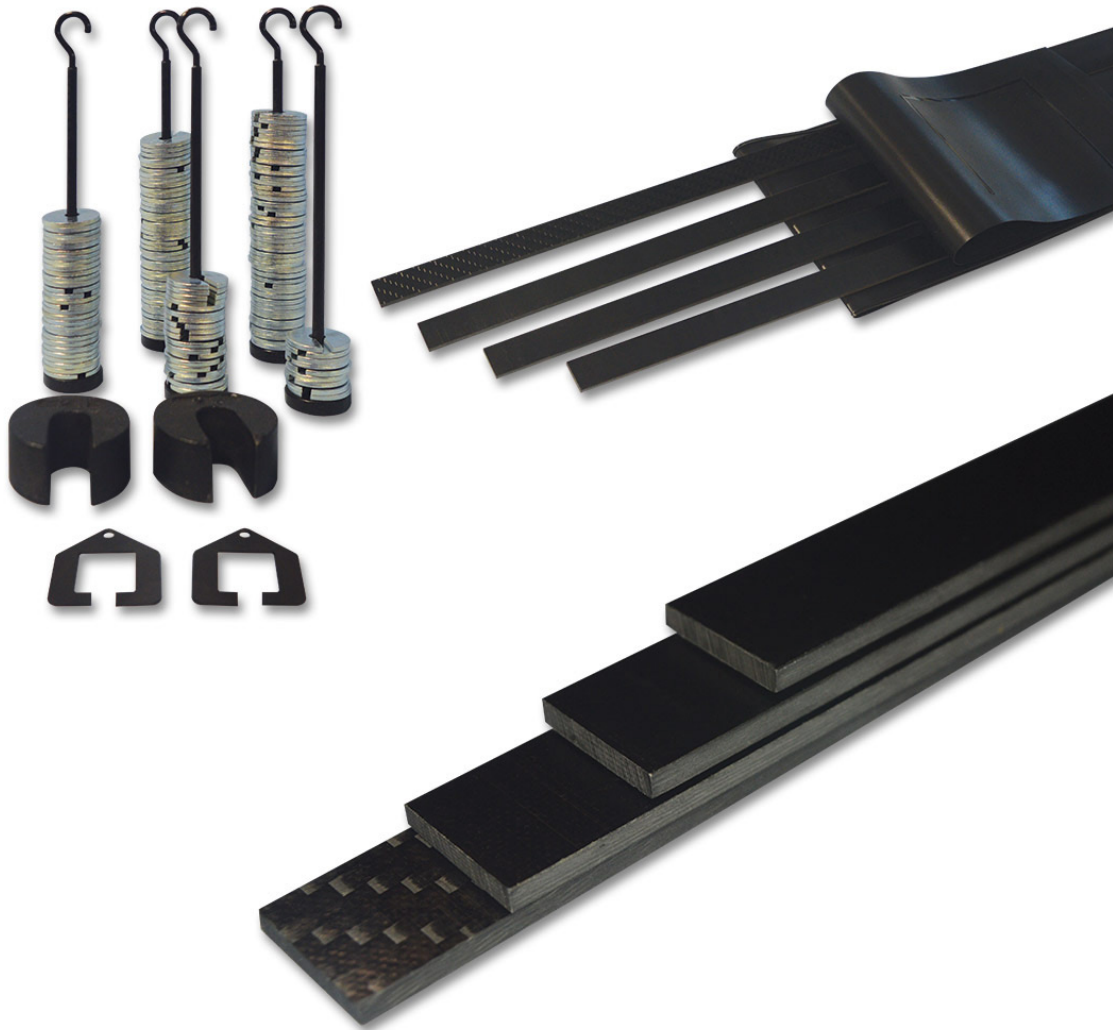




≡ BASIC COMPOSITE BEAM / STRUT SET

SM1004DI AND SM1005BI

A set of carbon composite beams / struts with varied construction. The different construction of each beam / strut exhibiting differing bending/stiffness characteristics.



KEY FEATURES

- Forms an introduction to carbon composites
- Fits in the Beam Apparatus (SM1004) or the Euler Buckling Apparatus (SM1005) to extend their experimental range
- Includes four beams / struts in a storage wallet
- Includes weights, hangers and knife edges (SM1004d1 only)



≡ BASIC COMPOSITE BEAM / STRUT SET

SM1004D1 AND SM1005B1

DESCRIPTION

Composite materials with specific properties are common in many industries such as aerospace, automotive, sports and civil engineering. Fibre-reinforced composite materials are lightweight, stiff and strong. They have good fatigue and impact resistance. Their properties can be tailored to match the specific needs of end users by changing constituent material types and manufacturing parameters such as tow, weave type, resin or manufacturing method.

For carbon composite materials, a variety of carbon fibre architectures can be obtained by using two- (2D) and three-dimensional (3D) fabric production techniques such as weaving, knitting, braiding, stitching, and nonwoven methods. Each fibre architecture/textile form results in a specific configuration of mechanical and performance properties of the resulting composites and determines the end use possibilities.

The beams / struts in the TecQuipment Basic Composite Beam / Strut Set have been designed to introduce students to the properties of composite beams / struts and their construction.

The beam / strut types included in the basic kits are:

- Unidirectional tape 0° aligned
- Unidirectional tape alternating 0° and 90° aligned
- Unidirectional tape alternating $\pm 45^\circ$
- Full woven fabric

All beams / struts are bonded with epoxy resin.

The set also includes two 2 Newton weights, 150 10 g masses, five hangers and two knife edges. (SM1004d1 only)

STANDARD FEATURES

- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

- Introduction to carbon composites
- Benefits of composite beams / struts
- Determination of flexural rigidity and Young's modulus
- Comparison of different construction options
- Comparison of carbon composites with steel beams / struts of the same cross section
- Deflection of carbon composite beams / struts

ESSENTIAL BASE UNIT

- Beam Apparatus (SM1004) for SM1004D1

NOTE: SM1004D1 also includes additional masses and weight hangers

OR

- Euler Buckling Apparatus (SM1005) for SM1005B1

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory environment

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

WEIGHTS INCLUDED: (SM1004D1 ONLY)

2 x 2 Newton weights

150 x 10 g masses

2 x knife edges

5 x hangers

DIMENSIONS:

Each beam / strut 3.2 x 19 x 750 mm (nominal)

APPROXIMATE NETT WEIGHT:

SM1004d1: 4 kg

SM1005b1: 0.6kg

APPROXIMATE PACKED VOLUME:

0.02 m³