

## Technical Specification

### EN 13348 Degreased Medical Copper Tube and Fittings

#### Product Description

CPX degreased copper tube and fittings are manufactured in the UK under BS EN 13485 Medical Devices: Quality Management Systems. CPX copper tube is the only British manufactured tube that is CE marked as a Medical Device 93/42/EEC under CE0086.

CPX degreased copper tube is manufactured from phosphorous deoxidised (non-arsenical) copper alloy CW024A. The chemical composition being CU.DHP to ISO 1190-1/CW024A to EN1412.

The raw material is a combination of cathode (electrolytically pure to 99.9%) and proportion of controlled reworked material.

The mechanical properties of CPX degreased copper tube is in accordance with BS EN 13348:2008:

- R250 (half hard) for sizes up to 54mm in diameter
- R290 (hard) for sizes 67mm + in diameter

#### Manufacturing Process

The copper is cast into billets and heated to 900°C in a gas furnace and loaded onto a 4,000 tonne press. An 80m long hollow shell is extruded under water as the basis for the drawing processes which follow. The shell proceeds through the plant in automated basket handling system and follows a carefully controlled sequence of reduction processes through to the final dimensions and temper. It is then straightened and finally eddy-current tested, marked, cut to length and bundled.



**CPX Degreased Medical Gas Copper Tube Size Range:**

Part no.	Diameter (mm)	Thickness Table X (mm)	Weight (kg/m)	Max working pressure (bar)	Length (m)	Temper	Tubes per bundle	Estimated MTR per wooden crate
10CP	10	0,6	0.16	77	6.0	250	10	4000
12CP	12	0,6	0.19	63	5.8	250	10	2900
15CP	15	0,7	0.28	58	5.8	250	10	2900
18CP	18	1	0.48	60	5.0	290	5	2000
22CP	22	0,9	0.53	51	5.8	250	5	1682
28CP	28	0,9	0.69	40	5.8	250	1	1160
35CP	35	1,2	1.14	42	5.8	250	1	539
42CP	42	1,2	1.38	35	5.8	250	1	522
54CP	54	1,2	1.78	27	5.8	250	1	348
67CP	64	1.2	2.22	26	5.8	290	1	220
76CP	76	1,5	3.14	29	5.8	290	1	174
108CP	108	1,5	4.49	16	5.8	290	1	81

Part no.	Diameter (mm)	Thickness Table Y (mm)	Weight (kg/m)	Max working pressure (bar)	Length (m)	Temper	Tubes per bundle	Estimated MTR per wooden crate
10CP	10	0,8	0.21	77	6.0	250	10	4000
10CP*	10	1	0.27	85	5.8	250	10	4000
12CP	12	0,8	0.25	67	5.8	250	10	2900
12CP*	12	1	0.31	70	5.8	250	10	2900
15CP	15	1	0.39	67	5.8	250	10	2900
18CP	18	1	0.56	63	5.8	290	5	2000
22CP	22	1,2	0.70	57	5.8	250	5	1682
28CP	28	1,2	0.90	42	5.8	250	1	1160
35CP	35	1,5	1.41	41	5.8	250	1	539
42CP	42	1,5	1.71	34	5.8	250	1	522
54CP	54	2	2.92	36	5.8	250	1	348
67CP	67	2	3.65	28	5.8	290	1	220
76CP	76	2	4.16	25	5.8	290	1	174
108CP	108	2,5	7.41	22	5.8	290	1	81

\*Note: 10CP\* and 12CP\* are not part of the BS2871 Table Y range. All sizes in the above table are compliant with BS EN 13348.



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## Specialists in HTM02-01 Medical Gas Pipeline Equipment

CPX degreased medical gas copper fittings are manufactured from the same grade of copper as CPX copper tube and are end feed type in accordance with the requirements of BS EN 1254.

CPX degreased medical gas copper fittings are available in the following variations:

- 90° Elbow
- Equal Tee
- Straight Coupling
- Reducing Tees
- Reducing Couplings
- Fitting Reducers
- 45° Elbow
- End Caps
- Street Elbows

The above variations come in the following sizes: 12mm to 108mm

### Definition of Intended Use

CPX degreased copper tube is intended to be used in Medical Gas Pipeline Systems (MGPS) installations and incorporates the specialist requirement of the MGPS industry to include cleanliness, packaging and usability required to attain the levels of quality as stated particularly in HTM 02-01.

It is intended for jointing degreased medical copper fittings and other medical gas equipment compliant to BS EN 13348, BS EN 1057, BS 2871 Part 1 Table X, EN 7396, HTM 2022 and HTM 02-01.

CPX degreased copper tube is suitable for use with the following medical gases:

- Oxygen
- Nitrous Oxide
- 50% Oxygen/50% Nitrous Oxide mixture
- Medical Air (for breathing)
- Surgical Air (for tools)
- Medical Vacuum



## Specialists in HTM02-01 Medical Gas Pipeline Equipment

CPX degreased medical gas copper fittings are intended for jointing degreased medical gas copper tube pipelines compliant to BS EN 13348, BS EN 1057 and BS 2871 Part 1 Table X as quoted in HTM 02-01 and C11.

### Quality

CPX degreased copper tube and fittings are manufactured in the UK under BS EN 13485 Medical Devices: Quality Management Systems. All tube is manufactured under strict quality control procedures to ISO 9001:2008.

### CE Marking

CPX degreased copper tube and fittings are CE marked as a Class IIa Medical Device 93/42/EEC with notified body British Standards Institute and stamped CE 0086.

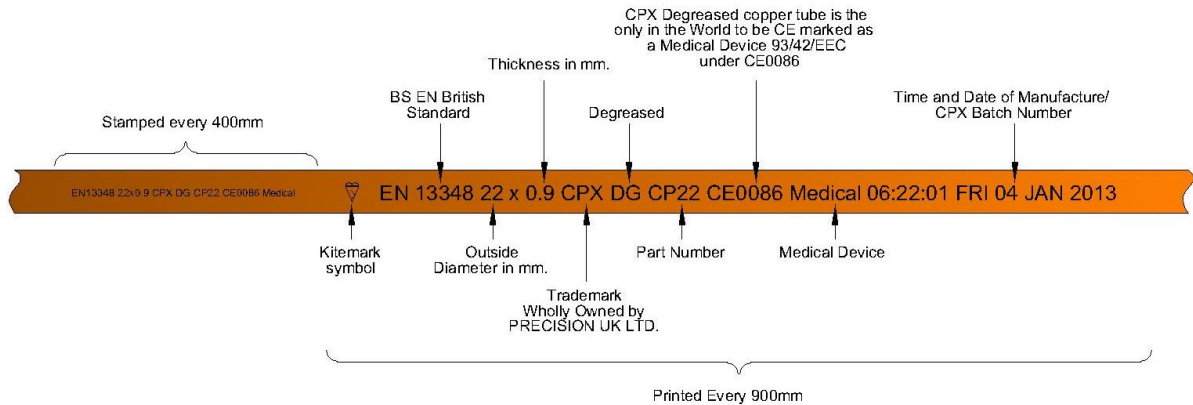
### Engraving/Ink Marking

All copper tube from sizes 12mm through to 108mm are engraved/permanently ink marked with the following information:

- The harmonised standard number EN 13348
- Nominal dimensions = Diameter x wall thickness mm
- Manufacturer details = CPX PRECISION UK
- DG = Degreased for Oxygen
- CP22 = Part No. example Copper Pipe 22mm
- CE mark (CE0086)
- Medical = Medical Device Directive to 93/42/EEC
- Time and Date of Production = Batch Number



### Sample ink marking:



This information is repeated at 900mm intervals along its length.

### Sample stamping:

EN 13348 22x0.9 CPX DG CP22 CE0086 Medical

This information is repeated at 400mm intervals along its length.

All **CPX degreased copper fittings** from sizes to 12mm through to 108mm are engraved with the following information:

- The harmonised standard number **EN 1254**
- **Size** in mm = 12
- Manufacturer details = **CPX**

Each fitting is individually bagged in clear protective polythene bags and sealed to maintain cleanliness. Each bag is labelled with the degreased specification and production batch number.

### Sample Labelling on Packaging:

#### DEGREASED MEDICAL GAS COPPER FITTINGS

<Standards Comply to> **EN 1254, HTM 02-01/2022, C11, ASTM B280, CE0086**

<Product Code> 12SC



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All boxes include logical and concise labelling identification.

### Product Cleanliness

CPX degreased copper tube is cleaned and degreased for oxygen service and free from all particulate matter and toxic residues in accordance with BS EN 13348:2001 and has a maximum carbon level of 0.2mg/dm<sup>2</sup>.

Each pipe is individually end capped and bundled in sealed polythene bags to maintain cleanliness.

CPX degreased medical gas copper fittings have a guaranteed cleanliness below 0.01 mg/cm<sup>2</sup> of hydrocarbons on the degreased surface of the fittings.

Each fitting is individually sealed in a clear polythene bag to protect against external contamination such as water and maintain cleanliness.

### Installation Guidelines

CPX degreased copper tube is rigid and can be installed vertically or horizontally without sagging or distortion and the minimum use of pipe support clips. Pipeline systems should be supported at intervals as specified in HTM 2022/02-01 using a suitable metallic, non-ferrous material for example Brass Munsen Ring suitably treated to prevent corrosion and electrolytic action.



**Intervals between copper pipe supports (horizontal and vertical)**

Outside diameter (mm)	Maximum interval between supports (m)
Up to 15	1.5
22-28	2.0
35-54	2.5
>54	3.0

**Note:** Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.

Supports for surface mounted pipework should provide clearance to permit painting of the surface. Where it is essential for pipes to cross electric cables or conduit, they should be supported at intervals on either side of the crossing to prevent them from touching the cables or conduit.

**Pipeline Jointing**

Copper to copper joints shall be made on site using copper, phosphorus and silver brazing alloy CuP282 to BS EN 17672:2010. Brazing should be carried out using oxygen free nitrogen as an inert gas shield to prevent the formation of oxides on the inside of the pipe. Copper pipes shall be cut square with the pipe axis using a sharp wheel cutter wherever possible, and be cleaned to get rid of any cuttings or burrs.





### Pipeline Identification

Following installation, pipeline systems are required to be clearly identified with pipeline identification tape. 150mm wide Colour banding should be applied near to valves, junctions; walls etc a label every 3m should identify each gas and arrow tape showing the flow direction of gas.

