

STANDARD TOLERANCES

PULTRUDED PROFILES

INTRODUCTION

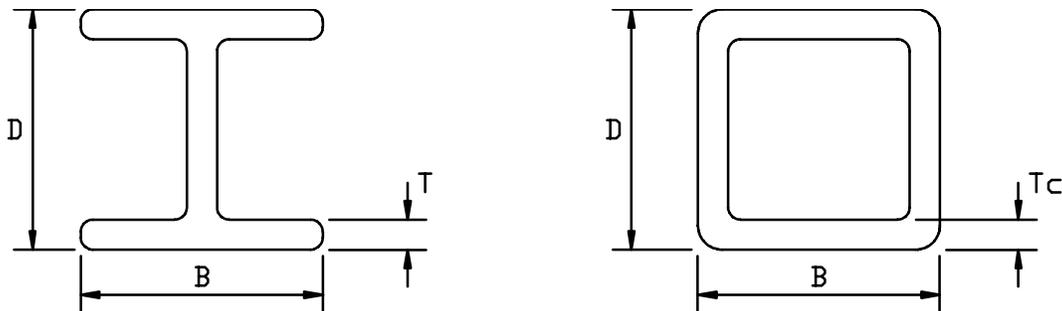
To assist with purchasing and specifying pultruded profiles, this guide enables standard tolerances to which designers may refer.

These tolerances are based on the recommendations of the CEN committee currently drawing up a European standard for Pultrusions (TC249/SC2/WG6). This standard is to be implemented throughout the industry as a benchmark and is therefore a basis for tolerances.

TOLERANCES

In the absence of a customer-supplied specification, the standard tolerances are automatically applied.

DIMENSIONAL TOLERANCES



Nominal Dimension	B	D
Up to 49.9mm	± 0.20mm	± 0.20mm
50 - 99.9mm	± 0.30mm	± 0.30mm
100 - 299.9mm	± 0.35mm	± 0.35mm
300mm +	± 0.45mm	± 0.45mm

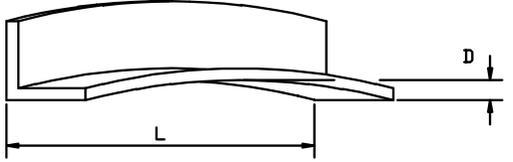
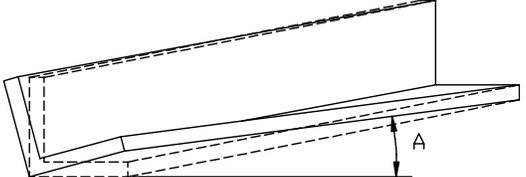
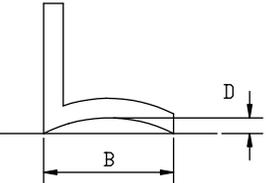
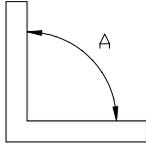
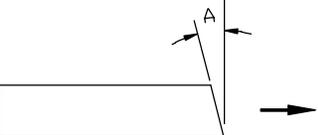
Nominal Thickness	T	Tc
Up to 4.99mm	± 0.20mm	± 0.35mm
5 - 9.99mm	± 0.35mm	± 0.45mm
10mm +	± 0.45mm	± 0.50mm

Tc is a thickness dimension that is governed not by die cavity but by mandrel position, i.e. a closed profile thickness.

Where possible, dimensions shall be measured in such a way as to reduce any angle effect present.

On occasion, the same tooling may be used to manufacture product in a range of different resin types. When this occurs, whilst the nominal values may change, the above tolerances will still apply to those nominal values.

PHYSICAL TOLERANCES

Bow (straightness)		<p>D=0.4mm/m</p> <p>See note below for longer lengths</p>
Twist		<p>A - 1°/m cumulative</p>
Flatness		<p>D = 0.008 x B (mm)</p>
Angularity		<p>A ±1.5°</p>
Cut Squareness		<p>A ±2°</p>
Cut Tolerances	<p>Up to 7m 7m +</p>	<p>-0, +25mm -0, +50mm</p>

Note: Bow or Straightness is measured with the profile on its side, *not under its own weight*. The formula to be used for calculating the bow for different length profile is: $D(\text{mm}) = L(\text{m})^2$. For example, the maximum bow allowed on a 2.5metre length is 1×2.5^2 or 6.25mm. Similarly, for a 6metre length it is 1×6^2 or 36mm. A tighter tolerance can be negotiated if the application demands a tighter tolerance.

INSPECTION PROCESS

At the start of each production run, or after a significant break in production, a first off sample should be submitted to Quality for inspection. This will be inspected against the product specification and approval, or not, advised to production. Where no Quality personnel are available a sample will still be submitted but the decision to proceed will fall to production personnel, with Quality verifying at a later stage.

INSPECTION FREQUENCY

Unless otherwise stated within the product specification, the inspection frequency will be:

Test Frequency	Production	QA
Appearance	Continuous	Daily
Tolerances	Twice Daily	First Off
Other Properties	As Stated	As Stated

TRACEABILITY Each length of product or bundle needs to be marked with the product number, the date of manufacture. These details are to allow full traceability to be provided.