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## THE ANTIMICROBIAL HOT & COLD WATER PIPE SYSTEM

- Provides 99.99% antimicrobial efficacy and long lasting protection against Bacteria, Fungi & Algae; hence providing safe and healthy water
- The Premium Hot & Cold Water Pipe System
- Highest Quality Fittings Imported From Wavin Europe
- Unwavering Commitment to Quality & Reliability
- Providing Customers with Outstanding Pre and Post Sales Support



## Introduction

Polydex is designed for transport of hot and cold water. It is also used for the distribution of compressed air. Polydex is the first complete PPR piping system in Pakistan that conforms to international quality and standards.

In order to take advantage of its chemical resistance and other system properties and use of system for transport of other liquids, gaseous or solid media - an individual assessment of any such case would be needed.

Dadex Polydex pipes have 99.99% antimicrobial efficacy and provide long lasting protection against Bacteria, Fungi and Algae; hence providing safe and healthy water.

## Material

Polydex pipe system is manufactured from Polypropylene Random (PPR). PPR is a 100% certified food-grade material. Its resistance to high temperatures has made PPR a popular piping system recommended for domestic and industrial usage. The physical and chemical properties of PPR make it a superior and safe piping system for supply of potable water and other fluids.

Polydex pipes and fittings are supplied in green in colour.

## Standards & Specifications

Polydex pipe system conforms to the following international standards:

Pipes       DIN 8077-8078   PN 20  
Fittings\*   DIN 16962

\*Polydex fittings carry a mark 'Ekoplastik' (EK on fittings).

## Available Range

Polydex pipes and fittings are available in the following outside diameters:



### Nominal outside diameter in mm

20

25

32

40

50

63

75

90

110

Complete range of fittings is available. Special fittings are also available such as flange connections and short by-pass bends.

## Fields of Application

### Hot and cold water installations in:

- Residences and apartments
- Hospitals
- Hotels and Offices
- School buildings
- Commercial buildings and plazas
- Swimming pools

### Pipe System Network

- Various industries (for transportation of aggressive fluids)
- Chilled water for central air conditioning

## Features & Benefits

### • Potability

Polydex conforms to international standards that approve its use for distribution of drinking water and other liquids.

### • Welding capability

All elements of Polydex pipe system can be easily joined by heat fusion.

### • Metal insert in fittings

All threaded inserts in the fittings are made of nickel plated brass and machined from solid bars. Polydex pipes and fittings can easily be fixed with metal fittings such as taps, bib cocks and stop cocks which enhance its utility for a wide spectrum of applications.

### • Reduced head loss

Polydex has a smooth internal surface, hence there are no chances of encrustation. This leads to reduced head loss and smooth flow.

### • Noise free

Polydex has high insulation capacity which reduces noise tremendously, even in case of water hammering.

### • Resistant to frost

Polydex pipe system can sustain sub zero temperatures. Elasticity of the material allows the pipes to expand if the liquid being conveyed freezes due to low temperature. Polydex does not crack or break due to frosting.

### • Resistant to abrasion and corrosion

Polydex resists corrosion and abrasion even in presence of acidic and alkaline substances having pH values ranging between 1 to 14.

### • Environment friendly

Polydex is environment friendly and can be recycled.

### • Low electrical conductivity

Polydex is a poor conductor of electricity and is safe against stray currents.

### • Low heat conductivity

The material used for Polydex is a poor conductor of heat. As a result, condensation and heat dispersion of the transported fluid are reduced. Due to this, it instantly allows hot or cold water to flow through pipes even if the piping system has not reached average working room temperature.

### • Fitness for use in seismic areas

Polydex is manufactured from a flexible material and can therefore be used in seismic areas.



## Jointing Method

### Heat Fusion

Jointing of Polydex pipes is carried out by a method called 'heat fusion'. This is done by means of a welding machine. The male and female parts of pipes and fittings are joined together to form a joint.

The end of the two parts are heated simultaneously. Once the welding temperature is reached, the two end parts (which are in molten form) are pressed together. They are held together till the recommended cooling time (See table 1). When fully cooled, a permanent leak-free joint is formed. Heat fusion is an irreversible process, hence care should be taken in jointing in order to avoid loss of fittings.

### Welding - Getting Started

1. Cut the pipe at the right angle with a cutter.
2. Mark off the welding depth at the pipe end.
3. Simultaneously heat the ends of both pipe and fittings as per recommended heating time. (See Table 1)
4. Push the pipe end into the fitting and ensure its alignment of assembly within the specified time period.

**Table 1**

Fusion Data For Polydex			
Outside Diameter	Average Heating Time*	Average Working Time (max.)	Average Cooling Time (min.)
mm	sec	sec	min
20	5	4	2
25	7	4	2
32	8	6	4
40	12	6	4
50	18	6	4
63	24	8	6
75	30	8	6
90	40	8	6
110	50	10	8

\*Average heating time refers to the start time when the pipe and fitting are inserted up to the marked welding depth in the welding machine.

### Welding - Guidelines

1. Always ensure that the welding machine corresponds to the required jointing size.
2. Required operating temperature of the welding machine is 250°C - 270°C.
3. Cut the pipe at right angles by using a cutter.
4. Always clean the pipe from burrs, cuttings and chips.
5. Remember to mark the welding depths at the end of the pipe before heating.
6. Push the end of the pipe into the welding machine up to the marked welding depth and push the fitting into the welding machine simultaneously.
7. Quickly remove the pipe and fitting from the welding machine on completion of the recommended heating time. Continue to press the pipe into the fitting until the welding depth mark is covered with the bead of material from the fittings.
8. Allow the joint to cool down as per specified cooling time before starting installation.

## Installation Guidelines

### • Concealed Installations

Polydex does not cause any problem when embedded in the wall or floor, because naturally occurring frictional forces prevent the thermal expansion and contraction. Also the characteristic of deformability of the system can absorb expansions in walled installation.

### • Fastening technique for open installation

Suspended pipelines require compensation for thermal changes and this can be achieved by proper placement of fixed and sliding clamps in the installation network.

#### (a) Fixed Point

Fixed clamps help limit the uncontrollable movements of the pipelines and divide them into sections. Fixed point spacing must be performed on the basis of pipe diameter. The material used to perform this operation must possess certain characteristics so that it does not damage the external surface of the pipe.

#### (b) Sliding Point

Sliding clamps allow the axial movement of the pipe without damaging it. On locating a sliding clamp it has to be ensured that movements of the pipeline are not hindered by fittings or armatures installed next to them.



Table 2

POLYDEX (PN20) CLAMP SPACES						
∅ pipe	Maximum distances in cm of supports of Polydex PPR S 2.5 (PN 20) pipe (horizontal pipeline) at temperature of					
mm	20°C	30°C	40°C	50°C	60°C	80°C
20	95	90	85	85	80	70
25	100	100	100	95	90	85
32	120	115	115	110	100	90
40	130	130	125	120	115	100
50	150	150	140	130	125	110
63	170	160	155	150	145	125
75	185	180	175	160	155	140
90	200	200	185	180	175	150
110	220	215	210	195	190	165

Above chart recommended by wavin.

## Dadex PPR Antimicrobial Pipes

Dadex is committed to water conservation as well as the supply of safe water for health and well-being of our people. To this purpose, Dadex has once again brought a revolutionary technology for the first time in the piping industry of Pakistan, by introducing Antimicrobial pipes containing state of the art Antimicrobial Technology, developed by a UK based company having its network in 98 countries.

**Dadex Polydex pipes have 99.99% antimicrobial efficacy and provide long lasting protection against Bacteria, Fungi and Algae; hence providing safe and healthy water.**

## Why Dadex Antimicrobial Pipes

Pipes are the backbone of water distribution systems in building and infra-structure, and once incorporated, lasts as long as the life span of structure. Water distribution systems provide a suitable milieu for micro-organisms: Bacteria, Fungi and Algae. Microbes which survive in the distribution system possess the ability to grow and produce BIOFILM, a surface deposit of microorganisms, and organic and inorganic materials that accumulate within a slime layer. Biofilms induce many problems in water distribution systems like: change in color, odor, taste and turbidity of water, blockage of pipes and inefficacy of disinfection treatment. The Slimy layer of biofilm act as a slow-release mechanism for persistent contamination of water.

The microbial contamination and buildup in water distribution pipes pose a direct risk to public health because of water-borne diseases. Most common disease causing microorganisms associated with water contamination are Pseudomonas, Aeromonas, Klebsiella, E.coli, Helicobacter, Vibrio spp. Shigella, Salmonella, Legionella spp. Aspergillus, Cryptococcus and Mucor. These pathogens can cause serious illnesses like diarrhea, dysentery, gastroenteritis, allergies, skin infection, etc.

Water-borne diseases pose serious threat to public health:

- According to WHO (2014), every year more than 3.4 million people die as a result of water-related diseases, making it the leading cause of morbidity and mortality around the world.
- 1.8 million People die every year from diarrheal diseases. 90% percent are children under 5, mostly in developing countries.
- 88 % of diarrheal disease are attributed to unsafe water supply, inadequate sanitation and hygiene. (WHO).
- Elderly people, children, people with weak immune system and pregnant women are more susceptible to water borne diseases.

Dadex has make the piping system microbe-free by incorporating Antimicrobial Technology, as bacteria lands on the inner pipe wall, antimicrobial technology eliminates the bacteria and support to provide safe water.

Dadex antimicrobialpipes eradicate the bacteria in pipes surfaces and protect against the development of microbial biofilm in water distribution systems. The built-in antimicrobial technology becomes an integral part of the finished product.

The antimicrobial additive being used by Dadex in Antimicrobial pipes has been tested against over 50 dangerous microorganisms including: MRSA, E. coli Salmonella, Klebsiella pneumoniae, Staphylococcus aureus, Pseudomonas aeruginosa, Clostridium difficile, A. niger Corynebacterium spp, Escherichia coli. The Dadex Antimicrobial products have built-in anti-fungal, anti-bacterial, anti-mold, anti-mildew and anti-algal protection, providing a broad spectrum of total anti-microbial performance.

## How Dadex Antimicrobial Pipes works?

The Antimicrobial Technology provides effective and broad spectrum anti-microbial performance

### Antimicrobial Process - 3 Stages

#### Stage-1

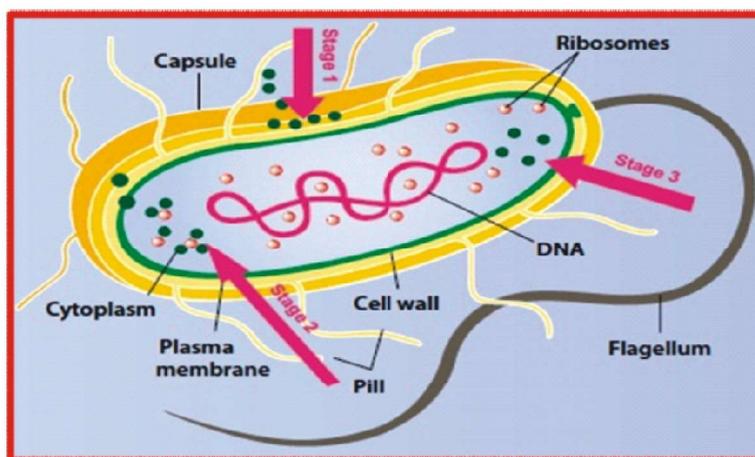
Antimicrobial ability enters the bacterial membrane and cause damage and disruption to the cellular wall before penetrating the cell.

#### Stage-2

Antimicrobial ability is highly reactive with the cell enzymes and can deactivate these vital molecules.

#### Stage-3

It interrupt the cell DNA, preventing replication and cell formation. Provides bacterial safe, healthy drinking water.



### Features of Dadex Antimicrobial pipes

- Built-in Antimicrobial Protection against Bacteria, Fungi and Algae.
- Dadex Antimicrobial Pipes are tested by Intertek for Antimicrobial performance
- Maximum protection against water borne diseases and bio-film development.
- 99.99% Antimicrobial efficacy against microorganisms
- Effective and long-lasting antimicrobial protection that keeps the pipe safe from bacteria and provides healthy water.
- Improves water quality and prevents the development of bad tastes and odors in water.

### American and US Standards Compliance

The Dadex Antimicrobial Pipes conforms to the following standards for its antimicrobial efficacy.

Anti-fungal testing

ISO16869:2008, ASTM G21-09 and ASTM E 2180

Anti-bacterial testing

ISO 22196:2011 and JIS Z 2801

Anti-algae testing

ASTM D 5589-09 and prEN WD algae

**DADEX Antimicrobial Pipes**  
**A Promise of Healthy Living !**

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**Note :** All information contained in this literature is given in good faith. The user should, however, check that the product is suitable for purpose, in the application for which it shall be used. Please ensure compliance with all health and safety requirements. Whilst continuing its programme of continuous development, Seller reserves the right to modify or extend any published information without any prior notification. No responsibility can be accepted for any error, omissions or incorrect assumptions.

**“Seller’s Responsibility:** responsibility of seller ceases once the goods are delivered to the buyer’s representative at our factory, where delivery is taken in person. In other cases responsibility of seller shall cease once the goods are delivered to the buyer’s/carrier’s authorized representative (s). No claims of any type including in transit loss, damage, pilferage, short-delivery, etc. will be entertained by the seller and the buyer agrees to hold the seller harmless in this regard. Additionally, seller shall not be responsible for any consequential damages including but not limited to economic loss of any kind whatsoever, upon the products being delivered to the seller as per the terms of this Clause. Any claim or responsibility as stated herein will not be entertained by the seller and such action will also not be the cause of dispute by the buyer”.

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