	Infrared filters
Sanitary grade	SG	The SG is a grade that is easy to mold. It can be deeply drawn and has excellent strength and heat resistance. The SG has good chemical resistance and can withstand hair styling products. Furthermore, it has good scratch resistance, and it is hard to get dirty.	Sanitary applications and bathtubs
Bicolor	D100	The D100 is a board coated with white paint on one side of the transparent substrate of PARAGLAS™, and the paint film can be scraped off by engraving, and ink can be put in that part to display characters, pictures, etc.	Name tags and wiring display boards
Alcohol-resistant sheet	AT	The AT has improved alcohol resistance while maintaining properties equivalent to standard PARAGLAS™ sheets. This product is characterized by its resistance to cracking even when cleaned with an alcohol-based solvent after sheet laser machining, edge face buffing, and flame polishing.	Partitions, Medical device parts

Auxiliary Material

Antistatic and Cleaning Agent

New PARACLEANER™

The product is applied to PARAGLAS™ and COMOGLAS™ and used for antistatic purposes.
This excellent effect lasts for a long time (one to two years) and keeps dust away.

Packing	Packing unit
400-cc spray type	12-cardboard boxes
1000-cc polyethylene container	6-cardboard boxes

* Handling precautions
LPG is used for injection gas, so be careful of fire.
Use the product in a well-ventilated place. Do not spray it on people.
In case of accidental inhalation or swallowing, seek medical attention immediately.

COMOGLAS™ Special Brand

Brand	Name symbol (color number)	Feature	Main application
Pearl sheet	9041K (white) 9053K (gray)	The color of 9041K and 9053K are sheets with a pearly metallic luster.	Name tags, nameplates, and displays
Matte sheet	DFA2	The DFA2 is not shaped by mold glass or embossed roll. Therefore, the matte surface properties will not be lost even if it is heated and stretched.	Partition plates and displays
Optical property sheet	UV40	UV Protection Sheet. It prevents the material deterioration, discoloration, and fading of exhibits.	Picture frame and exhibit covers
	TH1	The TH1 is a transparent sheet, but the surface will emit light when light is introduced from the edge.	Billboards, signs, and displays
Scratch-resistant sheet	KH	The KH is a surface-hardened sheet with scratch resistance on one or both sides of the surface of COMOGLAS™.	Window materials, machine covers, and game consoles
Fluorescent edge	125K 135K 145K 155K	The color of 125K, 135K, 145K, and 155K are sheets that emit bright fluorescence. The colors are pink (the 125K), orange (the 135K), green (the 145K), and violet (the 155K). The polished edge surface emits a bright fluorescence.	Displays and nameplates
Impact-resistant sheet	HI	The HI is a sheet with improved impact resistance. Grades with higher impact resistance are more flexible, with a slight decrease in heat resistance. Select the grade best suited to your application.	Vending machines, templates, and machine covers
Static control sheet	SC	The SC's major feature is that it has extremely low surface intrinsic resistance and is not charged even when charged. It has an excellent effect on measures against static electricity and dust damage on IC electronic parts.	Cleanroom window materials
Amended Food Sanitation Act-compliant sheet	SE	This grade complies with the Amended Food Sanitation Act (enforced in June 2020), which is applicable for use in direct contact with food.	Food trays and the like
High UV ink adhesion sheet	DMP2	This grade has higher UV ink adhesion than the standard COMOGLAS™ brand. It offers the same levels of surface smoothness and printing performance as the standard brand, with high peel strength without the need for primer treatment.	Key-holders and novelties

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PARAGLAS™ SG Sanitary Grade

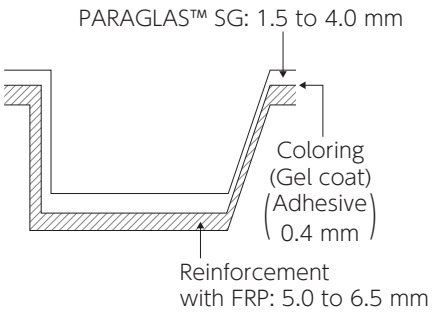
PARAGLAS™ SG has improved thermoformability while maintaining features, including its gloss, color tone, and physical properties of the standard PARAGLAS™.
The molding temperature range is vast, and the elongation is massive, even at low temperatures.
It is relatively easy to make the sheet thickness of the molded product uniform.
PARAGLAS™ SG also has excellent heat and water resistance and impact resistance.
It is a casting sheet suitable for various deep drawing and molding of complicated shapes for sanitary applications.

Features and Comparison of PARAGLAS™ SG with Other Materials

* FRP refers to sheet molding compound (SMC).

Feature	PARAGLAS™ SG	FRP	Poly artificial marble	Enamel	Stainless
1. Design (Color diversity and shape)	◎	△	○	△	×
2. Texture (Glossiness and depth)	◎	△	○	◎	△
3. Hydrolyzable (24 hours)	◎	×	△	◎	◎
4. Antifouling property	○	△	△	◎	◎
5. Feels on the skin	◎	△	○	○	×
6. Weather resistance	◎	△	△	○	◎
7. Small lot production possible	◎	×	×	△	○
8. Weight (Workability)	◎	◎	×	××	○

(According to our evaluation and survey)



PARAGLAS™ SG Sanitary Grade

Physical Properties of PARAGLAS™ SG

	Item	Test method	Unit	PARAGLAS™ SG85	PARAGLAS™ standard grade
General physical properties	Specific gravity	JIS K7112	—	1.19	1.19
	Water absorption rate	JIS K7209	%	0.3	0.3
Thermal properties	Specific heat	JIS K7123	J/g℃	1.5	1.5
	Deflection temperature under load	JIS K7191-2(Method A)	℃	90	105
	Coefficient of linear expansion	JIS K7197	$℃^{-1}$	7×10^{-5}	7×10^{-5}
	Thermal conductivity (20℃)	JIS A1412	W/m・K	0.19	0.19
Mechanical properties	Tensile strength	JIS K7161	MPa	74	76
	Tensile elongation	JIS K7161	%	6	6
	Bending strength	JIS K7171	MPa	120	120
	Flexural modulus	JIS K7171	MPa	3200	3200
	Charpy impact strength (No notches)	JIS K7111	KJ/m^2	15	18
Electrical properties	Volume specific resistance	JIS K6911	Ω	$>10^{15}$	$>10^{15}$
	Surface intrinsic resistance	JIS K6911	Ω	$>10^{15}$	$>10^{15}$
	Insulation resistance	JIS K6911	Ω	$>10^{15}$	$>10^{15}$

* The above values are typical and are not guaranteed values.

Chemical Resistance of PARAGLAS™ SG

○ : There is resistance △ : There is a limit to resistance

Inorganic chemicals		Organic chemicals		Others	
30% sulfuric acid solution	○	50% acetic acid solution	○	Whisky	○
10% hydrochloric acid solution	○	10% formic acid solution	○	Sake	○
10% nitric acid solution	○	Methanol	△	Beer	○
75% phosphoric acid solution	○	Ethanol	○	Wine	○
5% caustic soda solution	○	Isopropanol	○	Butter	○
Calcium hydroxide	○	Acetone	△	Margarine	○
Magnesium chloride	○	Toluene	△	Mayonnaise	○
Sodium chloride	○	Methyl ethyl ketone	△	Salad oil	○
10% calcium chloride solution	○	Ethyl acetate	△	Rapeseed oil	△
10% sodium sulfate solution	○	Carbon tetrachloride	△	Clove oil	○
10% ammonium sulfate solution	○	Chloroform	△	Coffee	○
15% sulfurized soda solution	○	Cresol	△	Tea	○
15% potassium dichromate solution	○	40% formalin solution	○	Orange juice	○
10% ammonia solution	○	Normal hexane	○	Tomato juice	○
10% soda nitrite solution	○	Kerosene	○	3% soap solution	○
Sodium carbonate	○	Light oil	○	3% neutral detergent solution	○
30% hydrogen peroxide solution	○	City gas	○	2% bleached powder solution	○
20% hydrofluoric acid solution	○	Propane gas	○	Cement	○
Sodium permanganate	○	Lubricant	○	Glass putty	○
Chlorine gas	△	Paraffin oil	○	Freon	△

Note: • Even if the product is stable at room temperature with no load, it may be affected at high temperatures with a load applied. Make a check in advance.
• The above chemical resistance data is that on PARAGLAS™ SG85.
Test method: In accordance with JIS A 1454, drop 2 ml of each reagent onto PARAGLAS™ SG, cover it with a watch glass, and let it stand for 24 hours. After water washing and drying, observe any changes in the surface condition (such as gloss).

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COMOGLAS™ HI Impact Resistant Sheet

COMOGLAS™ HI is a methacrylic resin sheet with improved impact resistance.
The total light transmittance is 90% or more, and the weather resistance is good with little deterioration of physical properties, even when used outdoors.
Suitable for applications, such as faceplates of vending machines and automobile visors.

COMOGLAS™ HI Impact Resistant Sheet

Physical Properties of COMOGLAS™ HI

	Item	Test method	Unit	COMOGLAS™ HI-30	COMOGLAS™ HI-50	COMOGLAS™ HI-70	COMOGLAS™ General Grade
General physical properties	Specific gravity	JIS K 7112	—	1.18	1.18	1.17	1.19
Optical properties	Total light transmittance	JIS K 7361-1	%	92≦	92≦	91≦	92≦
	Haze	JIS K 7136	%	0.3	0.6	1.0	0.2
Thermal properties	Deflection temperature under load	JIS K 7191-2(Method A)	℃	88	88	84	96
	Vicat softening point	JIS K 7206	℃	102	102	98	106
mechanical nature	Tensile strength (Yield value)	JIS K 7161	MPa	64	60	49	74 (Break value)
	Tensile elongation (Break value)	JIS K 7161	%	10	15	20	5
	Bending strength (Yield value)	JIS K 7171	MPa	100	86	74	113
	Flexural modulus	JIS K 7171	MPa	2800	2500	2200	3200
	Falling impact strength	JIS K 7211-1 (Steel ball 200 g)	cm	>200	>200	>200	70
	Rockwell hardness	JIS K 7202-2	M scale	86	79	61	97
Other properties	Coefficient of linear expansion	JIS K 7197	$℃^{-1}$	7×10^{-5}	8×10^{-5}	8×10^{-5}	7×10^{-5}
	Burning speed	JIS K D1201	mm/min	28	28	28	23
	Water absorption rate	JIS K 7209	%	0.3	0.3	0.3	0.3
* Weatherability	Charpy impact strength (No notches) (JIS K 7111)	Irradiation for 0 hours	KJ/m^2	30	55	66	17
		Irradiation for 500 hours	KJ/m^2	21	30	44	14
		Irradiation for 1000 hours	KJ/m^2	15	18	27	10
		Irradiation for 2000 hours	KJ/m^2	11	12	16	10

* After accelerated exposure to a sunshine weather meter.
* The above values are typical and are not guaranteed values.

COMOGLAS™ HI Standard Table (HI30, HI50, and HI70)

No.	Sheet thickness (mm) / Size (mm)	1.0	1.8	2.0	3.0	5.0
#2	1300×1100	▲	▲	▲	▲	▲
#3	1830×915	○	▲	○	○	▲
#4	2000×1000	▲	▲	○	○	○

Symbol description: ○: Standard stock item ▲: Manufactured upon request
* Contact us for lots manufactured upon request.
* HI30 and HI50 are products manufactured upon request in all sizes and thicknesses.

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COMOGLAS™ UV40 UV Protection Sheet

COMOGLAS™ UV40 is a methacrylic resin sheet with an ultraviolet absorbing function.
The product is especially useful in suppressing UV deterioration.
Suitable for display cases of arts and crafts, frame plates, etc.
Unlike common glass and acrylic products, this product absorbs andit thus cuts 97% or more of ultraviolet rays of 400 nanometers or less, which are detrimental to fine art quality, preventing exhibits from material deterioration, discoloration, and color fading.
Furthermore, visible light is transmitted by 90% or more and does not interfere with viewing the exhibits.
It is harder to break than glass, weighs about half, and is easy to handle.

Physical Properties of COMOGLAS™ UV40

	Item	Test method	Unit	COMOGLAS™ UV40
General physical properties	Specific gravity	JIS K 7112	—	1.19
mechanical nature	Tensile strength	JIS K 7161	MPa	73
	Flexural strength	JIS K 7171	MPa	113
	Rockwell hardness	JIS K 7202-2	M scale	97
Thermal properties	Deflection temperature under load	JIS K 7191-2(Method A)	℃	96

Optical characteristics on the back (total light transmittance, scattered light transmittance, and haze)

Workability of COMOGLAS™ UV40

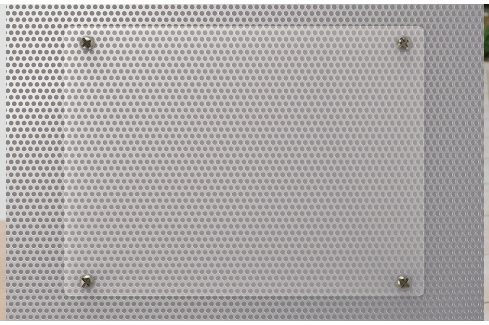
The product can be processed in the same way as general grades for unique applications, such as heat molding, printing, hot stamping, and resist making.

COMOGLAS™ UV40 Standards

Color	Symbol	No.	Sheet thickness (mm) Size (mm)	2.0	3.0	5.0
Transparent	P	#2	1300×1100	▲	▲	▲
		#3	1830×915	○	▲	▲
		#4	2000×1000	○	○	○
		#46	1830×1220	▲	▲	▲

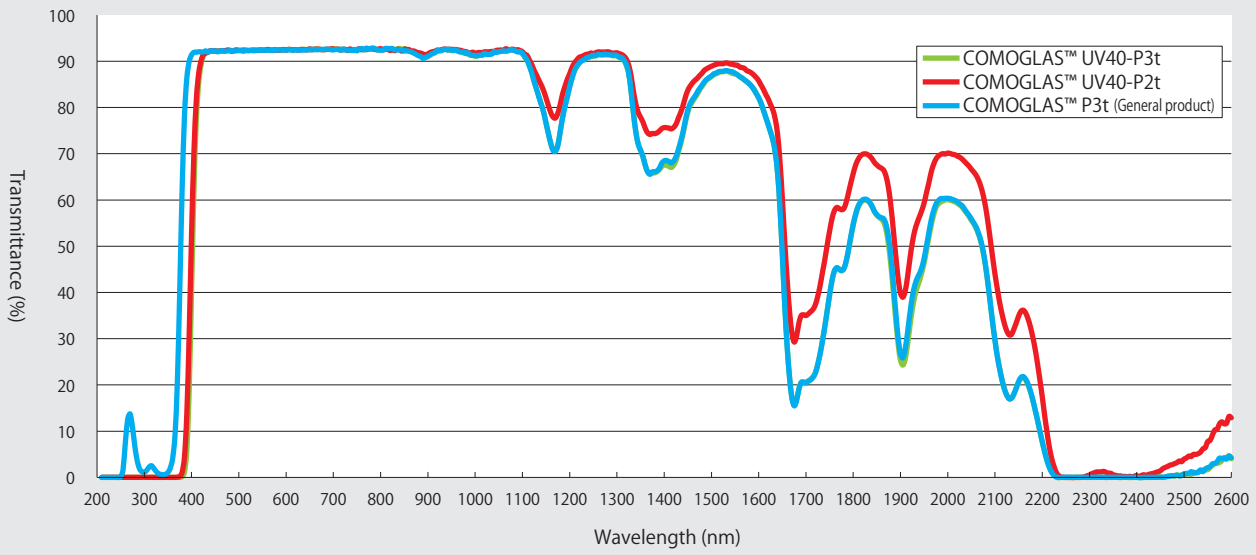
Symbol description: ○: Standard stock items; ▲: Manufactured upon request
* Contact us for lots manufactured upon request.


NIHON VOGUE Corp.'s pressed flower painting



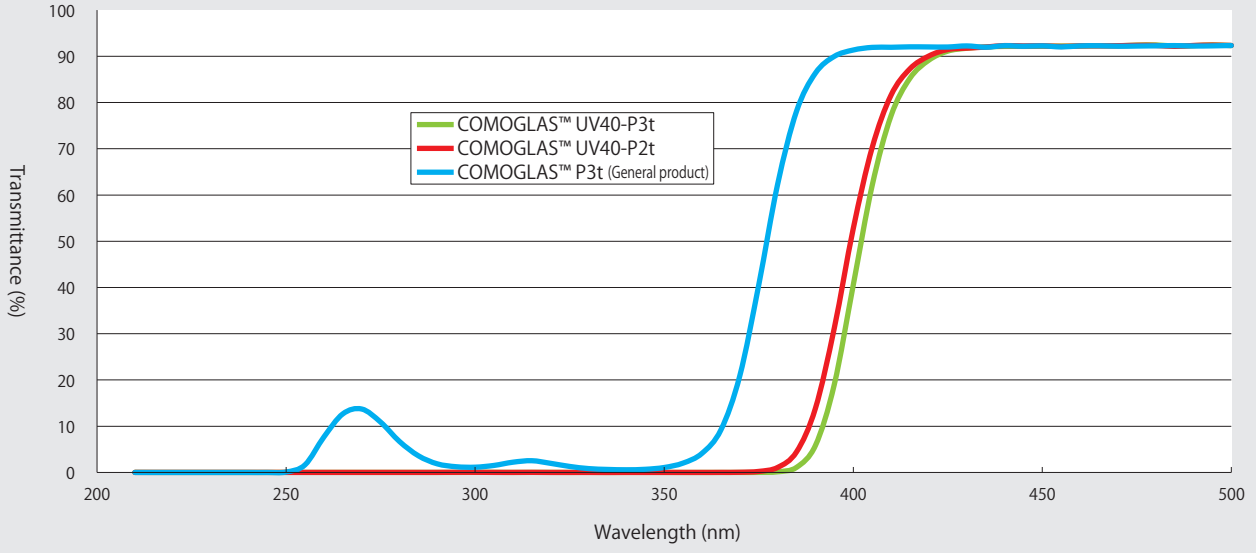
COMOGLAS™ UV40 UV Protection Sheet

Total Light Transmittance and Color Measurement of COMOGLAS™ UV40



Spectral Light Transmittance of COMOGLAS™ UV40

Sheet thickness	Total light transmittance	Scattered light transmittance	Haze
2mm	92≦	0.22%	0.24%
3mm	92≦	0.21%	0.23%



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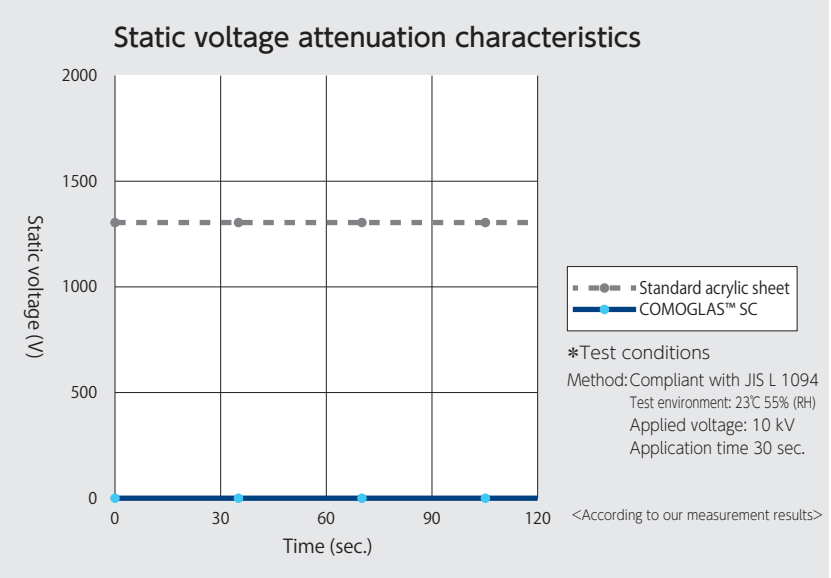
COMOGLAS™ SC Static Control Sheet

COMOGLAS™ SC has extremely low surface intrinsic resistance, has a feature of not accumulating charges even when charged, and has excellent transparency and surface gloss with little fogging.
It contains fewer impurities and generates less outgas, making it suitable for various applications, such as carrier boxes, machine covers, cleanroom window materials, and partitions.



Physical Properties of COMOGLAS™ SC

(Sheet thickness: 3 mm)

	Item	Test method	Unit	COMOGLAS™ SC
General physical properties	Specific gravity	JIS K 7112	—	1.19
	Pencil hardness	JIS K 5600		F
	Water absorption rate 23℃/24HR	JIS K 7209	%	0.4
Electrical properties	Surface intrinsic resistance	JIS K 6911	Ω	$10^{7\sim8}$
	Volume specific resistance	IEC 60093	Ω・cm	$10^{15\sim16}$
	Maximum static voltage	JIS L 1094	V	0
	Half-life	JIS L 1094	Sec.	0
Mechanical properties	Tensile strength	JIS K 7161	MPa	74
	Tensile fracture strain	JIS K 7161	%	5
	Flexural strength	JIS K 7171	MPa	122
	Flexural modulus	JIS K 7171	MPa	3300
Thermal properties	Deflection temperature under load	JIS K 7191-2(Method A)	℃	96
	Linear coefficient of thermal expansion	JIS K 7197	cm/cm・℃	7×10^{-5}
Optical properties	Total light transmittance	JIS K 7361-1	%	87
	Haze	JIS K 7136	%	0.9

* The above values are typical and are not guaranteed values.
* The numerical values of optical properties are for colorless and transparent products.

COMOGLAS™ SC Specification Table

Color tone	Symbol	No.	Sheet thickness (mm) Size (mm)	2.0	3.0	5.0	6.0	8.0	10.0
Transparent	P	#2	1300×1100	▲	▲	▲	▲	▲	▲
		#4	2000×1000	—	○	○	▲	▲	▲
		#48	2440×1220	—	○	○	▲	▲	▲
Color	K	#4	2000×1000	—	○	○	▲	▲	▲

Symbol description: ○: Standard stock items; ▲: Manufactured upon request
* Poly-coated masking paper on both sides
* Contact us for the thicknesses and sizes of products other than those of standard products. Also, contact us for those manufactured upon request.

Standard color	Color tone	Total light transmittance
P	Transparent	87%
3009K	Yellow	80%
2014K	Orange	41%
7048K	Brown smoke	25%

COMOGLAS™ SC Static Control Sheet

Workability of COMOGLAS™ SC

■Machining

COMOGLAS™ SC can be cut with a running saw, drilled with a drilling machine, and cut with an NC router in the same way as general acrylic extrusion sheets.

■Adhesive Processing

COMOGLAS™ SC adheres with solvent-type adhesive for acrylic board or methylene chloride adhesive. However, COMOGLAS™ SC may whiten if the adhesive comes into contact with the antistatic control film. Therefore, if there is a problem with the appearance, it is recommended to scrape off the antistatic film with sandpaper before bonding. The part where the static control film is scraped off does not have static control performance.

■Printing Processing

COMOGLAS™ SC can be screen printed or spray painted.
Depending on the type of ink, it may damage the antistatic control film. Therefore, it is recommended to check the compatibility of the ink in advance.

■Thermoforming

COMOGLAS™ SC can be molded by controlling the sheet temperature to about 110°C if it has a simple shape, such as a single curved surface.
If the retention rate of sheet thickness is 2/3 or less, the antistatic control performance will deteriorate.

■Maintenance (Cleaning)

If COMOGLAS™ SC becomes dirty, wipe it off with a soft cloth dampened with water.
If oil adheres to COMOGLAS™ SC, wipe it off with a soft cloth dampened with a 1% aqueous solution of neutral detergent or a 10% aqueous solution of alcohol. Then wipe it off with a soft cloth dampened with water.

Chemical Resistance of COMOGLAS™ SC

The following table shows the resistance of COMOGLAS™ SC to the following chemicals. Refer to the table when using COMOGLAS™ SC.
Test method: <Dripping> The changes in appearance were checked at 20°C, with an elapsed time of one hour after 0.5 ml of chemical solution was dropped on the surface of COMOGLAS™ SC.

Chemical name	Concentration	Dripping
Chlorine	20%	○
Sulfuric acid	50%	×
Fluorine	20%	×
Nitric acid	50%	×
Phosphoric acid	90%	×
Acetic acid	98%	×
Hydrogen peroxide	30%	○
Formalin	37%	○
Sodium hydroxide	30%	○
Potassium hydroxide	30%	○
Ammonia water	30%	○
Acetone	98%	×
Esters	98%	×
Methylene chloride	98%	×
Alcohol	99%	○

○: Not immersed; ×: Immersed and swollen, or otherwise damaged
* The data in the above table may differ depending on the usage conditions, such as temperature, humidity, and concentration. Therefore, it is recommended to check the usage conditions before use.

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COMOGLAS™ TH-1 Surface-Emitting Sheet

Features

The surface of COMOGLAS™ TH-1 will emit light when light enters from the edge face.
In general, making the surface of a methacrylic resin sheet emit light requires the treatment of that surface.
With a light-diffusing material added, COMOGLAS™ TH-1 can diffuse light entering from the edge face and emit light its surface.
This product eliminates the need for surface treatment and can be processed by cutting and bending, just like the standard COMOGLAS™.

Application Examples

COMOGLAS™ TH-1 can be used in various fields, including lighting interiors, shelf boards, displays, small signs, pop signs, and partitions.

COMOGLAS™ TH-1 Standard Table

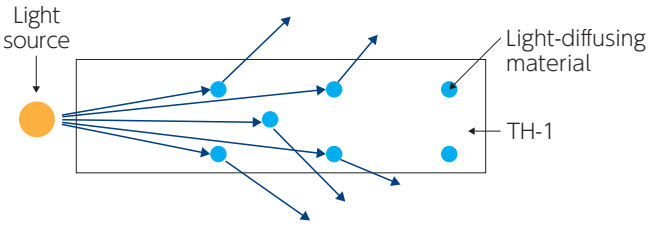
Sheet thickness (mm)	No.	Size (mm)
3	#4	2000×1000
5	#4	2000×1000
10	#4	2000×1000

Normal optical property

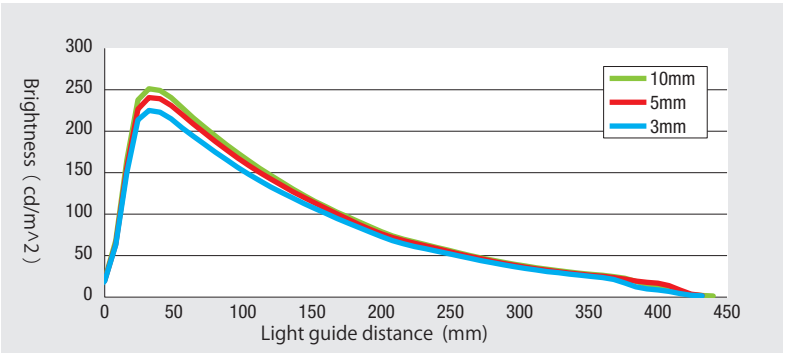
Sheet thickness (mm)	Haze (%)	Total light transmittance (%)
3	3.1	90.5
5	4.9	89.2
10	9.4	85.4

☆The above values are measurements and are not guaranteed

Mechanism of Surface Light Emission



Front brightness when light enters from the edge face

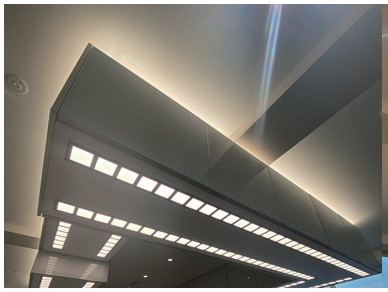


Use Examples

【When the light turns OFF】
The background is seen through the TH-1 sheet.

【When the light turns ON】
The entire surface emits light when the LEDs are ON

【When the light turns OFF】
The panels are assimilated into the background framework



【When the light turns ON】
The panels emit light when the LEDs are ON

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COMOMIRROR™ Vapor Deposited Aluminum Mirror Sheet

Features

COMOMIRROR™ is a mirror sheet with an aluminum coating formed by vacuum vapor deposition on a COMOGLAS™ methacrylic resin extruded sheet.
Methacrylic resins have higher transparency than glass. Because of that, the reflectance of the mirror surface is exceptionally high, creating a sense of luxury.
These resins are safer than glass because they weigh only about half as much, and no shards would fly off in the event of an accident.
Therefore, COMOMIRROR™ can help decorate commercial and interior spaces flexibly, safely, and gorgeously.

COMOMIRROR™ Standard Table

Color tone	Symbol	No.	Sheet thickness (mm) Size (mm)	2.0	3.0	5.0
Transparent	P	#2	1300×1100	○	○	○
		#3	1830×915	○	○	○
		#4	2000×1000	○	○	○
Gold	209K	#2	1300×1100	○	○	
Bronze smoke	665K	#3	1830×915	○	○	

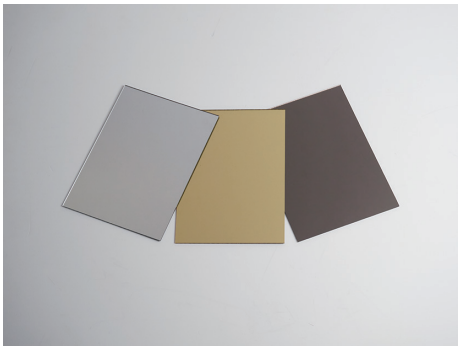
Comparison with Other Materials

Color tone	Acrylic resin	Glass	Polyvinyl chloride
Specific gravity (g/cm³)	1.19	About 2.5	About 1.4
Total light transmittance (%)	92≦	About 90	About 85

Workability of COMOMIRROR™

■Machining

This product can be cut and milled in the same way as standard acrylic extruded sheets.
Cutting this product with the painted surface faces upward (the mirror surface downward) may cause scratches and other damage to the surface.Ensure that the painted surface faces downward (the mirror surface upward).
Conversely, when laser cutting this product, ensure that the painted surface faces upward (the mirror surface downward) to prevent laser beam reflection from the top surface.



■Adhesive bonding

Mirror surfaces can be adhesively bonded in the same way as standard acrylic extruded sheets.
Applying thick double-sided tape over the entire surface is recommended when adhesively bonding a painted surface.

Precautions for Use

- Be careful when using this product for full-length mirrors because of possible distortion depending on the installation site and mounting method.
- Avoid using this product outdoors or in hot and humid places.

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■General Precautions

The information specified here, including technical data, is based on our measured values and reliable information. Still, they are not guaranteed values, as they differ from the actual usage conditions and state.
When using our products for your applications, refer to the information, and examine the suitability of the materials.
We created the content according to reference materials, information, and data currently available. It is subject to change without notice as a result of new knowledge and data available in the future.

■Handling Precautions

A Safety Data Sheet (SDS) is available for handling precautions for each product. Be sure to read it before use.
Furthermore, we have summarized the main precautions for handling PARAGLAS™ and COMOGLAS™. Use them for safe handling.

Fire

PARAGLAS™ and COMOGLAS™ are flammable thermoplastic resins.
Be careful of fire, as they will burn if they are brought close to or come in contact with a fire or a high-temperature source.
Do not inhale combustion gas as it contains carbon monoxide. Fire extinguishing is possible in general fire extinguishing methods.

Safety

The impact strength of the products varies depending on the sheet thickness. Select the sheet thickness according to the application.
Handle the products with care as the cut corners may cause injuries (e.g., scratches and cuts).
Keep in mind that the products in contact with solvents may result in whitening or cracks.
To clean the surface, use a 1% aqueous solution of neutral detergent or water.

Do not use these products for medical appliances and implants that come in contact with human tissue or items babies may put into their mouth or swallow.
Call our representative if using these products for medical goods, toys, cosmetics, safety devices, food containers/packaging, or similar products.

Storage Environment

Store the products in a place that is not exposed to direct sunlight, is away from ignition sources, does not undergo sudden temperature changes, does not leak water, and does not get hot.

Disposal

Dispose of used products according to the Waste Management and Public Cleansing Act and the regulations of each local government.
Dispose of used products by entrusting them to a licensed industrial waste disposal company.

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