vega form Evolution

ALMECO GROUP

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vegaform evolution allows you to benefit from the excellent optical performance of our PVD coated finishes in applications requiring hollow forming and deep pressing.

Concept

vegaform evolution is a range of medium to soft temper, aluminium based, reflector materials produced from pre-anodized aluminium coated with special high reflectance PVD layers designed to provide high light output even after deep drawing operations. The high reflectance coatings are applied to coil and flat sheet products. **vega**form evolution can be deformed using specially softned adapted pressing techniques and the coating technology employed allows the reflector shape to be made with minimum loss of reflective properties and well maintained coating adhesion and protection. The special coatings used have excellent resistance to humidity and de-lamination even after forming. **vega**form evolution has been developed within the Integrated Reflector Program (**IRP**) and is now available in flat sheet for customer's forming operations

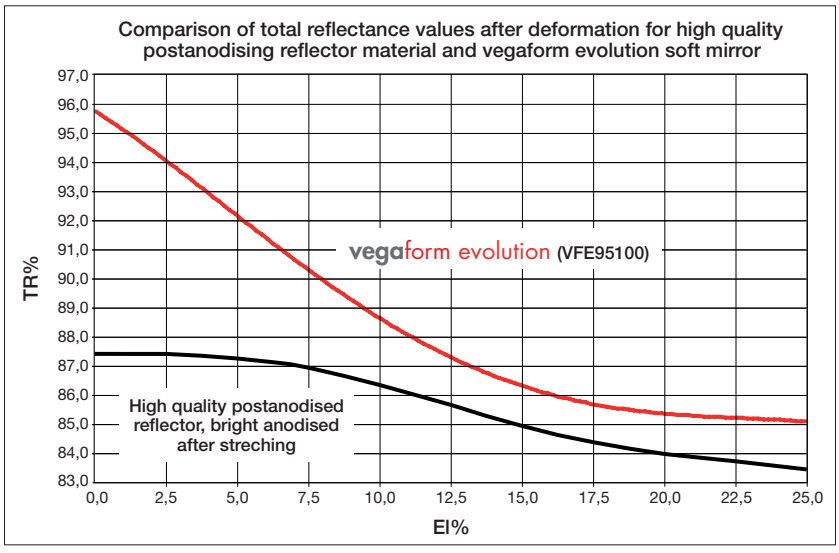
High Reflectivity

vegaform evolution has a total reflectance of about 95% before deformation. During forming operations, stretching of the surfaces causes some change to the hard ceramic type layers that give the product the high reflectance characteristics, but the coating remains integrally bonded to the aluminium. The elongation results in a slightly reduced reflectance, depending on the depth and shape of the die and varying from one point to another. We recommend that you try the material in your forming operation to determine how much light output you can gain for each reflector type. As an example, after a deformation of 7,5%, **vega**form evolution VFE95100 surfaces show a total reflectance of over 90%, much higher than the maximum reflectance value of post-anodized material. Considering that many parts of a reflector do not suffer high stretching, the gains can be very worthwhile with significantly higher output than obtained with post anodising. The tables and graph below show some examples of how **vega**form evolution retains its greater reflectivity even after 25% elongation.

Examples of reflective performance after pressing

vegaform evolution VFE95100	vegaform evolution VFE95800	El%	SuperBrite (99.98 clad)
TR%	TR%		TR%
95.7	95.7	0.0	87.4
93.6	94.6	2.5	87.4
92.2	93.4	5.0	87.3
90.4	92.1	7.5	87.1
88.5	90.3	10.0	86.6
87.2	89.0	12.5	85.9
86.1	87.9	15.0	85.2
85.4	87.5	20.0	84.2
85.0	87.0	25.0	83.7

TR% = Total luminous reflectance (DIN 5036-3), El% = Elongation (%)
* Base materials used in Almeco's laboratories to perform reflectance tests on flat samples.



TR% = Total luminous reflectance (DIN 5036-3),
SR60 = Specular reflectance at 60° (DIN 5036-3), El% = Elongation (%)

vegaform evolution is available in medium to soft hardness in several thicknesses and all vega finishings.

vegaform evolution

specification

Mechanical properties

Product	Base Alloy	Temper	Tensile strength	0.2% proof. stress	Elongation	Application
Units			MPa	MPa	%	
vega 95100	99.85% Al	H18	160 - 190	140 - 160	> 3	Roll formed or press bent reflectors
vegaform evolution VFE95800	Al - Mg 1	H26	150 - 190	130 - 170	> 8	Shallow formed reflectors and reflectors sections with high specular finish
vegaform evolution VFE95100	99.85% Al	H22	60 - 80	40 - 60	> 25	Deep formed reflectors with mirror type finish
vegaform evolution VFE95930	99.85% Al	H22	60 - 80	40 - 60	> 25	Special deep formed reflectors sections
vegaform VFE95080	99.8% Al	H0	50 - 70	30 - 50	> 30	Deep formed reflectors with bright matt finish

Reflective properties of unformed sheet

Product	Total reflectance	Total reflectance	Diffuse reflectance 1° cone	Diffuse reflectance 2.5° cone	Specular reflectance 60° long	Specular reflectance 60° trans
	ASTM E-1651	DIN 5036 Pt 3	DIN 5036 Pt 3	ALMECO TEST	ISO 6778	ISO 6778
vega 95100	> 95%	> 95%	< 11%	< 6%	90	90
vegaform evolution VFE95800	> 94%	> 94%	< 18%	< 10%	87	87
vegaform evolution VFE95100	> 94%	> 94%	< 30%	< 10%	89	89
vegaform evolution VFE95930	> 93%	> 93%	93%	92%	-	-
vegaform VFE95080	> 93%	> 93%	92%	90%	30	10

Environmental tests

Temperature resistance

Panels of **vega**form evolution VFE95100 have been held at a temperature of 250°C for 7 days and no reduction in reflectance values or change in visual appearance was observed. In the case of hard rolled products there would be, of course, a softening of the aluminium after this treating but as **vega**form evolution is already produced in a softened condition it is not so affected.

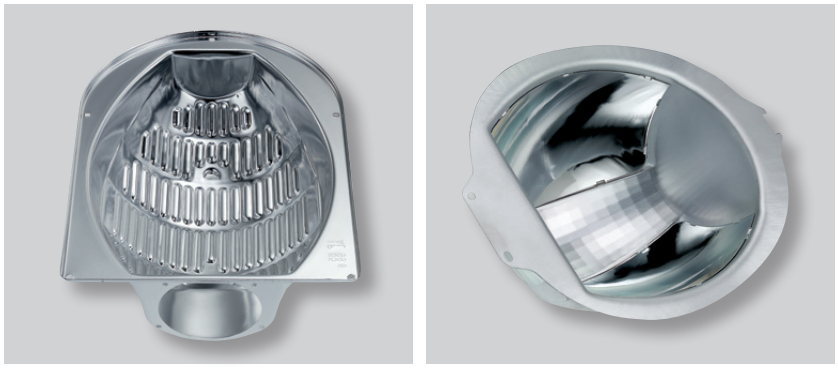
Humidity tests

In humidity tests, at 100% humidity at 38°C (ISO 6270-1), the **vega**form evolution products show the same good resistance to deterioration as anodized aluminium. This has been confirmed by highly accelerated humidity tests with a condensing atmosphere wetting a panel at 90°C.

Salt spray test

The weather resistance of **vega**form evolution has been proved by standard accelerated tests in Almeco's laboratories in Milan.

In Salt Spray testing (UNI EN ISO 9227 - ASTM B117), vacuum coated enhanced materials generally do not quite meet the high resistance standards achieved by pre or post anodized aluminium. However the resistance of **vega**form evolution is similar to that of normal **vega 95** and a typical **vega**form evolution reflector shows no significant deterioration in surface properties after exposure for 100 hrs in Neutral Salt Spray and little deterioration after 240 hrs. Based on above tests we can recommend **vega**form evolution for outdoor luminaries prouved they have an appropriate IP rating.



Examples of reflectors in vegaform evolution





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