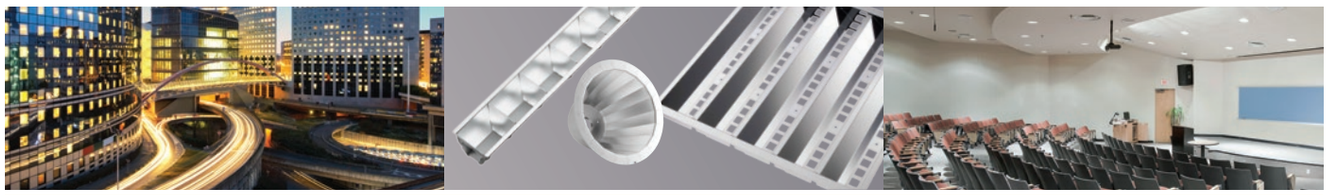
HIGH REFLECTIVE ALUMINIUM

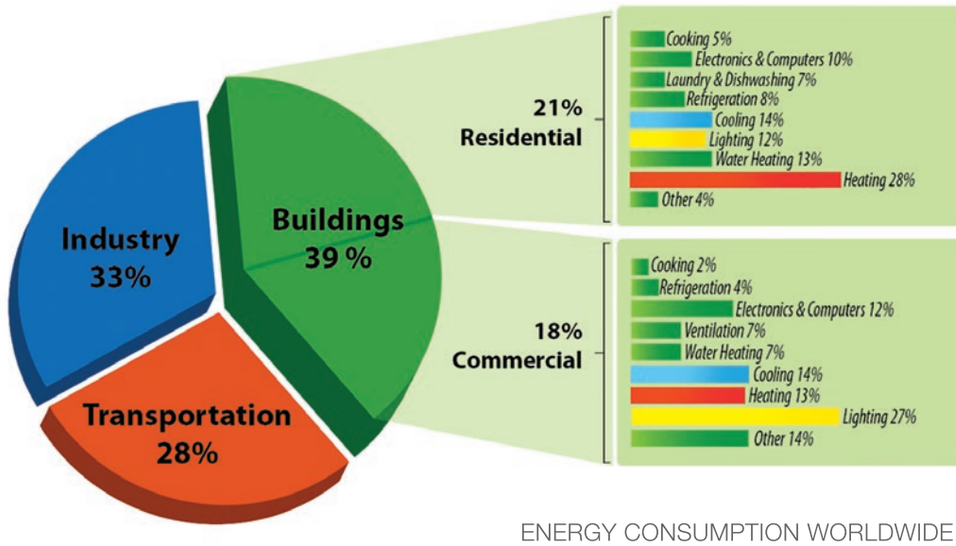


vega

ALMECO GROUP

Our mission

Almeco is devoted to environmental protection.
Our production mostly uses renewable energy and efficient systems with low use of primary energy.
Our range, from laminates to reflectors, optimizes the efficacy and durability of your final products.
We provide you the highest levels in performance and energy saving, from the beginning of our production to your final use.



ENERGY CONSUMPTION WORLDWIDE

Every Country has a different energy consumption per person, nevertheless, in the industrialized Nations, the use of energy is similar. Lighting consumes approximately 19% of the electricity of the world, therefore an aware utilisation of lighting is important for a global sustainable living and development.

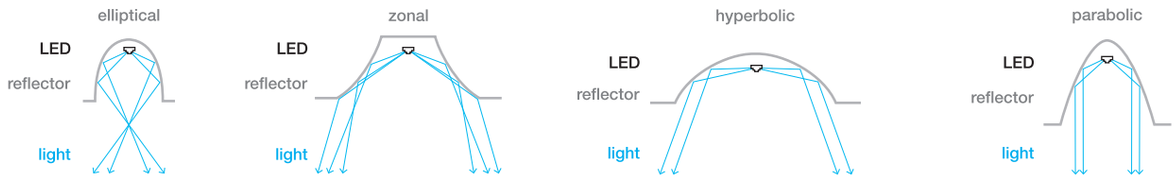
Evolving laminate solutions for efficient lighting

Almeco high reflective materials help users in saving costs and obtaining better light quality, while the environment benefits from lower energy/CO_2 emissions, moreover the business competitiveness is strengthened.

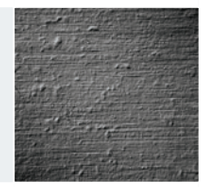
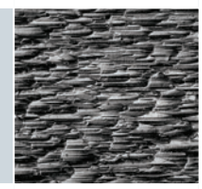
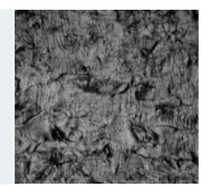
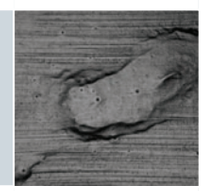
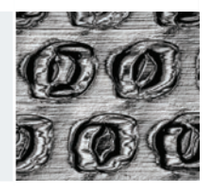
vega combines the proven quality of the aluminium anodising processes with the most advanced technology of surface coating under vacuum, known as PVD (Physical Vapour Deposition).
vega significantly improves the reflector optical performance and increases its efficiency up to 20% compared to the already high levels of anodised aluminium, thanks to its extraordinary reflectance.

The higher the total reflection, the higher the fixture efficiency. More internal reflections create greater differences.

		Loss per reflection	Increase in performance
S100	Pre-anodised	14%	-
V95100	vega 95	< 5%	+ 15%
V98100	vega 98	< 2%	+ 20%



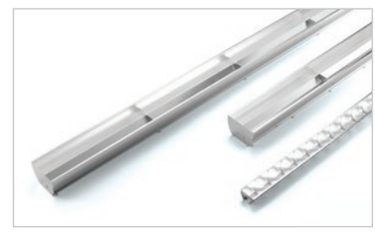
vega characteristics

Laser	Code	Glare	Influence of shape	Application	Micro-scope
	**V9X100**	Perfect Optimum beam control	Very high	Linear, lighting spot lighting, louvre, batwing, daylighting	
	**V9X120**	Good High diffusion	Minimal	Parking, wall washer, spot, horticoltural	
	**V9X127**	Perfect White effect with high reflection	Minimal ¼ specular reflection	High bays, low bays, flood lighting, louvre, spot	
	**V9X210**	Perfect Good diffusion	Not relevant diffuse ditribution	Sport areas, flood lighting	
	**V9XD80**	Very good White effect	Important ½ specular reflection	Linear lighting, louvre	

Example of applications





Have a look to our optimised product catalogues for specific applications like horticoltural, daylighting, street lighting,…

vega98® technical data

Product	Type	Reflection layer	Total reflectance [%]		Specular reflectance [%]		Diffuse reflectance [%]	Alloy	Temper (hardness)	Min. tensile strength [MPa]	Min. yield strength [MPa]	Min. [%] elongation A_5A_{10}	Class efficiency
			ASTM E 1651	DIN 5036-3	60° long	60° trans	DIN 5036-3						EN 16268
V98100	specular	99.99% pure silver	≥ 98	≥ 98	93	93	< 11	1085	H18	125	105	2	A+
V98110	high specular	99.99% pure silver	≥ 98	≥ 98	94	94	< 7	1090	H18	125	105	2	A+
V98120	reflectormatt	99.99% pure silver	≥ 97	≥ 97	73 - 83	58 - 68	85 - 95	1090	H19	140	120	1	A+
V98125	lumenal matt	99.99% pure silver	≥ 98	≥ 98	83 - 87	83 - 87	65 - 75	1090	H18	125	105	2	A+
V98127	bright diffuse	99.99% pure silver	≥ 97	≥ 97	20 - 30	25 - 35	94 - 97	1090	H16	110	90	2	A+
V98138	mill finish	99.99% pure silver	≥ 97	≥ 97	67 - 83	27 - 48	87 - 95	1080	H18	125	105	2	A+
V98210	stucco	99.99% pure silver	≥ 98**	≥ 98**	not relevant		95	1085	H18	125	105	2	A+
V98D80	specular diffuse	99.99% pure silver	≥ 97	≥ 97	45 - 55	42 - 52	75 - 85	1090	H19	140	120	1	A+

vega95® technical data

Product	Type	Reflection layer	Total reflectance [%]		Specular reflectance [%]		Diffuse reflectance [%]	Alloy	Temper (hardness)	Min. tensile strength [MPa]	Min. yield strength [MPa]	Min. [%] elongation A_5A_{10}	Class efficiency
			ASTM E 1651	DIN 5036-3	60° long	60° trans	DIN 5036-3						EN 16268
V95110	high specular	99.99% pure aluminium	≥ 95	≥ 95	91	91	< 6	1090	H18	125	105	2	A
V95120	reflectormatt	99.99% pure aluminium	≥ 94	≥ 94	70 - 80	60 - 70	80 - 90	1090	H19	140	120	1	A
V95125	lumenal matt	99.99% pure aluminium	≥ 95	≥ 95	81 - 84	81 - 84	60 - 70	1090	H18	125	105	2	A
V95127	bright diffuse	99.99% pure aluminium	≥ 94	≥ 94	18 - 25	22 - 30	92 - 94	1090	H16	110	90	2	A
V95138	mill finish	99.99% pure aluminium	≥ 94	≥ 94	65 - 80	25 - 45	85 - 92	1080	H18	125	105	2	A
V95145	semi-specular	99.99% pure aluminium	≥ 94	≥ 94	70 - 82	70 - 82	40 - 55	5005	H16	165	145	2	A
V95210	stucco	99.99% pure aluminium	≥ 95**	≥ 95**	not relevant		94	1085	H18	125	105	2	A
V95230	hammered	99.99% pure aluminium	≥ 95**	≥ 95**	not relevant		94	1085	H18	125	105	2	A
V95236	large hammered	99.99% pure aluminium	≥ 95**	≥ 95**	not relevant		94	1085	H18	125	105	2	A

**Measured on the flat surface before patterning

All information provided is based on up-to-date values where possible. Optical values are typical results from 0.4mm (0.016") metal and are published for guidance only; they may vary according to the raw material thickness. For more detailed information please contact our technical sales department. Physical characteristics of the materials are in accordance with EN (European Committee for Standardization).

Applicable standards

Specular Reflectance (ISO 2813 - ASTM D-523)
Measurements are made by BYK - Gardner GmbH reflectometer.

Total Reflectance (DIN 5036-3)
Measurements are made using a 50 cm integrating sphere (Ulbricht Globe).

Total Reflectance at 30° (ASTM E 1651)
Measurements are made by the Technidyne TR2 integrating sphere.

Diffuse Reflectance (DIN 5036-3)
Measurements are made using our 50 cm integrating sphere with a specular exit port.

Class efficiency (EN 16268:2013)
Performance of reflecting surfaces for luminaire according to above measurements.

Test Standard For Anodic Oxidation
Microscopic measurement of oxide layer EN ISO 1463.

European Standards (EN) for aluminium

Alloys	EN 573-3
Mechanical Properties	EN 485-2
Measuring Standards	EN 485-4

General Tolerance

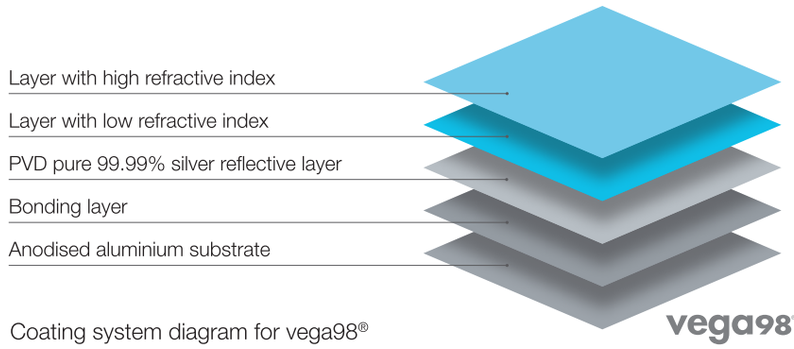
Thickness tolerance:	± 0.03mm / ±0.00118"
Width tolerance:	± 0.15mm / ±0.00591"
Length-cut sheets:	± 1mm/m / ±0.03937"

Note
All materials listed above can be delivered in various sizes and shapes according to customer requirements.

Products with protective tape are guaranteed for six months after delivery if stored in a conditioned room (temperature 20-30°C and relative humidity 50-60%) and kept away from sunlight and any heating source.
Protective tape is not UV resistant.
Products are supplied with a peelable self-adhesive polyethylene protection tape, which guards against scratching during transportation and manufacturing.

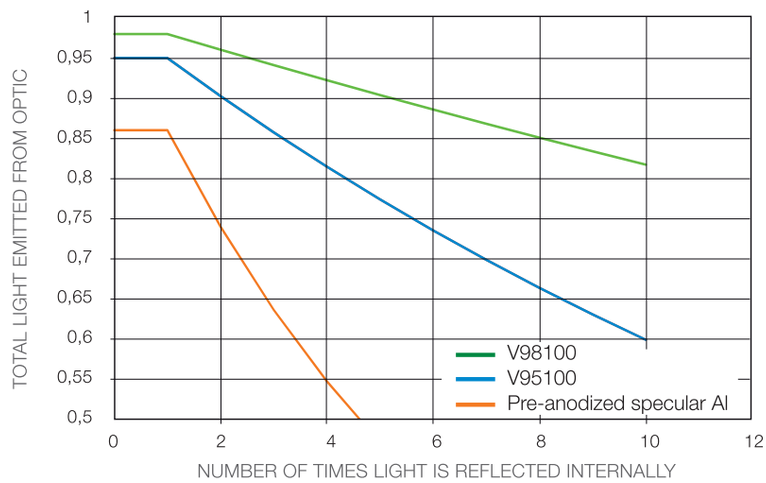
The samples shown in this catalogue are purely exemplary, although the materials and finishes correspond to the items listed.
For material approval and characterization, please ask for sampling.

The coating systems are applied to an electrochemically brightened high purity aluminium substrate coil, and start with an anodized base coat which gives a hard support to minimize abrasion damages. The strip is then treated under vacuum with specially developed processes to maximize coating adhesion and, depending on the product type, is vacuum coated with a super pure reflection layer of either 99.95% pure aluminium (vega95®) or 99.9% pure silver (vega98®).

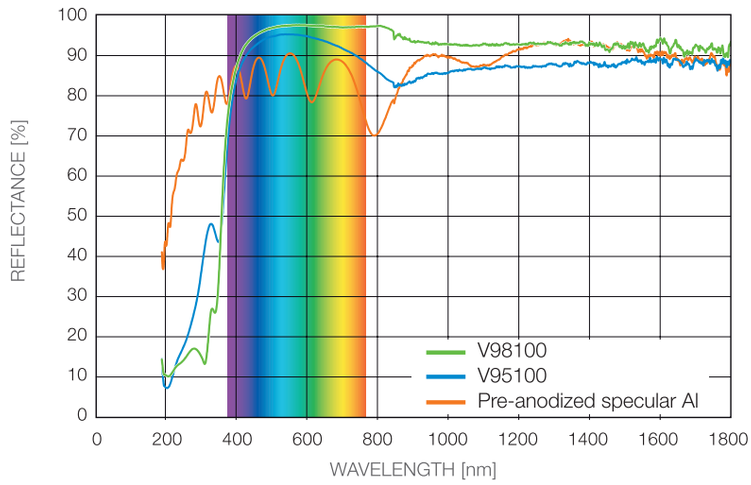


Coating system diagram for vega98®

These reflection layers are overlaid with a dual layer oxide system tuned for maximum visible reflection enhancement. This serves to increase the overall reflectivity provided by the metallic layers and adds protection against damage degradation.
Multiple reflections in an optical reflector system can greatly reduce light output if the surfaces do not have the highest reflectivity.



Graph showing reduction in light intensity with multiple reflections for 86%, 95% and 98% reflective materials



Comparison of spectral reflectance curves for V98100 vs V95100 and pre-anodized specular aluminium

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