ELLE™ 2.0

The product

ELLE™ is a shell made of elastomeric polyurethane casted in a geometry to fit the leading edge of a specific wind turbine blade to protect the blade against rain erosion. The ELLE™ shell is mounted with a durable pressure sensitive tape, alignment marks and identification information, that secure an easy and high-quality application.

Component properties

ELLE™ shell

Material	Elastomeric polyurethane
Characteristics	Rubbery, customized to fit the specific blade LE profile
Color	Light grey
Geometry	According to customer geometry. Request detailed drawings.

Adhesive

Material	Modified acrylic polymer
Thickness	220 µm

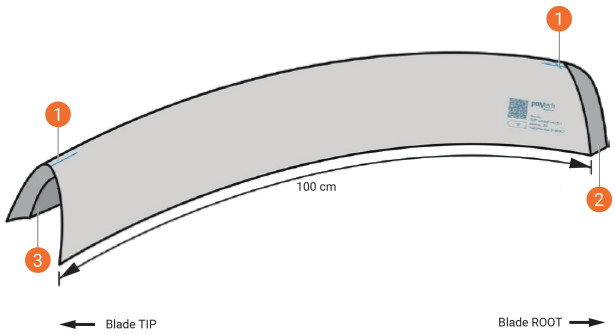

Figure 1: Overview
[1] Alignment mark
[2] Tapered outside
[3] Tapered inside

Document ID:	LE-D001
Document Version:	1.1
Release Date:	2023-02-08
Legacy Document ID:	M136-07

Mechanical Data

Materials properties shell

Property	Test method	Value	Unit
Tensile Strength	ISO 37/1A	30 ±10	MPa
Elongation at break	ISO 37/1A	≥400	mm
Glass transition temperature (Tg)	ISO 11357-2	-55 ± 2	°C
Density	ISO 1183-1 method A	1.08 ± 0.05	g/cm^3
Hardness Shore A	ISO 868	66 ± 5	
Peel strength PSA on epoxy gel coat	ASTM D3330-F (modified)	> 8	N/cm
Gloss 60°	ISO 2813	< 60	GU

Erosion properties shell

Property	Test method	Value
Erosion resistance pristine specimen with overlap	Polytech 160 m/s (ASTM G73-10)	100 h
Erosion resistance after UV exposure	Xenon ISO 4892-2 + Polytech 160 m/s (ASTM G73-10)	4,500 h Xenon, 90 h RET
Erosion resistance after UV, salt mist and cold climate	ISO 20340 + Polytech 160 m/s (ASTM G73-10)	12 cycles ISO 20340, 40 h RET
Sand Erosion Resistance	0.125 mm particles Flowrate 2.5 kg/h Wind speed 90 m/s 30° angle of attack	100 h Sand Erosion, 251.8 kg particles

Environmental Conditions

Property	Value	Unit
Permitted temperature (Transport and storage)	10 ... 30	°C
Permitted relative humidity (Non-condensing) (Transport and storage)	0 ... 100 when kept in original sealed packaging. If vacuum is lost it is recommended to keep shells within 40 ... 80	%
Shelf life	18*	months
Permitted temperature (Installation)	5 ... 35	°C
Permitted temperature (Operation)	-40 ... 90	°C
Permitted relative humidity (Non-condensing) (Operation)	30 ... 90	%

* When kept in original packaging