



times change **copper remains**

# KEMBLA<sup>®</sup>

MEDICAL GAS  
COPPER TUBE TO  
AMERICAN STANDARD  
ASTM B819



PUBLICATION E58/10

# KEMBLA® medical gas

## KEMBLA® MEDICAL GAS TUBE TO AMERICAN STANDARD ASTM B819

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MM Kembla is a world-class producer and Australia's leading supplier of copper tube and manufactures under the famous KEMBLA® brand name. MM Kembla manufactures a comprehensive range of copper tube products to comply with a variety of applications and International Standards.

Included in the KEMBLA® range is Medical Gas tube manufactured to fully conform to ASTM B819 specifications and is available in outside diameters from 9.52mm to 155.58mm (3/8" to 6 1/8"). Only Types K and L are nominated in the Standard and these specifications are shown in the tables overleaf.

The internal cleanliness of medical gas and oxygen tubes 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 tubes after manufacture. Oils or other contaminants may also cause patients serious respiratory problems if not removed prior to installation. MM Kembla has a unique manufacturing process to ensure that the total internal residue does not exceed 0.038g/m<sup>2</sup> as specified in ASTM B819. After cleaning, all tubes are individually end-capped to maintain their internal cleanliness, then bundled and wrapped in plastic for maximum protection.

During storage and handling of KEMBLA® Medical Gas tube and fittings, particular attention must be given to keeping them clean and dry. When brazing joints, lines should be continuously purged with nitrogen or another appropriate inert gas. Only approved filler metals and fluxes (if required) should be used. After brazing, all joints should be cleaned and inspected visually. Pressure and contaminant testing should be performed on installed tubing before final approval and use of the system.

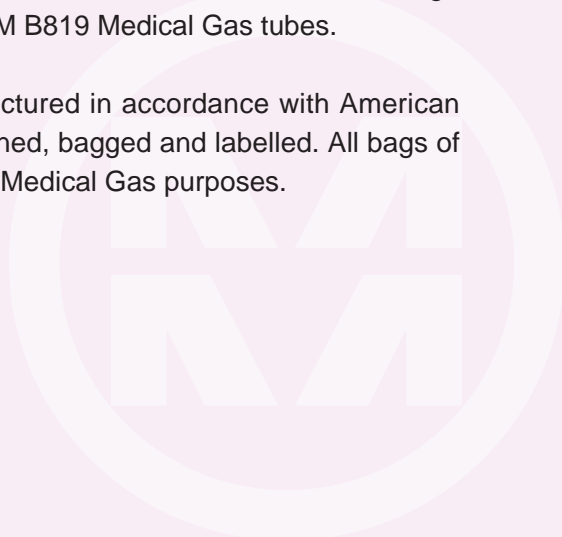
Test Certificates are supplied with all deliveries for each product. Straight lengths of 5.8m are manufactured for ease of containerisation.

## KEMBLA® MEDICAL GAS FITTINGS TO AMERICAN STANDARD ASME B16.22

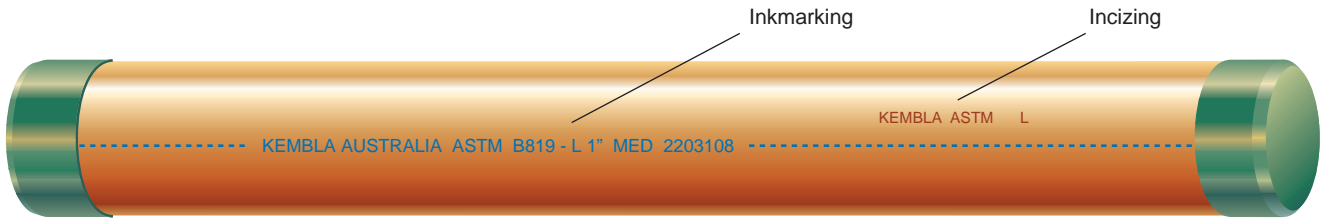
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MM KEMBLA is a leading supplier of a comprehensive range of copper fittings conforming to a variety of applications and International Standards. KEMBLA® fittings are marketed under the famous KEMBLA® and K Tick brand marks. A full range of fittings is available to suit KEMBLA® ASTM B819 Medical Gas tubes.

KEMBLA® Medical Gas fittings are manufactured in accordance with American Standard ASME B16.22 and individually cleaned, bagged and labelled. All bags of fittings are individually marked as suitable for Medical Gas purposes.



# MEDICAL GAS TUBE IDENTIFICATION



## TYPE 'K'

| Nominal Size (inch) | ACTUAL (inch) |       | ACTUAL (mm) |      | Mass kg / 5.8m | Safe Working Pressure*(kPa) | Lengths per Bundle |
|---------------------|---------------|-------|-------------|------|----------------|-----------------------------|--------------------|
|                     | o.d.          | w.t.  | o.d.        | w.t. |                |                             |                    |
| 1/4                 | 3/8           | 0.035 | 9.52        | 0.89 | 1.25           | 7,397                       | 100                |
| 3/8                 | 1/2           | 0.049 | 12.70       | 1.24 | 2.31           | 7,751                       | 100                |
| 1/2                 | 5/8           | 0.049 | 15.88       | 1.24 | 2.96           | 6,106                       | 100                |
| 5/8                 | 3/4           | 0.049 | 19.05       | 1.24 | 3.60           | 5,040                       | 100                |
| 3/4                 | 7/8           | 0.065 | 22.22       | 1.65 | 5.53           | 5,790                       | 100                |
| 1                   | 1 1/8         | 0.065 | 28.58       | 1.65 | 7.24           | 4,445                       | 100                |
| 1-1/4               | 1 3/8         | 0.065 | 34.92       | 1.65 | 8.95           | 3,610                       | 50                 |
| 1-1/2               | 1 5/8         | 0.072 | 41.28       | 1.83 | 11.77          | 3,380                       | 30                 |
| 2                   | 2 1/8         | 0.083 | 53.98       | 2.11 | 17.85          | 2,968                       | 30                 |
| 2-1/2               | 2 5/8         | 0.095 | 66.68       | 2.41 | 25.25          | 2,739                       | 30                 |
| 3                   | 3 1/8         | 0.109 | 79.38       | 2.77 | 34.60          | 2,642                       | 20                 |
| 3-1/2               | 3 5/8         | 0.120 | 92.08       | 3.05 | 44.27          | 2,504                       | 20                 |
| 4                   | 4 1/8         | 0.134 | 104.78      | 3.40 | 56.20          | 2,452                       | 10                 |
| 5                   | 5 1/8         | 0.160 | 130.18      | 4.06 | 83.49          | 2,355                       | 8                  |
| 6                   | 6 1/8         | 0.192 | 155.58      | 4.88 | 119.90         | 2,368                       | 5                  |

## TYPE 'L'

| Nominal Size (inch) | ACTUAL (inch) |       | ACTUAL (mm) |      | Mass kg / 5.8m | Safe Working Pressure*(kPa) | Lengths per Bundle |
|---------------------|---------------|-------|-------------|------|----------------|-----------------------------|--------------------|
|                     | o.d.          | w.t.  | o.d.        | w.t. |                |                             |                    |
| 1/4                 | 3/8           | 0.030 | 9.52        | 0.76 | 1.08           | 6,251                       | 100                |
| 3/8                 | 1/2           | 0.035 | 12.70       | 0.89 | 1.71           | 5,447                       | 100                |
| 1/2                 | 5/8           | 0.040 | 15.88       | 1.02 | 2.47           | 4,970                       | 100                |
| 5/8                 | 3/4           | 0.042 | 19.05       | 1.07 | 3.14           | 4,320                       | 100                |
| 3/4                 | 7/8           | 0.045 | 22.22       | 1.14 | 3.92           | 3,932                       | 100                |
| 1                   | 1 1/8         | 0.050 | 28.58       | 1.27 | 5.66           | 3,388                       | 100                |
| 1-1/4               | 1 3/8         | 0.055 | 34.92       | 1.40 | 7.65           | 3,047                       | 50                 |
| 1-1/2               | 1 5/8         | 0.060 | 41.28       | 1.52 | 9.85           | 2,791                       | 30                 |
| 2                   | 2 1/8         | 0.070 | 53.98       | 1.78 | 15.15          | 2,493                       | 30                 |
| 2-1/2               | 2 5/8         | 0.080 | 66.68       | 2.03 | 21.40          | 2,297                       | 30                 |
| 3                   | 3 1/8         | 0.090 | 79.38       | 2.29 | 28.78          | 2,174                       | 20                 |
| 3-1/2               | 3 5/8         | 0.100 | 92.08       | 2.54 | 37.08          | 2,077                       | 20                 |
| 4                   | 4 1/8         | 0.110 | 104.78      | 2.79 | 46.39          | 2,003                       | 10                 |
| 5                   | 5 1/8         | 0.125 | 130.18      | 3.18 | 65.85          | 1,835                       | 8                  |
| 6                   | 6 1/8         | 0.140 | 155.58      | 3.56 | 88.24          | 1,717                       | 5                  |

\* Safe Working Pressures are based on annealed temper for temperatures up to 50°C  
 Type M sizes available on request.

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MM Kembla was established in 1916 at Port Kembla, south of Sydney, in the state of New South Wales, Australia. It was from this location that the famous KEMBLA® brand originated. The company has been manufacturing copper products on the site since 1918 and first made copper tube there in 1920.

The factory is certified as a Quality Endorsed facility to ISO9001 by SAI Global, as shown by the Certificate of Registration below. MM Kembla also has a variety of third party accreditations to Australian, British/European and American Standards for many of its product ranges.



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