

# AMPCO<sup>®</sup> 483

cast aluminum-nickel-iron-copper alloy

# TECHNICAL DATA

## Description

A cast aluminum-nickel-iron-copper alloy (UNS 95800). Commonly called alpha nickel aluminum bronze or propeller bronze.

Uses include: propeller blades and hubs, fittings, pump housings and impellers, gears, worm wheels, valve guides, seals and structural applications requiring excellent corrosion resistance in both fresh and salt water.

AMPCO 483 alloy will maintain mechanical properties at temperatures up to 600°F and has a machinability rating of 50%. The alloy was developed at the request of the U.S. Navy for critical salt-water service and provides excellent corrosion resistance to seawater and non-oxidizing acids. Can be welded with both the gas-shielded and shielded metal-arc processes. Brazing, soldering and oxyfuel gas welding are not recommended.

The microstructure of the as-cast alloy generally consists of continuous equiaxed alpha crystals with small areas of metastable beta phase. Kappa phase precipitates are found in the alpha phase, in grain boundaries and in the beta areas. A quench and temper thermal treatment results in refinement and redistribution of the kappa phase throughout a matrix of tempered beta martensite and alpha kappa eutectoid. AMPCO 483 castings are always subjected to this thermal treatment to enhance corrosion resistance and eliminate the potential of any de-alloying.

## Chemistry

Copper 81.3%, Aluminum 9%, Nickel 4.5%\*, Iron 4%, Manganese 1.2%

\*iron content shall not exceed nickel content

## Mechanical Properties

Tensile Strength, min. (ksi).....	85
Yield Strength, min. (ksi).....	35
Elongation, min. (% in 2").....	15
Hardness, nom. BHN.....	163
Ultimate in Compression (ksi).....	110
Impact – Charpy V-notch (ft-lbs).....	16
Charpy Keyhole (ft-lbs).....	10
Modulus of Elasticity –	
tension (ksi).....	16,500
Poisson's Ratio.....	0.320
Fatigue Strength – rotating beam (ksi).....	33

## Physical Properties

Density (lbs/in <sup>3</sup> ).....	0.276
Specific Gravity.....	7.64
Specific Heat (Btu/lb °F).....	0.105
Coefficient of Thermal Expansion	
(in/in/°F).....	9.0 x 10 <sup>-6</sup>
Electrical Conductivity (% IACS).....	7
Electrical Resistivity	
(Microhms-Meter @ 68°F).....	243
Thermal Conductivity	
(Btu/sq ft/ft/hr/°F @ 68°F).....	21
Magnetic Permeability (16 kA/m).....	1.05

## Specifications

ASTM	
B-148 C95800, B-271 C95800,	
B-505 C95800	
Federal	
QQ-C-390 C958	
MIL	
C-15345 Alloy 28, B-24480,	
B-21230 Alloy 1, C-22229 Alloy 958	
SAE	
J-462b C95800	