CASE STUDY

C71500 CuNi 70/30 Seamless Tubing

for Nuclear Heat Exchanger Service



CUSTOM MANUFACTURING Domestically Processed

CORROSION RESISTANT CuNi 70/30 Alloy

VERIFIED QUALITY Tested & Documented

RELIABLE DELIVERY On Time, On Spec

PROJECT SNAPSHOT

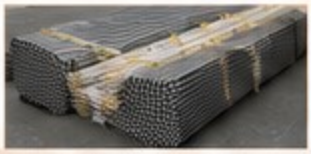
CUSTOMER / MARKET	Nuclear Power Generation (Dominion Energy Nuclear Plant)
ALLOY / GRADE	C71500 Copper Nickel 70/30
PRODUCT FORM	Seamless Tubing
QUANTITY / SCOPE	3,600 pieces • Multiple lots • $300,000+
PRIMARY SPECS	ASME SB466 / ASTM B466 / Military MIL-T-16420
KEY REQUIREMENTS	Annealed • Hydrostatic Tested • Air Underwater Tested • Flattening & Expansion • MTRs • Customer Surveillance
AMERITUBE ROLE	Manufacturing • Annealing • Cutting • Testing • Inspection • Packaging • Documentation

OVERVIEW

Dominion Energy required C71500 CuNi 70/30 seamless tubing for critical nuclear heat exchanger service. The tubing had to deliver long term corrosion resistance in demanding service conditions while meeting strict quality and documentation requirements.

AMERITUBE SOLUTION

Ameritube managed the project from material receipt through final inspection and shipment using controlled processes, verified testing, and complete traceability to ensure the tubing met the customer's technical and regulatory



RAW MATERIAL RECEIPT



ANNEALING



HYDROSTATIC TESTING



PACKAGING & SHIPMENT

2 | TECHNICAL EXECUTION

THE CHALLENGE

The project required more than supplying commodity tubing. Key challenges included:

- High corrosion resistance in nuclear service
- Controlled annealing and dimensional accuracy
- 100% hydrostatic and air underwater testing
- Flattening and expansion testing per specification
- Full documentation, MTRs and customer surveillance
- Export packaging and on-time delivery

TECHNICAL REQUIREMENTS

ALLOY / UNS	C71500 CuNi 70/30
PRODUCT FORM	Seamless Straight Tube
DIMENSIONS	Various OD & Wall Thicknesses
PROCESSING	Drawing • Annealing • Cutting • Straightening • Cleaning
NDE	Eddy Current • Hydrostatic • Air Underwater • PMI
DESTRUCTIVE TESTS	Flattening • Expansion •
DOCUMENTATION	MTRs • NDE Reports • Work Orders • Final Inspection Reports
PACKAGING / LOGISTICS	Export Standard Wooden Boxes • Customer Inspection

MANUFACTURING & QUALITY PROCESS

1. Material Receipt & MTR Review
2. Heat / Batch Allocation
3. Pilgering / Drawing
4. Annealing
5. Cutting & Straightening
6. Cleaning & Finishing
7. Non-Destructive Testing
8. Destructive / Mechanical Testing
9. Final Inspection & Documentation
10. Packaging & Shipment

3 | ALLOY PROFILE & RESULTS

C71500 CuNi 70/30 ALLOY PROFILE

C71500 is a copper nickel alloy with a nominal 70% copper and 30% nickel composition. It offers excellent resistance to seawater corrosion, high temperatures, and long term durability in heat exchanger and condenser applications.

TYPICAL APPLICATIONS

Heat Exchangers · Condensers · Feedwater Heaters · Marine Equipment

CHEMICAL COMPOSITION (nominal %)

Cu[1]	Fe	Pb	Mn	Ni[2]	Zn
Rem	0.40–1.0	0.05	1.0	29.0–33.0	1.0

(1) Cu value includes Ag. (2) Ni value includes Co.
NOTE: Cu + Sum of Named Elements = 99.5% min.

KEY PHYSICAL PROPERTIES (annealed)

Density	8.94 g/cc (0.323 lb/in³)
Tensile Strength (min)	52 ksi (360 MPa)
Yield Strength (0.2% min)	18 ksi (125 MPa)
Thermal Conductivity	26.0 Btu-ft/[hr-ft²-°F) @ 68°F
Electrical Conductivity	4% IACS @ 68°F

PROJECT RESULTS

- Delivered 3,600 pieces of C71500 seamless tubing
- All testing completed per ASME / ASTM / Military specs
- Customer surveillance & third party inspection
- Documentation package complete and accepted
- On-time delivery in export ready packaging