

CATube (Coated Aluminum Tube)

For Heating & Cooling Systems

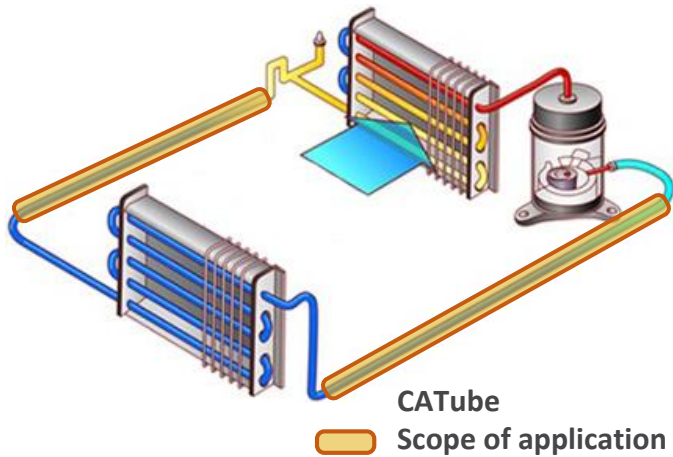


'CATube offers better price and performance satisfaction.'

Table of Contents

- **Product Description**
 - CATube
 - Copper Tube VS CATube
 - CATube Advantages
 - CATube Composition
- **Quality Assurance Certificates
& Test Results**





CATube

- Nylon-coated aluminum tube that is by far **the best alternative to copper tubes**

Usage

- Can replace copper tubes used for the **external connecting lines of heat exchangers**

Advantage

- **Easy installation** (more lightweight and easier to bend than copper tubes)
- **Better durability** (superior corrosion resistance to copper tubes)
- **Reduced cost** (cheaper than copper tubes)

Tubes Currently on the Market



Copper Tube

- Excellent corrosion resistance
- It takes longer and costs more to install



Aluminum Tube

- Cheaper and more flexible
- Easily warps and is vulnerable to frequent refrigerant leakage caused by corrosion



**Copper-Aluminum
Joint Tube**

- Compatible with copper tubes
- Cannot adjust the length and is vulnerable to corrosion at the joint

VS

CATube



- Compared to copper tubes, CATube is more flexible and thus easier to bend, saving time and cost to manipulate
- CATube is coated in nylon that is **semi-permanently resistant to corrosion** under most circumstances
- CATube can be cut into various lengths and makes it easier to expand joints

Copper Tube VS CATube

✓ Lightweight

Size (O/D, inch)	Copper Tube		CATube		Weight Rate
	THK	Weight	THK	Weight	CATube/ Copper
1/4	0.7mm T	3.3 KG	0.8mm T	1.3 KG	40%
3/8	0.7mm T	5.2 KG	0.9mm T	2.3 KG	43%
1/2	0.8mm T	8.0 KG	1.0mm T	3.4 KG	42%
5/8	0.8mm T	10.2 KG	1.1mm T	4.6 KG	45%
Average		6.7 KG		2.9 KG	43%

- On average, CATube is **43%** in weight of Copper tubes of the same mass & measurements (based on 30 meters)

✓ Bending Ease



CATube

Copper Tube

✓ Corrosion Resistance



CATube

Copper Tube

* Salt spray duration: 6 months
Salt water concentration: saturated (100%)
Copper: C1200 type
(Phosphorus Deoxidized Copper)

✓ Pressure Resistance

Size(O/D)	Maximum Working Pressure		Pressure Rate
	Copper	CATube	
1/4"	1649 psi	5511 psi	334%
3/8"	1066 psi	3814 psi	358%
1/2"	782 psi	3177 psi	406%
5/8"	611 psi	3177 psi	520%

- Compared to copper of the same specs, CATube's pressure resistance is **4 times** higher or more on average



✓ Lightweight

- only 43% in weight of copper of the same mass
- **easier delivery and handling**
- **easier to install** because of the reduced weight



✓ Easier Bending

- **more flexible** than copper, thus **easier to bend**
- the nylon resin keeps CATube from **warping** when you bend it



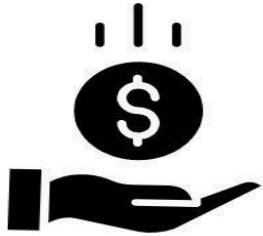
✓ Corrosion Resistance

- The nylon resin of CATube is **semi-permanently corrosion-resistant**.
- When different types of metals are in electrical connection, there's a threat of corrosion. The nylon resin keeps CATube from the threats of the electrolytic and corrosive environment.
- When connected to an AC service valve or fittings, the uncoated inner wall of a CATube may be exposed to corrosive environment. **Using teflon rings for such cases can completely prevent potential corrosion.**



✓ Pressure Resistance

- Compared to copper tubes of the same specs, CATube boasts **pressure resistance that is 3 to 5 times higher**.
- At the stage of a rupture, input pressure was 4-6 times higher than the reference pressure strength (50.0 Kgf/cm²).



✓ Reduced Cost

- **Cheaper** than copper tubes



✓ Improved Workability

- Resin clad products currently on the market need their resins to be removed before use, but CATube have its resin coating so strongly and thinly adhered to aluminum that it's **not necessary to remove the coating prior to expanding tubes**



✓ Impact Resistance

- CATube has overcome the aluminum's weaker impact resistance with its nylon resin and boasts **excellent impact resistance**

CATube Advantages

	Copper	Copper + Aluminum	CATube
Weight	X	△	◎
Bending Ease	○	◎	◎
Corrosion Resistance	○	X	◎
Pressure Resistance	○	X	◎
Price	X	△	◎

* ◎ : Great / ○ : Good / △ : Average / X : Bad

CATube Composition

1. CATube nylon-coated aluminum standards

A. Size

Standard		O/Diameter	Thickness		Weight (gr/Meter)
Inch	Millimeter		Al	Nylon	
1/4	6.35	6.35 mm	0.80 mm	0.180 mm	39.15 gr
3/8	9.52	9.52 mm	0.90 mm	0.180 mm	69.12 gr
1/2	12.70	12.70 mm	1.00 mm	0.180 mm	104.65 gr
5/8	15.88	15.88 mm	1.10 mm	0.180 mm	145.28 gr

- CATube's standard outside diameters are identical with those of copper tubes and CATube is compatible with regular copper tubes' fittings. But it's recommend to use teflon rings.

B. Aluminum Composition

- A3000 Series (1/4")
- A1000 Series (3/8", 1/2", 5/8")
- Seamless by Conform Processed Aluminum Tube

C. Coating material

- Nylon resin
- The nylon resin of CATube is superior to conventional PA in terms of heat resistance and UV resistance

2. Packing methods



- CATube packing methods and length per unit CAN BE TAILORED to customer's requirement.

NKC
NOKOCO Incorporation



한국화학융합시험연구원
KOREA TESTING & RESEARCH INSTITUTE

Report No.	TNS-180801
Sample Name	Coating Film (17-7)

3.3.1 PW (HCD) < Hydraulic Isolation Test Condition >



< Before the Test 1 >



< Pressure Gauge 17.5 MPa >



< Before the Test 2 >



< After the Test 2 >