PURE METALS / MATERIAL PROFILE

Grade 1 Titanium Capillary Tubing

ASTM Grade 1 / UNS R50250 / Commercially pure titanium

01 Chemical composition

Reference limits by mass. Use the material specification on the order for lot acceptance.

ELEMENT	MASS %	ELEMENT	MASS %
Oxygen (O)	**0.18 max**	Carbon (C)	**0.08 max**
Iron (Fe)	**0.20 max**	Hydrogen (H)*	**0.015 max**
Nitrogen (N)	**0.03 max**	Titanium (Ti)	**Balance**

*Hydrogen limits depend on the product form. Confirm the limit for the specified tubing.

02 Typical physical properties

Material reference values, not test results for the finished capillary.

PROPERTY	TYPICAL VALUE
Density	**4.51 g/cm³**
Elastic modulus at 20–25 °C	**105–120 GPa**
Mean thermal expansion, 20–100 °C	**8.6 µm/(m·K)**

Specifying a tube for bending or flaring

Grade 1 is chosen for its ductility. If a tube will be bent or flared after delivery, include the bend radius or final flare dimensions on the drawing. Specify the delivery condition and how the formed part will be inspected.

PRECISION ROUND TUBING / PRODUCT SPECIFICATION

Tube Dimensions and Finish

Grade 1 titanium / Custom capillary tubing, cut lengths and sleeves

03 Dimensional capabilities

MingQuan's ranges below cover its tubing program. They are not stock sizes or a guarantee for every Grade 1 titanium tube. We confirm the feasible combination at quotation.

FEATURE	CAPABILITY	SCOPE
Outside diameter (OD)	**0.3–20 mm**	Core focus: below 6 mm OD.
Wall thickness	**0.015–1.5 mm**	Depends on OD and bore.
Tube or component length	**0.8–2000 mm**	Long tubes and cut parts.
Inside / outside diameter tolerance	**±0.005 mm**	**Selected capillary sizes only.**
Cut-length tolerance	**Typically ±0.1 mm**	Length of short parts only.

04 Surface finish and cut ends

OUTER SURFACE

Ra ≤ 0.2 µm

BORE SURFACE

Ra ≤ 0.6 µm

Confirm the finish for the specified bore and length. Cut ends are burr-free; visual inspection at 20× checks for obvious surface damage. Call out any specific edge profile on the drawing.

What to include with your drawing

MATERIAL	Grade 1 / UNS R50250, governing specification and delivery condition.
GEOMETRY	OD, bore, wall, length, critical tolerances and end details.
ORDER	Quantity, inspection records and material traceability requirements.

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