



MINIATURE TUBING ALLOY SPECIFIC DATA SHEET

MP35N[®] Alloy

General Description

MP35N[®] Alloy, with its nickel-cobalt-chromium-molybdenum content, has a special combination of high strength, ductility and corrosion resistance. In the annealed state, it has the same easy-to-work characteristics of the 300 series alloys, yet it is capable of being hardened by a simple heat treatment. It has higher tensile strength/hardness and even ductility compared to the 300 series when cold-worked. After the aging heat treatment, it has one of the highest strengths on any currently produced alloys. The unique properties of MP35N[®] allow for it to be used in applications where other alloys have failed.

Applications

- Stents
- Device delivery systems
- Biopsy needles
- MRI Compatible devices

Reference Standards

- AMS 5758
- AMS 5844
- AMS 5845
- ASTM F562
- BS 7252
- ISO 5832

Characteristics

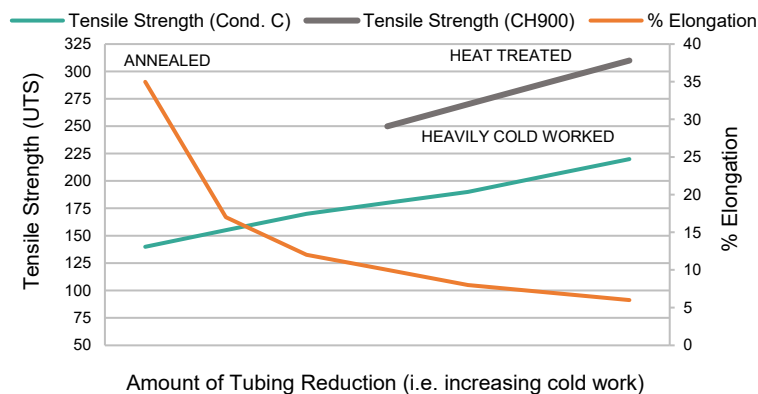
- Cold working will achieve higher tensile strengths.
- Aging Heat treatment will result in the highest strength available for miniature stainless steel tubing.
- Many combinations of properties available based on processing method to suit many applications.
- Excellent corrosion resistance—extensive use in stents and implants

Typical Chemistry

Element	Minimum	Maximum
Carbon		0.03%
Manganese		0.15%
Phosphorus		0.015%
Sulfur		0.01%
Silicon		0.15%
Chromium	19.0%	21.0%
Nickel	33.0%	37.0%
Molybdenum	9.0%	10.5%
Titanium		1.0%
Iron		1.0%
Boron		.01%
Cobalt		Balance

Possible Mechanical Properties

Attribute	Annealed	As Drawn	Aged
Hardness	HRC	44 HRC	54 HRC
Tensile Strength	140 ksi	220 ksi	290 ksi
Elongation	40%	5%	2%



General Properties

Attribute	English
Density (annealed)	.304 lb/in ³
Elastic modulus	34,000 ksi
Shear modulus	12,100 ksi
Thermal conductivity (70F)	88 BTU-in/hr-ft ² - F
Mean CTE (70-1000F)	8.7 x10-6 in/in/F
Electrical resistivity	80 microrhm-cm
Magnetic Permeability (Annealed)	1.0009

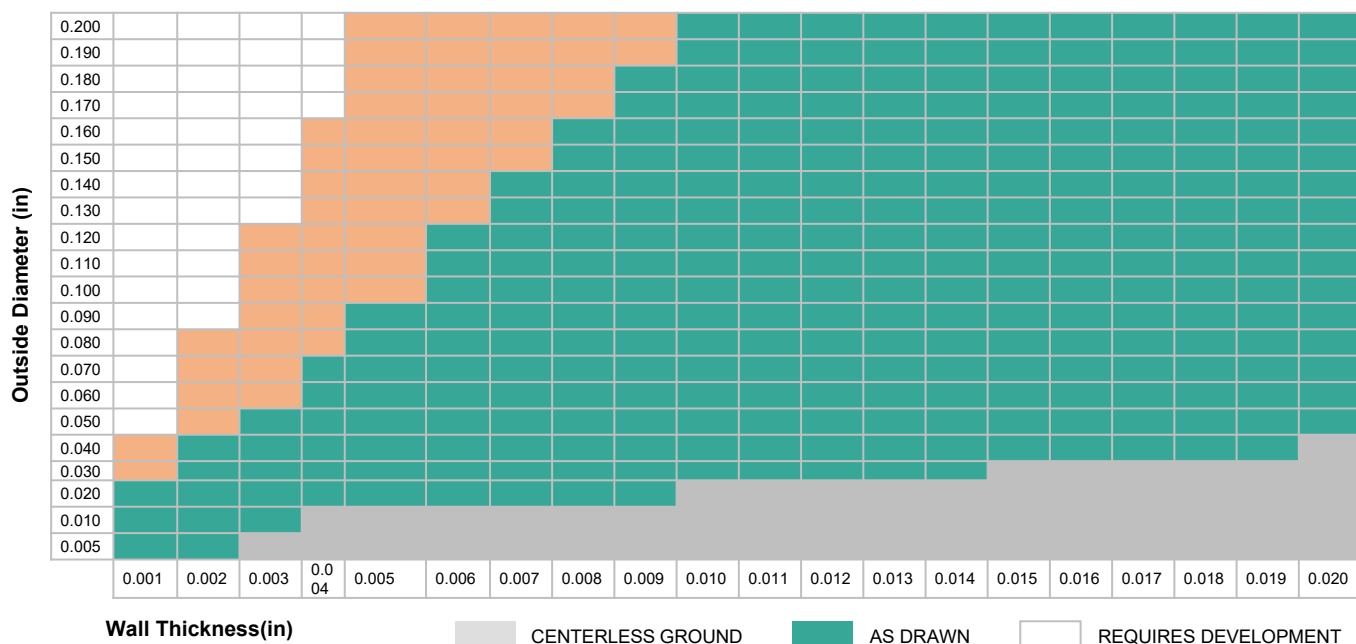
Tubing-specific Requirements

- **Lengths:** Tubing is normally furnished in mill lengths of 5 ft, but it can be supplied in up to 20 ft lengths with a shear cut end.
- **Cut End Finish:** Precision cut-to-length pieces with burr-free ends can be furnished when specified.
- **Roundness:** Difference in minimum and maximum OD measurements must be equal or less than half the OD tolerance.
- **Surface Finish:** OD and ID surface finish (Rq or RMS) limits may be specified. ID and OD surface finish values are only reported for dimensions >0.020".
- **Typical OD Surface:** < 20 μ n Rq.
- **ID Surface finish:** Depends on the reduction (drawing) method. Free sunk tubing has a typical ID surface finish <150 μ n Rq. Plug drawn tubing can have an ID surface finish range with values as low as < 20 μ n Rq.
- **Straightness:** No deflection greater than 5% of the outside diameter for tubing with OD > 0.020" or 0.001" maximum deflection for tubing with OD <0.020". Any special straightness requirements shall be agreed upon between the purchaser and supplier. Tubing should not "wobble" as defined per ASTM F2819

Additional tubing specification information can be found in *K001-15a Standard Specification for Miniature Laser Welded and Drawn Stainless Steel and Nickel-Chromium Alloy Tubing for General Use* on the K-Tube's website at <https://www.k-tube.com/downloads-documents/>

Available Dimensions

K-Tube has the capability to make tubing with the wall thickness and outside diameter combinations in the table below. Tubing with an OD/Wall ratio lower than 20:1 can be drawn to the final dimensions. Tubing with an OD/Wall ratio between 20:1 and 40:1 must be centerless ground to the final dimensions. K-Tube's capabilities are constantly improving, please inquire if your dimensions are outside of the listed dimensions.



Contact Information

Our professional staff is available to assist you with custom projects and provide you with the direction you need to complete your project to specification and on time. We look forward to working with you.

K-Tube Technologies
13400 Kirkham Way
Poway, CA 92064 USA

Toll free | 800.394.0058
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Hours | 7:00 am-4:30 pm (PST)
General questions and inside sales | sales@k-tube.com



The data and information provided are based on work conducted principally by K-Tube Technologies and occasionally supplemented by information from the open literature, and are believed to be reliable. However, we do not make any warranty or assume any legal liability or responsibility for its accuracy, completeness or usefulness, nor do we represent that its use would not infringe upon private rights. Any suggestions as to uses and applications for specific alloys are opinions only and K-Tube Technologies makes no warranty of results to be obtained in any particular situation.