

TECHNICAL CATALOGUE



UPVC PIPES & FITTINGS



Plumbing Consultant & Architects

[www.themaliktraders.com](http://www.themaliktraders.com)



**MALIK & SONS**

*"Strengthening the veins of  
your architecture"*

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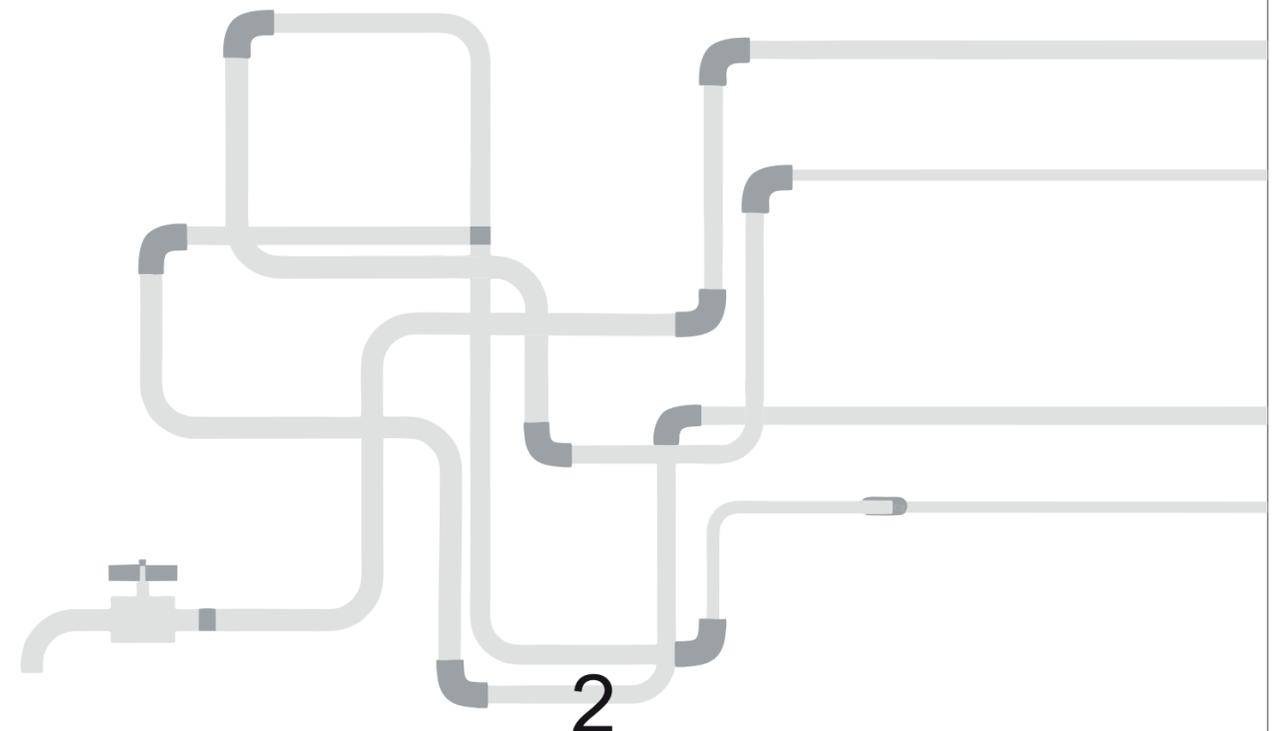
## INTRODUCTION

**Malik Traders** is the complete firm deals in local and imported products since last two decades. Product line includes; UPVC, CPVC, PPRC pipes and fittings along with the ultimate range of products.

After successful business journey, the firm proudly commences 4B UPVC Pipes and Fittings in Pakistan on state of the art imported machinery that meets the norms of the International quality standards. **4B** ensure the compliance of quality control, mythologies at every stage prior to the delivery of any product.

## 4B UPVC PIPES

**4B UPVC PIPES** for Water supplies, Irrigation, Drainage soil waste sewer and ventilation system electrical conduits and many other things are manufactured to inch dimensions.



## WELCOME TO MALIK TRADERS

Our Vision is to provide the most effective product to our all clients. We never hesitate to own the share holder's interest in given material because we belief our clients are the most precious assets for us.

**MALIK ARIF KHAN**  
Chairman



Our UPVC & PPRC products ensure the project's superiority. Above all, we believe any success relates to the civil sector leads to our priorities

**MALIK SOHAIL**  
CEO



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We tend to regulate our manufacturing process as per the international standard which simultaneously makes our product different from others.

**MALIK ZOHAIB**  
Managing Director



With all due respect, I would like to pay a humble thanks to all our existing customers, architects, plumbing consultants, civil and plumbing contractors who trust upon us. We focus on our markets, dynamics and adopt the viable changes in the industry to improve our product considering domestic, international and corporate sectors.

**MUHAMMAD SABIR KHAN**  
Director Marketing



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## PROCESSING VIEW



UPVC Mixer Machine



Extrusion Pipe Line

5

## PROCESSING & STOCKYARD VIEW



Molding Machines



Stock Yard

6

## APPLICATION STANDARDS

| SCHEDULE 40   | SCHEDULE 80 (UPVC)  |
|---|---|
| ASTM D-1784 - for rigid UPVC compound<br>ASTM D-1785 - for UPVC pipes<br>(size & pressure)<br>ASTM D-2466 - for UPVC fittings | ASTM D-1784 - rigid UPVC compound<br>ASTM D-1785 - for UPVC pipes (size & pressure)<br>ASTM D-2464 - for threaded UPVC fittings |
| UPVC PIPES SDR SERIES   |   |
| ASTM D-2241   |   |

### ASTM D-1785

4B UPVC Pipes and Fittings for water supply are manufactured to dimension from 1/2 inch to 8 inches.

Our UPVC pipes are produced to ASTM D-1785. These pipes are normally available in standard lengths of 6 meters. Other lengths can be manufactured and available with a plain end and other colours can also be made on demand.

## PRODUCT INFORMATION



**UPVC PIPES & FITTINGS**

**4B UPVC Pipes and Fittings are produced in conformity with the appropriate specifications**

**UPVC pipes for water supply**

**UPVC pipes for irrigation**

**UPVC pipes for water and ventilation**

**UPVC pipes for drainage and sewer systems**

**UPVC fittings for all the above items.**



### AMERICAN NATIONAL STANDARD

All products manufactured by "4B for Pipes and Fittings" have to pass through our stringent Quality Control procedures.

4B Pipes and Fittings are manufactured as per AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS.

## QUALITY CONTROL

This is our long-term commitment to the customers. From the receipt of the bulk resins to the final stages of production, 4B maintains stringent Quality Control programme by qualified technical personnel using sophisticated procedures, with latest equipment. Q.C. checks in-lab tests are conducted.

4B subjects its full line of pipes and fittings to hydrostatic pressure test as per the design data, to check the suitability of the product to the application.



## QUALITY ASSURANCE

4B UPVC Pipes & Fittings high performance extruders with advanced process control and monitoring system permit increased rate of production over the entire diameter ranges, adhering to the highest quality.

4B UPVC Fittings high technology moulding machines with advanced automated tooling, permit high volume production of Fittings with exceptionally high consistency in terms of dimensional accuracy, mechanical strength and surface finish.

At 4B, sophisticated quality control procedures and advanced manufacturing techniques work hand-in-hand to assure the highest quality and dimensional consistency in thermoplastic piping products.



## MATERIAL PROPERTIES OF 4B UPVC

### MATERIAL :

Unplasticized Polyvinyl Chloride (UPVC)

### GENERAL PROPERTIES:

|                     |                             |
|---------------------|-----------------------------|
| a) Specific Gravity | 1.42 gm/ cm <sup>2</sup>    |
| b) Water absorption | 4 gm/ cm <sup>2</sup>       |
| c) Flammability     | will not support combustion |

### THERMAL PROPERTIES:

|                             |                           |
|-----------------------------|---------------------------|
| a) Softening point          | 80°C                      |
| b) Specific Heat            | 0.25 cal/°C               |
| c) Thermal conductivity     | 0.13 cal/ cm-h- °C        |
| d) Coefficient conductivity | 6.7 x 10 <sup>-5</sup> °C |
| e) Elongation at break      | 10-50%                    |

### MECHANICAL PROPERTIES:

|                              |                             |
|------------------------------|-----------------------------|
| a) Ultimate tensile strength | 475-525 kg/ cm <sup>2</sup> |
| b) Compressive strength      | 670 kg/ cm <sup>2</sup>     |
| c) Flexural strength         | 950 kg/ cm <sup>2</sup>     |
| d) Impact strength           | 4-4.5 joules                |
| e) Modulus of elasticity     | 3.2 x 10 kg/ cm             |

### ELECTRICAL PROPERTIES:

|                                |                          |
|--------------------------------|--------------------------|
| a) Volume resistivity          | 10 <sup>14</sup> ohm/ cm |
| b) Surface resistivity         | 10 <sup>12</sup> ohm/ cm |
| c) Power factor (at 10 cycles) | 3.0                      |

UPVC is a non conductor of electricity and also non subject to galvanic or electrolytic attack. Electrical equipments should not be earthened to (UPVC) pipes.

### COLOUR:

Grey color on request / white readily available

## ADVANTAGES OF 4B UPVC PIPES

### FLEXIBILITY

4B UPVC pipes are regarded as being flexible when properly installed in a trench using suitable bedding and backfill. They seldom fracture when subjected to unforeseen excess loading, merely taking on a small deformation which is of temporary nature.

### LIGHTWEIGHT

4B UPVC pipes are lighter in weight than traditional cast iron pipes. This gives savings in manpower handling and installation cost.

### STRENGTH

4B UPVC pipes, having a higher impact strength than its iron or clay counterpart, cuts breakages due to mishandling, etc.

### NON-TOXIC

Will not impair the taste or smell of water.

### CORROSION RESISTANCE

4B UPVC pipes do not undergo physical deterioration due to corrosive subsoil. They can also handle a wide range of industrial effluents.

### INSTALLATION

Requiring no special tools or skilled personnel. UPVC pipes are easier to install than the traditional ones.

## TECHNICAL SERVICE

**MALIK TRADERS.,** has technical service department, staffed by qualified team, who provide a free technical advisory service to consultants, contractors etc., including advice on the properties of UPVC. The suitability of the material for specific application, the design of pipelines and the installation of UPVC pipes. This service also provides site demonstrations and training of operators, unfamiliar with the handling and jointing of UPVC pipes and fittings.

Direct substitution of UPVC pipes for traditional pipes, without an informed appraisal of the most efficient methods of using them, can never show their full economies. The many advantages and economics possible are best achieved only where UPVC are used correctly.

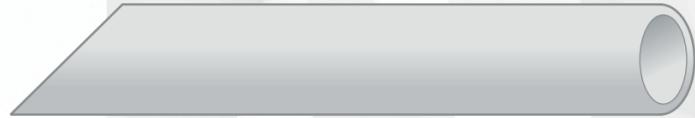
## 4B PIPES WITH PLAIN END ACCORDING TO ASTM D-1785 SCH.80



| Nominal Size<br>Inches | Outside Dia.<br>(d)<br>mm | Wall Thickness<br>(S) |           | Nominal weight<br>kg/m | Pressure Rating<br>Bar |      |
|------------------------|---------------------------|-----------------------|-----------|------------------------|------------------------|------|
|                        |                           | MIN<br>mm             | MAX<br>mm |                        | Threaded / Unthreaded  |      |
| 1/2                    | 21.34                     | 4.8                   | 4.24      | 0.31                   | 29.0                   | 58.6 |
| 3/4                    | 26.67                     | 2.7                   | 4.42      | 0.41                   | 23.4                   | 47.6 |
| 1                      | 33.40                     | 3.5                   | 5.08      | 0.60                   | 22.1                   | 43.4 |
| 1 1/4                  | 42.16                     | 3.2                   | 5.44      | 0.84                   | 17.9                   | 35.9 |
| 1 1/2                  | 48.26                     | 4.0                   | 5.69      | 1.03                   | 16.5                   | 32.4 |
| 2                      | 60.32                     | 4.5                   | 6.20      | 1.41                   | 13.8                   | 27.6 |
| 2 1/2                  | 73.12                     | 3.2                   | 7.84      | 2.15                   | 14.5                   | 28.9 |
| 3                      | 88.90                     | 4.5                   | 8.53      | 2.88                   | 13.1                   | 25.5 |
| 4                      | 114.30                    | 5.2                   | 9.58      | 4.22                   | 11.0                   | 22.1 |
| 6                      | 168.28                    | 6.0                   | 12.29     | 8.05                   | N.R.                   | 19.3 |
| 8                      | 219.08                    | 7.0                   | 14.20     | 12.23                  | N.R.                   | 17.2 |

Pressure ratings apply to water services at 23°C. For more severe service an additional correction factor may be required. Threading of schedule 80 UPVC pipe above 4" nominal size is not recommended.

## 4B PIPES WITH PLAIN END ACCORDING TO ASTM D-1785 SCH.40



| Nominal Size<br>Inches | Outside Dia.<br>(d)<br>mm | Wall Thickness<br>(S) |           | Nominal weight<br>kg/m | Pressure Rating<br>Bar |
|------------------------|---------------------------|-----------------------|-----------|------------------------|------------------------|
|                        |                           | MIN<br>mm             | MAX<br>mm |                        |                        |
| 1/2                    | 21.34                     | 2.77                  | 3.28      | 0.24                   | 41.4                   |
| 3/4                    | 26.67                     | 2.87                  | 3.38      | 0.33                   | 33.1                   |
| 1                      | 33.40                     | 3.38                  | 3.89      | 0.48                   | 31.0                   |
| 1 1/4                  | 42.16                     | 3.56                  | 4.06      | 0.65                   | 25.5                   |
| 1 1/2                  | 48.26                     | 3.68                  | 4.19      | 0.77                   | 22.8                   |
| 2                      | 60.32                     | 3.91                  | 4.42      | 1.04                   | 19.3                   |
| 2 1/2                  | 73.12                     | 5.15                  | 5.77      | 1.62                   | 20.5                   |
| 3                      | 88.90                     | 5.49                  | 6.15      | 2.14                   | 17.9                   |
| 4                      | 114.30                    | 6.02                  | 6.73      | 3.05                   | 15.2                   |
| 6                      | 168.28                    | 7.11                  | 7.98      | 5.37                   | 12.4                   |
| 8                      | 219.08                    | 8.18                  | 9.20      | 8.11                   | 11.0                   |

Pressure ratings apply on to unthreaded pipes at 23°C. Threading of Schedule 40 pipes is not recommended. The standard length is 6 meters.

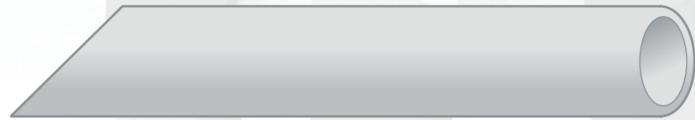
## 4B PIPES WITH ONE SOCKET ACCORDING TO ASTM D-1785 SCH.40



| Nominal Size<br>Inches | Outside Dia.<br>(d)<br>mm | Wall Thickness<br>(S) |           | t<br>mm | D<br>mm | Nominal weight<br>kg/m | Pressure Rating<br>Bar |
|------------------------|---------------------------|-----------------------|-----------|---------|---------|------------------------|------------------------|
|                        |                           | MIN<br>mm             | MAX<br>mm |         |         |                        |                        |
| 1/2                    | 21.34                     | 2.77                  | 3.28      | 26      | 27.85   | 0.24                   | 41.4                   |
| 3/4                    | 26.67                     | 2.87                  | 3.38      | 32      | 32.95   | 0.33                   | 33.1                   |
| 1                      | 33.40                     | 3.38                  | 3.89      | 38      | 40.70   | 0.48                   | 31.0                   |
| 1 1/4                  | 42.16                     | 3.56                  | 4.06      | 42      | 49.75   | 0.65                   | 25.5                   |
| 1 1/2                  | 48.26                     | 3.68                  | 4.19      | 50      | 56.15   | 0.77                   | 22.8                   |
| 2                      | 60.32                     | 3.91                  | 4.42      | 76      | 68.65   | 1.04                   | 19.3                   |
| 2 1/2                  | 73.12                     | 5.15                  | 5.77      | 80      | 84.05   | 1.62                   | 20.5                   |
| 3                      | 88.90                     | 5.49                  | 6.15      | 90      | 100.55  | 2.14                   | 17.9                   |
| 4                      | 114.30                    | 6.02                  | 6.73      | 100     | 127.05  | 3.05                   | 15.2                   |
| 6                      | 168.28                    | 7.11                  | 7.98      | 134     | 183.40  | 5.37                   | 12.4                   |
| 8                      | 219.08                    | 8.18                  | 9.20      | 158     | 236.45  | 8.11                   | 11.0                   |

Pressure ratings apply on to unthreaded pipes at 23°C. Threading of Schedule 40 pipes is not recommended. The standard length is 6 meters.

## 4B PIPES WITH PLAIN END ACCORDING TO ASTM D-2241 SDR SERIES



| Nominal Size<br>Inches | Outside Dia.<br>(d)<br>mm | Wall Thickness<br>mm<br>(S) | Nominal weight<br>kg/m | Pressure Rating<br>Bar |
|------------------------|---------------------------|-----------------------------|------------------------|------------------------|
| 2" SDR 26              | 60.32                     | 4.8                         | 0.768                  | 11.0                   |
| 3" SDR 32.5            | 88.90                     | 2.7                         | 1.093                  | 8.62                   |
| 3" SDR 26              | 88.90                     | 3.5                         | 1.417                  | 11.0                   |
| 4" SDR 41              | 114.30                    | 3.2                         | 1.667                  | 6.89                   |
| 4" SDR 32.5            | 114.30                    | 4.0                         | 2.082                  | 8.62                   |
| 4" SDR 26              | 114.30                    | 4.5                         | 2.333                  | 11.0                   |
| 6" SDR 64              | 168.28                    | 3.2                         | 2.45                   | 4.34                   |
| 6" SDR 41              | 168.28                    | 4.5                         | 3.445                  | 6.89                   |
| 6" SDR 32.5            | 168.28                    | 5.2                         | 3.987                  | 8.62                   |
| 8" SDR 41              | 219.08                    | 6.0                         | 5.988                  | 6.89                   |
| 8" SDR 32.5            | 219.08                    | 7.0                         | 6.987                  | 8.62                   |

The standard length is 6 meters.

## 4B PIPES WITH ONE SOCKET ACCORDING TO ASTM D-2241 SDR SERIES

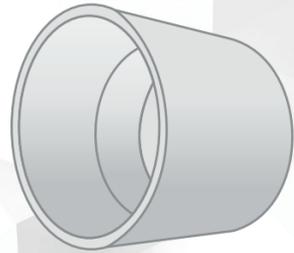


| Nominal Size<br>Inches | Outside Dia.<br>(d)<br>mm | Wall Thickness<br>mm<br>(S) | t<br>mm | D<br>mm | Nominal weight<br>kg/m | Pressure Rating<br>Bar |
|------------------------|---------------------------|-----------------------------|---------|---------|------------------------|------------------------|
| 2" SDR 26              | 60.32                     | 2.8                         | 58      | 66      | 0.768                  | 11.0                   |
| 3" SDR 32.5            | 88.90                     | 2.7                         | 82      | 95      | 1.093                  | 8.62                   |
| 3" SDR 26              | 88.90                     | 3.5                         | 82      | 96      | 1.417                  | 11.0                   |
| 4" SDR 41              | 114.30                    | 3.2                         | 94      | 121     | 1.667                  | 6.89                   |
| 4" SDR 32.5            | 114.30                    | 4.0                         | 94      | 123     | 2.082                  | 8.62                   |
| 4" SDR 26              | 114.30                    | 4.5                         | 94      | 124     | 2.333                  | 11.0                   |
| 6" SDR 64              | 168.28                    | 3.2                         | 124     | 175     | 2.45                   | 4.34                   |
| 6" SDR 41              | 168.28                    | 4.5                         | 124     | 177     | 3.445                  | 6.89                   |
| 6" SDR 32.5            | 168.28                    | 5.2                         | 124     | 179     | 3.987                  | 8.62                   |
| 8" SDR 41              | 219.08                    | 6.0                         | 148     | 231     | 5.988                  | 6.89                   |
| 8" SDR 32.5            | 219.08                    | 7.0                         | 148     | 233     | 6.987                  | 8.62                   |

The standard length is 6 meters.

## 4B FITTINGS SCH.40 (D-2466)

### COUPLING



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 101.5   | 100.0   | 5.79    | 4.76    |
| 4"           | 127.8   | 106.5   | 6.32    | 4.76    |
| 6"           | 184.1   | 157.4   | 7.46    | 5.0     |

### ELBOW 90°



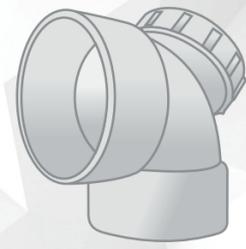
| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.7    | 94.4    | 5.15    | 48.13   |
| 4"           | 126.8   | 110.0   | 5.50    | 51.30   |
| 6"           | 180.5   | 168.5   | 5.9     | 80.0    |

### ELBOW 45°



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.7    | 23.53   | 5.15    | 48.13   |
| 4"           | 126.8   | 25.65   | 5.5     | 51.30   |
| 6"           | 180.5   | 41.00   | 5.9     | 80.0    |

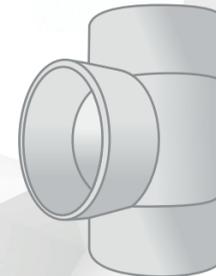
### ELBOW 90° with access cap



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.7    | 94.4    | 5.15    | 48.13   |
| 4"           | 126.8   | 110.0   | 5.50    | 51.30   |
| 6"           | 180.5   | 168.5   | 5.9     | 80.0    |

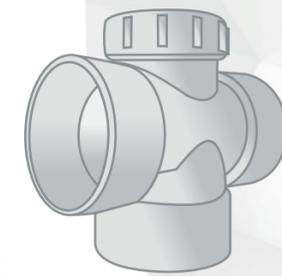
## 4B FITTINGS SCH.40 (D-2466)

### TEE eq. 90°



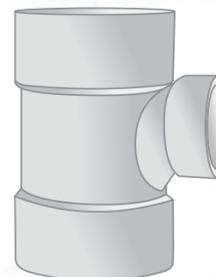
| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.7    | 94.4    | 5.15    | 48.13   |
| 4"           | 126.8   | 220.0   | 5.5     | 51.30   |
| 6"           | 180.5   | 337.00  | 5.9     | 80.0    |

### TEE eq. with access cap



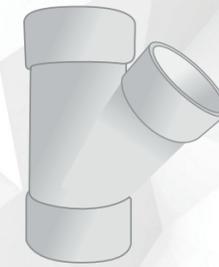
| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.7    | 94.4    | 5.15    | 48.13   |
| 4"           | 126.8   | 220.0   | 5.5     | 51.30   |
| 6"           | 180.5   | 337.00  | 5.9     | 80.0    |

### Reducing TEE eq. 90°



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"x3"x2"     | 92.00   | 38.50   | 100.73  | 68.00   |
| 4"x4"x2"     | 95.95   | 44.45   | 127.70  | 72.95   |
| 4"x4"x3"     | 119.95  | 44.45   | 127.70  | 87.95   |
| 6"x6"x4"     | 169.20  | 76.20   | 183.30  | 134.20  |

### Reducing Y eq. 45°



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm |
|--------------|---------|---------|---------|
| 3"x3"x2"     | 203.00  | 100.53  | 119.90  |
| 4"x4"x2"     | 216.90  | 127.70  | 140.50  |
| 4"x4"x3"     | 255.90  | 127.70  | 151.50  |
| 6"x6"x4"     | 329.40  | 183.30  | 190     |

## 4B FITTINGS SCH.40 (D-2466)

### P - TRAP = SYPHON + ELBOW 45°

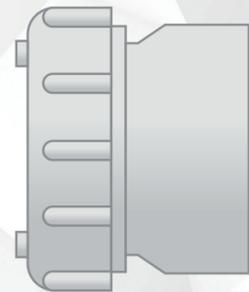


### Y-TEE eq. 45°



| SIZE<br>Inch | D<br>mm | L<br>mm | I<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 99.97   | 208.2   | 147.05  | 23.15   |
| 4"           | 126.8   | 275.6   | 193.5   | 30.0    |
| 6"           | 180.5   | 410.4   | 286.4   | 44.0    |

### CLEANING INSERT W/ ACCESS CAP



| SIZE<br>inches | D<br>mm | L<br>mm | S<br>mm |
|----------------|---------|---------|---------|
| 2              | 49.15   | 70.65   | 59.90   |
| 3              | 59.70   | 698.10  | 88.90   |
| 4              | 71.65   | 125.85  | 112.00  |
| 6              | 113.75  | 187.80  | 168.50  |

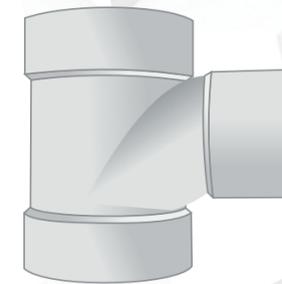
## 4B FITTINGS SCH.40 (D-2466)

### FLOOR TRAP



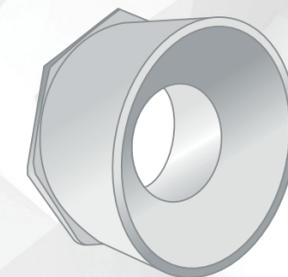
| SIZE<br>inches             | D<br>mm | L<br>mm    | S<br>mm | Z<br>mm |
|----------------------------|---------|------------|---------|---------|
| OUTLET 3"<br>INLET 1½", 2" | 120     | 144<br>117 | 3.35    | 48      |

### Sanitary TEE eq. 90°



| SIZE<br>Inch | D<br>mm | L<br>mm | S<br>mm | Z<br>mm |
|--------------|---------|---------|---------|---------|
| 3"           | 116.50  | 38.50   | 100.73  | 84.00   |
| 4"           | 141.95  | 44.45   | 127.70  | 100.95  |
| 6"           | 202.70  | 76.20   | 183.30  | 164.70  |

### Reducer Bush



| SIZE<br>Inch | D<br>mm | L<br>mm |
|--------------|---------|---------|
| 3" x 2"      | 56.36   | 18.26   |
| 4" x 2"      | 66.68   | 28.58   |
| 4" x 3"      | 66.68   | 19.05   |
| 6" x 4"      | 147.63  | 117.48  |

## CHEMICAL RESISTANCE

| Agent                           | Concentration % | Temp. °C | Agent   | Concentration % | Temp. °C |
|---------------------------------|-----------------|----------|---|-----------------|----------|
| Acetaldehyde, aqueous           | 40              | 40       | Beznene   | 100             | 20       |
| Acetaldehyde, concentrated      | 100             | 20       | Benzine   | 100             | 60       |
| Acetaldehyde + acetic acid      | 90/10           | 20       | Benzine-benzene mixture                             | 80/20           | 20       |
| Acetic acid, aqueous            | upto 25         | 40       | Benzoic acid, aqueous                               | any             | 40       |
|                                 | upto 25         | 60       |   | any             | 60       |
|                                 | 25-60           | 60       | Benzoic acid soda, aqueous                          | upto 10         | 40       |
| Acetic acid, crude              | 80              | 40       |   | upto 10         | 60       |
| Acetic anhydride                | 95              | 40       |   | 36              | 60       |
|                                 | 100             | 20       | Bisulphite lye, containing SO2                      | warm sat.       | 50       |
|                                 | 100             | 40       | Bleaching lye, 12.5% active chlorine                | usual           | 40       |
|                                 | 100             | 60       |   | usual           | 60       |
| Acetic ester                    | 100             | 20       | Borax, aqueous                                      | diluted         | 40       |
| Acetone, aqueous                | traces          | 20       |   | diluted         | 60       |
| Acetone                         | 100             | 20       |   | saturated       | 60       |
|                                 | 100             | 60       | Boric acid, aqueous                                 | diluted         | 40       |
| Acronal dispensions             | commercial      | 20       |   | diluted         | 60       |
| Acronal solutions               | commercial      | 20       |   | saturated       | 60       |
| Acrylic acid ethyl ester        | 100             | 20       | Brandy, various kinds                               | commercial      | 20       |
| Adipic acid, aqueous            | saturated       | 20       | Bromine, liquid                                     | 100             | 20       |
|                                 | saturated       | 60       | Bromine, vapours                                    | low             | 20       |
| Aktivin, aqueous                | 1               | 20       | Butadiene   | 100             | 60       |
| Allyl alcohol                   | 96              | 20       | Butandiol   | upto 100        | 20       |
|                                 | 96              | 60       | Butandiol, aqueous                                  | upto 10         | 520      |
| Aluminium chloride, aqueous     | diluted         | 40       |   | upto 10         | 40       |
|                                 | diluted         | 60       |   | upto 10         | 60       |
|                                 | saturated       | 60       | Butane, gaseous                                     | 50              | 20       |
| Aluminium sulphate, aqueous     | diluted         | 40       | Butanol   | upto 100        | 40       |
|                                 | diluted         | 60       |   | upto 100        | 60       |
|                                 | saturated       | 60       |   | upto 100        | 40       |
| Alums, aqueous                  | diluted         | 60       | Butindiol   | 100             | 20       |
|                                 | diluted         | 60       | Butyl acetate                                       | 100             | -20      |
|                                 | saturated       | 60       | Butylene, liquid                                    | 100             | 20       |
| Ammonia, gaseous                | 100             | 60       | Butyl phenol  | 100             | 20       |
| Ammonia, liquid                 | 100             | 20       | Butyric acid, aqueous                               | 20              | 20       |
| Ammonia water                   | warm sat.       | 40       |   | concentr.       | 20       |
|                                 | warm sat.       | 60       | Calcium, chloride, aqueous                          | diluted         | 40       |
| Ammonia chloride, aqueous       | diluted         | 40       |   | diluted         | 60       |
|                                 | diluted         | 60       |   | saturated       | 60       |
|                                 | saturated       | 60       | Calcium nitrate, aqueous                            | 50              | 40       |
| Ammonium flouride, aqueous      | upto 20         | 20       | Caramel   | commercial      | 60       |
|                                 | upto 20         | 60       | Carbon bisulphide                                   | 100             | 20       |
| Ammonium nitrate, aqueous       | diluted         | 40       | Carbonic acid, aqueous at an over pressure of 7 bar | saturated       | 20       |
|                                 | diluted         | 60       | Carbonic acid, dry                                  | 100             | 60       |
|                                 | saturated       | 60       | Carbonic acid, moist                                | any             | 40       |
| Ammonium sulphate, aqueous      | diluted         | 40       |   | any             | 60       |
|                                 | diluted         | 60       | Carbon tetrachloride, techn.                        | 100             | 20       |
|                                 | saturated       | 60       | Caustic lye, aqueous                                | upto 40         | 40       |
| Ammonium sulphate, aqueous      | diluted         | 40       |   | upto 40         | 60       |
|                                 | diluted         | 60       |   | 50/60           | 60       |
|                                 | saturated       | 60       |   |                 |          |
| Aniline, aqueous                | saturated       | 20       |   |                 |          |
|                                 | saturated       | 60       |   |                 |          |
| Aniline, pure                   | 100             | 20       |   |                 |          |
|                                 | 100             | 60       |   |                 |          |
| Aniline chloride hydrate, aqu.  | saturated       | 20       |   |                 |          |
|                                 | saturated       | 60       |   |                 |          |
| Anone                           | 100             | 20       |   |                 |          |
| Anthraquinone sulphonic acid    | suspension      | 30       |   |                 |          |
| Antiformin, aqueous             | 2               | 20       |   |                 |          |
| Antimony chloride, aqueous      | 90              | 20       |   |                 |          |
| Arsenic acid, aqueous           | diluted         | 40       |   |                 |          |
|                                 | diluted         | 60       |   |                 |          |
|                                 | 80              | 40       |   |                 |          |
|                                 | 80              | 60       |   |                 |          |
| Asfluid I, dry (film)           | -               | 20       |   |                 |          |
| Asfluid I, liquid               | -               | 20       |   |                 |          |
| Beef suet emulsion, sulphonated | commercial      | 20       |   |                 |          |
| Beer                            | commercial      | 20       |   |                 |          |
| Benzaldehyde, aqueous           | 0.1             | 60       |   |                 |          |

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## CHEMICAL RESISTANCE

| Agent                                   | Concentration % | Temp. °C | Agent  | Concentration % | Temp. °C |
|---|-----------------|----------|--|-----------------|----------|
| Molasses                                | ind.stand.      | 20       | Potassium lye, aqueous                               | upto 10         | 60       |
|   | ind.stand.      | 60       |  | saturated       | 60       |
| Molasses wort                           | ind.stand.      | 60       |  | upto 40         | 40       |
| Mowilith D                              | commercial      | 20       |  | upto 40         | 60       |
| Nekal, BK, aqueous                      | diluted         | 40       |  | 50/60           | 60       |
|   | diluted         | 60       | Potassium nitrate, aqueous                           | diluted         | 40       |
| Nickel sulphate, aqueous                | diluted         | 40       |  | diluted         | 60       |
|   | diluted         | 60       |  | saturated       | 60       |
|   | saturated       | 60       | Potassium perchlorate, aqu.                          | 1               | 40       |
| Nicotine, aqueous                       | usual           | 20       |  | 1               | 60       |
| Nicotine preparations, aqu.             | usual           | 20       | Potassium permanganate, aqu.                         | upto 6          | 20       |
| Nitric acid, aqueous                    | upto 30         | 50       |  | upto 6          | 40       |
|   | 30/50           | 50       |  | upto 6          | 60       |
|   | 98              | 20       | Potassium persulphate, aqu.                          | upto 18         | 40       |
| Nitrous fumes                           | concentr.       | 20       |  | diluted         | 40       |
|   | concentr.       | 60       |  | diluted         | 60       |
| Oils and fats                           | commercial      | 60       |  | saturated       | 40       |
| Oleic acid                              | commercial      | 60       |  | saturated       | 60       |
| Oleum                                   | 10              | 20       | Propane, gaseous                                     | 100             | 20       |
| Oleum fumes                             | lower           | 20       | Propane, liquid                                      | 100             | 20       |
|   | higher          | 20       | Propargyl alcoho, aqueous                            | 7               | 60       |
| Oxalic acid, aqueous                    | diluted         | 40       | Roaster gases, dry                                   | any             | 60       |
|   | diluted         | 60       | Sea water  | -               | 40       |
|   | saturated       | 60       |  | -               | 60       |
| Oxygen                                  | any             | 60       | Silicic acid, aqueous                                | any             | 60       |
| Ozone                                   | 100             | 20       | Silver nitrate, aqueous                              | upto 8          | 40       |
|   | 10              | 30       |  | upto 8          | 60       |
| Palm nut fatty acids                    | 100             | 60       | Soap solution, aqueous                               | concentr.       | 20       |
| Paraffin emulsion                       | commercial      | 20       |  | concentr.       | 60       |
|   | commercial      | 40       | Soda, aqueous  | diluted         | 40       |
| Perchloric acid, aqueous                | upto 10         | 40       |  | diluted         | 60       |
|   | saturated       | 60       | Sodium bisulphite, aqueous                           | saturated       | 60       |
| Phenol, aqueous                         | upto 90         | 45       |  | diluted         | 40       |
|   | 1               | 20       |  | diluted         | 60       |
| Phenylhydrazine                         | 100             | 20       | Sodium chlorate, aqueous                             | saturated       | 60       |
|   | 100             | 60       |  | upto 10         | 40       |
| Phenylhydrazine-chloro-hydrate, aqueous | saturated       | 20       |  | upto 10         | 60       |
|   | saturated       | 60       | Sodium chloride, aqueous                             | diluted         | 60       |
| Phosgene, gaseous                       | 100             | 20       |  | saturated       | 60       |
|   | 100             | 60       | Sodium chlorite, aqueous                             | diluted         | 20       |
| Phosgene, liquid                        | 100             | 20       |  | diluted         | 60       |
| Phosphoric acid, aqueous                | upto 30         | 10       | Sodium hypochlorite, aqu.                            | diluted         | 20       |
|   | upto 30         | 60       | Sodium sulphide, aqueous                             | diluted         | 60       |
|   | 40              | 60       |  | saturated       | 60       |
|   | 80              | 20       | Sperm oil alcohol                                    | commercial      | 20       |
|   | 80              | 60       | Spin bath acids, containing CS2                      | 0.01            | 52       |
|   | 100             | 20       |  | 0.02            | 52       |
| Phosphorus pentoxide                    | 100             | 20       |  | 0.07            | 52       |
| Phosphorus trichloride                  | 100             | 20       | Stannous chloride, aqueous                           | diluted         | 40       |
| Photo developers                        | commercial      | 40       |  | diluted         | 60       |
| Photo emulsions                         | any             | 40       |  | saturated       | 60       |
| Photo fixing baths                      | commercial      | 40       | Starch, aqueous                                      | any             | 40       |
| Picric acid, aqueous                    | 1               | 20       |  | any             | 60       |
| Potash, aqueous                         | saturated       | 40       | Starch syrup   | ind.stand.      | 60       |
| Potassium bichromate, aqu.              | 40              | 20       | Stearic acid   | 100             | 60       |
| Potassium borate, aqueous               | 1               | 40       | Sulphir dioxide, aqueous at an overpressure of 7 bar | saturated       | 20       |
|   | 1               | 60       | Sulphur dioxide, dry                                 | any             | 60       |
| Potassium bromate, aqu.                 | upto 10         | 40       | Sulphur dioxide, liquid                              | 100             | 20       |
|   | upto 10         | 60       |  | 100             | 60       |
| Potassium bromide, aqueous              | diluted         | 40       |  | 100             | 20       |
|   | diluted         | 60       | Sulphir dioxide, moist and aqu.                      | any             | 40       |
|   | saturated       | 60       |  | 50              | 50       |
| Potassium chloride, aqueous             | diluted         | 40       |  | any             | 60       |
|   | diluted         | 60       | Sulphuric acid, aqueous                              | upto 40         | 40       |
|   | saturated       | 60       |  | upto 40         | 60       |
| Potassium chromate, aqueous             | 40              | 20       |  | 70              | 20       |
| Potassium cyanide, aqueous              | upto 10         | 40       |  |                 |          |

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# TEST REPORTS

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 1147818 REPORT NO. 1147818 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Pipe Size 4" x 41 SDR Broad Name (BN), tested for Outside Diameter, Wall Thickness, Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, and Delamination Test.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Outside Diameter (mm)                | 113.75-114.30                  |
| Wall Thickness (mm)                  | 2.75-3.30                      |
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.65                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 1147818 REPORT NO. 1147818 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Pipe Size 7" x 23.5 SDR Broad Name (BN), tested for Outside Diameter, Wall Thickness, Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, and Delamination Test.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Outside Diameter (mm)                | 85.90-89.50                    |
| Wall Thickness (mm)                  | 2.74-3.25                      |
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.42                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 1147818 REPORT NO. 1147818 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Pipe Size 4" x 41 SDR Broad Name (BN), tested for Outside Diameter, Wall Thickness, Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, and Delamination Test.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Outside Diameter (mm)                | 103.30-108.30                  |
| Wall Thickness (mm)                  | 4.51-4.62                      |
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.76                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 22185418 REPORT NO. 22185418 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Fittings Broad Name 4B, tested for Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, Delamination and Hydrostatic Pressure.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.76                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 22185418 REPORT NO. 22185418 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Pipe Size 4" x 41 SDR Broad Name (BN), tested for Outside Diameter, Wall Thickness, Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, and Delamination and Hydrostatic Pressure.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Outside Diameter (mm)                | 113.50-114.30                  |
| Wall Thickness (mm)                  | 6.02-6.73                      |
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.72                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

**NATIONAL TEXTILE UNIVERSITY**  
KARACHI CAMPUS

**TEST REPORT**

JOB NO. 22185418 REPORT NO. 22185418 DATED 06.04.2018

CLIENT'S NAME: Ms. Malik Sami / Malik Traders

ADDRESS: Plot C.C. Sector 30, Korangi Industrial Area, Karachi-75000 Pakistan

CONTACT PERSON: Mr. Malik Zubair PHONE: 0300-2805944

REFERENCE NO.: Yiting Card DATED: 02.04.2018

**SAMPLE DETAILS:**  
One sample of U-PVC Pipe Size 7" x 23.5 SDR Broad Name (BN), tested for Outside Diameter, Wall Thickness, Impact Resistance, Longitudinal Heat Reversion, Resistance to Di-methylene Chloride, and Delamination and Hydrostatic Pressure.

**TEST RESULTS:**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Outside Diameter (mm)                | 97.65-98.90                    |
| Wall Thickness (mm)                  | 5.45-6.15                      |
| Impact Resistance                    | No Cracking or Breaking (Pass) |
| Resistance to Di-methylene Chloride  | No De-coloration (Pass)        |
| Delamination Test                    | No Chipping or Cracking (Pass) |
| Longitudinal Heat Reversion (%)      | 1.69                           |
| Hydrostatic Pressure Test @27°C/60hr | No Bursting or Leakage         |

Overall results of the samples are Satisfactory.

TARIQ JAMAL  
ASSOCIATE PROFESSOR

Tested as per Standard: ASTM D-1784 (2011)

# TEST REPORTS

**GOVERNMENT OF PAKISTAN**  
Ministry of Science & Technology  
Pakistan Council of Scientific & Industrial Research  
Laboratories Complex, Karachi

TEST REPORT

Test Report # ILDA/IR-2023-22563-2 Date: 19-09-2023

1. Name and Address of Client: Ms. SEM Engineers, IIR-A, First Floor, Block-2, PCTIS, Rahmania Masjid Road, off Tariq Road, Karachi-75000

2. Description of the Sample: Item: U-PVC Pipe Dia 4" Make: 4B (Mark in Pak)  
Lab Code No: ILDA/IR-2023-22563-2 Mark if any: Nil

3. Test Performed on: 11-09-2023 - 19-09-2023 Date of sampling: N/A

4. Environmental Conditions: 30°C±0.5, 50%±5% RH, Temp., Humidity (Where applicable)

5. Method Used: I.A. & Lab Developed

6. Measurements & Results:

| S. No. | Test Parameters         | Results   |
|--------|-------------------------|---|
| 1.     | Filter Content          | 0.15%   |
| 2.     | Cylindrical Correctness | Wall Thickness: 5.54 ± 0.21 mm<br>Inner Dia: 113.08 ± 0.27 mm |
| 3.     | Density                 | 1.406 g/cm <sup>3</sup>                                       |

7. Statement of Compliance: N/A

8. Opinion / Interpretation (where required): N/A

END OF REPORT

Prepared by: *Saima Inchausti*  
Saima Inchausti Head of the Centre

Checked by: *Naushad Khan*  
Naushad Khan Director General

**GOVERNMENT OF PAKISTAN**  
Ministry of Science & Technology  
Pakistan Council of Scientific & Industrial Research  
Laboratories Complex, Lahore

TEST REPORT

Test Report # ACIS/IR/2023/02022 Date: 19-09-2023

1. Name and Address of Client: M/S. Malik & Sons, Plot # C-7 Sector F Bahra Town, KHA Karachi, Company letter dated 14/12/2020

2. Description of Sample: U-PVC Pipe No. of Sample(s): 04

3. Lab Code: 4B (Mark in Pak) Mark if any: Nil

4. Test Performed on: 08/09/2023 Date of sampling: N/A

5. Environmental Conditions: 30°C±0.5, 50%±5% RH, Temp., Humidity (Where applicable)

6. Method Used: I.A. & Lab Developed

7. Measurements & Results:

| S. No. | Test Parameters         | Results   |
|--------|-------------------------|---|
| 1.     | Filter Content          | 0.15%   |
| 2.     | Cylindrical Correctness | Wall Thickness: 5.54 ± 0.21 mm<br>Inner Dia: 113.08 ± 0.27 mm |
| 3.     | Density                 | 1.406 g/cm <sup>3</sup>                                       |

8. Statement of Compliance: N/A

9. Opinion / Interpretation (where required): N/A

END OF REPORT

Prepared by: *Saima Inchausti*  
Saima Inchausti Head of the Centre

Checked by: *Naushad Khan*  
Naushad Khan Director General

**GOVERNMENT OF PAKISTAN**  
Ministry of Science & Technology  
Pakistan Council of Scientific & Industrial Research  
Laboratories Complex, Karachi

TEST REPORT

Test Report # ILDA/IR-2023-22563-2 Date: 19-09-2023

1. Name and Address of Client: Ms. SEM Engineers, IIR-A, First Floor, Block-2, PCTIS, Rahmania Masjid Road, off Tariq Road, Karachi-75000

2. Description of the Sample: Item: U-PVC Pipe Dia 4" Make: 4B (Mark in Pak)  
Lab Code No: ILDA/IR-2023-22563-2 Mark if any: Nil

3. Test Performed on: 11-09-2023 - 19-09-2023 Date of sampling: N/A

4. Environmental Conditions: 30°C±0.5, 50%±5% RH, Temp., Humidity (Where applicable)

5. Method Used: I.A. & Lab Developed

6. Measurements & Results:

| S. No. | Test Parameters         | Results   |
|--------|-------------------------|---|
| 1.     | Filter Content          | 0.143%  |
| 2.     | Cylindrical Correctness | Wall Thickness: 5.54 ± 0.21 mm<br>Inner Dia: 113.08 ± 0.27 mm |
| 3.     | Density                 | 1.406 g/cm <sup>3</sup>                                       |

7. Statement of Compliance: N/A

8. Opinion / Interpretation (where required): N/A

END OF REPORT

Prepared by: *Saima Inchausti*  
Saima Inchausti Head of the Centre

Checked by: *Naushad Khan*  
Naushad Khan Director General