



EXEL COMPOSITES

Standard Tolerances

TUBES AND RECTANGULAR TUBES

(If tolerance is not specified, Exel tolerance II applies)

Inner and Outer Diameter

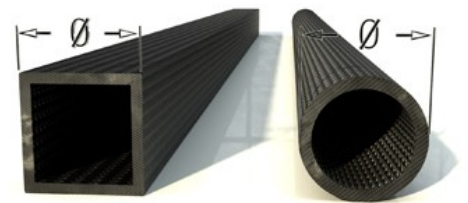
Diameter/width mm	Tolerance I, mm	Tolerance II, mm
$5 \leq L < 20$	$\pm 0,1$	$\pm 0,2$
$20 \leq L < 30$	$\pm 0,15$	$\pm 0,3$
$30 \leq L < 50$	$\pm 0,2$	$\pm 0,3$
$50 \leq L < 75$	$\pm 0,25$	$\pm 0,4$
$75 \leq L < 250$	$\pm 0,3$	$\pm 0,5$

Cutting Straightness [°]

Cutting Straightness	Tolerance I, [°]	Tolerance II, [°]
All Products	$\pm 0,5$	± 2

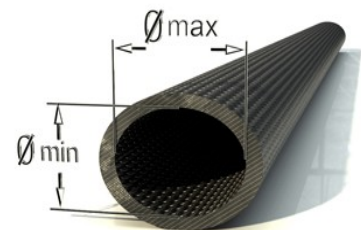
Length

Length, m	Tolerance I, mm	Tolerance II, mm
$0 < L < 1$	± 1	± 3
$1 < L < 2$	± 2	± 3
$2 < L < 3$	± 3	± 5
$3 < L < 6$	± 5	± 10
$6 < L < 12$	± 20	± 40



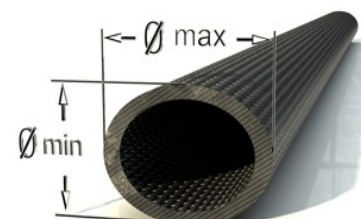
Ø Inner Dimension:

$$\frac{\text{Ø max} + \text{Ø min}}{2}$$



Ø Outer Dimension:

$$\frac{\text{Ø max} + \text{Ø min}}{2}$$



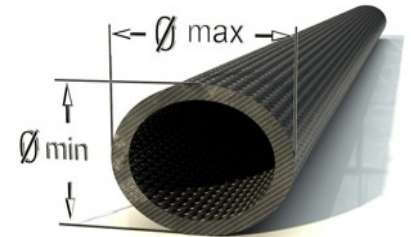
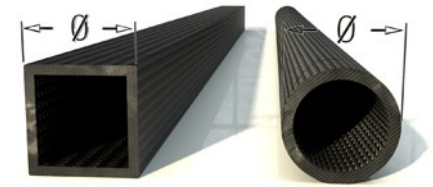
Circularity (Ø)

Diameter mm	Tolerance I, mm	Tolerance II, mm
$5 \leq L < 10$	$\pm 0,1$	$\pm 0,2$
$10 \leq L < 20$	$\pm 0,15$	$\pm 0,3$
$20 \leq L < 30$	$\pm 0,2$	$\pm 0,4$
$30 \leq L < 50$	$\pm 0,3$	$\pm 0,4$
$50 \leq L < 75$	$\pm 0,4$	$\pm 0,5$
$75 \leq L < 100$	$\pm 0,5$	$\pm 0,7$
$100 \leq L < 250$	$\pm 1,0$	$\pm 2,0$

Circularity:

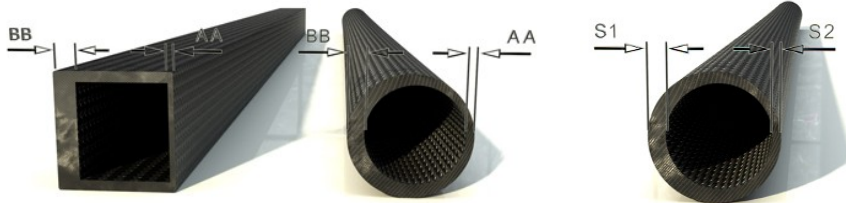
$\frac{\text{Ø max} - \text{Ø min}}{2}$

2



Centricity (K)

Tolerance I	K=10 % of the nominal wall thickness (S)
Tolerance II	K=16 % of the nominal wall thickness (S)



$$K = \frac{BB - AA}{2}$$

2

Centricity:

$$K = \frac{S1 - S2}{2}$$

2



Straightness (D)

Diameter/width	Tolerance I, mm	Tolerance II, mm
$5 \leq L < 10$	$\pm 3,0$	$\pm 5,0$
$10 \leq L < 20$	$\pm 2,0$	$\pm 3,0$
$20 \leq L < 30$	$\pm 1,5$	$\pm 2,5$
$30 \leq L < 50$	$\pm 1,0$	$\pm 2,0$
$50 \leq L < 100$	$\pm 0,5$	$\pm 1,0$
$100 \leq L < 250$	$\pm 0,3$	$\pm 0,5$



STRAIGHTNESS FORMULAS:

Formula: H (max tolerance) = $L^2 \times h$ (max tolerance/m)

H (max tolerance) = maximum allowable tolerance for distortion measured along the whole length.

L = measured length

H (max tolerance/m) = maximum allowable tolerance for distortion measured on 1 m.

