



# EXEL ARCHERY LAMINATES AND LIMBS

## High performance with composite laminates

Exel has become well known in the sporting goods industry for its ski poles, windsurfing masts and floor ball clubs and has also over 25 years' experience in designing and manufacturing special FRP laminates for the sporting goods industry. Typical application areas for the Exel Laminates are skis, snowboards, ice hockey sticks, kiteboards, wakeboards and archery products.



## When optimum performance is no option

Glass fiber and carbon fiber composites are ideal materials for archery products because of their superior strength and fatigue properties. Also stiffness and low weight are beneficial when designing such high tech products as bows. Exel is using an advanced continuous lamination process to produce FRP Laminates for the archery applications.



Depending on performance requirements we can design the laminate structure based on carbon-, glass- or carbon/glass hybrid continuous fibers or fabrics. Other fibers are also possible. In all archery laminates Exel is using special epoxy resin systems giving the best possible mechanical properties for the products.



Exel is using special epoxy resin systems giving the best possible mechanical properties for the products.

### Exel Archery Laminates

Transparent Laminate:	U1 TPH transparent 1,0 mm
Black Laminate	R1-200 P black 1,0 mm
White Laminate	R1-200 P white 1,0 mm
Ntech transparent Laminate	U1 TPH Ntech transparent 1,0 mm

**NEW!**

Exel has recently developed a new transparent unidirectional archery laminates with excellent mechanical properties and with good transparency based on nano particle technology.

### Laminate widths

Most commonly used widths for the archery laminates are: 38, 45 and 50 mm. The laminates can be delivered in coils or cut according to customer requirements (from 14 mm up to 1220 mm). The minimum quantity is 2000 meters / laminate type.

### Exel Limbs

Exel has also been producing limbs (cores) for compound bows for several years based on the same continuous lamination process. For more detailed information for the limb products contact our sales and technical representatives.





# Product Specification

## U2, U1 (H100, H150, TPH)

Laminate is an UD glassfiber/epoxy product. The laminate is available in roll or ready cut to the length required. The widths are 14–1220 mm.

### Reinforcements

Glassfibers	1430±70 g/m <sup>2</sup>
Warp	1200 tex

### Matrix

Glasstransition temperature	120±3 °C
-----------------------------	----------

### Laminate

Weight (after grinding)	1950±90 g/m <sup>2</sup>
Fiber content (after grinding)	75±4 m-%
Thickness (after grinding)	1.00±0.05 mm

### Grinding

U2	Both sides grit 40
U/1-H100	Top grit 100
U/1-H150	Top grit 150
U1 TPH	Top unsanded

### Mechanical Properties

E-modulus (0°)	min 43 GPa
Tensile strength (0°)	> 900 MPa



# Product Specification

## R1-200 P Black and White (Resin white or Black)

Laminate is a glassfiber/epoxy product with UD glass roving and glass fabric reinforcements. The laminate is available in roll or ready cut to the length required. The widths are 14–1220 mm.

### Reinforcements

Glassfibers	1330±50 g/m <sup>2</sup>
Warp	1200 tex
Weft	160 tex
Decorative Paper	80 g/m <sup>2</sup>

### Matrix

Glasstransition temperature	120±3 °C
-----------------------------	----------

### Laminate

Weight (after grinding)	1900±50 g/m <sup>2</sup>
Fiber content (after grinding)	70±5 m-%
Thickness (after grinding)	1.00±0.05 mm
Gluing side	Grit 40
Top	Ungrinded

### Mechanical Properties

E-modulus (0°)	42±5 GPa
Tensile strength (0°)	> 600 MPa
Tensile strength (90°)	> 190 N/cm