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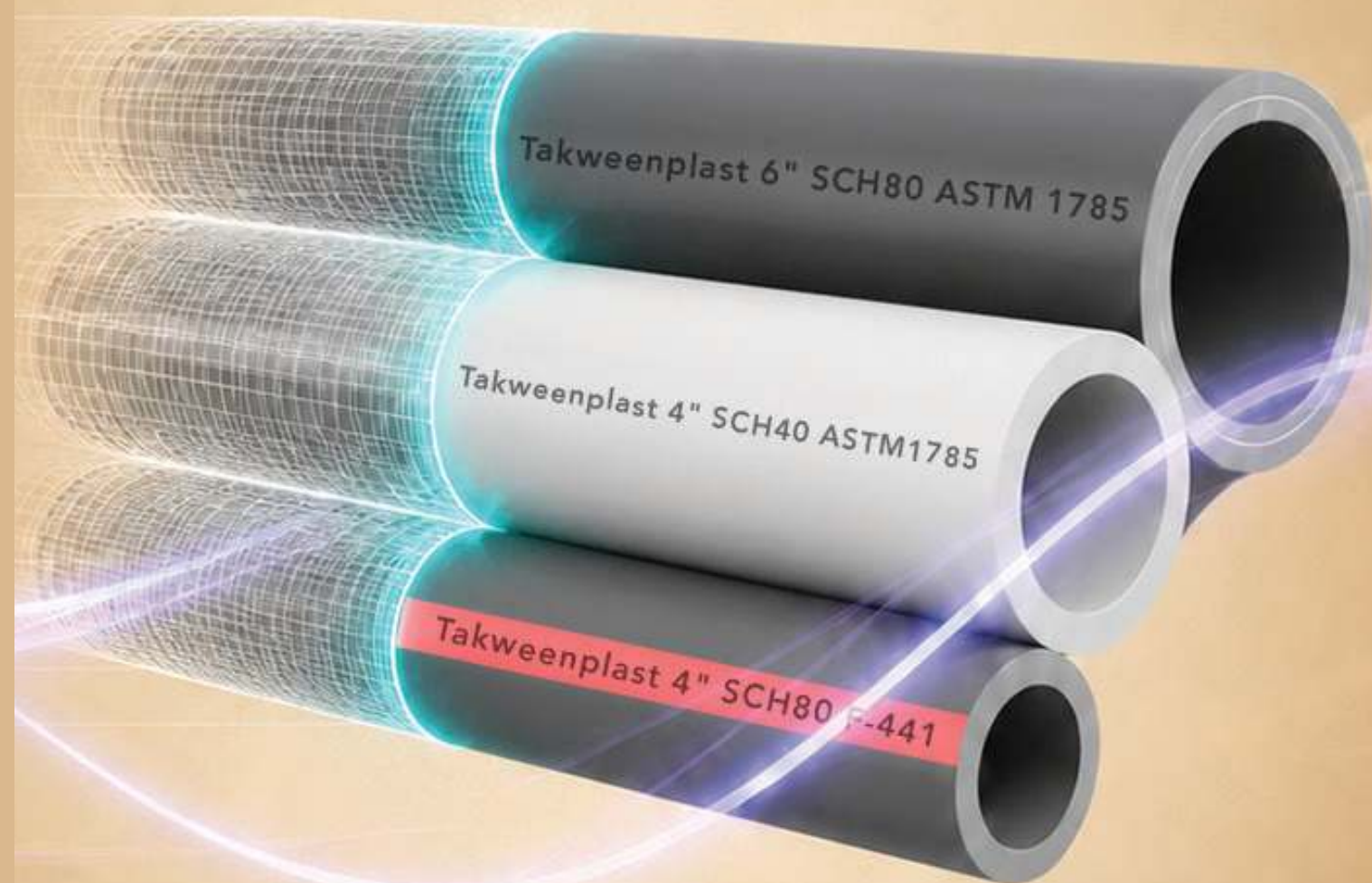
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**TAKWEEN PLAST**  
One of Innovation Experts Brands إحدى علامات شركة صابرات الابتكار التجارية

**PVC/cPVC PIPES**  
according to  
ASTM Standards



## رسالتنا

بناء قاعدة صلبة ومتنامية من العملاء المخلصين عبر تقديم أنظمة أنابيب بلاستيكية عالية الجودة تتوافق مع أرفع المعايير الدولية. نحن ملتزمون بتوفير منتجات موثوقة وحلول مبتكرة وخدمات استثنائية تدعم النجاح طويل الأمد لعملائنا وشركائنا، وتسهم بفاعلية في التنمية المستدامة للبنية التحتية الحديثة.



## رؤيتنا

أن نصبح رائداً عالمياً معترفاً به في مجال أنظمة الأنابيب البلاستيكية، واضعين معايير جديدة للثقة والابتكار والتميز الصناعي. نطمح تكوين بلاست " لقيادة الأسواق الإقليمية من خلال التقنيات المتقدمة والحلول المستدامة والشراكات الاستراتيجية، لتصبح مرجعاً موثقاً لمشاريع البنية التحتية والمرافق العامة حول العالم.



## قيمنا الجوهرية

1. التميز في الجودة: نلتزم بأعلى معايير التصنيع لتقديم حلول أنابيب موثوقة وطويلة الأمد تلبي المتطلبات الدولية وتتجاوز تطلعات عملائنا.
2. الالتزام تجاه العملاء: نضع عملاءنا في قلب اهتماماتنا، ونبني شراكات طويلة الأمد قائمة على الثقة، والأداء المتفوق، والنجاح المشترك.
3. الابتكار والتحسين المستمر: نسعى دوماً لتطوير حلول متقدمة وتحسين عملياتنا لمواكبة الاحتياجات المتطورة في قطاع البنية التحتية والصناعة.
4. النزاهة والموثوقية: نعمل بشفافية ومسؤولية ومهنية عالية، بما يضمن أداءً يعتمد عليه في كل مشروع ندعمه.
5. الاستدامة والمسؤولية: نلتزم بممارسات تصنيعية مسؤولة بيئياً تسهم في تطوير بنية تحتية مستدامة وحماية البيئة للأجيال القادمة.



# من نحن تكوين بلاست



تعد شركة "صائدات الابتكار" المظلة المؤسسية والمالك لعلامة "تكوين بلاست" التجارية. حيث يجسد هذا الارتباط تكاملاً استراتيجياً يجمع بين الرؤية الاستثمارية والخبرة الصناعية المعمقة؛ بينما تقود "صائدات الابتكار" قاطرة الابتكار والنمو، تبرز "تكوين بلاست" كذراع صناعي متميز يمثل تحالفاً استراتيجياً لنخبة من كبار المصنعين في العديد من الدول عبر خمس دول.

نحن ملتزمون بتقديم حلول مستدامة ومبتكرة لأنظمة الأنابيب البلاستيكية المستخدمة في شبكات تصريف المياه، والاتصالات، وأنظمة التكييف (HVAC)، وتطبيقات الطاقة. ونفخر بتوفير أنظمة متطورة تتماشى مع المتطلبات المتسارعة لمشاريع البنية التحتية الحديثة، على المستويين الإقليمي والعالمي.

تكمّن قوتنا في العمل التشاركي، والوحدة التنظيمية، والالتزام المشترك بالتميز. ومن خلال تواجدها الاستراتيجي في مراكز الأعمال الرئيسية بالملكة العربية السعودية ومنطقة الخليج والشرق الأوسط، تستند "تكوين بلاست" إلى كوادرات بشرية عالية الكفاءة، وشبكة موثوقة من الموزعين، وشراكات تجارية متينة لخدمة قاعدة عريضة ومتنوعة من العملاء.

وتعمل "تكوين بلاست" كشبكة متكاملة من شركات التصنيع المحلية، بالتعاون مع أكثر من 20 شريك إنتاج دولي، مدعومة بسلسلة توريد قوية في كافة أنحاء المملكة ودول مجلس التعاون الخليجي والشرق الأوسط الكبير. تتيح لنا هذه القدرات الجماعية تقديم جودة ثابتة، وحلولاً مخصصة، وخدمات موثوقة في كافة الأسواق التي نتواجد فيها.

## Who We Are **TAKWEEN PLAST**



About Us "Innovation Expeerts" (Innovation Exports) is the institutional umbrella and the proud owner of the "Takween Plast" brand. This relationship represents a strategic integration combining investment vision with industrial expertise, where "Innovation Expeerts" drives innovation and growth, while "Takween Plast" operates as a distinguished industrial arm representing a strategic consortium of leading Saudi manufacturers. We are committed to delivering sustainable and innovative plastic piping solutions for water drainage, telecommunications, HVAC, and energy applications. We take pride in providing advanced piping systems that align with the evolving requirements of modern infrastructure projects, both regionally and globally. Our strength lies in collaboration, organizational unity, and a shared commitment to excellence. With a strategic presence across key business hubs in the Kingdom of Saudi Arabia, the Gulf region, and the Middle East, TAKWEEN PLAST leverages a highly skilled workforce, a trusted network of distributors, and strong business partnerships to serve a broad and diverse client base. Operating as an integrated network of local manufacturing companies, and collaborating with more than 20 international production partners, TAKWEEN PLAST is supported by a robust distribution chain throughout Saudi Arabia, the GCC, and the wider Middle East. This collective capability enables us to deliver consistent quality, customized solutions, and reliable service across all markets we serve.



### OUR MISSION

To build a strong and continuously expanding base of satisfied and loyal customers by consistently delivering high-quality plastic piping systems that meet the highest international standards. We are committed to providing reliable products, innovative solutions, and exceptional service that support the long-term success of our clients and partners while contributing to the sustainable development of modern infrastructure.

### OUR VISION

To become a globally recognized leader in plastic piping systems, setting benchmarks for trust, innovation, and manufacturing excellence. Takween Plast aims to lead regional markets through advanced technologies, sustainable solutions, and strategic partnerships, becoming a trusted reference for infrastructure and utility projects worldwide.

### Our Core Values

1. **Quality Excellence:** We uphold the highest standards in manufacturing, delivering reliable and long-lasting piping solutions that meet international requirements and exceed customer expectations.
2. **Customer Commitment:** We place our customers at the center of everything we do, building long-term partnerships based on trust, performance, and mutual success.
3. **Innovation & Continuous Improvement:** We continuously develop advanced solutions and enhance our processes to meet evolving infrastructure and industry demands.
4. **Integrity & Reliability:** We operate with transparency, accountability, and consistency, ensuring dependable performance in every project we support.
5. **Sustainability & Responsibility:** We are committed to environmentally responsible manufacturing practices that contribute to sustainable infrastructure development and long-term environmental protection.

# PVC/cPVC PIPES

according to  
ASTM Standards

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## INTRODUCTION

### TAKWEEN PLAST for Manufacturing CO.LTD. (TAKWEEN PLAST) in brief

TAKWEEN PLAST offers a wide range of plastic products, the most important of which are PVC pipes and fittings. They are used in drinking water, sewerage and ventilation (DWV) networks and cPVC pipes used in cold and hot water systems and are produced in accordance with American standards (ASTM) and international specifications using modern machines and technology.

### PVC and cPVC Material :

- PVC and CPVC pipes are some of the most durable and flexible types of piping, manufactured from rigid PVC compound. These materials were engineered in the hopes of replacing traditional cast iron, copper, and iron pipes, which are expensive and prone to breakdown.
- The ASTM standard allows PVC pipe to be used in applications not exceeding 140 degrees F (60°C).
- CPVC pipe on the other hand can handle temperatures up to 200 degrees F (93°C).

### Manufacturing Standards:

- PVC Pipes Schedule 40 & Schedule 80 according to ASTM D - 1785.
- PVC Pipes Drain, Waste and Vent (DWV) according to ASTM D - 2665.
- PVC Pipes according to D - 2241 (SDR Series).
- cPVC Pipes Schedule 80 according to ASTM F - 441.

### Colour of Pipe:

Table No. 1:

| TYPE OF PIPE                | STANDARD      | COLOUR |
|-----------------------------|---------------|--------|
| PVC Pipes Schedule 80       | ASTM D - 1785 | Grey   |
| PVC Pipes Schedule 40       | ASTM D - 1785 | White  |
| PVC Pipes Schedule 40 (DWV) | ASTM D - 2665 | White  |
| PVC Pipes Schedule 40 (SDR) | ASTM D - 2241 | White  |
| cPVC Pipes Schedule 80      | ASTM F - 441  | Grey   |

### Standard pipe length:

(6 meters).

### Jointing pipe:

PVC and cPVC pipes and fittings assemble easily using solvent cement.



### Applications of TAKWEEN PLAST Piping. (PVC and cPVC Pipes):

- Potable Water and Food Industrial.
- Hot and Cold Water Plumbing.
- Irrigation/Agricultural system.
- Drain, Waste and Vent systems.
- Chemical Industries (Pharmaceutical and Biotechnology - Chemical Manufacturing -Health Care - Ultra-pure Water).
- Industrial Processing (Water Desalination - Water Distribution Stations - Cooling Water.
- Water and Waste Water Treatment - HVAC Control - etc.).

### PVC and cPVC Pipes Features and Benefits:

- 1- Rigid Means fewer hangers and supports compared to other plastic pipe materials.
- 2- High quality.
- 3- Clean and uncontaminated for use in Potable water and other liquids.
- 4- Chemically resistant to a wide range of chemicals.
- 5- High tensile strength.
- 6- Smooth surfaces mean less friction loss.
- 7- Corrosion resistant.
- 8- Easy installation methods.
- 9- Lightweight.
- 10- Low thermal conductivity.

## Quality Control Department:

Our company applies a strict quality control system through an independent quality control department to ensure quality at all levels. The quality control department works round the clock to synchronize with shift system of the plant and reports to the top management of the company to insure ascendancy free.



Table No. 2: Physical Properties of PVC & cPVC Pipe.

| General                                    | Test Method | PVC Value              | cPVC Value             |
|--------------------------------------------|-------------|------------------------|------------------------|
| Cell Classification                        | ASTM D 1784 | 12454                  | 23447                  |
| Maximum Service Temp.                      |             | 140° F                 | 200° F                 |
| Color                                      |             | White, Dark Gray       | Medium Gray            |
| Specific Gravity, (g/cu.cm @ 73°F)         | ASTM D 792  | 1.41                   | 1.51                   |
| Water Absorption % increase 24 hrs @ 25°C  | ASTM D 570  | 0.05                   | 0.03                   |
| Hardness, Rockwell                         | ASTM D 785  | 110-120                | 117-119                |
| Poisson's Ratio @ 73°F                     |             | 0.39                   | 0.38                   |
| MECHANICAL                                 | Test Method | PVC Value              | cPVC Value             |
| Tensile Strength, psi @ 73°F               | ASTM D 638  | 7450                   | 7900                   |
| Tensile Modulus of Elasticity, psi @ 73°F  | ASTM D 638  | 420000                 | 426000                 |
| Flexural Strength, psi @ 73°F              | ASTM D 790  | 14450                  | 15000                  |
| Flexural Modulus, psi @ 73°F               | ASTM D 790  | 360000                 | 360000                 |
| Compressive Strength, psi @ 73°F           | ASTM D 695  | 9600                   | 10000                  |
| Izod Impact, notched, ft-lb/in @ 73°F      | ASTM D 256  | 0.75                   | 2.9                    |
| Thermal                                    | Test Method | PVC Value              | cPVC Value             |
| Coefficient of Linear Expansion (in/in/°F) | ASTM D 696  | 3 x 10-5               | 3.2 x 10-5             |
| Coefficient of Thermal Conductivity        | ASTM C 177  |                        |                        |
| Calories • cm/second • cm2 • °C            |             | 3.4 x 10-4             | 3.27 x 10-4            |
| BTU • inches/hour • Ft.2 • °F              |             | 1.02                   | 0.95                   |
| Watt/m/K                                   |             | 0.147                  | 0.137                  |
| Under Load (264 psi, annealed)             | ASTM D 648  | 170                    | 235                    |
| ELECTRICAL                                 | Test Method | PVC Value              | cPVC Value             |
| Dielectric Strength                        | ASTM D 149  | 1,113                  | 1,240                  |
| Dielectric Constant                        | ASTM D 150  | 4                      | 3.7                    |
| Volume Resistivity                         | ASTM D 257  | 1.2 x 10 <sup>12</sup> | 3.4 x 10 <sup>12</sup> |
| Flammability                               | Test Method | PVC Value              | cPVC Value             |
| Flammability                               | ASTM D 635  | Self Extinguishing     | Self Extinguishing     |
| Average Time of Burning (sec.)             | ASTM D 635  | < 5                    | < 5                    |
| Average Extent of Burning (mm)             | ASTM D 635  | < 10                   | < 10                   |
| Flammability rating                        | UL-94       | V-0                    | V-0,5VB                |

## Chemical Resistance of PVC & cPVC Pipe.

PVC and cPVC pipe has excellent chemical resistance to strong mineral acid and bases.

## Temperature Pressure Relationship:

- Maximum PVC Service Temperature 140°F (60°C).
- Maximum cPVC Service Temperature 200°F (93°C).
- The pressure ratings for water at 73°F. To calculate elevated temperature rating use the following formula:

$$\text{Max Pressure} = (73) \times (\text{De-rating Factor}).$$

Table No. 3:

|          | Operating Temp (°C) | Operating Temp (°F) | Percentage of Working Pressure (De-Rating Factor) |
|----------|---------------------|---------------------|---------------------------------------------------|
| PVC Pipe | 23                  | 73                  | 100                                               |
|          | 27                  | 80                  | 88                                                |
|          | 32                  | 90                  | 75                                                |
|          | 38                  | 100                 | 62                                                |
|          | 43                  | 110                 | 51                                                |
|          | 49                  | 120                 | 40                                                |
|          | 54                  | 130                 | 31                                                |
|          | 60                  | 140                 | 22                                                |

EX: 1" PVC SCHEDULE 80 @ 120°F

$$= 630 \text{ psi} \times 0.40 = 252 \text{ psi (max pressure @ 120°F)}$$

Table No. 4:

|           | Operating Temp (°C) | Operating Temp (°F) | Percentage of Working Pressure (De-Rating Factor) |
|-----------|---------------------|---------------------|---------------------------------------------------|
| cPVC Pipe | 23                  | 73                  | 100                                               |
|           | 32                  | 90                  | 91                                                |
|           | 38                  | 100                 | 82                                                |
|           | 49                  | 120                 | 65                                                |
|           | 60                  | 140                 | 50                                                |
|           | 71                  | 160                 | 40                                                |
|           | 82                  | 180                 | 25                                                |
|           | 93                  | 200                 | 20                                                |

EX: 1" cPVC SCHEDULE 80 @ 120°F

$$= 630 \text{ psi} \times 0.65 = 409.5 \text{ psi (max pressure @ 120°F)}$$

## Rigid PVC Pipe Dimensions.

Table No. 5: Dimensions based on ASTM D 1785.

Rigid PVC Pipe - PRESSURE APPLICATIONS.

| Nominal Pipe Size | Outside Diameter | SCHEDULE 40            |       |                |                  | SCHEDULE 80            |        |                |                  |
|-------------------|------------------|------------------------|-------|----------------|------------------|------------------------|--------|----------------|------------------|
|                   |                  | Minimum Wall Thickness |       | Nominal Weight | Working Pressure | Minimum Wall Thickness |        | Nominal Weight | Working Pressure |
| inch              | mm               | inch                   | mm    | kg/m           | PSI              | inch                   | mm     | kg/m           | PSI              |
| 1/2               | 21.34            | 0.109                  | 2.770 | 0.248          | 600              | 0.147                  | 3.730  | 0.309          | 850              |
| 3/4               | 26.67            | 0.113                  | 2.870 | 0.329          | 480              | 0.154                  | 3.910  | 0.418          | 690              |
| 1                 | 33.40            | 0.133                  | 3.380 | 0.483          | 450              | 0.179                  | 4.550  | 0.614          | 630              |
| 1 1/4             | 42.16            | 0.140                  | 3.560 | 0.652          | 370              | 0.191                  | 4.850  | 0.850          | 520              |
| 1 1/2             | 48.26            | 0.145                  | 3.680 | 0.779          | 330              | 0.200                  | 5.080  | 1.030          | 470              |
| 2                 | 60.32            | 0.154                  | 3.910 | 1.040          | 280              | 0.218                  | 5.540  | 1.430          | 400              |
| 2 1/2             | 73.02            | 0.203                  | 5.160 | 1.650          | 300              | 0.276                  | 7.010  | 2.180          | 420              |
| 3                 | 88.90            | 0.216                  | 5.490 | 2.160          | 260              | 0.300                  | 7.620  | 2.910          | 370              |
| 4                 | 114.3            | 0.237                  | 6.020 | 3.070          | 220              | 0.337                  | 8.560  | 4.260          | 320              |
| 6                 | 168.28           | 0.280                  | 7.110 | 5.410          | 180              | 0.432                  | 10.970 | 8.130          | 280              |
| 8                 | 219.08           | 0.322                  | 8.180 | 8.150          | 160              | 0.500                  | 12.700 | 12.400         | 250              |
| 10                | 273.05           | 0.365                  | 9.270 | 11.500         | 140              | 0.593                  | 15.060 | 18.300         | 230              |

Notes:

- 1- All PVC pipe sizes listed above are standard nominal pipe size.
- 2- Schedule 40 & 80 PVC pipe pressure ratings vary based on pipe size.
- 3- Using schedule 40 parts on a primarily schedule 80 pipe system is not recommended.
- 4- Be aware that Schedule 40 PVC pipe has a lower pressure rating than Schedule 80.
- 5- All our PVC pipe schedule 80 is NSF approved for potable water service (NSF-61).

Table No. 6: Dimensions based on ASTM D 2665.

Rigid PVC Pipe - NON-PRESSURE (DWW).

| Nominal Pipe Size | Outside Diameter | Minimum Wall Thickness |       | Nominal Weight |
|-------------------|------------------|------------------------|-------|----------------|
|                   |                  | inch                   | mm    |                |
| inch              | mm               | inch                   | mm    | kg/m           |
| 1 1/4             | 42.16            | 0.140                  | 3.560 | 0.652          |
| 1 1/2             | 48.26            | 0.145                  | 3.680 | 0.779          |
| 2                 | 60.32            | 0.154                  | 3.910 | 1.040          |
| 2 1/2             | 73.02            | 0.203                  | 5.160 | 1.650          |
| 3                 | 88.90            | 0.216                  | 5.490 | 2.160          |
| 4                 | 114.30           | 0.237                  | 6.020 | 3.070          |
| 6                 | 168.28           | 0.280                  | 7.110 | 5.410          |
| 8                 | 219.08           | 0.322                  | 8.180 | 8.150          |
| 10                | 273.05           | 0.365                  | 9.270 | 11.500         |



Table No. 7 : Dimensions based on ASTM D 2241 (SDR SERIES).

| Nominal Pipe Size | Outside Diameter | SDR 32.5 -125 PSI |                | SDR 26 -160 PSI |                | SDR 21 - 200 PSI |                | SDR17 - 250 PSI |                |
|-------------------|------------------|-------------------|----------------|-----------------|----------------|------------------|----------------|-----------------|----------------|
|                   |                  | Wall Thickness    | Nominal Weight | Wall Thickness  | Nominal Weight | Wall Thickness   | Nominal Weight | Wall Thickness  | Nominal Weight |
| inch              | mm               | mm                | kg/m           | mm              | kg/m           | mm               | kg/m           | mm              | kg/m           |
| 1 1/2             | 48.26            |                   |                |                 |                | 2.3              | 0.52           | 2.9             | 0.63           |
| 2                 | 60.32            | 1.9               | 0.56           | 2.3             | 0.66           | 2.9              | 0.81           | 3.6             | 0.98           |
| 2 1/2             | 73.02            | 2.2               | 0.77           | 2.8             | 0.95           | 3.5              | 1.16           | 4.3             | 1.39           |
| 3                 | 88.9             | 2.7               | 1.13           | 3.4             | 1.39           | 4.2              | 1.68           | 5.2             | 2.05           |
| 4                 | 114.3            | 3.5               | 1.85           | 4.4             | 2.28           | 5.4              | 2.79           | 6.7             | 3.4            |
| 6                 | 168.28           | 5.2               | 3.99           | 6.5             | 4.97           | 8                | 6.06           | 9.9             | 7.4            |
| 8                 | 219.08           | 6.7               | 6.72           | 8.4             | 8.35           | 10.4             | 10.2           | 12.9            | 12.5           |
| 10                | 273.05           | 8.4               | 10.5           | 10.5            | 13             | 12.8             | 15.6           | 16.1            | 19.4           |

## Rigid cPVC Pipe Dimensions for Hot and Cold Water.

Table No. 8: Dimensions based on ASTM F 441 SCHEDULE 80.

| Nominal Pipe Size | Outside Diameter |         | SCHEDULE 80            |        |                |                  |      |
|-------------------|------------------|---------|------------------------|--------|----------------|------------------|------|
|                   |                  |         | Minimum Wall Thickness |        | Nominal Weight | Working Pressure |      |
| inch              | inch             | mm      | kg/m                   | mm     | kg/m           | PSI              | Mpa  |
| 1/2               | 0.840            | 21.340  | 0.1470                 | 3.730  | 0.337          | 850              | 5.86 |
| 3/4               | 1.050            | 26.670  | 0.1540                 | 3.910  | 0.457          | 690              | 4.76 |
| 1                 | 1.315            | 33.400  | 0.1790                 | 4.550  | 0.671          | 630              | 4.34 |
| 1 1/4             | 1.660            | 42.160  | 0.1910                 | 4.850  | 0.928          | 520              | 3.59 |
| 1 1/2             | 1.900            | 48.260  | 0.2000                 | 5.080  | 1.130          | 470              | 3.24 |
| 2                 | 2.375            | 60.320  | 0.2180                 | 5.540  | 1.560          | 400              | 2.76 |
| 2 1/2             | 2.875            | 73.020  | 0.2760                 | 7.010  | 2.370          | 420              | 2.90 |
| 3                 | 3.500            | 88.900  | 0.3000                 | 7.620  | 3.180          | 370              | 2.55 |
| 4                 | 4.500            | 114.300 | 0.3370                 | 8.560  | 4.650          | 320              | 2.21 |
| 6                 | 6.625            | 168.280 | 0.4320                 | 10.970 | 8.870          | 280              | 1.93 |
| 8                 | 8.625            | 219.080 | 0.5000                 | 12.700 | 13.500         | 250              | 1.72 |

Notes:

- 1- All PVC pipe sizes listed above are standard nominal pipe size.
- 2- Schedule 40 & 80 PVC pipe pressure ratings vary based on pipe size.
- 3- Using schedule 40 parts on a primarily schedule 80 pipe system is not recommended.
- 4- Be aware that Schedule 40 PVC pipe has a lower pressure rating than Schedule 80.
- 5- All our PVC pipe schedule 80 is NSF approved for potable water service (NSF-61).

## Handling and Storage.

To store PVC and cPVC pipes safely, consider the following:



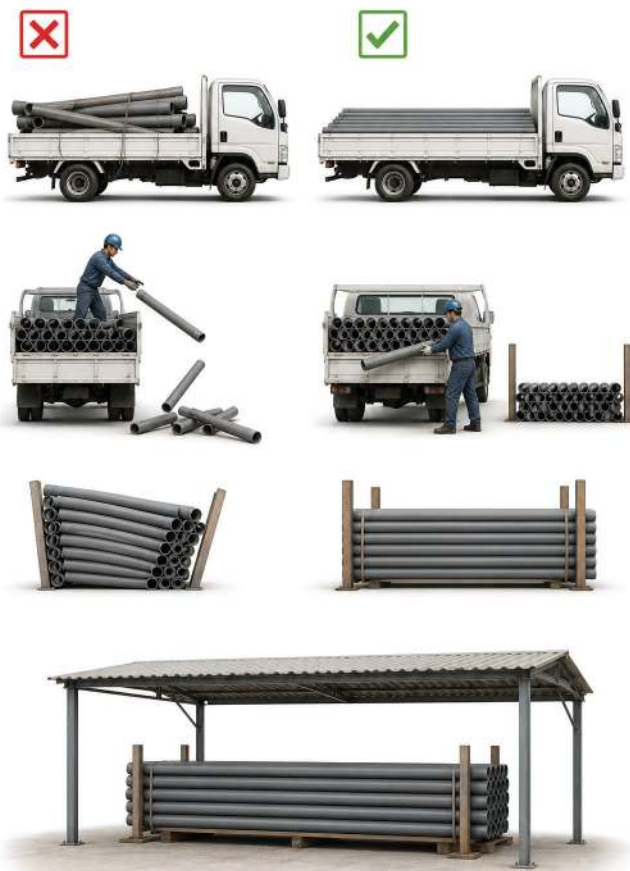
- 1- All storage areas should be flat and kept free from stones and sharp-edged objects.
- 2- Pipes are to be stored in such a way to prevent any contamination of the insides.
- 3- Storage zones and stack heights are to be chosen which avoid possible damage or permanent deformation.
- 4- Large diameter pipes with low wall-thicknesses are to be provided with stiffener rings.
- 5- Single point or longitudinal contact support for any pipe is to be avoided.
- 6- Non-pelleted pipes should be stacked in heights not exceeding 1 meter. This is not applicable for pipes which are stacked on pallets providing their full weight is supported by the frame of the pallet. In principle, coiled pipes are to be either laid flat or placed in a suitable protective framework for storage.
- 7- Pipes should not be allowed to come into contact with fuels, solvents, oil, greases, paints (silicones) or heat sources during storage.
- 8- Dragging pipes above ground should always be avoided.

## Transportation of PVC and cPVC pipes:

Vehicles for transporting pipes should be selected in such a way so that the pipes can lay completely flat on the bed of the vehicle without any over-hang.

- 1- All pipes are to be supported so that they cannot bend or become deformed.
- 2- The area of the truck where the pipes are laid should be covered with either protective sheeting or cardboard (including all side supports) in order to prevent any possible damage from protruding rivets or nails etc.

- 3- Pipes should be protected from possible damage during transportation and not dragged over the bed of the truck or across open ground prior to installation.
- 4- Pipes and fittings should always be loaded and unloaded with extreme care. Special support frames are to be employed when using cranes for loading or unloading from vehicles.
- 5- Throwing pipes onto the ground from the bed of the transport truck must always be prevented.
- 6- Sudden shock impacts are to be avoided under all circumstances.



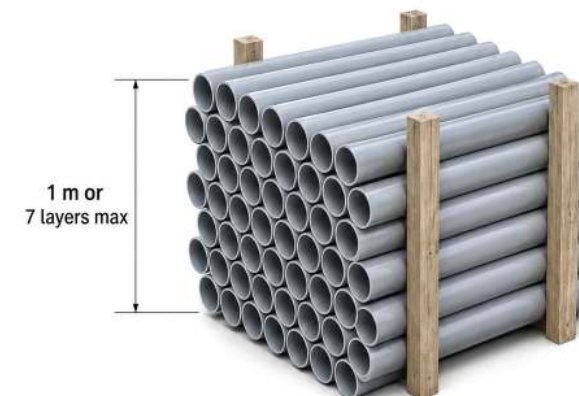
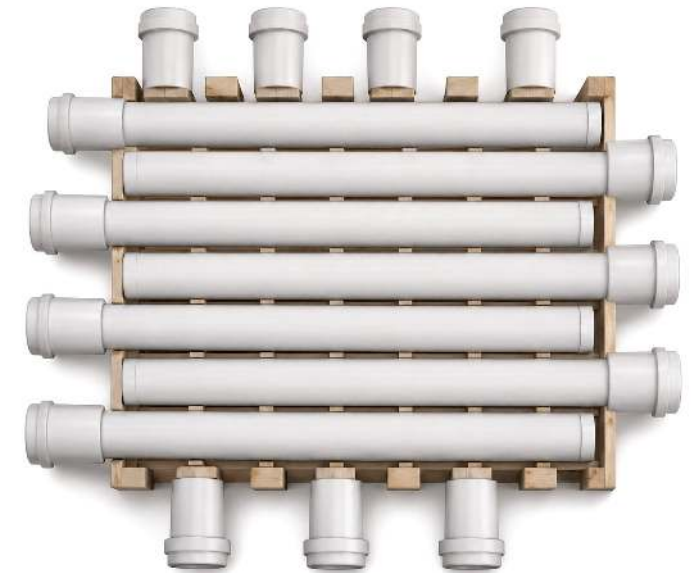
## Effect of Weather:

If pipes are stored in the open area (for example, on construction sites) they must be covered with suitable colored or plain black sheeting to protect them from the effects of weather (e.g. UV radiation). Furthermore, a one-sided exposure to direct sunshine can ultimately lead to deformation of the pipe.

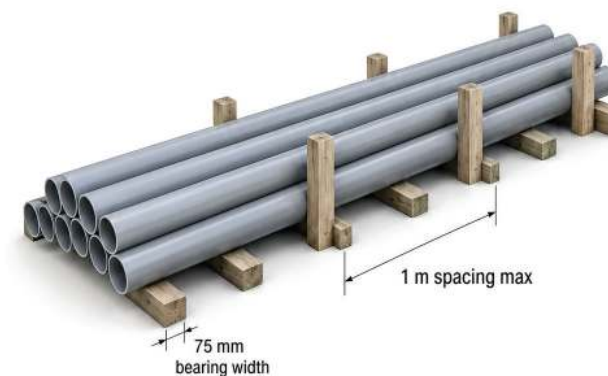
## Handling and Storage Methods.

### Pipe Storage:

Pipes should be stored under shade or inside a closed warehouse. When this is not possible, the pipe should be stored on level ground which is dry and free from sharp objects. If different schedules of pipe are stacked together, the pipe with the thickest walls should be on the bottom. If the pipe is packed in pallets, the pallets should be sacked with the pallet wooden frames on top of each other's rather than having them placed on the pipes. This will prevent damage to or bowing underlying pipes. If the pipe is stored in racks, it should be continuously supported along its length. If this is not possible, the spacing of the supports should not exceed their feet (3'). The pipe should be protected from the sun and be in an area with proper ventilation. This will reduce the effects of ultraviolet rays and help prevent heat deflection impact.



Loose pipes on the ground



Loose pipes on the bearers

### Stacking:

Pipes should always be given adequate support. They should not be stacked in large piles, especially under warm temperature conditions.

As the bottom pipes may distort, thus giving rise to difficulty in pipe alignment and jointing.

Socket and spigot pipe joints should be stacked in large layers with sockets placed at alternate ends of the stack and imparting of a permanent set to the pipes. For the long-term storage, pipe racks should preferably provide continuous support but, if this is not possible, timber supports of at least 75 mm (3 in) bearing width, at spacing not greater than 1 m (3.2 ft.) centers should be placed beneath the pipes and, if the stacks are rectangular, at twice this spacing at the different classes of pipe are kept in the same racks then the thickest classes must always be at the bottom.

## Jointing Methods:

TAKWEEN PLAST PVC and cPVC pipes and fittings may be joined using rubber ring joints or solvent cement joints.

### A) Solvent Cement Joints.

To achieve strong leak free joints, should:

- 1- Select the correct solvent cement and cleaner primer for the application.
- 2- Cleaner primer and solvent cement must be used together to achieve permanent leak-free joints.
- 3- Select the correct pipe and fitting.
- 4- Follow the recommended jointing steps shown below:

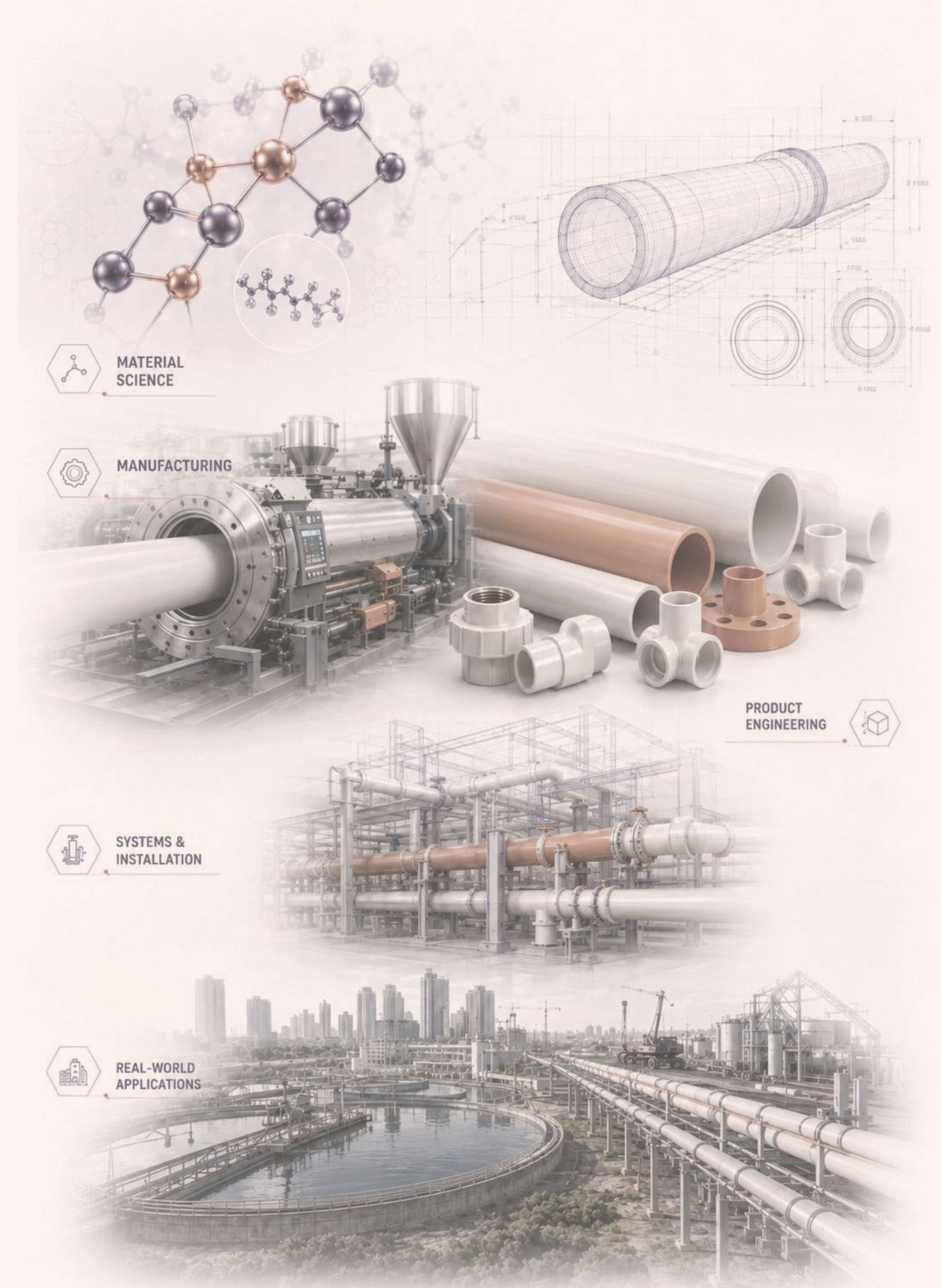


### Solvent Cement Welding Procedure:

- 1- Ensure the pipe and fitting are clean and dry. Moisture contamination may lead to future joint failure.
- 2- Cleaner primer fluid must be used to clean and prime all surfaces, it is important to the jointing process.
- 3- Apply cleaner primer to the pipe and fitting with a lint-free cloth (natural fibres) dampen the joint with priming fluid.
- 4- Apply solvent cement without delay after cleaning, using a flat clean brush. Apply an even unbroken layer brushing axially to the pipe end and fittings.
- 5- Apply a second full even coat to the pipe if required. Excessive solvent cement on the outer can easily be wiped away after assembly.
- 6- Ensure the entire surface is covered and are with cement before assembly. As solvents evaporate faster from the exposed pipe than from the fitting. (a dry patch not lubricated by wet solvent, may prevent full insertion).
- 7- Immediately insert the pipe into the fitting up to the entry mark, align pipe and fitting. Hold in position for a few seconds, then wipe off excess cement (do not twist).

### After Jointing:

Do not move the joint for at least 10 - 15 minutes, allow 4 hours if the jointed pipe lengths are to be laid in a trench. Do not fill the pipe with water for at least one hour after making the last joint. Allow the cement to fully cure before attempting any site hydrostatic testing. Joint curing normally takes at least 24 hours at 20° C. Allow up to 48 hours of cure time if the temperature is less than 20° C.



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