

ABS sheet and film with superior appearance

VALUETECH® NSG400

VALUETECH® NSG400 is an ABS sheet and film with least defects such as gel particles or inclusion. This superior appearance is realized by TechnoPolymer's polymer synthesis technology. Vacuum molding of NSG400 is also gives molded products with superior appearance, that is most appropriate for base sheet of decorative sheet. The jet-black appearance of NSG400 enables you to have a jet-black decorative sheet simply applying transparent hard coat or lamination to NSG400.

Characteristics

- Smooth surface with little defects and inclusions.
- Applicable to insert molding and vacuum molding methods.
- Good printability.
- Color image comes out easily.
- Easy lamination with other materials.
- Co-extrusion with acrylic polymer is possible
- Facile coating on the surface.



Basic property

Item	Unit	VALUETECH NSG400					Standard
		Black	Black	Black	Black	Black	
Color							
Thickness		200	250	280	400	450	JIS K7130
Strength at break	MD	35	33	32	31	30	JIS K7127
	TD	32	31	32	31	32	
Elongation at break	MD	88	78	119	47	90	JIS K7127
	TD	38	29	26	41	18	
Modulus	MD	1,860	1,650	1,620	1,550	1,580	JIS K7127
	TD	1,790	1,620	1,630	1,630	1,550	
Shrinkage (100°C × 30min)	MD	0.27	0.18	0.2	0.19	0.12	JIS K7133
	TD	0.1	0.04	0.03	0.06	0.01	
Gloss (60°)	Super mirror	95	96	91	91	92	
	Mirror	76	83	81	87	88	
Tg	°C	110	110	110	110	110	DSC

Defect evaluation

Color		VALUETECH NSG400					Ordinary ABS sheet	
		Black	Black	Black	Black	Black		
Thickness	μm	200	250	280	400	450	400	
		Super mirror	0	0	0	0	0	2
Number of defects	>1.0mm ²	Mirror	0	0	0	0	0	1
		Super mirror	0	0	0	0	0	3
0.5~1.0mm ²	Mirror	0	0	0	0	0	3	
	Super mirror	1	1	1	0	0	40	
0.2~0.5mm ²	Mirror	0	0	0	0	0	36	
	Super mirror	0	0	0	0	0	36	

Defect evaluation method:

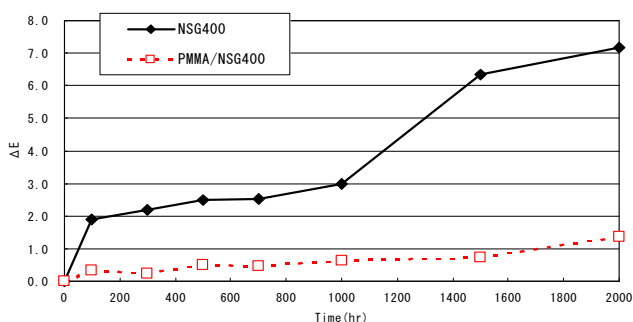
1. Sheet (A4 size) is attached to miniature vacuum molder.
2. Sheet is heated with a heat of 450C for 10 sec (distance between heater and sheet is 40 mm)
3. Sheet gives "DRAW DOWN"
4. Number of defects in the center of "DRAW DOWN" (100mmX100mm) is observed and counted.

Weatherability

Lamination of NSG400 with PMMA film gives weather resistant decorative sheet.

		Sunshine weather meter treatment time(hr)								
			0	100	300	500	700	1000	1500	2000
Color chang	ΔE	NSG400	0	1.90	2.20	2.48	2.54	2.99	6.34	7.17
	ΔE	PMMA/NSG400	0	0.32	0.24	0.49	0.47	0.63	0.73	1.37
GLOSS	60度	NSG400	96.0	—	—	—	—	—	—	0.2
	60度	PMMA/NSG400	87.5	—	—	—	—	—	—	56.7
Appearance change (observation)	Gloss	NSG400	—	Lower gloss	Lower gloss	No gloss	No gloss	No gloss	No gloss	No gloss
		PMMA/NSG400	—	No change	No change	No change	No change	No change	No change	No change
	Color	NSG400	—	No change	Smoked	Smoked	Smoked	Smoked	Smoked	Smoked
		PMMA/NSG400	—	No change	No change	No change	No change	No change	No change	No change

Weatherability (Change in delta-E)



Lamination of PMMA film on to the ABS sheet and film gives not only better weatherability but also higher surface hardness.

NSG400

Thickness	Width	Length	Delivery unit	Color	Appearance
200 μm	1,180 mm	1,000m/roll	Four rolls minimum	Black	Super mirror surface/Mirror surface
250 μm		800m/roll			
280 μm		750m/roll			
400 μm		500m/roll			
450 μm		450m/roll			

Thin film (test product)

Item	Unit	VALUETECH NSG400		Standard
		White	White	
Color		White	White	
Thickness	μm	50	100	JIS K7130
Strength at break	MD	31	35	JIS K7127
	TD	28	30	
Elongation at break	MD	60	200	JIS K7127
	TD	20	50	
Modulus	MD	1,640	1,650	JIS K7127
	TD	1,550	1,640	
Shrinkage (100°C × 30min)	MD	0.1	0.0	JIS K7133
	TD	0.0	0.0	
Tg	°C	110	110	DSC

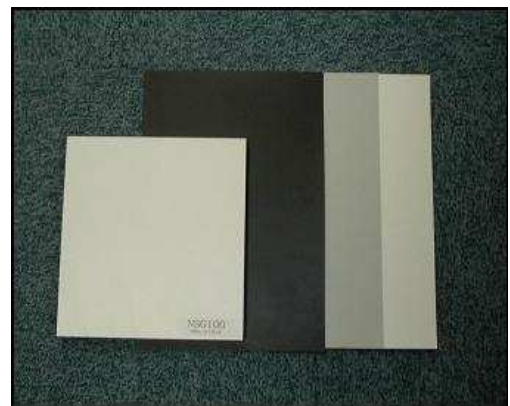
ABS film with superior appearance (Matt type)

VALUETECH® NSG100

VALUETECH® NSG100 is an ABS sheet with specifically designed embossed surface giving classy appearance and superior scratch resistance. NSG100 is suitable as interior housing applications.

Characteristics

- Specifically designed embossing gives good appearance suitable to building interior materials.
- Specifically designed embossing gives good scratch resistance.
- Corona treatment to the backside of the sheet is possible. Corona treatment gives superior adhesion to MDF.



Basic property

Item	Unit	VALUETECH NSG100	Standard
Color		White	
Thickness		μm	JIS K7130
Strength at break	MD	39	JIS K7127
	TD	36	
Elongation at break	MD	36	JIS K7127
	TD	25	
Modulus	MD	2,250	JIS K7127
	TD	2,180	
Heat shrinkage (100°C × 30min)	MD	0.8	JIS K7133
	TD	-0.1	
Gloss (60°)	Embossed	10	
	Backside	60	
T _g	°C	110	DSC

NSG100

Thickness	Width	Length	Delivery unit	Color
0.5mm	915mm	200m/roll	1roll	White, Black, Gray

Substances of environmental concern

VOC emission rate

	Emission rate: $\mu\text{g}/\text{m}^2\cdot\text{h}$		
	1 day	3 days	7 days
Toluene	ND(<0.3)	ND(<0.3)	ND(<0.3)
o-, m-, p- Xylene	ND(<0.3)	ND(<0.3)	ND(<0.3)
Ethyl benzen	ND(<0.3)	ND(<0.3)	ND(<0.3)
Stylene	0.71	0.39	0.39

Method: JIS A1901:2009

CO2 emission = 0.00000395 t/m²

Polymer alloy film based on ABS resin

VALUETECH® NFC500

VALUETECH® NFC series is made of polymer alloy based on ABS. NFC500 is applicable to various printing methods, especially gravure multi-layer printing and inkjet printing. Flexibility of NFC500 maintains after multi-layer printing. Shrinkage after 200C 30 minutes is so small, which makes high temperature drying possible for better productivity and realizes precise processing.

Characteristics

- Smooth surface with little defects and inclusions.
- Applicable to insert molding and vacuum molding methods.
- Good printability.
- Color image comes out easily.
- Easy lamination with other materials.
- Co-extrusion with acrylic polymer is possible
- Facile coating on the surface.



Basic property

Item	Unit	VALUETECH NFC500	Standard
Color		Beige	
Thickness		μm	JIS K7130
Strength at break	MD	45	JIS K7127
	TD	36	
Elongation at break	MD	330	JIS K7127
	TD	260	
Modulus	MD	990	JIS K7127
	TD	930	
Shrinkage (100°C × 30min)	MD	0.7	JIS K7133
	TD	0	
Gloss (GLOSS60°)	Matt	4	
	Mirror	21	
Tm	°C	205	DSC法

Solvent resistance

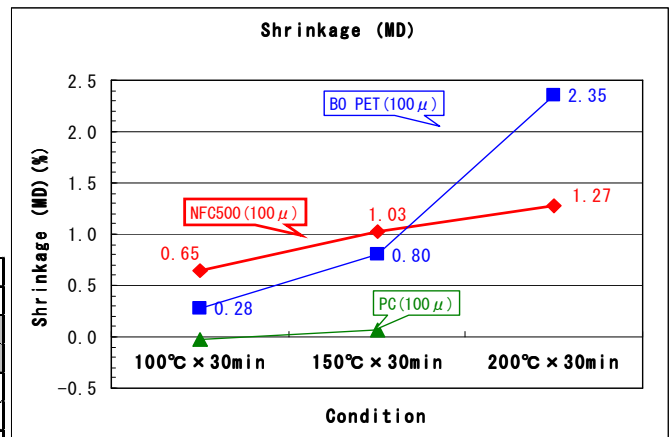
Solvent	VALUETECH NFC500	Standard PS film
Ethyl acetate	◎	×
THF	○	×
MEK	○	×
IPA	○	○
Toluene	◎	×
Aceton	◎	×

Rubbing test method

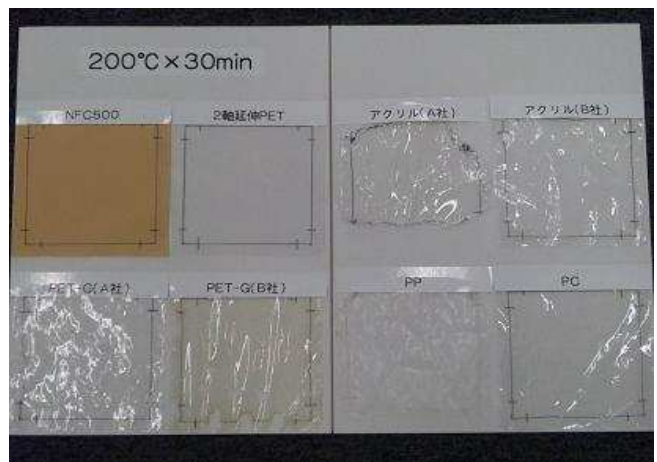
1. Rub the film surface three times with a cotton stick absorbing solve
 2. Film surface is visually inspected.
- Level:◎No change、○a little change、△a big change、×Dissolved

Heat resistance (Shrinkage upon heating)

NFC500 does not melt even at 200C.
 Since shrinkage is small, it can be applied to where precise size control is required.



Sample	Thickness (μ)	Condition	Shrinkage (%)		
			100°C x 30min	150°C x 30min	200°C x 30min
NFC500	100	MD	0.65	1.03	1.27
		TD	-0.04	-0.02	0.41
PET	100	MD	0.28	0.80	2.35
		TD	0.12	0.35	0.62
PET-G	100	MD	2.89	Melt	Melt
		TD	2.11	Melt	Melt
Rubber toughened PMMA	125	MD	5.39	Melt	Melt
		TD	0.64	Melt	Melt
PP	80	MD	0.38	Melt	Melt
		TD	0.15	Melt	Melt
PC	100	MD	-0.03	-0.04	Melt
		TD	-0.02	0.06	Melt



NFC 500

Thickness	Width	Length	Delivery unit	Color
0.1mm	980mm 1,280mm	2,000m/roll	1roll	White, Beige, Brown, Dark brown

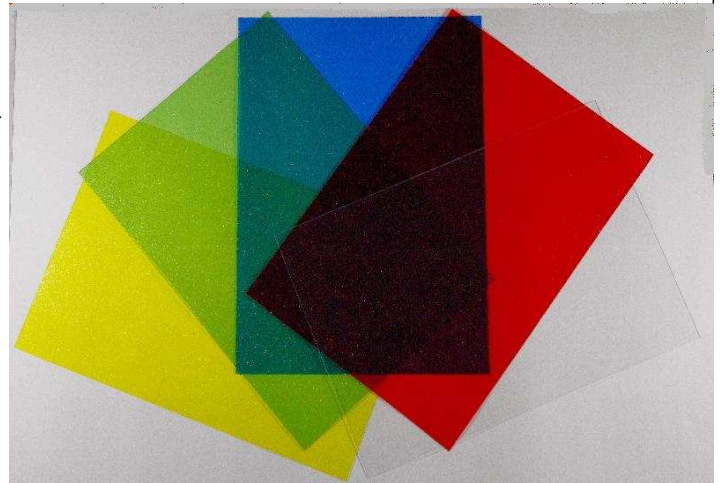
Transparent ABS sheet and film

VALUETECH® NST700

VALUETECH® NST700 is made of transparent ABS resin. NST700 has clear transparency along with good vacuum molding performance. NST700 is also has least defects and inclusion due to TechnoPolymer's polymer synthesis technology. Transparent ABS resin can be variously colored. Especially, transparent metallic colored sheet has exceptional brilliancy giving new designing tool to industrial designers.

Characteristics

- Smooth surface with little defects and inclusions.
- Applicable to insert molding and vacuum molding methods.
- Good printability.
- Color image comes out easily.
- Easy lamination with other materials.
- Co-extrusion with acrylic polymer is possible
- Facile coating on the surface.



Basic property

Item	Unig	VALUETECH NST700	Standard
Color		Clear	
Thickness		200	JIS K7130
Strength at break	MD	44	JIS K7127
	TD	41	
Elongation at break	MD	5	JIS K7127
	TD	3	
Modulus	MD	1,570	JIS K7127
	TD	1,650	
Shrinkage (100°C × 30min)	MD	0.1	JIS K7133
	TD	0	
Light transparency		95	
Haze		7	
T g		111	DSC

Metallic colored clear NST700

The sheet was made of transparent ABS resin colored with metallic pigments.

Brilliance of this new color cannot be achieved with conventional thermo plastics.



Eco-friendly sheet and film (PLA/ABS)

VALUETECH® NFV900 series

VALUETECH® NFV900 series is sheet or film made from TechnoPolymer's PLA/ABS which is certified as BIOPLASTIC by JBPA (Japan BioPlastics Association). NFV900 is easy to print and easy to process. Eco-friendly labels or decorative sheet can be obtained by applying NFV900.

Characteristics

- Smooth surface with little defects and inclusions.
- Applicable to insert molding and vacuum molding methods.
- Good printability.
- Color image comes out easily.
- Easy lamination with other materials.
- Co-extrusion with acrylic polymer is possible
- Facile coating on the surface.



Basic property

Item	Unit	Test production code #			Standard
		SVV0001	SVV0002	SVV0005	
PLA content	%	30	30	70	Standard
Color		White	White	White	
Thickness	μm	50	400	50	JIS K7130
Strength at break	MD	52	53	50	JIS K7127
	TD	48	52	47	
Elongation at break	MD	6	4	3	JIS K7127
	TD	3	4	2	
Modulus	MD	2,480	2,060	3,010	JIS K7127
	TD	2,470	2,040	3,090	
Shrinkage (100°C × 30min)	MD	2.1	1.1	2.3	JIS K7133
	TD	1.4	0.7	2.9	
T _g	°C	66,117	66,117	65,115	DSC
T _m		164	164	156	

DSC Data (T_g and T_m) were taken from the second scan of DSC measurements.

Hydrolysis resistance

