



**SCHÖNN**  
Medizintechnik GmbH

## MEDICAL GAS COPPER TUBES



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SCHÖNN degreased copper tube is manufactured under EN ISO 13348:2016 standard Medical Devices: Quality Management Systems. It is suitable for jointing degreased medical gas copper fittings and other medical gas equipment compliant to EN 13348 (seamless copper tubes for medical gases and vacuum), EN 1057, EN ISO 7396-1, HTM 2022 and HTM 02-01.

SCHÖNN copper tube is designed for use in Medical Gas Pipeline System installations and incorporates the specialist requirement of the Medical Gas Pipeline System industry to include cleanliness, packaging and usability required to attain the levels of quality as stated particularly in HTM 02-01.



## Cleanliness and Resistance

In the sensitive healthcare areas and installations, it is imperative to use materials that safeguard cleanliness, neat appearance and durability. SCHÖNN copper tubes can withstand high operating pressures with unlimited durability, thanks to the natural strength of copper, hence they are the ideal choice for the construction of medical gases distribution networks. SCHÖNN copper tubes are manufactured according to the requirements of standard EN 13348. They are supplied with end caps to prevent contamination by foreign matter intrusion during storage or transportation.

## Material

Non-arsenical copper phosphorus deoxidised (DHP-Cu) with minimum copper content 99,90% and P = 0,015% - 0,040%.

## Specifications

EN 13348

## Mechanical Properties

Temper	EN 13348 Classification	Minimum Tensile strength N/mm <sup>2</sup>	Minimum elongation A%
Soft	R-220	220	40
Half Hard	R-250	250	30
Hard	R-290	290	3

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## Medical Gas Pipes

The piped distribution system shall use copper pipes manufactured from phosphorous de-oxidised non-arsenical copper to EN 1412:1996 grade CW024A (Cu-DHP), manufactured to metric outside diameters and having mechanical properties in accordance with EN 13348:2016 - R250 (half hard) for sizes 12-28mm, R250 or R290 for sizes 35-54mm and R290 for larger sizes of 76mm and above.

Pipes shall be degreased suitable for oxygen use and cleanliness is to be maintained by filling each pipe with dry, clean, oil and oxygen-free nitrogen, fitting suitable end caps and protectively wrapping. All pipework materials shall be manufactured by EN ISO 13485-2016 certified companies.

## Cleanliness and Resistance

For sizes up to 54mm, copper pipes shall be permanently and durably marked at regular intervals along its length with the following

Information:

- a) The harmonised standard number EN 13348;
- b) DIN kitemark/statement/equivalent approval;
- c) Nominal dimensions, diameter x wall thickness;
- d) Temper designation to EN 1173;
- e) Manufacturer's identification;
- f) Date of production: year and month (1 to 12);
- g) Confirmation of degreasing for oxygen;

Example:

**MEDICAL GRADE COPPER PIPE \*\*\* Ø.....mm \*\*\* EN 13348 CLEANED & DEGREASED FOR OXYGEN USE\*\*\*\* SCHÖNN GmbH \*\*\*  
02/15**

Following installation, pipelines shall be clearly identified with 150mm wide adhesive labels. Labels shall be fitted near walls, risers, valves and junctions. Colour coding and labelling shall be in accordance with BS 1710:1984. Arrows to identify the direction of gas flow shall be fitted adjacent to each identification label.

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Pipe outside diameter (mm)	EN 13348:2008 R250 (half hard)	EN 13348:2008 R290 (hard)
12-28	√	x
28-54	√	√
76 +	x	√

Nominal outside diameter <i>d</i>	Nominal wall thickness						
	0,7	0,8	0,9	1,0	1,2	1,5	2,0
8	--	R	--	R	--	--	--
10	--	R	--	R	--	--	--
12	R	X	--	R	--	--	--
14	--	--	--	X	--	--	--
15	R	--	--	R	X	--	--
16	--	--	--	X	--	--	--
18	--	--	--	R	X	--	--
22	--	--	R	R	X	R	--
28	--	--	R	R	X	R	--
35	--	--	--	--	R	R	X
42	--	--	--	--	R	R	X
54	--	--	--	--	R	R	R

R Indicates the European recommended dimensions.

X Indicates other European dimensions.

Dimensions in millimetres

## Nominal outside diameters and wall thicknesses

Values in millimetres

Nominal outside diameter <i>d</i>		Tolerances on nominal diameter		
over	up to and including	applicable to mean diameter all tempers	applicable to any diameter <sup>a</sup>	
			R290 (hard) temper	R250 (half hard) temper
8 <sup>b</sup>	18	± 0,04	± 0,04	± 0,09
18	28	± 0,05	± 0,06	± 0,10
28	54	± 0,06	± 0,07	± 0,11

NOTE: Tolerances for tubes in R220 (annealed) temper are applicable only to mean diameter

a Including deviation from circular form.

b Including 8

## Tolerances on outside diameter

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Nominal outside diameter $d$ mm	Tolerances on wall thickness $e^a$	
	$e < 1$ mm %	$e \geq 1$ mm %
<18	$\pm 10$	$\pm 13$
$\geq 18$	$\pm 13$	$\pm 15^b$

NOTE: Concentricity ( uniformity of wall thickness ) is controlled by tolerance on wall thickness.

a Including deviation from concentricity.

b  $\pm 10$  % for R250 (half hard) tubes of 35mm, 42mm and 54 mm diameter with a wall thickness of 1,2mm.

## Tolerances on the wall thickness



### Identification of Medical Gas Pipelines

Pipeline should be identified in accordance with 1710:1984, and colour banding for the pipelines should be used. Colour band identification should be applied every 3 m and bearing 6mm size letters should identify each gas. Self-adhesive plastic labels of approved manufacture may be used for this purpose. A band 150 mm wide is usually adequate. All color-coded tapes applied by the pipe manufacturers should be removed before the systems are identified, in accordance with this paragraph.

Care should be taken to maintain pipeline identification when periodical re-painting is undertaken. The direction of flow should be indicated.

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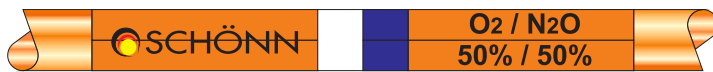
## Identification of Medical Gas Pipelines



OXYGEN



NITROUS OXIDE



OXYGEN / NITROUS OXIDE  
MIXTURE  
50% / 50%



MEDICAL AIR



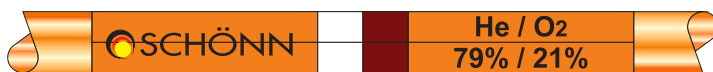
SURGICAL AIR



MEDICAL VACUUM



AGS SYSTEM



HELIUM / OXYGEN MIXTURE  
79% / 21%



SURGICAL NITROGEN  
(Alternative Label N2)



CARBON DIOXIDE

All Our Labels are fully comply with BS 1710:1984, ISO 7396:2008, HTM 2022 and HTM 02-01.