

HONGTAI COPPER

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TP2 & C12200 Copper Tube Material Guide

Composition, grade equivalents, applications and buyer checks

For HVAC, refrigeration, water, medical gas

and heat-transfer copper tube procurement

Text-selectable PDF with product links

Quick Answer: What Is TP2 Copper?

TP2 copper is a phosphorus-deoxidized copper grade used extensively for copper tube. The controlled phosphorus content improves resistance to hydrogen embrittlement and supports reliable brazing, welding, drawing and forming. These characteristics make TP2 particularly suitable for HVAC, refrigeration, heat exchange, water supply and medical gas piping.

Hongtai material statement

Hongtai states that its main purple copper tube is manufactured in grade TP2, with copper content of at least 99.95% and phosphorus content of 0.015-0.040%. Final contractual values should always be confirmed by the applicable product standard and the mill test certificate (MTC).

Why buyers search for TP2

- Material identification: to confirm whether a tube is phosphorus-deoxidized copper.
- Cross-standard purchasing: to compare TP2 with C12200, C1220/C1220T, Cu-DHP and CW024A.
- Process suitability: to check brazing, welding, forming and heat-transfer performance.
- Application fit: to select copper pipe for refrigerant, water, gas or medical systems.

TP2 copper is not simply a generic name for every red copper tube. The grade, temper, dimensions, cleanliness, pressure test and governing standard must be considered together.

Common search terms answered in this guide

Search intent	Covered term
Definition	tp2, tp2 copper, what is tp2
UNS grade	c12200, c12200 copper, copper c12200
Chemistry	c12200 composition, c12200 chemical composition
Tube purchasing	c12200 copper pipe
Grade comparison	t2 copper material, t2 tube

Grade Designations and Cross-Standard References

TP2 and C12200 are commonly cross-referenced within the phosphorus-deoxidized high-residual-phosphorus copper family. However, the designation alone does not replace the product standard. A buyer should confirm the exact standard, product form, temper and required tests.

Designation	System	Practical purchasing note
TP2	China / GB	Common Chinese designation for phosphorus-deoxidized copper tube.
C12200	UNS / ASTM	DHP copper widely specified for seamless water, HVAC and refrigeration tube.
C1220 / C1220T	JIS	C1220 is the material designation; the T suffix is commonly used for tube product designation.
Cu-DHP / CW024A	EN	European phosphorus-deoxidized high-residual-phosphorus copper designation.
SF-Cu	Legacy DIN	Older German designation still used in some drawings and procurement documents.

Important equivalence note

These grades are commonly treated as comparable material families, but chemical limits, dimensional tolerances, mechanical properties and testing rules can vary by standard and product form. Do not approve a substitution using the grade name alone.

Recommended wording for technical documents

Material: TP2 phosphorus-deoxidized copper, commonly cross-referenced to UNS C12200 / JIS C1220 / EN Cu-DHP, subject to the specified tube standard and MTC.

This wording is stronger than listing a chain of “equivalent” grades without qualification because it preserves the buyer’s requirement for standard-specific compliance.

C12200 Composition and Chemical Control

C12200 copper is classified by the Copper Development Association as phosphorus-deoxidized, high-residual-phosphorus (DHP) wrought copper. Its chemistry is designed to retain enough phosphorus after deoxidation to improve process reliability in brazed and welded tube systems.

Typical C12200 chemical composition reference

Element	Reference limit	Why it matters
Copper, including silver	Minimum 99.90%	Provides the base thermal conductivity, corrosion resistance and workability.
Phosphorus	0.015-0.040%	Supports deoxidation and hydrogen-embrittlement resistance; excessive phosphorus lowers conductivity.
Other elements	Controlled by the applicable standard	Impurities may affect forming, brazing, corrosion behavior and product acceptance.

Hongtai published value

For its main TP2 copper tube, Hongtai publishes copper content of at least 99.95% and phosphorus content of 0.015-0.040%. The purchase order should state the governing standard because the reporting format and acceptance criteria may differ.

How to verify C12200 chemical composition

- Request an MTC or material certificate that identifies the heat or batch number.
- Confirm that the certificate states the requested grade and product standard, not only “pure copper.”
- Review copper and phosphorus values, along with any impurity limits required by the selected standard.
- For critical projects, specify third-party inspection or positive material identification when technically applicable.

A keyword-rich page or PDF should never replace verifiable material documentation. Technical trust is a ranking and conversion asset only when the published information matches the actual product.

Why C12200 Copper Pipe Is Used in Tube Systems

A C12200 copper pipe or TP2 copper tube is selected when the project needs a practical balance of heat transfer, corrosion resistance, formability and joining performance. Residual phosphorus generally makes this material more suitable for brazed and welded tube systems than high-conductivity tough-pitch copper.

Performance need	How TP2 / C12200 supports it	Typical use
Reliable brazing and welding	Phosphorus-deoxidized chemistry reduces hydrogen-embrittlement risk during heating and joining.	HVAC line sets, refrigeration circuits, fittings and fabricated assemblies
Tube drawing and forming	Good cold-workability supports coils, straight lengths, bends, flares and capillary dimensions.	LWC coil, pancake coil, straight tube, capillary tube
Heat transfer	Copper provides effective thermal transfer for evaporators, condensers and heat exchangers.	Air conditioners, refrigerators, radiators and heat exchangers
Corrosion resistance	Appropriate material and cleanliness support long service in many water, gas and refrigerant environments.	Water supply, medical gas and industrial piping
Standardized procurement	Common international designations help buyers align drawings, specifications and MTC review.	OEM production and international projects

The final performance also depends on wall thickness, temper, internal cleanliness, residual stress, tube geometry, installation quality and operating environment.

Selection reminder

Use a product-specific standard. For example, refrigeration tube, water tube and general-purpose seamless tube may all use C12200-family copper, but they do not share the same dimensional, cleanliness or testing requirements.

Hongtai TP2 / C12200 Copper Tube Product Coverage

Hongtai manufactures copper tube for refrigeration, HVAC, water, heating, medical and industrial applications. The links below help buyers move from material research to the appropriate product form.

Product form	Primary buyer need	Hongtai product link
Copper tube range	Overview of tube types, standards and customization	View copper tube range
Refrigeration copper tube	C12200 (TP2), hard/soft, HVAC and radiator applications	View refrigeration application
LWC copper coil	High-volume coil supply for HVAC, heat exchange and OEM production	View LWC copper coil
Copper tube coil	Flexible coiled tube for refrigerant transmission and installation	View copper tube coil
Pancake copper coil	Installation coils for air-conditioning and refrigeration systems	View pancake coil
Copper straight tube	Straight lengths for medical gas, water, HVAC and fabrication	View straight tube
Capillary copper tube	Precision small-diameter refrigerant control and transfer	View capillary tube
Medical copper tube	Clean tube systems for medical gas and healthcare projects	View medical application

For project quotations, provide the grade, standard, temper, outside diameter, wall thickness, length or coil weight, cleanliness requirement, test requirement, packaging and annual demand.

TP2 vs T2 Copper Material: Do Not Confuse the Grades

Buyers frequently compare TP2 copper with T2 copper material, but the two terms should not be used as synonyms. TP2 is phosphorus-deoxidized copper. T2 is generally associated with a high-conductivity tough-pitch copper family in Chinese material practice.

Comparison point	TP2 / C12200 family	T2 / high-conductivity tough-pitch family
Material concept	Phosphorus-deoxidized copper with controlled residual phosphorus	High-conductivity tough-pitch copper with a different oxygen/phosphorus condition
Joining behavior	Well suited to brazed and welded tube systems; improved resistance to hydrogen embrittlement	High conductivity, but heating in reducing atmospheres requires greater attention to hydrogen embrittlement
Electrical conductivity	Lower than tough-pitch high-conductivity copper because of residual phosphorus	Typically selected where electrical conductivity is the dominant requirement
Typical tube choice	HVAC, refrigeration, water, heat exchange, medical gas and brazed assemblies	Electrical or conductive applications when the actual grade and process route are confirmed
Can one replace the other?	Not automatically	Not automatically

About the keyword “t2 tube”

A buyer searching for a T2 tube may require high-conductivity copper rather than TP2. Hongtai should use this term in an educational comparison section unless the company confirms that the specific product is available in T2 and can provide matching MTC data.

Recommended sales response

“Please send the required material standard, conductivity target, dimensions and application. We will confirm whether TP2/C12200 or another copper grade is the correct manufacturing option.”

Standards, Tempers and Quality Checks

The material grade answers only one part of a copper tube specification. Buyers should also define the product standard and delivery condition. Hongtai publishes support for multiple standards across its range, including ASTM B280, ASTM B68, ASTM B75, ASTM B88, JIS H3300, EN 12735 and relevant GB standards.

Check	What to specify or verify
Product standard	Select the standard that matches refrigeration, water, medical gas or general-purpose tube.
Temper	Soft, half-hard or hard, according to forming, installation and pressure requirements.
Dimensions	Outside diameter, wall thickness, tolerance, length, coil weight and end preparation.
Internal condition	Cleanliness, dryness, nitrogen charging or capped ends when required.
Testing	Eddy-current testing, pressure testing, dimensional inspection and surface inspection as applicable.
Compliance documents	MTC, third-party report, REACH/RoHS documents or project-specific certificates.
Packaging	Coil protection, sealed ends, pallets, wooden cases, labels and OEM packaging.

Buyer RFQ checklist

- Material: TP2 / C12200 / C1220 / Cu-DHP, or the exact drawing designation.
- Standard: ASTM, EN, JIS, GB or another project specification.
- Size: outside diameter x wall thickness x length, or coil specification.
- Temper: soft, half-hard or hard.
- Application: refrigerant, water, medical gas, heating, heat exchanger or electrical use.
- Quantity: trial order, container quantity or annual demand.

Frequently Asked Questions

What is TP2?

TP2 is a phosphorus-deoxidized copper grade commonly used for copper tube. It combines good forming and joining performance with resistance to hydrogen embrittlement, making it suitable for many HVAC, refrigeration, water and medical gas systems.

Is TP2 the same as C12200 copper?

TP2 and C12200 are commonly cross-referenced in the same DHP copper material family. They should still be ordered under a specific product standard because dimensional, mechanical and testing requirements can differ.

What is the typical C12200 composition?

A common reference for C12200 chemical composition is copper, including silver, at a minimum of 99.90%, with phosphorus from 0.015% to 0.040%. Hongtai publishes at least 99.95% copper and 0.015-0.040% phosphorus for its main TP2 tube. Verify final values on the MTC.

Why is C12200 copper pipe used in HVAC and refrigeration?

It provides a practical combination of heat transfer, corrosion resistance, tube formability and dependable brazing behavior. The selected tube must also meet the correct refrigeration standard and cleanliness requirement.

Is a T2 tube the same as a TP2 tube?

No. T2 and TP2 have different material concepts and should not be interchanged only because the names look similar. Confirm the grade, chemistry, conductivity target and application before substitution.

Which documents should be requested with TP2 or C12200 copper tube?

Request an MTC identifying the grade, standard, heat or batch number and chemical results. Add dimensional reports, eddy-current testing, cleanliness reports or third-party inspection when required by the project.

Technical disclaimer

This guide provides general material and procurement information. Product acceptance must be based on the applicable standard, purchase specification, approved drawing and Hongtai material certificate.

Contact and Reference Notes

Request a TP2 / C12200 Copper Tube Recommendation

Send your grade, standard, dimensions, temper, application and annual demand. Hongtai will recommend the appropriate copper tube form and documentation package.

[Contact Hongtai Copper](#) | sales@hongtai-copper.com | +86-15763973033

Reference notes

This original guide was prepared from Hongtai public product information, commonly used international grade references and the Copper Development Association alloy database. It was structured to answer material-search intent while directing buyers to Hongtai product pages.

Reference area	Public source
Hongtai grade and product statements	Hongtai copper tube category and linked product/application pages
C12200 alloy classification and composition	Copper Development Association - C12200
High-conductivity tough-pitch comparison	Copper Development Association - C11000
Final product compliance	Applicable ASTM, EN, JIS or GB standard plus Hongtai MTC

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