ELG Carbon Fibre Ltd.
RECYCLED CARBON FIBRE

TECHNICAL NOTE 1702: PRODUCT NOMENCLATURE

Introduction

This technical note explains ELG Carbon Fibre's system for the naming of its products. ELG produces a diverse range of materials based on recycled carbon fibre. The fibres are recovered from both manufacturing waste and end of life composite components via a patented pyrolysis process and then converted into intermediates which are ready for use in the composites and compounding industries. A structured product nomenclature is used to describe the form, composition and dimension of the products. These standardised names capture the main attributes of each product type in a concise form. This will provide clarity in the ordering process.

Product Name Structure

The general structure of all ELG Carbon Fibre product names is as follows:

CARBISO™	PRODUCT TYPE	POLYMER (WHERE USED)	CARBON FIBRE CLASSIFICATION	DIMENSION	
CARBISO™	TM	PA6/70	IM56P	200 1000	would therefore refer to
	A hybrid nonwoven mat made of recycled carbon fibres blended with thermoplastic fibres	Polyamide 6 fibres at 70% fibre weight fraction	With the carbon fibres being of intermediate modulus with a tensile strength between 5-6 GPa recovered from prepreg waste	With a weight per unit area of 200 gsm and a width of 1000 mm	
	1	2	3	4	

1. Product Types

The product types are:

M	Carbon fibre nonwoven mat	
TM	Thermoplastic nonwoven mat	
C	Random chopped carbon fibre	
CT	Standard chopped tow	
CT+	Oversized chopped tow	
MB	Carbon fibre masterbatch	
MF	Milled carbon fibre	

2. Polymer Type & Content

NB - Products M, C, CT & MF do not include polymer so this category is omitted from those names.

TM products contain thermoplastic polymer fibres. The code states the type of polymer and the amount as a percentage by weight. Conventional polymer acronyms are used, so:

- **CARBISO™ TM PP/60** is a hybrid mat with 60% polypropylene fibres.
- **CARBISO™ TM PA6/70** is 70% polyamide 6 fibres.
- **CARBISO™ TM PA66/60** is 60% polyamide 66 fibres.
- **CARBISO™ TM PET/60** is 60% polyethylene terephthalate fibres.
- **CARBISO™ TM PPS/65** is 65% polyphenylene sulphide fibres.

MB follows the same pattern with the polymer type described and then the amount by weight. Thus:

- **CARBISO™ MB PA66/60** is a masterbatch with 60% polyamide 66.

3. Fibre Classification

The fibre designation is a code which describes the modulus, strength and source of the carbon fibre used in the product. This was explained in ELG Technical Note 1701.

Modulus (GPa)		Strength (GPa)		Source	
SM	Standard: to 270	**23**	UTS between 2 & 3 GPa	**D**	Dry fibre, still with sizing
IM	Intermediate: 270 < E < 330	**34**	UTS between 3 & 4 GPa	**R**	Desized dry fibres
HM	High: 330 < E < 460	**45**	UTS between 4 & 5 GPa	**P**	Fibres recovered from pre-preg
UM	Ultra-high: over 460	**56**	UTS between 5 & 6 GPa	**L**	Fibres from cured waste
		67	UTS between 6 & 7 GPa		

Table 1: The ELG carbon fibre classification system.

4. Dimensions

The final section of the product name describes the dimension(s) of the material. This varies with the type of product.

Mat Format Products

For **M** and **TM** mats the key attributes are weight per unit area (g/m^2 or gsm) and width, expressed in millimetres. Therefore:

- **CARBISO™ M SM34D-300-1250** is a 100% recycled non-woven carbon fibre mat (made from standard modulus fibre with a strength of 3-4 GPa, recovered from dry waste) at 300 gsm & 1250 mm wide.
- **CARBISO™ TM PA66/60-IM56P-200-1000** is a recycled non-woven carbon fibre mat with 60% polyamide 66 fibres using intermediate modulus fibres with a strength of 5-6 GPa, recovered from pyrolysed pre-preg, with a weight of 200 gsm and produced at 1000 mm wide.

Chopped and Milled Products

For **chopped fibre** the key dimension is the average fibre length. The nominal mean value is expressed in millimetres, thus:

- **CARBISO™ C SM34L-60** is recycled standard modulus carbon fibre with a strength of 3-4 GPa recovered from pyrolysed laminate, chopped to a nominal mean length of 60 mm.

For **chopped tows**, again the key dimension is length but the distribution of lengths will be much tighter around the mean. The tow count (3k, 12k, 50k etc. follows the length). Only dry fibres can be used for CT products. Common codes will be:

- **CARBISO™ CT SM34D-06-50** - Chopped tow using standard modulus fibre with a strength of 3-4 GPa (dry fibre) and cut to a nominal length of 6 mm based on 50k tow.
- **CARBISO™ CT+ SM34D-06-24** - Oversized chopped tow using standard modulus fibre with a strength of 3-4 GPa (dry fibre) and cut to a nominal length of 6 mm based on 24k tow.

For **milled fibre**, as with chopped fibre, the important dimension is average fibre length. The nominal mean value is expressed in micrometres, thus:

- **CARBISO™ MF SM34P-100** is recycled standard modulus carbon fibre with a strength of 3-4 GPa recovered from pyrolysed pre-preg, milled to a nominal mean length of 100 μm.

Pellets

- **CARBISO™ MB** Masterbatch product will be supplied as equiaxed beads of material around 3 mm in diameter so there is no code after the fibre classification to state material dimension.

Disclaimer

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