High precision TUBES AND PROFILES

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PRODUCT LINE
Product line and tolerances precision profiles

Precision tooling makes possible the production of complex shapes while maintaining extremely close tolerances. These Profiles are available in stainless steel, brass, nickel silver, copper, beryllium copper, titanium, nickel alloys, aluminium alloys, etc.

The use of precision profiles covers an ever increasing variety of applications, they are mainly used in the watchmaking and jewellery industries, in the manufacture of spectacles and optical products, in medical and dental laboratories, in mechanical engineering, luxury products (cigarette lighters, fountain pens, etc.)

SHAPES
These depend on the requirements, which generally require special tooling

<table>
<thead>
<tr>
<th>SHAPE</th>
<th>AREA</th>
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<tbody>
<tr>
<td>59 mm²</td>
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<td>9 mm²</td>
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<td>10 mm²</td>
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<td>8 mm²</td>
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<td>3 mm²</td>
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<td>5 mm²</td>
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<td>34 mm²</td>
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<td>15 mm²</td>
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<td>10 mm²</td>
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<td>74 mm²</td>
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CROSS SECTIONS
1 mm² to 100 mm²
Width 20 mm max.

TOLERANCES
On outside dimensions:
± 0,015 mm.
Internal dimensions, centre distance, etc...:
± 0,015 to ± 0,05 mm

LENGTHS
Random straight length up to 5 m.
Exact length of 2 mm to 3 m
In coils
Tolerances on cut length:
± 0,1 to ± 2 mm depending on length.
LNI precision tubes are manufactured according to our customer's dimensional and metallurgical specifications using highly specialized equipment developed over 90 years.

This equipment, together with our experience, enables us to process exotic and technically demanding materials into complex shapes while maintaining very close tolerances.

**Shapes**

Standard shapes, typically round, square, hexagonal, flat-oval and rectangular can be produced on existing tooling. Special sections, typically elliptical, octagonal, semicircular and triangular require special tooling.

**Tolerances**

Relating to dimensions:
- Diameter or equivalent D:
  \[ \pm 0.005 \text{ to } \pm 0.10 \text{ mm depending on dimension and shape.} \]
- Mean wall thickness e:
  \[ \pm 0.005 \text{ to } \pm 0.05 \text{ mm depending on dimension and shape.} \]
- Wall thickness deviation: \[ 100 \frac{e_{W} - e_{N}}{e_{N}} = 3 \% \text{ to } 10 \% \text{ of nominal wall thickness.} \]
- Circularity: \[ D_{W} - D_{N} = 0.01 \text{ to } 2 \text{ mm depending on diameter, wall thickness and metallurgical condition.} \]
- Length L: \[ \pm 0.05 \text{ mm to } \pm 5 \text{ mm depending on length.} \]

**Presentation**

- Straight tubes: Long or short length
- Tubes in coils or on spools

**Dimensions**

Outside diameter: from 0.2 to 40 mm. Wall thickness: from 0.05 to 2.50 mm. Length:
- Random straight lengths up to 6.5 m.
- Exact length up to 6 m.
- In coils up to 1000 m depending on specification.

**Surface Finish**

Roughness: Ra from 0.3 to 1 \( \mu \)m

**Grain Size, G**

\[ G = 0.010 \text{ to } 0.050 \text{ mm or ASTM No 9 to 6} \]
Our Quality at your service

LNI operates strict controls in order to ensure product quality. Dimensions, shapes, mechanical properties, metallurgical structure, surface condition, are controlled with the most modern equipment.

Design and continuous development of our machinery is carried out in our engineering office and implemented by our own engineers whether this involves mandrel and plug drawing benches, bull-blocks, rolling mills, automatic saws, straightening equipment, etc.

Our drawing dies are machined on numerically controlled machinery by means of wire or immersion electro-erosion, or by grinding. Up-to-date computer controlled furnaces ensure uniformity of heat treatments.

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