



# ALLOY

## C36000

### Free Cutting Brass

## Data Sheet

### Typical Chemistry & Mechanical Properties

| Alloy Number | Name               | Nominal Chemical Composition                               | Tensile Strength (KSI) | Yield Strength (KSI) | Elongation % | Rockwell B Hardness | Remarks   |
|--------------|--------------------|--|------------------------|----------------------|--------------|---------------------|---|
| UNS C36000   | Free Cutting Brass | Cu: 60.0~63.0%<br>Pb: 2.5~3.0%<br>Fe: 0.35% max<br>Zn: Rem | 56                     | 45                   | 25%          | 72                  | Used for screw machine products in a wide range of applications |

### Straightness Tolerances

|                     |                          |  |
|---------------------|--------------------------|--|
| Round               | All Sizes                | 1/4" in any 10' portion                |
| Hexagonal/Octagonal | Up to 4.000"<br>>4.0000" | 3/8" in any 10' portion<br>As Extruded |
| Square/Rectangle    | All Sizes                | 3/8" in any 10' portion                |

### Drawn Length Tolerances

|                              |           |
|------------------------------|-----------|
| 0.250" to 2.000" (Inclusive) | +/-0.500" |
| 2.000" to 3.000" (Inclusive) | +/-0.500" |
| 3.000" to 4.000" (Inclusive) | +/-0.500" |

#### Notes:

Standard Lengths: 12', 14', 15' & 16'  
All other lengths considered non-standard  
Minimum Length: 9' - 11" (119")

### Shapes and Sizes

|                     |                  |
|---------------------|------------------|
| Round               | 0.250" to 4.000" |
| Hexagonal/Octagonal | 0.250" to 3.500" |
| Square/Rectangle    | 0.375" to 2.000" |

### Diameter Tolerances

|                              | Round       | Hexagonal   |
|------------------------------|-------------|-------------|
| 0.250" to 0.375" (Inclusive) | +/- 0.0015" | +/- 0.0030" |
| 0.375" to 0.500" (Inclusive) | +/- 0.0015" | +/- 0.0030" |
| 0.500" to 1.000" (Inclusive) | +/- 0.0020" | +/- 0.0040" |
| 1.000" to 2.000" (Inclusive) | +/- 0.0025" | +/- 0.0050" |
| 2.000" to 2.500" (Inclusive) | +/- 0.0030" | +/- 0.0060" |
| 2.500" to 3.000" (Inclusive) | +/- 0.0035" | +/- 0.0075" |
| 3.000" to 3.500" (Inclusive) | +/- 0.0045" | +/- 0.0090" |
| 3.500" to 4.000" (Inclusive) | +/- 0.0050" | +/- 0.0100" |



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**Machinability:** Recently amended and revised to reflect a lower maximum lead percentage; C36000 remains the industry standard for general machining and high volume production. The excellent machinability characteristic of C36000 permits full utilization of a screw machine's capabilities.

|                      | Speed<br>(sfpm)  | Feed<br>(ipr) | Back Rake Angle<br>(degrees) | Clearance Angle<br>(degrees) |
|----------------------|------------------|---------------|------------------------------|------------------------------|
| Lathe Turning Tools: | 300~1,000        | 0.002~0.015   | 0~5                          | 6                            |
| Drills (118°):       | 300~1,000        | 0.003~0.020   | 0                            | 12~15                        |
| Milling Cutters:     | 200~500          | 0.015~0.030   | 0~10                         | 10~15                        |
| Form Tools (1/2°):   | 300~1,000        | 0.001~0.003   | 0~5                          | 7~12                         |
| Taps:                | 100~200 (lineal) |               | 2~4                          |                              |

Use maximum speeds & minimum feeds for finish cuts. Light mineral (paraffin) oil or water soluble oil (20/1) should be used as a cutting lubricant & coolant. Sulfurized oils will stain parts & should be avoided.

**Workability:** Alloy C36000 has a poor capacity to be hot worked. It can be moderately cold worked. However, it is recommended that this be followed by stress relieving at 500 degrees for 1.5 hours to reduce the possibility of stress corrosion cracking.

**Spec. Equal.:** ASTM B16  
SAE J463, Alloy C36000  
AMS Alloy 4610

**Applications:** Free Cutting Brass include general machining and high volume production where the alloy's excellent machinability can permit full utilization of the screw machine's capabilities. With the lower maximum lead content, manufacturers are afforded greater latitude in their designs for lead free compliant component and products.

Typical applications include plumbing components and products, fittings, adapters, valve stems, and miscellaneous screw machine parts.

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