

1. Product Overview

C26000 is Cartridge Brass - a single-phase alpha (f.c.c.) copper-zinc alloy containing nominally 70% copper and 30% zinc. The 70/30 Cu/Zn ratio sits in the middle of the alpha-brass field, so the alloy remains a homogeneous single-phase solid solution at all temperatures up to the melting range. This gives C26000 the best balance of cold workability, moderate strength, and attractive golden colour among wrought brasses, and it is the most widely used cartridge brass in the world.

The alloy is named for its original and still-premier use - cartridge cases - because its single-phase structure and excellent ductility allow severe deep drawing into thin-wall, one-piece cases without cracking. Beyond ammunition, C26000 is specified across hardware, electrical connectors, drawn components, decorative trim, musical instruments, fasteners and general fabrication. It machines to a free-cutting Type I chip, solders and brazes readily, and takes a bright polish or plated finish. Its corrosion resistance is good in most rural, urban and industrial atmospheres, but - like all plain brasses - it is susceptible to dezincification in certain waters. It should not be used for potable-water or marine tube service; for inhibited (arsenic-bearing) brass use C44300 or C68700 instead.

C26000 is supplied in the full range of wrought product forms - sheet, strip, plate, rod, bar, wire, tube and custom profiles - in soft (annealed) and cold-worked tempers from quarter-hard to spring. It conforms to ASTM B36 (sheet / plate / strip), B134 (wire), B16 (free-cutting rod variant), B135 (tube), and related EN and JIS specifications, and is traceable by heat lot with EN 10204 mill test certificates.

1.1 Key Features

- Single-phase alpha brass - homogeneous Cu-Zn solid solution, no beta phase.
- Outstanding cold workability - the benchmark grade for deep drawing, spinning and coining.
- Attractive golden colour - widely used for decorative and architectural trim.
- Moderate strength: annealed ~290-340 MPa UTS; cold-worked to spring temper ~520-620 MPa.
- Good soldering, brazing and welding (gas-shielded) behaviour.
- Fair machining (Type I chip); free-cutting C36000 preferred for high-speed turning.
- Good corrosion resistance in most atmospheres; susceptible to dezincification in aggressive waters.
- Full heat-lot traceability with EN 10204 3.1 mill test certificates.

1.2 Typical Applications

Application	Description
Ammunition	Cartridge cases, primer cups, bullet jackets - the original deep-drawn use
Deep-drawn components	Lamp reflectors, flashlight bodies, cups, shells, cans, badges
Electrical & electronic	Connectors, terminals, contacts, lead frames, shielding cans, EMC gaskets
Hardware & fasteners	Rivets, screws, pins, hinges, locks, keys, fittings
Plumbing fittings	Ferrules, flare nuts, compression sleeves, fittings (non-potable/water-side)
Musical instruments	Brass instrument bodies, mouthpieces, valves, keys
Decorative & architectural	Trim, nameplates, emblems, jewelry, handbag frames, watch cases
Stampings	Stamped and coined parts, tags, clips, brackets, terminals
Heat-exchanger fins	Finned tube, radiator cores, air-cooler fins (non-marine service)

1.3 At-a-Glance Specification

Attribute	Value
UNS designation	C26000 (Cartridge Brass, 70/30 Brass)
Also known as	Cartridge Brass 260, 70/30 Brass, Yellow Brass (sheet)
Alloy system	Cu-Zn, single-phase alpha (f.c.c.) solid solution
Cu content	68.5 - 71.5% (nominal 70%)
Zn content	Balance (nominal 30%)
Density	8.47 g/cm ³ (0.306 lb/in ³)
Conductivity	≈ 28% IACS (15.7 MS/m at 20 °C)
Melting range	915 - 955 °C (1 679 - 1 751 °F)
Thermal conductivity	≈ 120 W/(m·K)
Max service temp.	200 °C continuous (pressure); higher for non-pressure
Product forms	Sheet, strip, plate, rod, bar, wire, tube, profiles
Certificates	MTC EN 10204 3.1 / 3.2, SGS, BV, TUV
MOQ	500 kg per specification

Composition and property limits conform to ASTM B36 / B134 / B16 specifications for the C26000 UNS designation. Verify all values against the MTC for each heat lot.

1.4 When to Choose C26000

C26000 is the most versatile of the common brasses. Choose it when the application needs a combination of severe cold formability (deep drawing, spinning), moderate strength, attractive golden colour, and good general corrosion resistance. For ammunition and deep-drawn thin-wall parts, C26000 is essentially the only grade used. For free-cutting high-speed machined parts, C36000 (free-machining brass) machines better but cannot match C26000's formability or corrosion resistance. For marine or potable-water tube service where dezincification is a risk, an inhibited brass (C44300 Admiralty, C68700 Aluminum Brass) or cupronickel (C70600 / C71500) should be used instead. For high-conductivity electrical busbar, pure copper (C11000 / C10200) is required. C26000 is the right answer when you need a workable, golden, moderately strong, moderately conductive alloy at reasonable cost.

2. Chemical Composition & Standards

C26000 is a binary Cu-Zn alloy. The 30% nominal zinc content places it well inside the single-phase alpha field of the Cu-Zn phase diagram, so the microstructure is a homogeneous face-centred-cubic solid solution at all temperatures from room temperature up to the melting range. This single-phase structure is the reason for the alloy's exceptional cold workability - there are no beta-phase (ordered B2) regions that would embrittle the material during cold deformation. Zinc dissolves substitutionally in copper and provides solid-solution strengthening: C26000 is roughly twice as strong as pure copper while retaining most of copper's ductility and corrosion resistance, and its golden colour makes it attractive for decorative applications.

2.1 Chemical Composition (wt%)

Element	Symbol	Content (% mass)	Note
Copper	Cu	68.5 - 71.5	Matrix; nominal 70%
Zinc	Zn	Balance (nominal 30%)	Solid-solution strengthener
Lead	Pb	≤ 0.07	Trace; not a free-machining grade
Iron	Fe	≤ 0.05	Trace impurity
Tin	Sn	□ 0.10	Trace; improves corrosion resistance if present
Nickel	Ni	□ 0.10	Trace; whitening element
Phosphorus	P	□ 0.005	Trace only; not deoxidised
Aluminium	Al	□ 0.05	Trace; would impair hot work if high
Antimony	Sb	□ 0.005	Trace; dezincification promoter
Arsenic	As	□ 0.005	Absent - C26000 is NOT inhibited
Bismuth	Bi	□ 0.002	Trace; embrittling
Other (total)	—	≤ 0.50	Sum of other named elements

Composition limits per ASTM B36 / B134 / B16 for the C26000 UNS designation. Note that C26000 is a plain brass and does NOT contain arsenic or antimony as dezincification inhibitors - for inhibited brass, specify C44300 / C68700. Verify composition on the MTC for each heat lot.

2.2 Applicable Standards by Product Form

Product form	Common standards
Sheet / plate / strip	ASTM B36 (plate / sheet / strip); ASTM B272 (flat products)
Wire	ASTM B134 (general wire); ASTM B135 (wire per specification)
Rod & bar (free-cutting)	ASTM B16 (free-cutting brass rod) - leaded variant
Rod & bar (plain)	ASTM B36 (flat); customer drawing
Tube (seamless / welded)	ASTM B135 (brass tube); B395 (seamless U-bend)
Foil / thin strip	ASTM B36; customer specification
Extruded / drawn profiles	Customer specification; precision shapes
Cast equivalent (ref)	UNS C83600 / C84400 (leaded red brass) - different grade

2.3 Brass Comparison - C26000 vs Common Brass Grades

Property	C26000	C36000	C46400	C68700
Common name	Cartridge Brass	Free-Cutting Brass	Naval Brass	Aluminum Brass
Cu (%)	68.5 - 71.5	60.0 - 63.0	59.0 - 62.0	76.0 - 79.0
Zn (%)	Balance (~30)	Balance (~37)	Balance (~38)	Balance (~20)
Other additions	None	Pb 2.5 - 3.7	Sn 0.5 - 1.0	Al 1.8 - 2.5, As 0.02 - 0.06
Phase	Single alpha	Alpha + Pb dispersoid	Alpha + small beta	Single alpha
Machinability	Fair (30)	Excellent (100)	Good (70)	Fair (30)
Cold formability	Excellent (best)	Poor	Good	Good
Dezincification	Susceptible	Susceptible	Resistant (Sn)	Resistant (As + Al)
Primary use	Cartridge cases, deep-drawn parts	High-speed machined parts	Marine hardware, shafting	Condenser / heat-exchanger tubes

Machinability rating is relative to C36000 = 100 (ASTM / CDA convention). C26000 is the benchmark for cold formability; C36000 is the benchmark for machinability. The two are rarely interchangeable - choose by primary operation.

3. Physical, Thermal & Electrical Properties

C26000 exhibits the physical, thermal and electrical properties of a single-phase alpha brass. Zinc substitution raises strength and resistivity relative to pure copper, and lowers density, melting point, and both electrical and thermal conductivity. The alloy is non-magnetic and retains useful ductility down to cryogenic temperatures. Values below are typical for annealed material at room temperature; cold work slightly increases strength and resistivity and slightly lowers conductivity.

Property	Symbol	Value	Unit
Density	ρ	8.47	g/cm ³
Melting range (solidus - liquidus)	T_m	915 - 955	°C
Specific heat capacity	c_p	0.385	J/(g·K)
Thermal conductivity	λ	120	W/(m·K)
Thermal expansion coeff.	α	20.0	$\times 10^{-6} / K$ (20 – 300 °C)
Electrical conductivity	σ	≈ 28	% IACS
Electrical resistivity	ρ	0.062	$\mu\Omega \cdot m$ (at 20 °C)
Temp. coeff. of resistance	α_r	0.0018	/°C (0 – 100 °C)
Modulus of elasticity	E	110	GPa
Shear modulus	G	41	GPa
Poisson's ratio	ν	0.33	—
Magnetic permeability	μ	≈ 1.0	essentially non-magnetic
Max continuous service temp.	—	200	°C (pressure); higher for non-pressure

Sources: ASTM B36 / B134 / B16 property data; CDA alloy data sheet for C26000 (Cartridge Brass). Values are typical for annealed material at 20 °C unless noted. Conductivity and resistivity vary slightly with temper and grain size.

4. Mechanical Properties by Temper

C26000 mechanical properties depend primarily on the degree of cold work, since the single-phase composition offers no precipitation or phase-transformation hardening. The annealed (soft) temper gives maximum ductility - the defining property for cartridge-case drawing and deep-drawn components - while cold-worked tempers deliver higher strength, stiffness and spring properties for hardware, fasteners and electrical connectors. Because the alpha phase is homogeneous, C26000 work-hardens smoothly and predictably, and can be restored to full softness by a simple anneal. Typical values at room temperature are shown below.

Temper	Tensile (typ.)	Yield 0.2% (typ.)	Elong. (min.)	Hardness (typ.)
Annealed (O61 / OS050)	290 - 340 MPa	80 - 120 MPa	≥ 55%	55 - 65 HRF
Cold-worked 1/4 hard (H01)	350 - 410 MPa	210 - 270 MPa	≥ 35%	55 - 65 HRB
Cold-worked 1/2 hard (H02)	410 - 470 MPa	270 - 340 MPa	≥ 23%	65 - 75 HRB
Cold-worked 3/4 hard (H03)	460 - 520 MPa	340 - 410 MPa	≥ 15%	75 - 82 HRB
Cold-worked full hard (H04)	≥ 480 MPa	≥ 410 MPa	≥ 10%	82 - 88 HRB
Spring (H06 / H08)	≥ 520 MPa	≥ 470 MPa	≥ 5%	≥ 90 HRB

Hardness shown in Rockwell F (soft) and Rockwell B (hard) scales. Values are indicative; verify against ASTM B36 / B134 specification limits and the MTC for each lot. Annealed grain size per ASTM B36 (typically 0.015 - 0.070 mm for OS050 deep-drawing temper).

5. Product Forms & Size Range

C26000 is supplied across the full range of wrought product forms. Sheet, strip and wire are the highest-volume forms, driven by deep-drawing, stamping and connector manufacturing; rod and bar are supplied in both plain (C26000) and free-cutting (lead) variants for machined hardware. Tube is available seamless or welded for fittings, decorative railings and heat-exchanger service.

Because cartridge brass is most often specified for severe cold forming, grain size control is the single most important quality parameter: fine, uniform annealed grain (typically 0.015 - 0.070 mm for ASTM OS050) is essential for cracking-free deep drawing, while coarser grain raises the forming limit but increases orange-peel tendency. Surface finish, edge condition (for strip), and temper uniformity are controlled throughout production. Mill-annealed, cold-rolled, and precision-finished surfaces are offered per the applicable ASTM specification and customer requirements.

5.1 Standard Size Range by Product Form

Form	Typical size range	Notes
Sheet / plate	Thick. 0.3 - 50 mm; width ≤ 1 000 mm	ASTM B36; deep-drawing, stamping, decorative
Strip / foil	Thick. 0.05 - 3 mm; width ≤ 600 mm	ASTM B36; connector, terminal, EMC gasket stock
Round rod / bar	Dia. 3 - 100 mm; length 1 - 6 m	ASTM B16 (lead) or B36 (plain); machined parts
Square / hex bar	5 - 60 mm across flats	For hardware, fittings, decorative sections
Wire	Dia. 0.2 - 8 mm	ASTM B134; spring, rivet, cold-heading stock
Tube (seamless)	OD 3 - 80 mm; wall 0.5 - 4 mm	ASTM B135; fittings, decorative, heat-exchanger
Tube (welded)	OD 6 - 60 mm; wall 0.5 - 3 mm	Decorative railings, handrails, furniture
Custom profiles	Per customer drawing	Extruded or drawn shapes; precision tolerances

5.2 Surface Finish & Special Processing

- Sheet / strip: mill-annealed, cold-rolled, precision-rolled or mirror-polish finish.
- Rod / bar: cold-drawn, centreless-ground or polished; plain or free-cutting (lead) variant.
- Wire: hard, medium-hard or annealed; bare, tinned or plated on request.
- Tube: bright-annealed inside and out; plain, polished or plated for decorative use.
- Edge condition for strip: round, square or deburred; rolled-edge for deep-drawing stock.
- Grain size controlled and reported per ASTM B36 for deep-drawing tempers (OS050 / OS025).
- Surface free from laminations, cracks and inclusions per ASTM acceptance criteria.
- Custom cutting, blanking, slitting and drawn profiles to customer drawing.

5.3 Packaging

- Sheet / plate: palletised with interleave paper, edge protectors and moisture barrier.
- Strip / foil: coil on cores, moisture-barrier wrapped, desiccant included.
- Rod / bar: bundled in wooden cases with separator strips and end protection.
- Wire: coils or spools, individually bagged, desiccant included.
- Tube: bundled or boxed, capped ends, desiccant for bright-annealed stock.
- Each bundle tagged with heat number, size, temper, grain size and quantity.
- Export seaworthy packing with moisture barrier and desiccant.

6. Tolerances, Finish & Quality Control

C26000 products are produced and inspected to the applicable ASTM specification (B36, B134, B16, B135). Because the alloy is most often used in deep-drawing and stamping applications, dimensional accuracy, surface integrity, grain-size control, and temper uniformity are controlled on every lot. Grain-size testing applies to annealed deep-drawing tempers; tensile, elongation and hardness testing applies to every lot; hydrostatic or pneumatic testing applies to tube; and bend / formability testing applies to strip and deep-drawing stock.

6.1 Dimensional Tolerances (typical)

Parameter	Typical tolerance
Sheet / plate thickness	± 0.03 - 0.40 mm (per thickness range, ASTM B36)
Strip thickness	± 0.005 - 0.05 mm (precision strip tighter)
Strip width	± 0.10 - 0.50 mm
Rod diameter (cold-drawn)	h8 - h9 (e.g. ± 0.02 - 0.07 mm)
Wire diameter	± 0.005 - 0.04 mm (per AWG / metric class)
Tube OD / wall	Per ASTM B135 class; OD ± 0.05 - 0.13 mm
Straightness (bar)	≤ 1.5 mm in any 1 m length
Flatness (sheet / plate)	Per ASTM B36 class; tighter for deep-drawing stock

6.2 Surface Finish & Cleanliness

- Smooth, bright surface per ASTM acceptance standard; no laminations, cracks or inclusions.
- Deep-drawing strip supplied with controlled surface roughness and edge condition.
- Surfaces cleaned of residual rolling lubricant for plating and joining service.
- Annealed grain size controlled and reported for OS050 / OS025 deep-drawing tempers.
- Rod / bar edges and ends deburred; cold-drawn surfaces bright and uniform.
- Tube bright-annealed inside and out for decorative and fitting service.

6.3 Quality Control Test List

Test	Standard / method	Frequency
Chemical analysis (full)	ASTM E478 / E536 (Cu, Zn, Pb, Fe, Sn, all)	Each heat
Tensile / elongation	ASTM E8 / E8M	Each lot
Hardness (HRF / HRF / HV)	ASTM E18 / E92	Each lot
Grain size (annealed)	ASTM E112 (intercept method)	Each lot (O61 / OS050)
Dimensional inspection	Calipers / micrometers / laser	Each piece / sample
Bend / formability test	ASTM E290 / customer method (reverse-bend, cup draw)	Each lot (strip / deep-drawing)
Cup / Erichsen draw test	Customer method; deep-drawing qualification	Per specification
Hydrostatic / pneumatic test	ASTM B135 (tube)	Each tube
Surface / visual inspection	ASTM acceptance criteria; eddy-current (tube)	Each piece
Microstructure (alpha-only)	ASTM E3 / E407; confirm no beta phase	Per specification

Grain-size testing is mandatory for annealed deep-drawing tempers (OS050 / OS025) because grain size is the primary control on cracking-free draw depth. Bend and cup-draw tests qualify strip for severe deep-drawing service. For tube, hydrostatic or pneumatic testing is mandatory per ASTM B135. Verify all values against the MTC.

7. Fabrication, Welding & Service Considerations

C26000 is the benchmark for cold workability among brasses. Its single-phase alpha structure allows severe deep drawing, spinning, coining and cold heading without the cracking that limits two-phase (alpha + beta) brasses. It solders and brazes readily and can be gas-shield welded. Machining is fair - the alloy produces a Type I (continuous) chip - so for high-speed turning, free-machining C36000 (lead brass) is preferred. The guidance below covers the fabrication and service practices that exploit C26000's advantages and avoid its known limitations, particularly dezincification.

7.1 Forming & Joining

- Cold formability: excellent - the best of all brasses for deep drawing, spinning, coining and cold heading.
- Annealed (OS050) temper gives maximum ductility for cartridge-case and deep-drawn thin-wall parts.
- Cold-worked tempers (H02 - H04) give stiffness and spring properties for hardware and connectors.
- Annealing: 425 - 750 °C (800 - 1400 °F), air or water quench; restores full softness after cold work.
- Soldering: excellent; surfaces tin readily with tin-lead and lead-free solders after proper fluxing.
- Brazing: good with silver (BAG) and low-temperature copper-phosphorus (BCuP) alloys.
- Welding: gas-shield (GTAW / TIG, GMAW / MIG) acceptable; oxy-acetylene and resistance welding good.
- Machining: fair (Type I continuous chip, ~30% machinability rating); use free-cutting C36000 for high-speed turning.
- Polishing / plating: takes a bright polish and accepts nickel, chrome, tin and decorative plating readily.

7.2 Service Limits & Design Notes

C26000 can operate continuously up to about 200 °C for pressure-containing and structural code applications; for non-pressure decorative and electrical service, higher temperatures are acceptable for short periods. Softening of cold-worked tempers begins near 250 °C, so spring-temper parts should not see sustained service above this level without re-annealing consideration. Galvanically, C26000 is compatible with other copper alloys and with steel; it should be insulated from aluminium and from passive stainless steel in conductive media to avoid galvanic attack. The principal service limitation is dezincification - selective loss of zinc - in acidic, high-chloride or stagnant-water environments. For potable-water or marine tube service, specify an inhibited brass (C44300, C68700) or cupronickel (C70600 / C71500) instead. C26000 should also be avoided in ammonia-bearing or ammonia-producing environments, where plain brasses can suffer season cracking (stress-corrosion cracking); relieve internal stress by stress-relief anneal (250 - 300 °C) for parts carrying residual cold work in ammonia service.

7.3 Design Practices

- Specify annealed (OS050) fine-grain temper for severe deep drawing; coarser grain raises draw depth but increases orange-peel tendency.
- For cartridge-case and deep-drawn thin-wall parts, C26000 is essentially the only grade - do not substitute.
- For high-speed machined hardware, switch to free-cutting C36000 (lead brass) and accept lower formability and corrosion resistance.
- For potable-water or marine tube service, use inhibited brass (C44300, C68700) or cupronickel (C70600, C71500) - never plain C26000.
- For ammonia-bearing service, stress-relief anneal (250 - 300 °C) all cold-worked C26000 parts to prevent season cracking.
- For decorative plated finish, C26000 takes polish, nickel, chrome and tin plating readily; specify surface roughness per plating spec.
- Control annealed grain size (0.015 - 0.070 mm) and report on the MTC for deep-drawing qualification.
- For springs and clips, use H02 - H04 temper; for formed busbar / stiff parts, H01 - H02.
- For EMC / RF shielding cans and gaskets, C26000 strip offers good formability and moderate conductivity (≈ 28% IACS).

8. About Gnee Metal

Gnee Metal is a supplier of copper and copper-alloy products for export markets. Our ISO 9001 / 14001 / 45001 certified plants serve customers in North America, Europe, the Middle East and Southeast Asia with C26000 cartridge brass sheet, strip, plate, rod, bar, wire, tube and custom profiles for deep-drawing, ammunition, hardware, electrical, decorative and general fabrication applications.

We provide project-specific mill test certificates (EN 10204 3.1 / 3.2) with certified composition, grain-size and mechanical data, third-party inspection by SGS / BV / TÜV, and value-added services including custom cutting, slitting, blanking, drawn profiles, precision grain-size control for deep-drawing stock, and technical consultation to help you select the correct grade, temper and grain size for your application. Contact us for a quote or for assistance.

Item	Detail
Website	chinacopperalloys.com
Email	sales@gneemetal.com
Certificates	ISO 9001 / ISO 14001 / ISO 45001
Third-party	SGS, Bureau Veritas, TÜV