

**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-silicone-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 150 W/mK, 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 (W / m.K)	Rockwell Hardness (HRB/C)
AMPCOLOY® 940	208	95 HRB
Be Cu (0.5% Be)	208	98 HRB
<b>AMPCOLOY® 944</b>	<b>150</b>	<b>28 HRC</b>
Aluminum (QC-7)	135	85 HRB
Aluminum (7075)	135	80 HRB
Be Cu (2.0% Be)	120	38 HRC
Tool Steel (P-20)	30	33 HRC
Tool Steel (H-13)	26	53 HRC
Stainl. Steel (420)	23	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:

	<b>AMPCO®18</b>	<b>AMPCO®21</b>	<b>AMPCO®940</b>	<b>AMPCO®944</b>	<b>AMPCO®88</b>	<b>AMPCO®91</b>	<b>AMPCO®83</b>
<b>Tensile Strength 20°C MPa</b>	725	760	690	850	890	700	1200
<b>Yield Strength 20°C MPa</b>	360	415	535	730	680	550	800
<b>Elongation % in 2"</b>	14	1	13	5	14	5	3
<b>Hardness HB</b>	192	286	210	275	275	215	360
<b>Hardness Rockwell</b>	92Rb	29Rc	95Rb	28Rc	28Rc	98Rb	38Rc
<b>Thermal Conductivity (W/m. °K)</b>	62	46	210	150	230	208	105

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](http://www.ampcometal.com) for additional information.