

# Wieland Chase brass product guide



# Standard alloys

## HIGH PERFORMANCE BRASS

Quality and consistency allows customers to produce more components per hour, maintain tighter tolerances, and reduce costs through longer tool life.

### Advantages

- Excellent machinability
- Good corrosion resistance
- High productivity alloy
- 100% recyclable
- Longer tool life



## C36000

Application: Machining  
 Astm: B16  
 Lengths: 10 to 16 feet  
 Bundle weights: 1,000 – 4,000 lbs.

## C37700

Application: Machining-forging  
 Astm: B124, B981  
 Lengths: 10 to 16 feet  
 Bundle weights: 1,000 – 4,000 lbs.

## C34500, C35000, C35300

Application:  
 Machining-cold forming  
 Astm: B453  
 Lengths: 10 to 16 feet  
 Bundle weights: 1,000 – 4,000 lbs.

## Chemistry composition

Rod Alloy	CU	Pb	Fe	Zn
C36000	60.0 - 63.0%	2.5 - 3.0%	0.35% max	Remainder
C37700	58.0 - 61.0%	1.5 - 2.5%	0.30% max	Remainder
C34500	62.0 - 65.0%	1.5 - 2.5%	0.15% max	Remainder
C35000	61.0 - 63.0%	0.8 - 2.0%	0.15% max	Remainder
C35300	61.0 - 63.0%	1.5 - 2.5%	0.15% max	Remainder

### C36000, C37700, C34500, C35000, & C35300

#### Sizes/shapes



### C36000, C34500, C35000 & C35300

#### Diameter/tolerances +/-

Diameter	Round	Hexagonal, octagonal
>0.250" - 0.500"	0.0015"	0.003"
>0.500" - 1.000"	0.002"	0.004"
>1.000" - 2.000"	0.0025"	0.005"
>2.000"	0.15%	0.30%

### C37700

#### Diameter/tolerances +/-

Diameter	Round	Hexagonal, octagonal
>0.250" - 0.500"	0.002"	0.004"
>0.500" - 1.000"	0.003"	0.005"
>1.000" - 2.000"	0.004"	0.006"
>2.000"	0.20%	0.40%

### C36000 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)	Hardness RD (Rb)	Hardness HX/OC (Rb)
<0.500"	57	25	7	—	—
0.500" - 1.000**	55	25	10	60 - 80	55 - 80
>1.000" - 2.000"	50	20	15	55 - 75	45 - 80
>2.000" - 3.000"	45	15	20	45 - 70	40 - 65
>3.000" - 4.000"	45	15	20	40 - 65	35 - 60
>4.000"	40	15	20	25 min	25 min

### C37700 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)
>0.250" - 0.500"	63	28	10
>0.500" - 1.000"	55	26	12
>1.000" - 2.000"	48	24	20
>2.000"	45	20	25

### C34500, C35000, & C35300

#### Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)	Hardness (Rb) (mid-radius)
>0.250" - 0.500"	57	25	7	-
>0.500" - 1.000"	55	25	10	60 - 80
>1.000" - 2.000"	50	20	15	50 - 75
>2.000"	50	20	15	40 - 70

\* Properties for thread-rolling applications where the minimum tensile strength is 52 ksi.

# Low lead alloys

HIGH PERFORMANCE LOW-LEADED BRASS

Good machinability, forgeability and thread rolling capability. Easily recyclable with leaded brass, and available in multiple chemistry options for custom applications.

## Advantages

- Multiple chemistry options for custom applications
- 100% recyclable
- Good thread rolling capability
- Good forgeability



## C27450\*

Application: Machining-forging  
Astm: B927  
Lengths: 10 To 16 feet  
Bundle weights: 1,000 – 4,000 lbs.

## C36300

Application: Machining-forging  
Astm: B981  
Lengths: 10 To 16 feet  
Bundle weights: 1,000 – 4,000 lbs.

## C37000

Application: Machining-forging  
Astm: B981  
Lengths: 10 To 16 feet  
Bundle weights: 1,000 – 4,000 lbs.

## Chemistry composition

Rod Alloy	CU	Pb	P	Fe	Zn
C27450*	60.0 - 65.0%	0.25% max	0.04 - 0.10%	0.35% max	Remainder
C36300	61.0 - 63.0%	0.25 - 0.7%	0.04 - 0.15%	0.15% max	Remainder
C37000	59.0 - 62.0%	0.8 - 1.5%	—	0.15% max	Remainder

\* Check with the Mill for product availability

### C36300 Sizes/shapes



Round  
0.375" - 4.50"



RC Hex  
0.562" - 2.50"



Square  
0.562" - 2.00"



Shapes  
Consult mill

### C36300 Diameter/tolerances +/-

Diameter	Round	Hexagonal, octagonal
>0.250" - 0.500"	0.002"	0.004"
>0.500" - 1.000"	0.003"	0.005"
>1.000" - 2.000"	0.004"	0.006"
>2.000"	0.20%	0.40%

### C36300 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)
>0.250" - 0.500"	63	28	10
>0.500" - 1.000"	55	26	12
>1.000" - 2.000"	48	24	20
>2.000"	45	20	25

### C37000 Sizes/shapes



Round  
0.375" - 4.50"



RC Hex  
0.562" - 2.50"



Square  
0.562" - 2.00"



Shapes  
Consult mill

### C37000 Diameter/tolerances + -

Diameter	Round	Hexagonal, octagonal
>0.250" - 0.500"	0.002"	0.004"
>0.500" - 1.000"	0.003"	0.005"
>1.000" - 2.000"	0.004"	0.006"
>2.000"	0.20%	0.40%

### C37000 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)
>0.250" - 0.500"	63	28	10
>0.500" - 1.000"	55	26	12
>1.000" - 2.000"	48	24	20
>2.000"	45	20	25



Manufactured in the USA

# ECO FORGE<sup>®</sup>

LEAD FREE FORGING ALLOY

Lower copper, highly forgeable,  
lead-free\* alloy that is  
dezincification and stress  
corrosion cracking resistant

\* This product complies with 0.25% weighted average lead content on wetted surfaces  
in accordance with Safe Drinking Water Act (SDWA) / Federal Public Law No. 111-380.

## Advantages

- Lead free\* 0.09% max
- NSF/ANSI/CAN 61, NSF/ANSI 14, and NSF/ANSI/CAN 372
- Dezincification resistant
- Stress corrosion cracking resistant
- Excellent capacity for being hot forged



# C69850

Application: Forging

Astm: B371

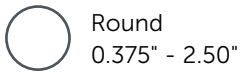
Lengths: 10 To 16 feet

Bundle weights: 1,000 – 4,000 lbs.

## Chemistry composition

Rod Alloy	CU	Si	P	Pb	Fe	Sn	Ni	Mn	Sb	Zn
C69850	67.5-69%	1.53-2.0%	0.04-0.15%	0.09% max	0.10% max	0.20% max	0.10% max	0.10% max	—	Remain.

### C69850 Sizes/shapes



### C69850 Diameter/tolerances +/-

Diameter	Round
>0.150" - 0.500"	0.002"
>0.500" - 1.000"	0.003"
>1.000" - 2.000"	0.004"
>2.000"	0.20%

### C69850 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)
>0.150" - 0.500"	60	40	5
>0.500" - 1.000"	55	35	10
>1.000" - 2.000"	50	30	10



# ECO BRASS®

## HIGH PERFORMANCE SILICON BRASS

Lead-free,\* excellent machinability, forgeability, and high strength equivalent to stainless steel, while eliminating the problems of stress corrosion cracking and dezincification.

\* This product complies with 0.25% weighted average lead content on wetted surfaces in accordance with Safe Drinking Water Act (SDWA) / Federal Public Law No. 111-380.

## Advantages

- No lead, no arsenic, and no bismuth added
- S3874 & AB1953 compliant
- Dezincification resistant
- Stress corrosion cracking resistant
- Meets NSF/ANSI 14 corrosion requirements
- NFS/ANSI/CAN 372 compliant
- Excellent machinability
- Hot forgeability
- Solders and brazes with standard materials
- Wear resistance equal to or better than SAE 660
- Strength comparable to annealed 303 stainless
- 100% recyclable



Don't  
cut  
corners  
on my  
house



# ECO BRONZE®

HIGH PERFORMANCE SILICON BRONZE

Tough bearing material that is environmentally friendly and cost effective. With no added arsenic or bismuth, ECO BRONZE® is a great lead-free\* alternative to C93200.

\* This product complies with 0.25% weighted average lead content on wetted surfaces in accordance with Safe Drinking Water Act (SDWA) / Federal Public Law No. 111-380.

## Advantages

- No lead, no arsenic, and no bismuth added
- S3874 & AB1953 compliant
- Dezincification resistant
- Stress corrosion cracking resistant
- Meets NSF 14/ANSI corrosion requirements
- NSF/ANSI/CAN 372 compliant
- Excellent machinability
- Good castability
- Solders and brazes with standard materials
- Wear resistance equal to or better than SAE 660
- C69300 strength comparable to annealed 303 stainless
- 100% recyclable
- High fluidity



this is  
**TOUGH  
STUFF**

# C69300

Application: Machining-forging  
 Astm: B371  
 Lengths: 10 to 16 feet  
 Bundle weights: 1,000 – 4,000 lbs.

# INGOT C87850

Application: Casting  
 Astm: B30  
 Lengths: 12 inches  
 Ingot weights: 17 lbs / Ingot 2,500 lbs / Pallet

## Chemistry composition

Rod Alloy	CU	Si	P	Pb	Fe	Sn	Ni	Mn	Sb	Zn
C69300	73.0-77.0%	2.7-3.4%	0.04-0.15%	0.09% max	0.10% max	0.20% max	0.10% max	0.10% max	—	Remain.
C87850	75.0-78.0%	2.7-3.4%	0.05-0.20%	0.09% max	0.10% max	0.30% max	0.20% max	0.10% max	0.10% max	Remain.

### C69300 Sizes/shapes



### C69300 Diameter/tolerances +/-

Diameter	Round	Hexagonal, octagonal
>0.150" - 0.500"	0.002"	0.004"
>0.500" - 1.000"	0.003"	0.005"
>1.000" - 2.000"	0.004"	0.006"
>2.000"	0.20%	0.40%

### C69300 Minimum mechanical properties

Diameter (inch)	Tensile (ksi)	Yield (ksi)	Elongation (%)
>0.150" - 0.500"	85	45	5
>0.500" - 1.000"	75	35	10
>1.000" - 2.000"	70	30	10

### C87850 Sizes/shapes

Shape	English	Length
Extruded octagon solid	2.400"	12"-12'

**Available as continuous cast product:**

Extruded rounds solids (sold as C693)	0.375" - 2.500"	105"
Cast round solids and rectangles	0.500" - 12.000"	105"
Cast round hollows	0.500" - 12.000" 4.000" - 36.000"	105" 52" Max

### C87850 Minimum mechanical properties

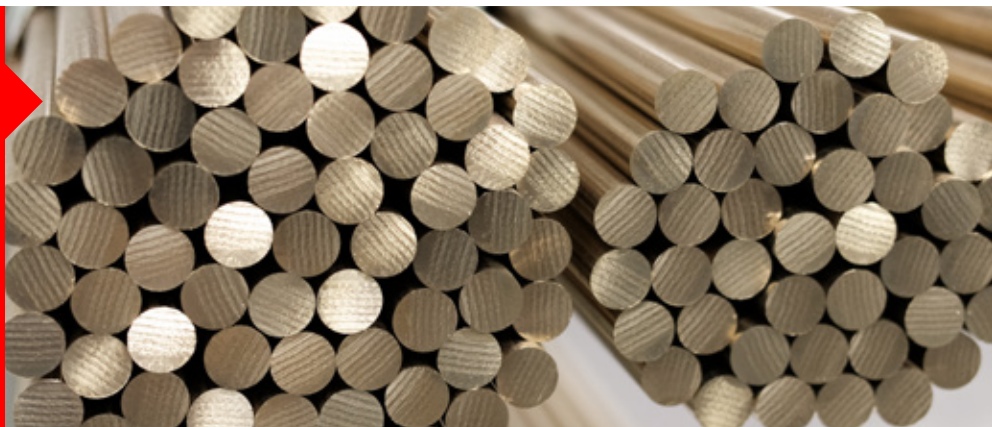
Casting method	Tensile (ksi)	Yield (ksi)	Elongation (%)	ASTM
Sand	59	22	16	B584
Permanent mold	64	32	16	B806
Continuous cast	65	25	8	B505



# Specialty alloy rod

## Specialty alloy (S)

C44300  
C67420  
C69300  
CuZn31Si1  
CuZn35Ni3Mn2AlPb  
CuZn38Mn1Al  
CuZn40Mn2Fe1



## Hollow rod

OD from 0.236" to 11.810" | Wall from 0.120" to 1.181"

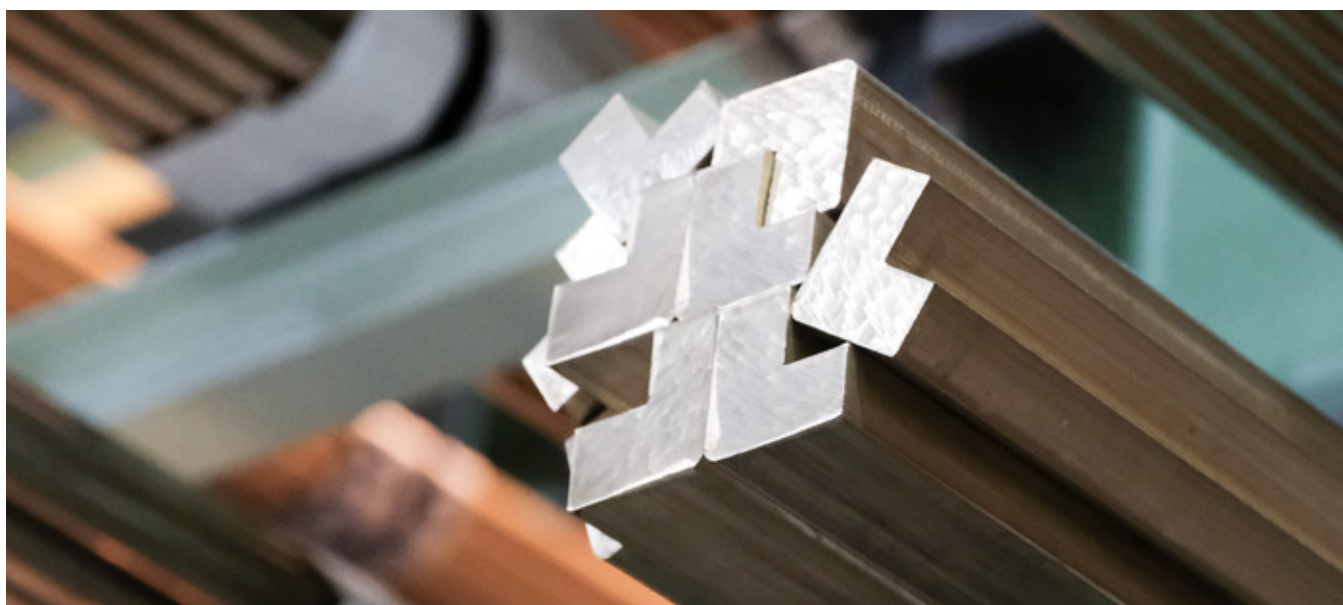


Copper series (K)	Brass series (M)	Machining alloys (Z)	Specialty alloy (S)	Bronze series (B)	Nickel series (N)
C10100	C21000	C33500	C67420	C51000	C75700
C10200	C22000	C34000	C69300	C51900	CuNi18Zn20
C10300	C23000	C35300	CuZn31Si1	C52100	
C11000	C24000	C36000	CuZn35Ni3Mn2AlPb		
C12200	C26000	C37700	CuZn38Mn1Al		
C18150	C27000	C38000	CuZn40Mn2Fe1		
C19400	C27200	C38500			
	C28000				

Specialty products

# Shape rod

Shape size cross sections from: 0.098" to 5.900"



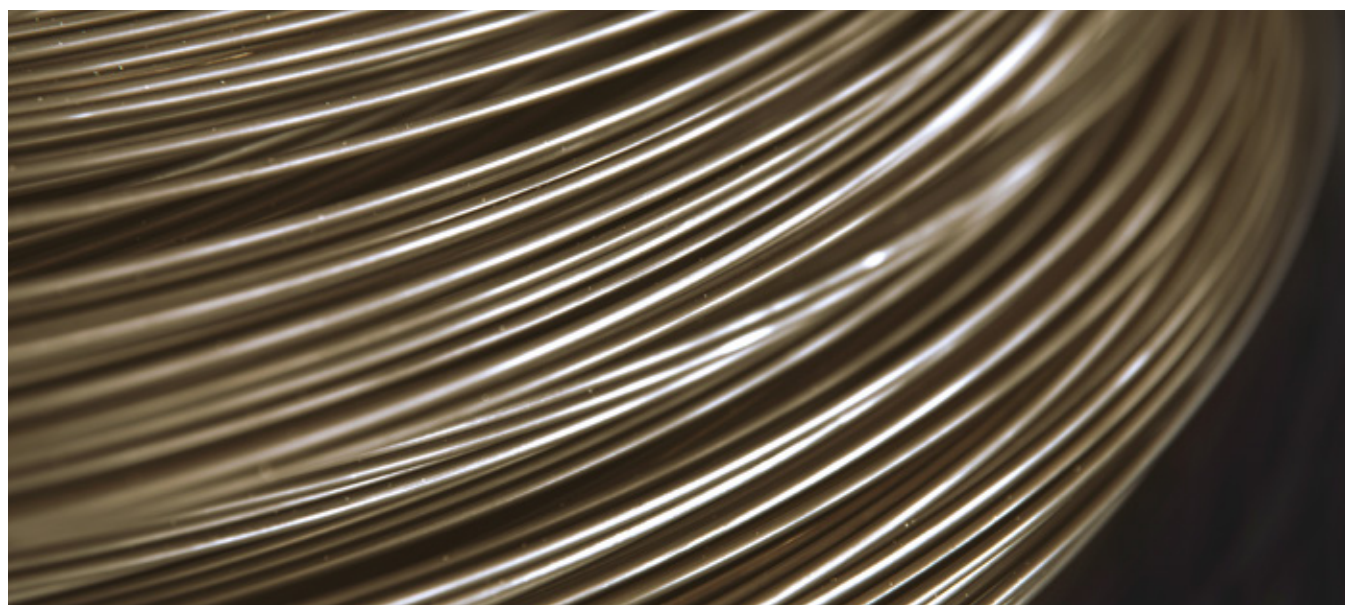
Copper series (K)	Brass series (M)	Machining alloys (Z)	Specialty alloy (S)	Bronze series (B)	Nickel series (N)
C10100	C21000	C33500	C67420	C51000	C75700
C10200	C22000	C34000	C69300	C51900	CuNi18Zn20
C10300	C23000	C34500	CuZn31Si1	C52100	CuNi72n39Pb3Mn2
C11000	C24000	C35300	CuZn35Ni3Mn2AlPb	C54400	CuNi2Zn30Pb1
C12200	C26000	C36000	CuZn40Mn2Fe1		CuNi18Zn19Pb1
C18150	C27000	C37700			
C19400	C27200	C38000			
	C28000	C38500			
	CuZn36As				
	CuZn30As				

Specialty products

# Small diameter rod and coil

Small diameter/wire size:

Round coil: 0.012" & above | Square: 0.079" & above | Round bar: 0.079" & above



Copper series (K)	Brass series (M)	Machining alloys (Z)	Specialty alloy (S)	Bronze series (B)	Nickel series (N)
C10100	C21000	C33500	C67420	C51000	C75700
C10200	C22000	C34000	C69300	C51900	CuNi18Zn20
C10300	C23000	C34500	CuZn31Si1	C52100	CuNi72n39Pb3Mn2
C11000	C24000	C35300	CuZn35Ni3Mn2AlPb	C54400	CuNi2Zn30Pb1
C12200	C26000	C36000	CuZn38Mn1Al		CuNi18Zn19Pb1
C14415	C27000	C37700	CuZn40Mn2Fe1		
C18150	C27200	C38000			
C19400	C28000	C38500			
CuNi3SiMg					
CuAg0.1P					



# EZ-MELT GRANULAR INGOT

START SMALL. MELT QUICKLY. MAXIMIZE PRODUCTIVITY

The smallest, yet most versatile, member of our product line. EZ-Melt provides more surface area in a furnace that results in more efficient melting and reduced BTU consumption than traditional Ingot.



## Advantages

### ENERGY

- Reduces melt time 10% or more
- Reduces BTU consumption
- Liquidus at 1616 °F

### LABOR & PRODUCTIVITY

- Labor saving
- Reduces pinch points vs traditional ingot
- Ideal form for charge automation
- No supplemental phosphorus required

### MATERIAL PERFORMANCE

- High strength
- High fluidity
- Low gassing
- Low dross
- NSF/ANSI/CAN 372 compliant



## C87850 Copper silicon bronze alloy properties

Melting point - liquidus (°F)	1616
Melting point - solidus (°F)	1571
Density (lb/cu in.)	0.3
Electrical conductivity (%IACS at 68°F)	8
Thermal conductivity (Btu/sq ft/ft hr/°F at 68°F)	21.8
Coefficient of thermal expansion (10 <sup>-6</sup> /°F, 68-212°F)	10.3
Coefficient of thermal expansion (10 <sup>-6</sup> /°F, 68-392°F)	10.3
Coefficient of thermal expansion (10 <sup>-6</sup> /°F, 68-572°F)	10.4
Specific heat capacity (Btu/lb/°F at 68°F)	0.09
Annealing temperature range (°F)	1,000-1,200
Hot working temperature range (°F)	1,200-1,400



## Chemistry composition

Rod alloy	CU	Si	P	Pb	Fe	Sn	Ni	Mn	Sb	Zn
C87850	75.0-78.0%	2.7-3.4%	0.05-0.20%	0.09% max	0.10% max	0.30% max	0.20% max	0.10% max	0.10% max	Remain.

The following properties can be expected for castings made using EZ-MELT Granular Ingot

Casting method	Tensile strength (ksi)	Yield strength (ksi)	Elong. %	Brinell hardness 500 lb load
Sand	59	22	16	
Permanent mold	64	32	16	
Continuous cast	65	25	8	103



\* This product complies with 0.25% weighted average lead content on wetted surfaces in accordance with Safe Drinking Water Act (SDWA) / Federal Public Law No. 111-380.

# Brass forgings

WE WANT YOU TO BRING YOUR BRASS  
PARTS BUSINESS BACK TO THE USA.

Wieland Chase provides raw  
forgings and finished products  
made with our high performance  
brass alloys, including our ECO  
BRASS® lead-free\* alloy.



LEADED ALLOY  
C37700

LOW-LEAD ALLOY  
C36300  
C27450

C69300

\* This product complies with 0.25% weighted average lead content on wetted surfaces  
in accordance with Safe Drinking Water Act (SDWA) / Federal Public Law No. 111-380.





# Your domestic solution for brass forgings!



## Maximize machining efficiency

- Near-net-shape forgings
- Up to three cores per part to minimize machining
- Less machining equals longer tool life and shorter cycle times

## High performing parts

- More design freedom
- Enhanced forged microstructures

## Brass parts for a changing world

- Domestic supply chain
- ECO BRASS® low-lead\* alloy forgings for potable water and NSF certified applications
- Leaded brass alloys for air, gas and liquid transport applications

Wieland Chase can provide a list of qualified machining partners if you are sourcing finished parts.

**wieland**

14212 Selwyn Drive | Montpelier, OH 43543 | USA

P 1-800-537-4291 | [wieland-chase.com](http://wieland-chase.com)



**MADE IN  
THE USA**

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