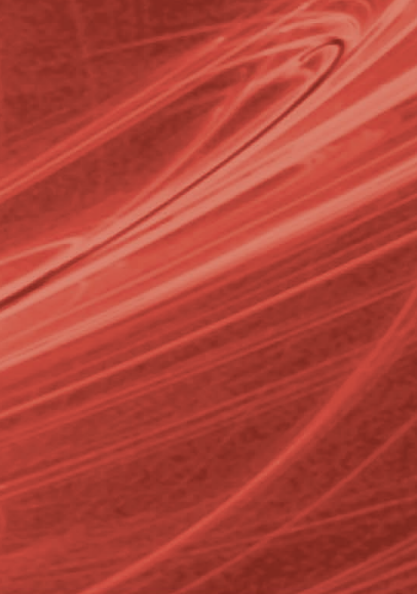




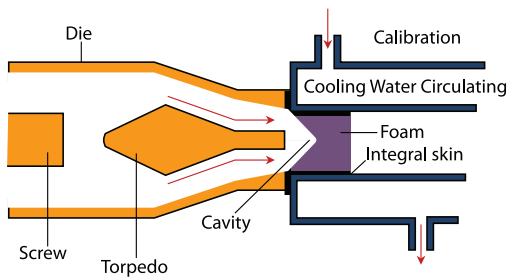
KOMACEL[®]

KOMACEL[®] integral foam sheets



Trade information for:

- Advertising technicians
- Digital printers
- Design & advertising agencies
- Exhibition stand builders
- POS fitters
- Sign makers
- Interior decorators
- Cabinet makers
- Window manufacturers
- Fitters
- Roller-shutter manufacturers
- Conservatory manufacturers



Celuka Procedure

The Versatile, High Impact-resistant, Integral-skin, Rigid Foam PVC Sheet for Graphic and Industrial Applications

Suitable for a virtually unlimited range of applications, PVC is one of the oldest and most developed synthetic materials. For more than 100 years, Kommerling has been dedicated to developing the highest-quality rigid PVC sheets.

Komacel®, an integral skin-foam sheet made of rigid PVC according to the Celuka process, has been part of Kommerling's range of thermoplastic sheets for more than 25 years. It fits requirements for a multitude of applications, from a substrate for backers of channel letters to wood replacement. However Komacel is used, experience has proven its quality.

Characteristics and Benefits

Komacel is the substrate of choice when the following characteristics are required:

- Fine-cell foam structure – light and easy to fabricate
- Smooth outer skin – ideal for screen printing, paints and vinyls
- Gloss finish – high-tech look
- Homogeneous coloring – little change in color from run to run
- Widest range of thicknesses – 4 – 30 mm
- Great for indoor and outdoor uses
- Thermal and sound insulation – absorbs vibrations and oscillations
- Good insulation value
- High flexural strength
- High impact strength – suitable for high-traffic areas
- Lightweight and easy to handle
- Easy to fabricate with most common tools
- Weatherproof and light-fast – solid surface ideal for exterior applications where other products have failed
- Chemical and corrosion resistance
- Moisture resistance – low water absorption
- Low flammability (UL-94VO) – perfect for trade shows and exhibit halls
- Bonds easily to similar and various other substrates

Komacel sheets are not harmful to human health or the environment in manufacturing, applications or disposal. Komacel is free of lead, cadmium and barium. All Kommerling products comply with national and international regulations relating to the environment.

It is not recommended to laser cut Komacel

Komacel® Applications

- Substrate for signs – easily screen printed, painted, laminated; ideal for vinyl letter application
- Exhibit and trade-show booths
- Point-of-purchase and 3D displays
- Photo mounting
- Arts and crafts
- Dimensional lettering
- Marine
- Refrigeration
- Vehicle manufacturing
- Theater and stage sets
- Models, architectural prototypes
- Wood replacement



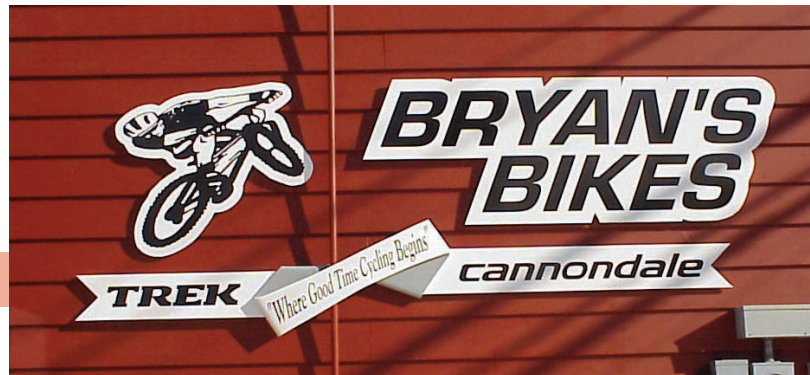
European Technical Values

For applications requiring more detailed technical data, please contact our specialists.

Properties	Examination Method	Unit	Values		Values 19, 24, 30 mm ¹			
			4, 5, 6 mm Values	8, 10, 13 mm				
Mechanical								
Apparent density ²	DIN 53 479	g/cm ³	0.85	0.55 – 0.60	0.55 – 0.60			
Tensile strength	DIN 53 455	N/mm ²	20	15	–			
Elongation at tear	DIN 53 455	%	30	20	–			
Flexural strength	DIN 53 452	N/mm ²	30	30	20			
Compressive strength (range of elasticity)	DIN 53 421	N/mm ²	10	4	3.5			
Compressive stress for compressive strain of 30%	DIN 53 421	N/mm ²	20	9	5.5			
Modulus of elasticity	DIN 53 457 (similar to)	N/mm	1100	850	1100			
Impact strength: 20°C	DIN 53 453	kJ/m ²	20	17	–			
Impact strength: 0°C	DIN 53 453	kJ/m ²	–	15	–			
Impact strength: -20°C	DIN 53 453	kJ/m ²	–	13	–			
Ball pressure hardness	DIN 53 456	N/mm ²	–	20	–			
Shore hardness D DIN 53 505		55	75	77				
Thermal								
Vicat softening temp.	DIN 53 460	°C	75	74				
Temp. of deflection under load acc. To ISO/R 75 (HDT)	DIN 53 461	°C	56	63				
Coefficient of linear thermal expansion (-30° - 50°C)	DIN 53 752	mm/m °C	0.08	0.08				
Thermal conductivity (0° - 60°C)	DIN 53 616	W/mK	0.10	0.05 – 0.07				
u-value (rate of heat transfer) ²	DIN 52 616	W/m ² K		10mm ~3.0	13mm ~2.6	19mm ~2.13	24mm ~1.9	30mm ~1.58
Electrical								
Surface resistance	DIN VDE 0303 T3	Ω	>1 x 10 ¹⁴	3.7 x 10 ¹⁴	7.0 x 10 ¹⁴			
Volume resistivity	DIN VDE 0303 T3	Ω x cm	4 x 10 ¹⁵	4.4 x 10 ¹⁵	6.0 x 10 ¹⁵			
Dielectric strength	DIN VDE 0303 T2	kV/cm	100	48	48			
Dielectric constant E	EIN 53 484 T2		2.4	1.9	1.8			
Dielectric dissipation factor	DIN 53 483 T2		0.013	0.013	0.0084			
Tracking resistance	DIN IEC 112		CTI 600	CTI 600	CTI 600			
Other								
Valued sound insulation measure RW	DIN 52 2120/84	dB	–	10mm ~3.0	13mm ~2.6	19mm ~2.13	24mm ~1.9	30mm ~1.58
Water absorption after 7 days	DIN 53 495	%	>0.2					
Fire behavior	DIN 4102 (D)		B 1 (Color 654, thickn. 4, 5, 6, 10 mm)					
	NFP 92-501 (F)		M 1 (Color 654, thickn. 4, 5, 6, 10 mm)					
	BS 476, Part 7, 1971 (UK)		Class 1 (Color 654, thickn. 4 mm)					
	UL 94 (USA)		VO					
	VKF (Switzerland)	5.3	5.3					
	Italia (I)		Class 1					Class1(Color 654, thkn.10mm)

¹The missing values of Komacel® – 19/24/30 mm – cannot be determined in conformity with the standards by applying measurement techniques.

²These are standard values that apply to an average density. Small variations depending on the sheet thickness are not excluded.



U.S. Technical Values

Property	Value	ASTM Method
Density (lbs/cubic ft)	37	D792
Water absorption (%)	<1	D570
Flexural strength (psi)	3,952	D790
Flexural modulus (psi)	192,700	D790
Tensile strength (psi)	1,739	D638
Tensile modulus (psi)	113,400	D638
Compression strength (psi)	2,018	D695
Compression modulus (psi)	90,200	D695
Notched izod impact strength (ft-lb/inch)	0.27	D256
Puncture impact energy (ft-lbs)	7.34	D3763
Coefficient of linear expansion (in./in. °F)	3.2 x 10 ⁻⁵	D696
Burn rate	None when flame removed	
Flame spread index	25	E84
Heat deflection temp. at 264psi (°F)	143	D648
Oil canning at 140 °F	None	D3979

ASTM E84-03 Test Results

Property	Flame Spread Index	Smoke Developed Index
Komacel®	15	350

ASTM C518 Test Results

Thermal Resistance, R = 1.976 and per inch equals 2.18 for 1" Komacel

Thermal Resistance, R = 1.106 and per inch equals 2.37 for 1/2" Komacel

Komacel Sheet Sizes

Product Code	Thickness		Lbs per sheet	Skid Qty	Stock Size
	mm	inches			
1020	4	5/32	22	125	4 X 8
1030	4	5/32	28	125	48"X118"
1040	5	3/16	28	100	4 X 8
1050	5	3/16	34	100	48"X118"
1060	6	1/4	31	75	4 X 8
1070	6	1/4	38	75	48"X118"
1110	10	3/8	40	60	4 X 8
1120	10	3/8	50	50	4 X 120
1130	13	1/2	52	40	4 X 8
1140	13	1/2	65	40	4 X 120
1150	19	3/4	76	30	4 X 8
1160	19	3/4	95	30	4 X 120
1170	24	1	96	20	4 X 8
1180	24	1	121	20	4 X 120
1190	30	1 3/16	121	15	4 X 8
1200	30	1 3/16	151	15	4 X 120

To learn more about Komacel and its outdoor use or to see more examples of finished projects, visit www.kommerlingusa.com or call 1.800.330.2239.

The information contained here is supplied in good faith and represents values obtained through empirical observation and as indicated by our own experience. The figures given are to be understood as reference figures and may vary according to processing methods and environmental conditions.

This information shall not be construed to be legally binding. In particular, it shall not exempt the purchaser from taking responsibility for testing the product supplied so as to determine its suitability for the intended application.

Consequently, this information shall not constitute an independent contractual relationship nor a warranty of the properties indicated. In the event, however, that liability should be at issue, it shall be precluded insofar as premeditation or gross negligence cannot be substantiated.



KOMACEL[®] Plus

Plus

Tough and Versatile Foamed PVC Sheets

Just what you've been asking for, a Celuka sheet you can digitally print. With a semi-rough surface, Komacel Plus is also ideal for laminating and painting, and it gives the finished digital print an "aged look." Komacel Plus can be fabricated just like wood, using your current woodworking equipment, and it won't rot, cup, delaminate or be infected by insects. Light-weight, yet strong and durable, Komacel Plus can be used for indoor and outdoor applications, including high humidity areas.

KomaCel Plus is available in the following sizes:

KOMACEL Plus

Available in White only

Item Number	Thickness mm	inches	Lbs per sheet	Skid Qty	Stock Size
131008	10	3/8	41	40	4 x 8
131010	10	3/8	51	40	4 x 10
131308	13	1/2	53	40	4 x 8
131310	13	1/2	66	40	4 x 10
131608	16	5/8	63	26	4 x 8
131610	16	5/8	78	26	4 x 10
131908	19	3/4	68	24	4 x 8
131910	19	3/4	85	24	4 x 10

Plus Embossed

With a faux wood grain finish, Komacel Plus Embossed gives you plastic that looks like wood but that lasts much longer, because it won't be damaged by some of woods worst nightmares – moisture, changing temperatures, UV radiation and insects. Komacel Plus Embossed is made using a new technology that also protects this PVC sheet from rotting, splitting, delaminating or cupping under harsh conditions. You can mill, drill, screw, nail, glue, rout, cut, paint and stain Komacel Plus Embossed, and you can use the same tools you currently use to fabricate wood. Unmatched by any wood product, Komacel Plus Embossed is so durable it will outlast the test of time.

KomaCel Plus Embossed is available in the following sizes:

Available in White only

Embossed one-side only

Item Number	Thickness mm	inches	Lbs per sheet	Skid Qty	Stock Size
141008	10	3/8	41	40	4x8
141308	13	1/2	53	40	4x8
141608	16	5/8	63	26	4x8
141908	19	3/4	72	24	4x8

Working with Komacel®

Machining

Komacel® sheets can be easily and quickly worked with standard tools to process wood and metal (plastic bits and blades are required). To prevent breaking and splitting, the tools must be sharp. Generally, you should use a high cutting speed and slow, continuous forward feed. Normally, it is not necessary to cool the cutting tools, but in special cases, compressed air is sufficient. Deep notches and sharp edges can cause premature breaking of the material if too much weight is placed on the affected area.

Welding

Komacel can be welded by normal procedures, such as hot gas, heated tool, bending and welding, friction, etc., using common equipment. Before welding, the part of the sheet to be welded must be properly cleaned with a cleaning agent or by machining. After welding, finishing may be necessary. Komacel should be worked very carefully to ensure that the foam structure does not collapse.

Bonding

Komacel will accept most adhesives for rigid PVC. The sheet surface must be clean, dry and free of oil or grease. When choosing an adhesive, consider the strength required, the temperature the sheet will be exposed to, cure time and environmental safety.

When bonding Komacel to itself, the same solvent-type adhesives used for rigid PVC will provide excellent results. We recommend Lord and IPC Weldon products for most applications in which bonding to Komacel or another substrate is required. As always, we suggest a test piece prior to full production.

Printing and Coating

Because of its smooth surface, Komacel is easy to print, paint and coat. Although, in principle, any PVC-compatible paint can be used, these systems have proved most suitable:

- One- and two-component acrylic paint systems
- Two-component polyurethane paint systems (DD paints)
- Screen-printing paints for PVC (binding agent basis acrylic resin/PVC copolymerisate)
- Carbit Paint Carbitthane 11 Series Low Acrylic Polyurethane and Series 12

Fixing and Storage

With a coefficient of linear thermal expansion $a = 0.08 \text{ mm/m}^\circ\text{C}$, Komacel sheets vary more in length than wood or metal. When you install screen-printed advertising boards or fix curtain walling and cladding, possible sheet expansion has to be taken into account. The appropriate fixing method depends on the application.

Always store Komacel sheets on a dry and even surface in heated rooms at $15 - 20^\circ\text{C}$ ($59 - 68^\circ\text{F}$). Sheets inside the packing must not be exposed to weathering and solar radiation.

Tolerances

Thickness (s)

$\pm(0.1 + 0.05 \times s)$

Width

$0 + 0.25 \text{ mm}$ (0.01 in.)

Length

$0 + 10 \text{ mm}$ (.39 in.)

Right angle precision

max 1.5 mm/m (0.05 in./yd.)

Angle of cuttings

0.5°

Evenness

max 1.5 mm/m (0.06 in.)

Colors

White 654/652

Permissible color difference according to DIN standard 6174, color white, $\geq 1,2$ CIELAB units.

KOMACEL[®]

Kommerling USA, INC.

3402 Stanwood Boulevard

Huntsville, AL 35811

800.330.2239

www.kommerlingusa.com

**NO. 1 WORLDWIDE
IN RIGID PVC FOAM SHEETS**



To request a free sample or for more information, visit
www.kommerlingusa.com or call 1.800.330.2239.