



**commercial**ability

- Enabling
- Dimensional stability
- Impact modified
- Creep resistant



**Polystruct**  
BY DUROMER

## CASE STUDY

### Crossbow Riser

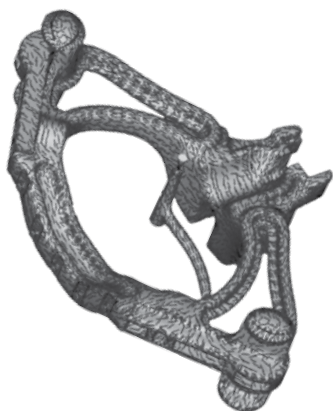
LFT is the “enabling technology” without which this product would never have become commercial. Complex part geometry and high strength requirements translated to very high production costs to make the part from metal. Standard short glass fibre did not provide the dimensional stability or strength required. LFT has in fact provided the technology for a world first in this piece of sporting equipment.

Careful analysis of fibre orientation was required to ensure the part operated as required. This resulted in selecting a gate location in a surprising position. The 3-Dimensional carbon fibre matrix allows the stress during operation to be distributed over a large area, effectively increasing the load limits under which it can safely function.

The result is a light weight, strong, functional and aesthetically pleasing part which is easy to manufacture for a commercially viable cost.

The success of this first part has inspired the company to press forward and develop more parts for their crossbow from LFT technology.

The LFT compound chosen to mould the part is a 40% Long Carbon Fibre PA66 modified for increased toughness. See the data sheet adjacent for indicative properties.



## DATA SHEET

**Product name:**

**Polystruct LCF40 – PA66 MT 1011 NAT**

**Release date:**

10 September 2011

**Description:**

- Nylon 66
- 40% long carbon fibre
- Impact modified
- Dimensional stability
- Creep resistant

TYPICAL PROPERTIES	UNITS	TEST METHOD	VALUES
<b>MECHANICAL PROPERTIES</b>			
Tensile Yield Strength	MPa	D-638	310
Tensile Modulus	MPa	D-638	33793
Tensile Elongation	%	D-638	1-2
Flexural Strength	MPa	D-790	483
Flexural Modulus	MPa	D-790	27486
Notched Izod Impact +23°C	J/m	D-256	300
Un-notched Izod Impact	J/m	D-4812	1175
<b>PHYSICAL PROPERTIES</b>			
Specific Gravity	g/cm <sup>3</sup>	D-792	1.31
<b>THERMAL PROPERTIES</b>			
HDT at Load 1.82 MPa	°C	D-648	246
Melting Point	°C	D-789	255
These values for natural colour resins only. Colorants or other additives may alter some or all of these properties. The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as the basis of design.			
<b>PROCESSING GUIDELINES</b>			
<b>PROCESS VARIABLES</b>			
Injection Speed			51-76 mm/s
Injection Pressure			Medium to Maximum
Back Pressure			25-50 psi
Screw Speed			30-50 rpm
Cushion			6.4mm
<b>DRYING</b>			
Temperature/Time/Moisture Content			80°C / 4 hrs / 0.2%
<b>PACKAGING</b>			
All of Duromer's Polyamide compounds are supplied in aluminium foil lined bags. Drying prior to moulding is generally not required. Foil lined bulk boxes are available on request.			

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