

cladding

deep drawing

printing



KÖMADUR[®]

The PVC-U sheet system for
virtually all areas



KÖMMERLING[®]

BU Semi-Finished Products

A brand of the profine Group

Even good things can still be improved on

A traditional brand in the profine Group, **KÖMMERLING** is a familiar name all over the world. Founded in 1897, the company started extruding window profiles and PVC sheets as early as 1967. Today, the **KÖMMERLING Business Unit Semi-Finished Products** exports its products to about fifty countries worldwide. And this number is constantly growing.

KÖMMERLING enjoys a high reputation among its customers, not only because of product quality or its extensive range. What drives us is our pursuit of "the better". This spirit can be felt at all of the company's divisions. It is our daily motivation to go new ways with our customers and to conquer the market with new products, systems, services, and sales channels.

This drive is also based on the reliability of a large company

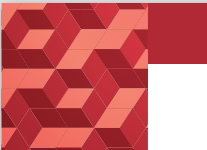
that can respond unerringly to individual market requirements and the needs of its customers. A reliability that engenders trust and, combined with new ideas and pioneering technology, offers new possibilities. The KÖMMERLING Business Unit Semi-Finished Products and its extensive portfolio simply deserve to lead the segment for PVC sheets. Always endeavouring to keep on the move, to make the good even better, and by doing so to safeguard its customers' sustainable success. We call this quite simply the **"EVER BETTER PRINCIPLE"**.

"Because we listen
to our customers
better, we can also
understand better
a lot more."



Patrick N. Slarko
Head of Business Unit
Semi-Finished Products

You have the choice. We the range.




KÖMACEL°

The universal integral skinfoam sheet for advertising, building, and industry




KÖMALU°

The aluminium composite sheet for indoor and outdoor applications



KÖMATEX°

The multiflexible free skinfoam sheet for advertising



KÖMADECO°

The PVC sheet with woodgrain laminate




KÖMAPRINT°

The innovative sheet for the best printing results



KÖMAFOAM°

The lightweight sandwich sheet for great design potential



KÖMADUR°

The PVC-U sheet system for virtually all areas



KÖMALITE°

The rigid lightweight sheet for graphic applications



Rigid
PVC sheet

KömaDur: quality based on experience.

The allround talent

for many areas

The KÖMMERLING solution KömaDur is a sheet system of rigid PVC-U. A genuine all-in-one solution for the most diverse requirements. Whether the chemicals industry, the building sector, electrical engineering, exhibitions, or advertising – the five KömaDur variants and their matched material properties are ideally equipped for the most diverse indoor and outdoor applications. In addition, KömaDur scores with properties that make its processing easy and cost effective to boot.

KömaDur is the child of intensive research and development and over forty years of experience in the extrusion of PVC-U sheets. In all this time, KömaDur has been constantly modified and improved in the face of growing market requirements.

The outcome is rigid PVC-U sheets that are characterised by a homogeneous, smooth, and glossy surface quality. They are resistant to flames, chemicals, and corrosion in compliance with DIN 8061 and to most aggressive media.

KömaDur samples:

We'll be pleased to send you on request our KÖMMERLING KömaDur samples free of charge.
Email: info@komasheets.com



Consistency:

- Excellent rigidity
- Smooth and glossy surface quality
- Flame resistant
- Resistant to chemicals

First choice

wherever quality is important

Its convincing properties and diversity make the KömaDur programme the ideal material for many applications.

Applications

KömaDur is an interesting solution for many applications. Thanks to its various modifications, KömaDur can play out its talents in many areas. Its special forming, printing, or outdoor properties, depending on the requirement. Thanks to its five different qualities, KömaDur can be adapted to each of its applications.






Overview of applications

Area	KömaDur:				
	M	D	ES	H	WA
Signs	+	+	+	-	-
Displays	+	+	+	-	-
Banners	+	+	+	-	-
Inscription panels	+	-	+	-	-
Photo industry	+	-	-	-	-
Exhibition and showroom stands	+	+	+	-	-
Shop window decorations	+	+	-	-	-
Digital printing	+	-	-	-	-
Deep drawn parts	-	+	+	+	+
Shop design	+	-	+	+	-
Interior finishing	+	-	+	+	-

Area	KömaDur:				
	M	D	ES	H	WA
Air conditioning and ventilation elements	+	-	+	+	-
Sandwich elements for wall and door panelling	+	-	+	+	-
Cladding and panelling	-	-	-	+	-
Apparatus and tank construction	-	-	-	-	+
Machine building	-	-	+	-	+
Accumulators	-	-	-	-	+
Electroplating technology	-	-	-	-	+
Chemical and laboratory engineering	-	-	-	-	+
Zones of high humidity	+	-	+	+	-

+ suitable - not suitable

Overview of properties








Property	KömaDur:				
Surface	M	D	ES	H	WA
 Smooth glossy		x	x	x	
 Matt on one side	x				
Colour	M	D	ES	H	WA
White	x ¹	x ²	x ³	x ⁴	
Types of Grey					x ^{5, 6}
 Colours for indoors			x		
Impact resistance	M	D	ES	H	WA
Normal	x				x
Increased		x	x		
Particularly impact-resistant, specially designed for outdoor applications (cold temperatures)				x	
Deep drawing properties	M	D	ES	H	WA
Normal	x				x
Good		x		x	
High			x		

¹ M 640, ² D 669, ³ ES 669 similar to RAL 9003

⁴ H 654 similar to RAL 9016

⁵ WA 155 Dark grey similar to RAL 7011

⁶ WA 112 Light grey similar to RAL 7035

Property	KömaDur:				
Further processing	M	D	ES	H	WA
 Suitable for welding	x				x
 Very good for printing		x			
 Good for laminating		x			
 Very good for bonding	x				x
Stability	M	D	ES	H	WA
 Flame resistant	x	x	x	x	x
 Chemical and corrosion resistant	x				x
 Weatherproof and weather resistant	x	x	x	x	
With protective film	M	D	ES	H	WA
Single-sided		x	x	x	
Double-sided	x				
Environmental compatibility	M	D	ES	H	WA
100 % recyclable	x	x	x	x	x

Overview of processing properties

Machining

Cutting, sawing, turning, filing, drilling, planing, milling, grinding, and screwing

Forming

Stretch drawing, deep drawing, vacuum drawing, blowing, bending, folding, and punching

Welding

Hot gas, heated tool, and folding welding

Technical Data

Mechanical properties	Standard	Unit	Value KömaDur:				
			M	D	ES	H	WA
Apparent density*	DIN 53479/ISO 1183	g/cm ³	~ 1.43	~ 1.43	~ 1.43	~ 1.43	~ 1.43
Yield stress (tensile strength)	DIN 53455/ISO 527	MPa	> 45	≥ 50	≥ 48	≥ 45	≥ 55
Elongation at tear	DIN 53455/ISO 527	%	> 20	≥ 15	≥ 20	≥ 20	≥ 15
Flexural strength	DIN 53452/ISO 178	MPa	≥ 80	≥ 75	≥ 75	≥ 70	≥ 80
Compressive strength	based on ISO 844	MPa	≥ 70	≥ 65	≥ 65	≥ 60	≥ 70
Modulus of elasticity	DIN 53457/ISO 527-2/1A/50	MPa	> 2500	≥ 2500	≥ 2500	≥ 2500	≥ 3000
Notched impact strength	DIN 53453/ISO 179-1ePA	KJ/m ²	≥ 4	≥ 6	≥ 6	≥ 8	≥ 4
Impact strength	DIN 53453/ISO 179	KJ/m ²					
0 °C			no failure	no failure	no failure	no failure	no failure
-20 °C			-	no failure	no failure	no failure	-
-30 °C			-	-	no failure	no failure	-
-40 °C			-	-	-	no failure	-
Ball indentation hardness (358 N/30 s)	DIN 53456/ISO 2039	MPa	~ 100	~ 90	~ 90	~ 90	~ 100

Thermal properties	Standard	Unit	Value KömaDur:				
			M	D	ES	H	WA
Vicat softening temperature	DIN 53460/ISO 306 (process B50)	°C	≥ 75	≥ 72	≥ 72	≥ 72	≥ 75
Deflection temperature	DIN 53461/ISO 75	°C	~ 68	~ 66	~ 66	~ 66	~ 68
Coefficient of linear thermal expansion from – 30 °C to + 50 °C	DIN 53752 (process Ae)	mm/mK	0.08	0.08	0.08	0.08	0.08
Thermal conductivity from 0 °C to + 60 °C	DIN 52612	W/mK	0.16	0.16	0.16	0.16	0.16

Environmental protection of tested reliability

Correct storage

Always store KömaDur sheets on a level surface in a dry, air conditioned environment at about 15–20 °C. The packaged sheets may not be exposed to weathering effects and direct sunlight.

Ecological manufacture

In line with our environmental guidelines, KÖMMERLING PVC-U sheets are safe for humans and the environment during their manufacture, use, and dis-

posal. They are free of formaldehyde, asbestos, lindane, PCB, PCP, CFCs, cadmium, and lead and do not contain any monomers, biocides, or plasticisers. At the end of their service lives, the sheets or sheet residue can be recycled. They are processed in shredders or grinders and then introduced to the manufacturing process for new sheets.

Certified quality

True to our “Ever better principle”, the acclaimed high quality of our products bear the hallmarks of our research and development work as well as decades of experience with synthetic materials. Tests are conducted over all stages – from the incoming raw materials to the final inspection of the finished products. Regular examinations by independent testing institutes confirm this high level of care. Logically, our quality assurance system has been DIN ISO 9001 certified.



Electrical properties	Standard	Unit	Value KömaDur:				
			M	D	ES	H	WA
Dielectric constant E_r (at 1 kHz)	VDE 0303 T4	-	3.4	3.4	3.4	3.4	3.4
Dielectric loss factor $\tan \delta$ (at 1 kHz)	VDE 0303 T4	-	0.016	0.016	0.016	0.016	0.016
Surface resistance	DIN VDE 0303 T30 DIN IEC 93	Ω	$> 10^{15}$	$> 10^{15}$	$> 10^{15}$	$> 10^{15}$	$> 10^{15}$
Volume resistivity	DIN VDE 0303 T30 DIN IEC 93	$\Omega \cdot m$	$> 10^{14}$	$> 10^{14}$	$> 10^{14}$	$> 10^{14}$	$> 10^{14}$
Dielectric strength	DIN VDE 0303 T21 1-mm-Sheet	KV/mm	≥ 23	≥ 27	≥ 27	≥ 27	≥ 23
Tracking resistance	DIN IEC 112	Level	CTI 600	CTI 600	CTI 600	CTI 600	CTI 600
Arc resistance	DIN VDE 0303 T5	Index	2.2.2.2	2.2.2.2	2.2.2.2	2.2.2.2	2.2.2.2

Other properties	Standard	Unit	Value KömaDur:				
			M	D	ES	H	WA
Water absorption after 7 days	DIN 53495	%	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Fire behaviour	DIN 4102 - B 1		-	1-2 mm	1-2 mm	1-2.5 mm	1-3 mm
	NFP 92-501/M 1 (F)		1-6 mm	1-2 mm	1-2 mm	-	1-2 mm
	UL 94 (USA) File E100599		-	-	≥ 1 mm	-	≥ 1 mm
	Fire index (CH) 5.2		-	-	-	≥ 1 mm	-
Physiological assessment	CSE-RF2/75 A (I) EG/VO 1935/2004	Class 1	-	-	1-3 mm	-	-
			----- generally recognised as safe -----				

*These values are recommended for the average apparent density.



“The wide range of applications for KömaDur makes it the optimal sheet for a great many tasks.”

Henning W.
Kitchen manufacturer

Chemical resistance

Medium	Concentration	Temperature	
	%	20 °C	60 °C
Organic chemicals			
Formic acid	10	++	++
Formic acid	100	++	+
Aniline	-	-	-
Ethanol	-	++	+
Benzine-benzene mixture (BV-Aral)	-	-	-
Benzene	-	-	-
Butanol	-	++	++
Cyclohexane	-	++	+
Cyclohexanol	-	++	++
Decalin	-	++	++
Diesel fuel	-	++	-
Diethyl ether	-	-	-
Pure acetic acid	-	++	-
Acetic acid	10	++	++
Formaldehyde	-	++	+
Glycol	-	++	++
Fuel oil	-	++	k. A.
Heptane	-	++	-
Hexane	-	++	++
m-cresol	-	+	-
White spirit	-	++	0
Machine oil	-	++	++
Methanol	-	++	+
Olive oil	-	++	++
Petroleum ether	-	++	+
Turpentine	-	++	0
Toluene oil	-	-	-
Transformer oil	-	++	++
Xylene	-	-	-

Medium	Concentration	Temperature	
	%	20 °C	60 °C
Inorganic chemicals			
Ammonia	24	++	-
Chromosulphuric acid	-	++	0
Potash lye	10	++	++
Aqua regia	-	++	+
Sodium chlorite	40	++	++
Sodium dithionite	10	++	++
Sodium hypochlorite	40	++	++
Soda lye	10	++	++
Soda lye	40	++	++
Phosphoric acid	10	++	++
Phosphoric acid	85	++	++
Nitric acid	10	++	++
Hydrochloric acid	10	++	++
Hydrochloric acid	35	++	++
Sulphuric acid	10	++	++
Sulphuric acid	96	++	++

++ good resistance Weight difference under 1%
 + resistant Weight difference 1–5%
 0 partially resistant Weight difference 5–10%
 - not resistant

Other chemicals on request.

Tolerances

Nominal size	Tolerance for	
	Length (mm)	Width (mm)
up to 500 mm	+ 2.0/-1.0	+ 1.5/- 1.0
> 500 to 1000 mm	+ 3.0/- 1.0	+ 2.0/- 1.0
> 1000 to 1500 mm	+ 4.0/- 1.0	+ 2.5/- 1.0

Subject to modifications without prior notice.

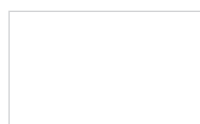
Technical delivery terms and conditions according to ISO 11833-1
 Thickness s : $\pm (0,1 + 0.03 \cdot s)$; on the example of 2 mm = ± 0.16 mm
 Perpendicularity tolerance max 2 mm/m.
 Permitted colour difference according to DIN 6174,
 pigmented colours: $\Delta L + \Delta H \leq \pm 1.5$ CIELAB units,
 white hues: $\Delta E \leq 1.2$ CIELAB units

Delivery programme

Dimensions and thicknesses (mm)	KömaDur										
	M 640	D 669	ES 669	ES 913	ES 712	ES 411	ES 520	ES 814	H 654	WA 155	WA 112
	White RAL 9003 ^{1,2}	White RAL 9003 ¹	White RAL 9003 ¹	Black RAL 9005 ¹	Yellow RAL 1021 ¹	Red RAL 2002 ¹	Green RAL 6005 ¹	Blue RAL 5010 ¹	White RAL 9016 ¹	Dark grey RAL 7011 ¹	Light grey RAL 9006 ¹
2000 x 1000 x 1	x	x	x	x	x	x				x	x
2000 x 1000 x 1,5		x	x	x						x	x
2000 x 1000 x 2	x	x	x	x	x	x	x	x	x	x	x
2000 x 1000 x 3		x	x	x	x	x	x	x	x	x	x
2000 x 1000 x 4		x	x	x					x	x	x
2000 x 1000 x 5		x	x	x						x	x
2000 x 1000 x 6		x	x							x	x
2000 x 1000 x 8			x						x	x	x
2000 x 1000 x 10			x							x	x
2000 x 1000 x 12										x	x
2000 x 1000 x 15										x	
2000 x 1000 x 20										x	
2000 x 1000 x 25										x	
2000 x 1000 x 30										x	
3000 x 1500 x 2		x	x						x	x	x
3000 x 1500 x 3		x	x						x	x	x
3000 x 1500 x 4		x	x						x	x	x
3000 x 1500 x 5		x	x							x	x
3000 x 1500 x 6		x	x						x	x	x
3000 x 1500 x 8			x							x	x
3000 x 1500 x 10										x	x
3000 x 1500 x 12										x	x
3000 x 1500 x 15										x	
3000 x 1500 x 20										x	

¹similar to RAL ²Blue protective film on one side

Standard colours



White H 654
similar to RAL 9016
M 640, D 669, ES 669



Black ES 913
similar to RAL 9005



Yellow ES 712
similar to RAL 1021



Red ES 411
similar to RAL 2002



Green ES 520
similar to RAL 6005



Blue ES 814
similar to RAL 5010

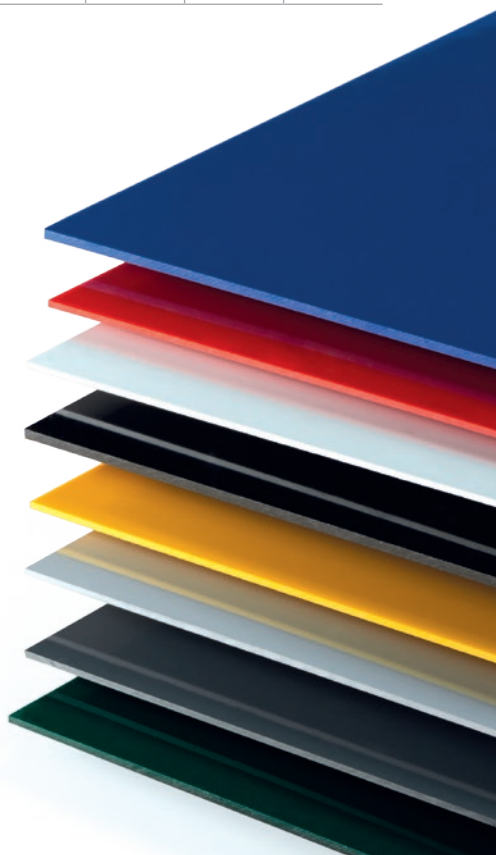


Dark grey WA 155
similar to RAL 7011



Light grey WA 112
similar to RAL 9006

All white colours are especially suitable for outdoors. Colour PVC sheets are not UV and weather resistant over protracted periods. The colours are suitable for indoors only.



VISIT US ON THE INTERNET



Further details on the extensive programme offered by the KÖMMERLING Business Unit Semi-Finished Products can be found here:

www.komasheets.com

profine GmbH

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**Hallmarks:**

Highest quality, versatile services, and great expertise in PVC sheet production – the following profine sheets have been awarded the pro-K quality seal: KömaCel, KömaTex, KömaPrint, KömaDur, and KömaDeco.

With best regards

KÖMADUR®