

# WEDNESBURY

## COPPER TUBE & FITTINGS

# Data Sheet 1

**BLACK LABEL**  
EN 1057 : 1996

### INTRODUCTION:

The British Standard EN 1057:1996 (brand name Black Label) specifies the requirements for copper tube in straight lengths to half hard temper. The tube is manufactured from phosphorus deoxidised (non arsenical) copper alloy Cu-DHP. Tube complying to this table is suitable for hot and cold water services, gas services, sanitation and central heating. This tube when buried should be factory plastic coated.

### APPROVAL:

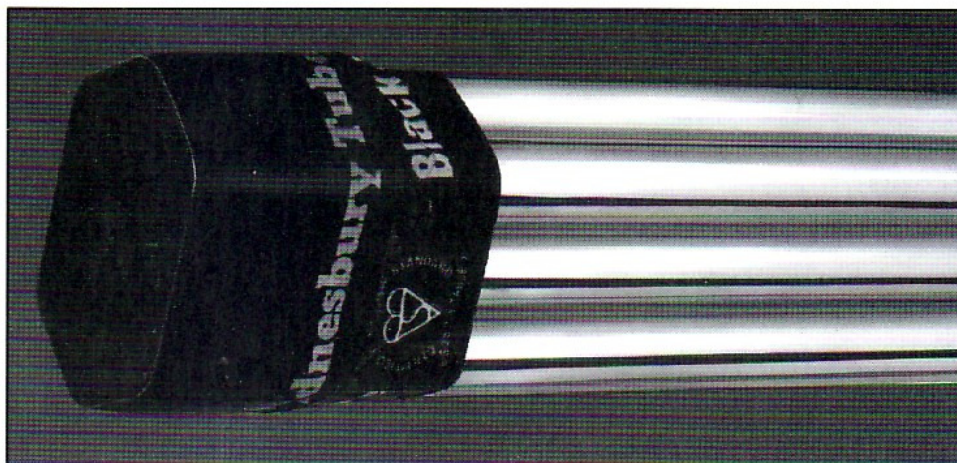
Black Label conforms to the requirements of the British Standards Institution and Wednesbury have earned the right to use the Kitemark as evidence of compliance of this tube to the British Standard EN 1057:1996 and have Registered Firm Status to BS EN ISO 9002:1994.

### MARKING:

Tube from 10mm to 54mm inclusive, is permanently die stamped 'Wednesbury (Kitemark) EN 1057 Black Label' and date of manufacture at intervals of not more than 600mm. Sizes from 6mm but less than 10mm or greater than 54mm shall at least be similarly marked legibly at both ends.

### JOINTING:

These tubes are suitable for connecting by means of capillary or compression fittings to BS/EN silver brazing, bronze or autogenous welding.



### NOMINAL DIMENSIONS AND MAX WORKING PRESSURE:

### TOLERANCE ON OUTSIDE DIAMETER:

### TOLERANCES ON WALL THICKNESS:

| Nominal outside diameter<br>Ø mm | MAX WORKING PRESSURE<br>BAR | Nominal outside diameter<br>Ø mm |                     | Tolerances on nominal diameter (mm) |  | Nominal outside diameter<br>Ø mm | Tolerances on wall thickness e <sup>1)</sup> |           |
|----------------------------------|-----------------------------|----------------------------------|---------------------|-------------------------------------|--|----------------------------------|--|-----------|
|                                  |                             | over                             | up to and including | Applicable to mean diameter         | Applicable to any diameter <sup>2)</sup> |                                  | e < 1mm %                                    | e ≥ 1mm % |
| 6                                | 0,6                         | 133                              |                     |                                     |  |                                  |  |           |
| 8                                | 0,6                         | 97                               |                     |                                     |  |                                  |  |           |
| 10                               | 0,6                         | 77                               |                     |                                     |  |                                  |  |           |
| 12                               | 0,6                         | 63                               |                     |                                     |  |                                  |  |           |
| 15                               | 0,7                         | 58                               |                     |                                     |  |                                  |  |           |
| 18                               | 0,8                         | 56                               |                     |                                     |  |                                  |  |           |
| 22                               | 0,9                         | 51                               |                     |                                     |  |                                  |  |           |
| 28                               | 0,9                         | 40                               |                     |                                     |  |                                  |  |           |
| 35                               | 1,2                         | 42                               |                     |                                     |  |                                  |  |           |
| 42                               | 1,2                         | 35                               |                     |                                     |  |                                  |  |           |
| 54                               | 1,2                         | 27                               |                     |                                     |  |                                  |  |           |
| 66,7                             | 1,2                         | 20                               |                     |                                     |  |                                  |  |           |
| 76,1                             | 1,5                         | 24                               |                     |                                     |  |                                  |  |           |
| 108                              | 1,5                         | 17                               |                     |                                     |  |                                  |  |           |
| 133                              | 1,5                         | 14                               |                     |                                     |  |                                  |  |           |
| 159                              | 2,0                         | 15                               |                     |                                     |  |                                  |  |           |

| Nominal outside diameter<br>Ø mm | Tolerances on nominal diameter (mm) | Tolerances on wall thickness e <sup>1)</sup> |
|----------------------------------|-------------------------------------|--|
| < 18                             | ±0,04                               | ±10 ±13                                      |
| ≥ 18                             | ±0,05 ±0,06 ±0,07 ±0,07 ±0,07 ±0,02 | ±10 ±15 <sup>2)</sup>                        |

<sup>1)</sup> Including deviation from concentricity  
<sup>2)</sup> ± 10% for R250 (half hard) tubes of 35mm, 42mm and 54mm diameter with a wall thickness of 1,2mm  
**NOTE:** Concentricity (uniformity of wall thickness) is controlled by tolerance on wall thickness.

<sup>1)</sup> Including 6mm.  
<sup>2)</sup> Including deviation from circular form.

### MECHANICAL PROPERTIES:

| Material temper | Nominal outside diameter<br>Ø mm | Tensile Strength<br>Rm<br>MPa | Elongation<br>A<br>% | Hardness<br>(indicative)<br>HV 5<br>VPN |             |            |
|-----------------|----------------------------------|-------------------------------|----------------------|---|-------------|------------|
|                 |                                  |                               |                      |   | Common term | min.       |
| R220            | annealed                         | 6                             | 54                   | 220                                     | 40          | (40 - 70)  |
| R250            | half hard                        | 6                             | 66,7                 | 250                                     | 30          | (75 - 100) |
|                 |                                  | 6                             | 159                  |   |             |            |
| R290            | hard                             | 6                             | 267                  | 290                                     | 3           | (min. 100) |

NOTE 1: Hardness figures in parentheses are not requirements of this standard but are given for guidance purposes only.  
 NOTE 2: MPa is equivalent to 1 N/mm<sup>2</sup>.



**BENDING:**

Wednesbury Black Label tube can be bent with ease on bending machines or with internal springs provided they are of the correct size. Manufacturers of bending machines such as Hilmor, Tubela, Consort, etc, are able to supply hand or free standing machines. Bending by spring is normally limited to a maximum size of 22mm diameter, but tight radii bends are not advised.

**WEIGHTS:**


| Size of Tube mm | No of Tubes per Bundle | Bundles per tonne 3m lengths | Bundles per tonne 6m lengths | Kg per Metre |
|-----------------|------------------------|------------------------------|------------------------------|--------------|
| 6               | 20                     | 184                          | 92                           | 0.096        |
| 8               | 20                     | 134                          | 67                           | 0.124        |
| 10              | 20                     | 106                          | 53                           | 0.158        |
| 12              | 20                     | 87                           | 44                           | 0.191        |
| 15              | 10                     | 120                          | 60                           | 0.280        |
| 18              | 10                     | 87                           | 43                           | 0.384        |
| 22              | 10                     | 60                           | 30                           | 0.531        |
| 28              | 10                     | 50                           | 25                           | 0.682        |
| 35              | 5                      | 59                           | 29                           | 1.134        |
| 42              | 5                      | 49                           | 24                           | 1.369        |
| 54              | 3                      | 63                           | 31                           | 1.772        |
| 66.7            | 1                      | 152                          | 76                           | 2.197        |
| 76.1            | 1                      | 106                          | 53                           | 3.134        |
| 108             | 1                      | 75                           | 37                           | 4.472        |
| 133             | 1                      | 60                           | 30                           | 5.531        |
| 159             | 1                      | 38                           | 19                           | 8.800        |

Based on theoretical weights

**LENGTHS & PACKAGING:**

| Lengths & Packaging Sizes mm | 6 | 8 | 10 | 12 | 15 | 18 | 22 | 28 | 35 | 42 | 54 | 67 | 76 | 108 | 133 | 159 |
|------------------------------|---|---|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| 6m Lengths                   | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| 3m Lengths                   | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| Other Lengths                | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| 20 Tube Bundle               | * | * | *  | *  |    |    |    |    |    |    |    |    |    |     |     |     |
| 10 Tube Bundle               |   |   |    |    | *  | *  | *  | *  |    |    |    |    |    |     |     |     |
| 5 Tube Bundle                |   |   |    |    |    |    |    |    | *  | *  |    |    |    |     |     |     |
| 3 Tube Bundle                |   |   |    |    |    |    |    |    |    |    | *  |    |    |     |     |     |
| Single Tubes                 |   |   |    |    |    |    |    |    |    |    |    | *  | *  | *   | *   | *   |
| Black End Cap                |   |   |    |    | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| <b>SPECIAL FINISHES</b>      |   |   |    |    |    |    |    |    |    |    |    |    |    |     |     |     |
| Protec Blue                  | * | * | *  | *  | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| Protec Green                 | * | * | *  | *  | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| Protec Yellow                | * | * | *  | *  | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| Protec White                 | * | * | *  | *  | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| Protec 2000 White            | * | * | *  | *  | *  |    | *  | *  | *  | *  | *  |    |    |     |     |     |
| Chromium Plated              | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| Degreased                    | * | * | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| Degreased Oxygen             |   |   |    | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *   | *   | *   |
| Degreased medical            |   |   |    | *  | *  | *  | *  | *  | *  | *  | *  |    |    |     |     |     |

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**WEDNESBURY**  **EN 1057 15x0.7mm (Month/Year) BLACK LABEL HH**

**WEDNESBURY**  
**COPPER TUBE & FITTINGS**



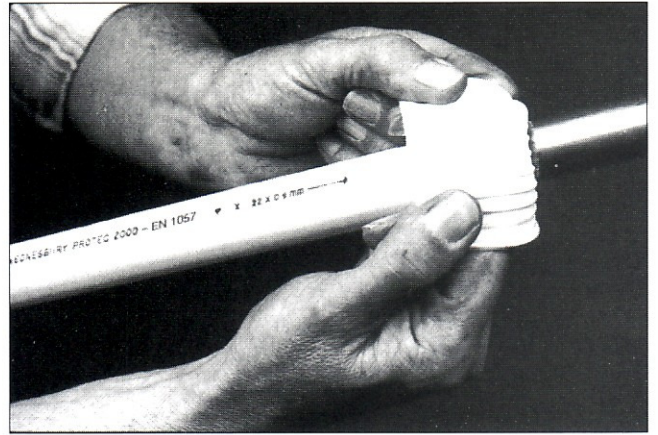




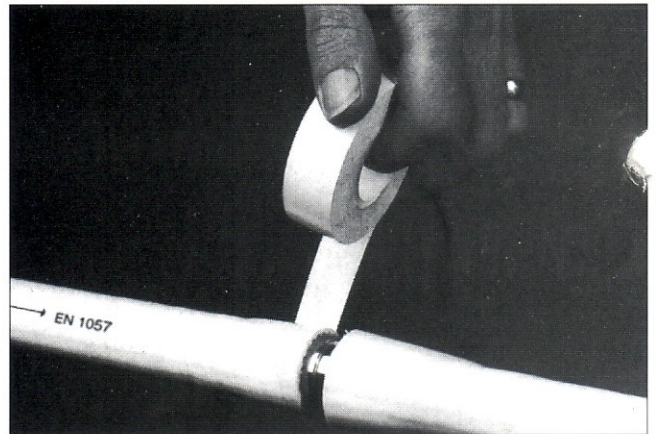


## DIMENSIONS:

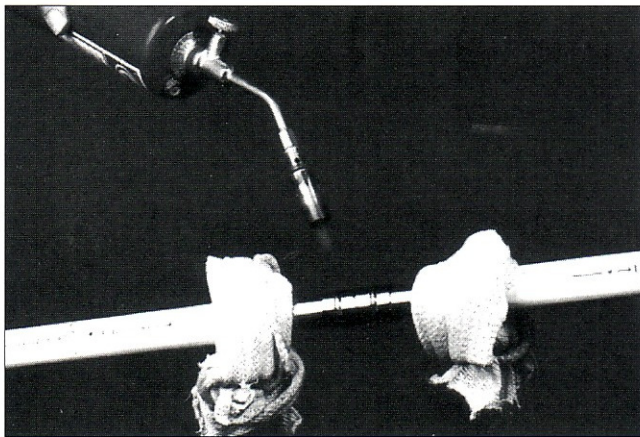
| Size of Tube mm | Nominal Diameter Plastic mm | Nominal Thickness Plastic mm |
|-----------------|-----------------------------|------------------------------|
| 6               | 8.00                        | 1.00                         |
| 8               | 10.00                       | 1.00                         |
| 10              | 12.00                       | 1.00                         |
| 12              | 14.00                       | 1.00                         |
| 15              | 17.00                       | 1.00                         |
| 18              | 20.00                       | 1.00                         |
| 22              | 24.00                       | 1.00                         |
| 28              | 30.00                       | 1.00                         |
| 35              | 38.00                       | 1.50                         |
| 42              | 45.00                       | 1.50                         |
| 54              | 57.00                       | 1.50                         |



Fold back to reveal copper.



When the joint is complete and cool, fold back the plastic coat and wrap the joint to give continuity of protection.



Be sure not to aim the blowtorch directly at the plastic.

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WEDNESBURY COPPER TUBE TO EN 1057 (KITEMARK, SIZE, TEMPER,) PROTEC

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**COPPER TUBE & FITTINGS**

Oxford Street Bilston West Midlands WV14 7DS England



A Mueller Industries Company



# WEDNESBURY

## COPPER TUBE & FITTINGS

Data Sheet 6


### PROTEC 2000 COPPER TUBE EN1057 : 1996

#### INTRODUCTION:

PROTEC 2000 is a brand name for Wednesbury Polyethylene coated copper tube, the inner surface of which is castellated to provide air gaps which run the length of the tube. These gaps trap air which forms a thermal barrier to reduce surface temperature, transmitted noise and condensation levels, together with a reduction of heat loss when buried.


The copper tube coated with Polyethylene is to EN 1057. This standard specifies the requirements for copper tubes in straight lengths to half hard, hard temper or coils in the annealed condition. The tube is manufactured from phosphorus deoxidised (non arsenical) copper alloy Cu-DHP and the plastic to BS 3412. Tube complying to these tables is suitable for hot and cold water services, gas services, sanitation and central heating. These tubes when plastic coated, will withstand temperatures of up to 95°C (203°F) with occasional peaks of up to 110°C (230°F). The plastic is tightly extruded on to the copper tube in a seamless and continuous run. It is durable and more effective than some other methods of protection against environments which may be aggressive to the copper tube.

#### APPROVAL:

Wednesbury Tube EN 1057 conform to the requirements of the British Standards Institution and Wednesbury have earned the right to use the Kitemark as evidence of compliance of these tubes to the British Standard EN 1057 and have Registered Firm status to BS EN ISO 9002:94 FM 452. It also bears the symbol of the British  Mark scheme.



#### MARKING:

Tube from 8m to 28mm inclusive is permanently marked 'Wednesbury (Kitemark) EN 1057  British' at intervals of 1000mm. The copper tube is prominently die marked in a similar manner together with the date of manufacture, to the relevant Label.

#### JOINTING:

These tubes are suitable for connecting by means of capillary or compression fittings to BS 864: Part 2:1983, silver brazing, bronze or autogenous welding. When jointing cut the plastic and fold back (see photograph), make joint and return the plastic to its original position, cover split plastic and joint with an impervious plastic tape to give continuous protection.

#### BENDING:

Wednesbury Protec 2000 annealed tube can be bent with ease, on bending machines or with internal springs. Bending machines are available with formers designed to accommodate the increased diameter for Protec 2000 from Hilmor, Tubela, Consort and Rothenburger etc. These machines are recommended for use with soft temper copper tube. If in doubt, refer to the bending machine manufacturer. Manufacturers of bending machines are able to supply hand or free standing machines of this type. Bending by spring is normally limited to a maximum size of 22mm diameter. Internal springs are available for tube up to this size but tight radii bends are not advised.

#### LENGTHS & PACKAGING:

| Sizes mm           | 6 | 8 | 10 | 12 | 15 | 22 | 28 |
|--------------------|---|---|----|----|----|----|----|
| 6M Lengths         | * | * | *  | *  | *  | *  | *  |
| 3M Lengths         | * | * | *  | *  | *  | *  | *  |
| Other Lengths      | * | * | *  | *  | *  | *  | *  |
| 20M Coils          | * | * | *  | *  | *  | *  | *  |
| Other Coils Length | * | * | *  | *  |    |    |    |
| 20 Tube Bundle     | * | * | *  | *  |    |    |    |
| 10 Tube Bundle     |   |   |    |    | *  | *  | *  |
| Plastic Sleeved    | * | * | *  | *  | *  | *  | *  |

#### FINISHES:

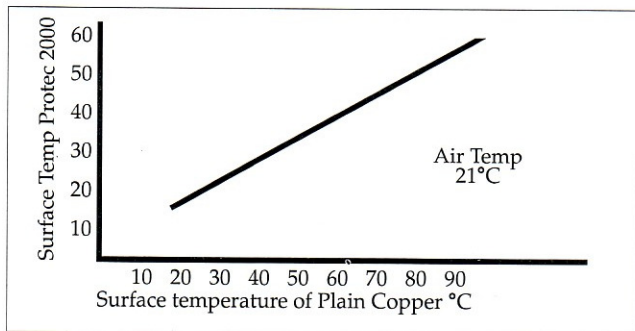
| Sizes mm          | 6 | 8 | 10 | 12 | 15 | 22 | 28 |
|-------------------|---|---|----|----|----|----|----|
| Protec 2000 White | * | * | *  | *  | *  | *  | *  |



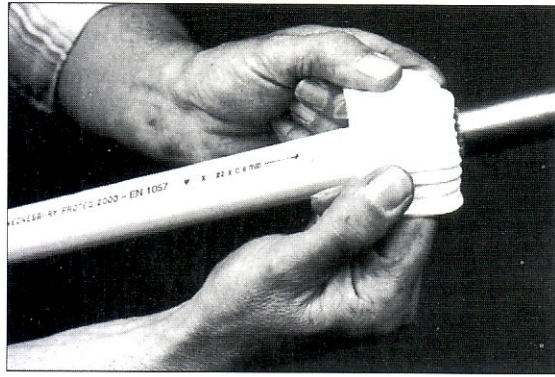
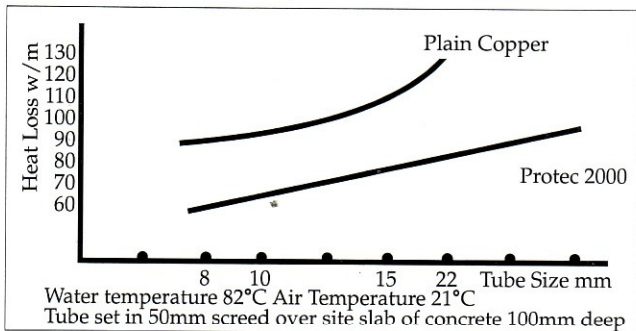
## DIMENSIONS AND WEIGHTS:

| Size of Tube mm | Overall Diameter mm | Nominal Thickness Plastic mm |
|-----------------|---------------------|------------------------------|
| 6               | 10                  | 2.00                         |
| 8               | 12                  | 2.00                         |
| 10              | 14                  | 2.00                         |
| 12              | 16                  | 2.00                         |
| 15              | 19                  | 2.00                         |
| 18              | 22                  | 2.00                         |
| 22              | 27                  | 2.50                         |
| 28              | 33                  | 2.50                         |

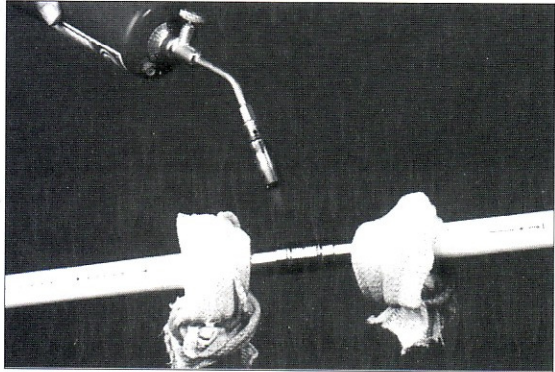
The graph below indicates the lower surface temperatures of Protec 2000 measured against bare copper in air.



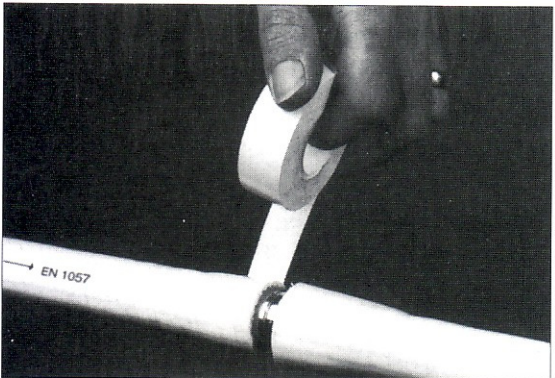
The graph below indicates the reduction in heat loss which can be achieved by using Protec 2000.



Fold back to reveal copper.



Be sure not to aim the blowtorch directly at the plastic.



When the joint is complete and cool, fold back the plastic coat and wrap the joint to give continuity of protection.

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WEDNESBURY COPPER TUBE TO EN 1057 (KITEMARK, SIZE, TEMPER,) PROTEC 2000

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