MEHTA TUBES LTD.
The Company With Mettle

MEXFLOW ACCESSORIES

BRAZING FILLER

MUNSEN RINGS

BRASS SADDLES

COPPER FITTINGS

MEXFLOW PRODUCTS ARE APPROVED BY NUMEROUS STANDARDS AUTHORITIES AND CERTIFICATION BOARDS.
FOR MORE DETAILS ON THIS PRODUCT RANGE PLEASE EMAIL US.

99 100 13099

Mehta Group - The Radiant Star of Indian Copper Industry

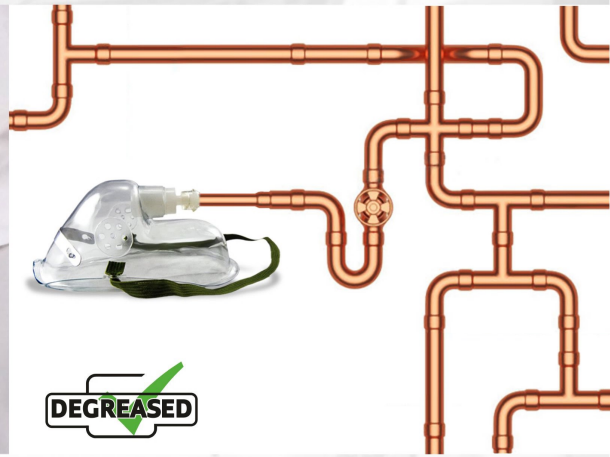
Office: 915-916, Plaza Panchshil, 9th Floor, 55 Hughes Road, Mumbai - 400 007 INDIA
Tel: +91 22 4340 4040 **Fax:** 4340 4050 **E-mail:** sales@mehta-group.com **Website:** www.mehtatubes.com
Unit 1: Char Rasta, Nanapondha, Taluka Kaprada Dist: Valsad, Gujarat, Pin - 396126, India
Unit 2: Survey No. 46/1, Ganga Devi Road, Palgam, Umbergaon Dist: Valsad, Gujarat, Pin - 396170, India

#swadeshi
Vocal for Local

MEHTA TUBES LTD.
The Company With Mettle

No Worries

Breath Safe



DEGREASED

RECYCLABLE
LONG LASTING

REARING AHEAD SINCE 35 YEARS

with

CARBON FREE Tubes

MEXFLOW®
Quality & Dependability

MEHTA TUBES LTD.
The Company With Mettle

About Us

Established in 1988, Mehta Tubes Ltd., is India's largest Copper and Copper Alloy Tubes manufacturer with head office in Mumbai and manufacturing facilities in South Gujarat and Daman. We offer wide range of Copper and Copper Alloys products for domestic, commercial, industrial and shipbuilding applications under MEXFLOW brand, our products are exported to over 25 countries worldwide including USA, Latin America, Europe and Australia.

Since inception we have continually strived to achieve high quality, reliability and safety by adopting latest technology in manufacturing of copper tubes and state of the art testing facilities. We pioneered manufacturing of Medical Grade Degreased Copper Tubes in India 25 years ago and since then Mexflow is the most relied and trusted brand in India amongst Hospitals, Consultants and Contractors.

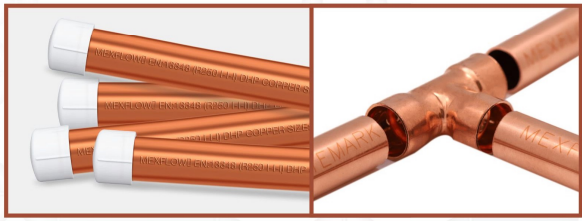
We understand the importance and criticality of Medical Gas tubing both for the patients and the hospitals, through the years; we have successfully developed a culture of safety to ensure we always deliver right quality material with utmost cleanliness to our clients.

MEXFLOW®
Quality & Dependability

Medical Grade Degreased Copper Tubes

The internal cleanliness of medical gas tubes in an Oxygen application is critical in order to prevent gas contamination and potential explosions. Oxygen under pressure may cause spontaneous combustion of residual organic drawing oils if they remain inside the tube after manufacturing. Oil and other contaminants may also cause patients serious respiratory problems if not removed prior to dispatch of the tubes to hospital site.

At Mehta Tubes, we are fully equipped with qualified manpower and required testing facilities in house to ensure that we consistently deliver the best quality Medical Grade Tubes with internal residue not exceeding **0.02mg/ dm2** as per **HTM 02 01/ EN 13348/ISO 7396-1.**



Manufacturing Standards

BS EN 13348:2016 - Copper and Copper Alloys – Seamless, Round Copper Tubes for Medical Gases or Vacuum

BS EN 1057: 2010 - Copper and Copper Alloys Seamless, Round Copper Tubes for Water and Gas in Sanitary and Heating Applications (mainly used for Plumbing Applications).

ASRTM B819-00 - Seamless Copper Tube for Medical Gas Systems

MEHTA TUBES LTD.
The Company With Mettle

MEXFLOW®
Quality & Dependability

Material Analysis

Material Grade: Phosphorus de-oxidised copper; Cu-DHP or CW024A Minimum Copper Content 99.90 % (including silver), Phosphorus 0.015-0.040 %

Total Impurities: Maximum 0.060 % (excluding phosphorus and silver)
Copper Melting Point: 1083ºC
Copper Density: 8.9 gm/cc
Temper Condition: Half Hard (R250)
Tensile strength: 250 MPa minimum.
Elongation: 30% minimum.
Hardness (Indicative) at HV 5 scale: 75 to 100
Cleanliness: Maximum total carbon content 0.20 mg/dm2. The determination of lubricant residue as total carbon is carried out with the help of Carbon Determinator using reference method described in EN 723.
Freedom from defect test: 100% Tubes are subjected to an Eddy Current Test for detection of local defects in accordance with EN:1971
Packaging: Each tube individually end capped, polythene wrapped in bundles and sealed.
Marking: Sizes 12 -108mm Mexflow Copper Tubes are marked with:

- Tube size
- BSI Kite mark/ Lloyds (as per order)
- EN 13348
- Temper (Half Hard R250)
- Manufacturer
- Date & Batch Code 12mm to 108mm sizes are also inkjet marked with additional data to enable traceability

Dimensions and Tolerances

Outside Diameter				Wall Thickness			WT / MTR
OD x WT	Tolerance	Minimum	Maximum	Tolerance	Minimum	Maximum	KG
mm x mm	mm	mm	mm	mm	mm	mm	
12.00 x 1.00	+/-0.09	11.91	12.09	+/-0.10	0.90	1.10	0.309
15.00 x 0.70	+/-0.09	14.91	15.09	+/-0.07	0.63	0.77	0.281
15.00 x 0.90	+/-0.09	14.91	15.09	+/-0.09	0.81	0.99	0.357
15.00 x 1.00	+/-0.09	14.91	15.09	+/-0.10	0.90	1.10	0.393
22.00 x 0.90	+/-0.10	21.90	22.10	+/-0.09	0.81	0.99	0.534
22.00 x 1.00	+/-0.10	21.90	22.10	+/-0.10	0.90	1.10	0.590
28.00 x 0.90	+/-0.10	27.90	28.10	+/-0.09	0.81	0.99	0.685
28.00 x 1.00	+/-0.10	27.90	28.10	+/-0.10	0.90	1.10	0.759
35.00 x 1.20	+/- 0.11	34.89	35.11	+/- 0.12	1.08	1.32	1.140
42.00 x 1.20	+/-0.11	41.89	42.11	+/-0.12	1.08	1.32	1.376
54.00 x 1.20	+/- 0.11	53.89	54.11	+/- 0.12	1.08	1.32	1.780
76.10 x 1.50	+/- 0.15	75.95	76.25	+/- 0.225	1.28	1.73	3.144
108.00 x 1.50	+/- 0.30	107.70	108.30	+/- 0.225	1.28	1.73	4.489

Table 2- Nominal outside diameters and wall thickness as per BS EN 13348

value in milimiters

Nominal Outside	Nominal Wall Thickness								
d	0,7	0,8	0,9	1,0	1,2	1,5	2,0	2,5	3,0
6	---	---	---	X	---	---	---	---	---
8	---	R	---	R	---	---	---	---	---
10	---	R	---	R	---	---	---	---	---
12	---	X	---	R	---	---	---	---	---
14	---	---	---	X	---	---	---	---	---
15	R	---	---	R	X	---	---	---	---
16	---	---	---	X	---	---	---	---	---
18	---	---	---	R	X	---	---	---	---
22	---	---	R	R	X	R	---	---	---
28	---	---	R	R	X	R	---	---	---
35	---	---	---	X	R	R	X	---	---
42	---	---	---	X	R	R	X	---	---
54	---	---	---	X	R	R	R	---	---
64	---	---	---	---	---	---	R	---	---
66,7	---	---	---	---	R	---	R	---	---
70	---	---	---	---	---	---	X	---	---
76,1	---	---	---	---	---	R	R	---	---
80	---	---	---	---	---	---	X	---	---
88,9	---	---	---	---	---	---	R	---	---
104	---	---	---	---	---	---	X	---	---
108	---	---	---	---	---	R	---	R	---
133	---	---	---	---	---	---	---	---	X
159	---	---	---	---	---	---	R	---	R
219	---	---	---	---	---	---	---	---	R

R Indicates the European recommends dimensions
X Indicates other european dimension

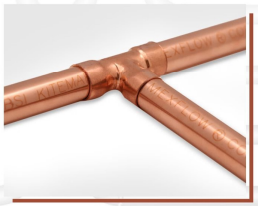
*The importance of Half Hard Tempered Copper Tubes in MGPS

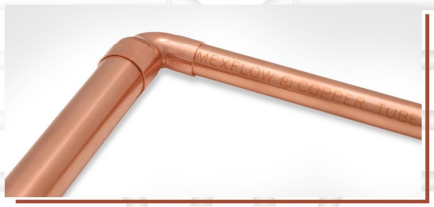
Half Hard Temper R250 Copper Tubes are resistant to long time stress cracking unlike Hard drawn copper tubes R290. Half hard copper tubes (R250 temper) can easily be adapted to be installed on uneven surfaces.

While conveying any fluid (Gas or liquid) through any pipe line there is Humming phenomenon i.e. hammering action / vibration of pipeline while in use. This action is absorbed by Half Hard tube or soft tube only. Joints may break if Hard Drawn Copper Tube is used. This will adversely affect the functioning of hospital as a whole. Similar effect can occur during earth quakes.

Temperature difference in the Copper Pipeline (Oxygen flow online/Off Line & Seasonal Temperature difference).Co-efficient Expanding & Contracting the Copper or any other metal. If metal is Half Hard or Annealed, the Expansion & Contraction is absorbed by the metal due to inherent ductility.

HARD DRAWN TUBES ON THE OTHER HAND CANNOT WITHSTAND EXPANSION & CONTRACTION





MEHTA TUBES LTD.
The Company With Mettle

Important Guidelines on Pipeline Design & Installation

An MGPS is designed to provide a safe and effective method of delivering medical gases, medical air and surgical air from the source of supply to the appropriate terminal unit. It is essential to ensure that there is no possibility of a cross-connection between any system and that all parts of each system to which connections can be made by users are gas – specific. MGPS should not be used to supply pathology department departments, general workshops or mechanical services.

General information is required to design an MGPS are:
Schedule of provision of terminal units, Design flow rate and pressure requirements at each terminal unit, Diversified flows for each section of the pipeline system & Total flow.

The Safety of an MGPS is Dependent on Four Basic Principles

Identity, Adequacy,Continuity & Quality of Supply.

MGPS should be kept away from areas where they may be subject to:

A. Mechanical damage
B. Chemical damage
C. Excessive heat
D. Splashing, dripping or permanent contact with oil, grease, bituminous compounds & electrical sparks etc.

MEXFLOW®
Quality & Dependability

Pipeline Component Specifications

Copper Tubes:

The Copper Tube shall be manufactured from Phosphorus deoxidised non-arsenical Copper to grade CW 024A (Cu-DHP) conforming to BS EN: 13348 / ASTM: B 819 in Half Hard Temper Condition. Copper Tubes shall be Degreased & Suitable for Oxygen use with both ends Capped and Protectively packed.

Copper Tubes manufacturing units shall be registered in accordance with ISO 9001: 2015
Marking for sizes up to 159 mm shall be permanently and durably marked at regular intervals along with it's lengths with following information:

- The harmonised standard number EN 13348;
- Nominal dimensions, diameter x wall thickness;
- Manufacturer's identification;
- Confirmation of degreasing for oxygen;
- BSI Kite Marked to EN 13348:2008
- Temper designation R 250 to EN 1173;
- Date of production: year and month (1 to 12)

Copper Fittings:

Medical Gas Pipeline Fittings shall be end feed type, manufactured from the same grade of copper as the tubes and be in accordance with the requirements of BS EN 1254-1:1998 Part 1. The manufacturing company should comply with BS EN ISO 9001:2015 and should be Kite Marked to EN 1254-1 (up to 159mm). Fittings should be factory degreased suitable for oxygen use and be supplied individually sealed in protective polythene bags. Fittings should be certified for medical use and accompany with oil analysis certificate and conformity certificate indicating suitability for medical use.

COPPER TUBE AND ENDFEED FITTINGS

1. Cut the tube to length.

Use only rotary tube cutter/ Wheel cutter. Cutter should be oil free. Do not use hack saw to cut the tubes

2. De-burr and remove all internal & external sharp edges.

Where possible angle the tube downwards to prevent fillings entering the tube. Use circular deburer for external edges / Pencil type deburer on internal tube edges.

3. Smooth & Free from Burs / Sharp Edges.

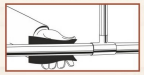
BEFORE AFTER

4. Clean the tube end with a cleaning pad in a rotating action, should be free from dirt and debris.

5. Pipe Jointing Fittings

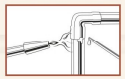
Pipe jointing fittings should be end-feed capillary fittings to BS EN 1254-1
All Pipe jointing fittings and sub-assemblies of Fittings must be cleaned and degreased for Oxygen service and be free of particulate matter and toxic residue and individually sealed in bags.

6. Insert the tube fully into the fittings.



The tube must be fully inserted into the fittings until it reaches the tube stop/up to the shoulder of the fittings.

7. Penetration of Brazing alloy:

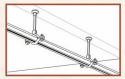


Due to tolerances of the capillary space on these pipes and fittings, full penetration of the brazing alloy may not occur and is not necessary.
The minimum penetration at any point on the joint must be three times the wall thickness of tube or 3 mm whichever is greater.
Heat Source: Heating of joints for brazing should be carried out with oxygen / acetylene (Oxygen + DA). While Copper to Copper joints, the brazed joints (torch brazing) should be made using a silver-copper-phosphorus brazing alloy CP 104 to BS EN:1044:1999. No flux should be used.
Make sure the internal and external surfaces of the tube ends are smooth and free from burrs/sharp edges. CP 104 brazing Rod melting range: indicative minimum brazing temperature 710 degree centigrade.
Ensure adequate protection of adjacent pipe runs and other services.
Brazing copper to brass/bronze is not performed on site. Manufacturers use copper-silver-zinc brazing alloys rods AG 203 to BS EN 1044:1999 with an appropriate flux. Liquidus Melting range approximate 735 degree centigrade. The flux residues created by the process are chemically removed and, if necessary, the complete assembly is cleaned and degreased for oxygen service. While Brass/Bronze fittings are required to be installed they should be supplied complete with copper 'tails' of adequate length to ensure that the brazing process does not damage the components.
Note: Do not use LPG for brazing of copper tubes, prolonged heating at the joints will damage the tube and fittings.

8. Inspection of joints.

Inspection of joints should be carried as a rolling procedure on a monthly basis as work progresses for each team performing the installation.

9. Pipe Supports.



The pipeline should be adequately supported at sufficient intervals as per the standards

Use of N2 internal inert gas shield:

Brazing should be carried out using oxygen-free nitrogen as an internal inert gas shield to prevent the formation of oxides on the inside of the pipes and fittings. This method leaves a bright, clean bore. Some slight burnishing may occasionally be observed on sectioned joints. Purging is still required to remove the internal shield gas and the other particulate matter not associated with the brazing operation.
Oxygen-free nitrogen should be supplied to the inside of the pre-assembled, un-brazed pipework through a pressure regulator and flow controller or flow-regulating device.
Oxygen-free nitrogen as an internal inert gas shield should be used for all positive pressure gases and for vacuum pipelines-up to and including 22 mm that are run in medical gas supply units and to individual terminal–unit drops. Nitrogen purging is not required for AGS disposal systems.
It is recommended that the pipeline to be brazed should first be flushed to remove air. This may be followed during the brazing operation by a continuous or intermittent flow as necessary to prevent the ingress of air.
Pipe ends may be capped if desired to direct the flow of nitrogen into sections of pipe or pipes to be brazed. Particular attention should be given to the gas shielding of T-joint fittings. Care also should be taken to ensure that other pipelines in close proximity to the one being brazed do not oxidize due to heat transfer.

Safety:

If working for the prolonged periods in very confined spaces, precautions must be taken to avoid excessive build-up of nitrogen by ventilating the space or by piping the shield gas safety out of the space. The oxygen content of the ambient air should be monitored when brazing in a confined space.