

AMPCOLOY®944:
A new copper-silicon-chromium
alloy for the MOLDMAKING
INDUSTRY



AMPCO METAL

**AN INNOVATIVE AND REVOLUTIONARY BERYLLIUM-FREE COPPER ALLOY
BY AMPCO METAL**

AMPCO METAL introduces a new copper-nickel-silicon-chromium alloy developed as an alternative to beryllium copper for industrial applications requiring a combination of strength and high thermal conductivity. These unique properties of **AMPCOLOY® 944** are attained through specially-developed and proprietary manufacturing processes and complex alloy compositions.

Indeed, this ground-breaking new copper alloy, **AMPCOLOY® 944**, provides the right balance between an average hardness of 28 HRC and a thermal conductivity of 87 BTU, 4 to 5 times greater than P20 tool steel, and electrical conductivity of app. 35%IACS.

The following Table gives a good comparison between this new alloy and other commonly used materials:

	Thermal Conductivity (BTU)	Rockwell Hardness (HRB/C)
AMPCOLOY® 940	120	95 HRB
Be Cu (0.5% Be)	120	98 HRB
AMPCOLOY® 944	87	28 HRC
Aluminum (QC-7)	78	85 HRB
Aluminum (7075)	78	80 HRB
Be Cu (2.0% Be)	69	38 HRC
Tool Steel (P-20)	17	33 HRC
Tool Steel (H-13)	15	53 HRC
Stainl. Steel (420)	13	52 HRC

AMPCOLOY® 944 is the answer to our customer needs and requirements to reduce both material scrap and machining time.

Typical applications include mold tooling for plastics processing, highly suitable for the injection and blow mold inserts for a wide range of plastics materials due to the alloy very good corrosion resistance to PVC resins as well as excellent results in thermoforming.

Plastics processors rely on **AMPCOLOY® 944** for cores and cavities, where it reduces molding cycle times, decreases post-mold part distortion, produces more parts per hour, increase design flexibility, remove heat uniformity and improves dimensional stability of the plastic parts.

Higher hardness also lengthens service life of the mold and lowers machining and production costs, as **AMPCOLOY® 944** requires no additional heat treatment.

AMPCOLOY® 944 can be used for applications demanding higher hardness levels as cores, core inserts, cavities-inserts, runner-less molding systems, hot runner nozzles, core pins, blow pins, ejector sleeve core combinations, sprue bushings, neck and tail pinch offs.

With its great electrical conductivity properties of app. 35% IACS, **AMPCOLOY® 944** can also be used in resistance welding applications and Integrated Circuits chips production fields.

AMPCOLOY® 944 is now available from stock in round rod dia. 1” up to 4” (dia. 25 mm up to dia. 100 mm) and plate up to 4” thick (100mm thickness). Other forms available on request include forged shapes made-to-order and finished-machined parts per customer drawings.

AMPCO METAL’s complete family of mold and tooling alloys consists of the following products:

	AMPCO®18	AMPCO®21	AMPCO®940	AMPCO®944	AMPCO®88	AMPCO®91	AMPCO®83
Tensile Strength 20°C Ksi	105	110	100	123	129	102	174
Yield Strength 20°C Ksi	52	60	78	106	99	80	116
Elongation % in 2"	14	1	13	5	14	5	3
Hardness HB	192	286	210	275	275	215	360
Hardness Rockwell	92Rb	29Rc	95Rb	28Rc	28Rc	98Rb	38Rc
Thermal Conductivity (BTU)	36	27	121	87	133	120	61

AMPCO METAL is an integrated producer and distributor of specialty copper alloys. Through its Subsidiaries and Service Centers, AMPCO METAL supplies worldwide markets with high conductivity copper alloys, specialty bronze products and engineered material systems.

The company's engineered products can be found in highly-technically demanding end-use applications within the metal production and metal processing, automotive, industrial components, plastics tooling, oil and gas, aerospace, and general engineering equipment markets.

Visit www.ampcometal.com for additional information.