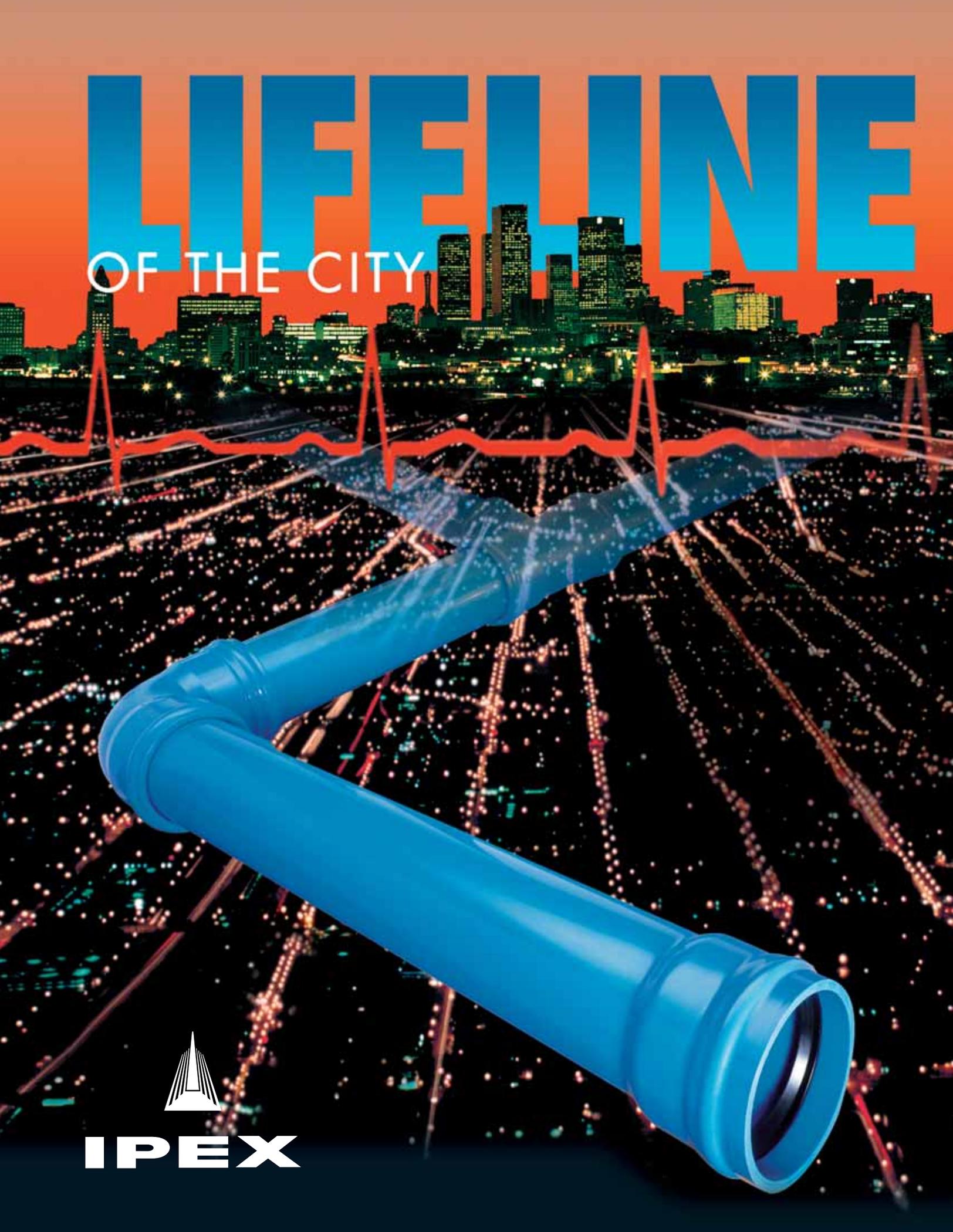


# LIFELINE

OF THE CITY



**IPEX**

## Lifeline of the City

Our well being depends on the health of our municipal infrastructure. We depend on reliable supplies of potable water and the effective removal of sewage. Leaks that waste precious water must be avoided.

Unfortunately, the existing infrastructure is running down. Corroded, clogged and requiring repairs, it just isn't as healthy as it should be.

IPEX Blue Brute PVC pipe and fittings can help restore the infrastructure back to health. Corrosion proof, easy to install and cost effective, Blue Brute can contribute to correcting the epidemic of problems plaguing the continent's infrastructure, while assuring it of a long, healthy life in the future.

## APPLICATIONS

Blue Brute Class 165 (DR25), Class 235 (DR18) and Class 305 (DR14) is available in sizes 100mm, 150mm, 200mm, 250mm and 300mm (4" – 12").

Manufactured to cast iron outside diameters, Blue Brute PVC Pipe is used for:

- Municipal Watermains
- Fire Lines
- Sewer Force Mains
- Industrial Process Lines
- Irrigation Piping



## ADVANTAGES

### Corrosion Proof

Blue Brute pipe is immune to damage from naturally corrosive soils, electrochemical action, and galvanic corrosion. This ensures lower maintenance costs and longer performance life.

### Improves Water Quality

The smooth interior surface of Blue Brute pipe virtually eliminates encrustants such as calcium from adhering to its surface. Ultimately, the water distribution line stays cleaner longer and provides better water quality.

### Blue Brute Tough!

Underground stresses that could place rigid pipe in jeopardy can easily be absorbed by the flexible strength of Blue Brute pipe. Such stresses as shear and flexure cannot reach damaging levels in PVC pipe because of its ability to flex without damage.

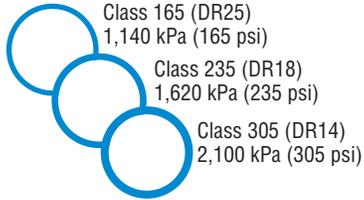
### Large Reserves of Strength

Each pressure class of Blue Brute pipe has long-term hydrostatic strength providing a generous safety factor of 2 to 1. Blue Brute also has large reserves of strength to withstand short-term pressure surges.



## A Variety of Pressure Classes

Blue Brute pipe comes in three pressure classes:



By engineering a variety of pressure classes in a distribution system, significant cost savings can be achieved.

## Each Pipe Tested

Blue Brute pipe is hydrostatically tested to two times its pressure class, i.e. Class 235 (DR18) tested at 3,240 kPa (470 psi.). This assures the user of total integrity of every length of pipe manufactured.

## Smooth Interior

Blue Brute's smooth interior walls provide a lifetime of operation with no loss of carrying capacity. Substantial savings can be realized through reduced pumping costs over the life of the system, due to a high Hazen Williams flow coefficient of C=150.

## Tight Joints

The IPEX gasket joint is designed for unequalled performance and ease of installation. The joints can withstand many times their pressure class without leakage. Joints must also withstand a vacuum pressure of 75 kPa (11 psi) or 22" of mercury.

Pipe	Joint Capability
Class 165 (DR25)	3,670 kPa (532 psi)
Class 235 (DR18)	5,190 kPa (752 psi)
Class 305 (DR14)	6,780 kPa (983 psi)

## Cast-Iron Outside Diameters

IPEX Blue Brute pipe is manufactured with cast-iron outside diameters compatible with standard cast-iron mechanical-joint and slip-joint fittings.

## Service Connections

Blue Brute may be serviced by direct taps for connections sizes 3/4" (20 mm) or 1" (25 mm) only. Pipe mainline diameter must be 6" (150 mm) or larger and the pipe wall must be DR18 or DR14 only for direct tapping. Alternatively, for all DR options and up to 2" (50 mm) diameter, services may be achieved using IPEX Tapped Couplings or metallic service saddles. More information on tapping Blue Brute can be found in the IPEX publication, "How to Tap Blue Brute Pipe".



## STANDARDS

IPEX Blue Brute Pipe meets these standards:





### QUALITY ASSURANCE

The following tests are performed on Blue Brute pipe to ensure the highest quality of pipe for our customers.

#### Material Tests:

PVC compound must meet the requirements of cell classification 12454 according to ASTM D1784. The compound must also have a Hydrostatic Design Basis of 27.6 MPa (4,000 psi).

#### Dimensional Tests:

Blue Brute pipe must pass a series of dimensional checks at 23°C (73°F).

**Fusion Tests:** Randomly selected pipe sections must pass the acetone immersion test. After 20 minutes immersion in a sealed container of anhydrous (99.5% pure) acetone, a 25mm (1") sample ring shall show no visible flaking or cracking.

#### Flattening Tests:

A 50mm (2") ring is placed between two flat parallel plates and compressed until the distance between the plates is 5% of the original outside diameter of the pipe, or the walls of the pipe touch within two to five minutes at uniform loading. There shall be no evidence of splitting or shattering.

**Impact Tests:** Impact tests are performed at 0°C (32°F). Pipe shall not crack or split when tested in accordance with the impact procedure outlined in Clause 7.7 in CSA B137.0, at the following energy levels:

Size	Joules @ 0°C	ft.•LbF
100mm (4")	135	100
150mm (6")	165	120
200mm (8")	175	130
250mm (10")	190	140
300mm (12")	205	150

#### Hydrostatic Proof Tests:

Every length of pipe shall be proof tested at two times its class:

Class 165	DR25	2,280 kPa (330 psi)
Class 235	DR18	3,240 kPa (470 psi)
Class 305	DR14	4,210 kPa (610 psi)





## DESIGN NOTES

### Temperature Coefficients

Pipe Temperature		Pressure Rating Reduction Coefficient
°F	°C	
80	(27)	0.88
90	(32)	0.75
100	(38)	0.62
110	(43)	0.50
120	(49)	0.40
130	(54)	0.30
140	(60)	0.22

### Allowable Maximum Occasional Surge Pressure in Pipe Operating at 73°F (23°C) or Below

DR	Pressure Class (PC)	Occasional Surge Pressure Capacity
	(psi)	(psi)
25	165	264
18	235	376
14	305	488

\* The surge pressure limits in this table apply only to pipe and not necessarily to system components, which may have lesser tolerance. The design should consider possible system reactions and their potential effect on system components.

## Thrust Restraints

Mechanical restraint collars are available for Blue Brute pipe. The restraint device attaches behind the bell of one pipe and grips the spigot of the next.

Concrete thrust blocks also provide good restraint, where space permits. For details on how to determine the appropriate concrete thrust block size, refer to the IPEX Installation Guide for Pipe and Fittings, or the latest edition of AWWA Manual M23, PVC Pipe-Design and Installation.

## Blue Brute Fittings



The perfect companion product for Blue Brute pipe is Blue Brute fittings. The fittings are available in 100mm, 150mm, 200mm, 250mm and 300mm (4", 6", 8", 10" & 12") for use with Class 165 (DR25) and Class 235 (DR18) Blue Brute pipe. For more

information on fittings, refer to IPEX Blue Brute Fittings Brochure.



## Gasket Options

The IPEX gasket has a proven lock-ring design, allowing joints to meet ASTM D3139 requirements with ease. The gasket stays in place without glue. All Blue Brute pipe and fittings can be supplied with any one of the following gaskets:

### 1. Standard Gasket:

Good for typical watermain applications where cast-iron-sized PVC pipe is being used.

### 2. Nitrile Gasket:

For watermain applications where pipe must be buried in soil with hydrocarbon contamination.

## General

Blue Brute pipe shall conform to AWWA C900 "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 12 in., for Water Distribution," and certified to CSA B137.3 "Rigid Polyvinyl Chloride (PVC) Pipe for Pressure Applications." Blue Brute DR25 shall have a pressure class of 1140 kPa (165 psi). DR18 pipe shall have a pressure class of 1,620 kPa (235 psi). DR14 pipe shall have a pressure class of 2,100 kPa (305 psi).

## Material

Blue Brute pipe shall be made from clean, 12454 PVC compound, conforming to ASTM resin specification D1784. Clean, reworked material generated from the manufacturer's own pipe production may be used.

## Product

Pipe shall be suitable for use at maximum hydrostatic working pressures equal to the class designation at 23°C (73°F). Laying lengths shall be 6.1 metres (20 feet). Pipe shall have cast-iron outside diameters. Every length must be proof tested at four times the pressure class of the pipe.

## Joining

The gasket shall be carefully fitted to the bell groove if not already factory installed. Both bell and spigot shall be clean and free of debris before approved lubricant is applied. The pipe and/or fittings shall be joined by push-fitting bell and spigot joint to the depth line marked on the spigot. When pipe has been cut in the field, the end shall be made square and bevelled to a 15° chamfer.

## Molded Fittings

Blue Brute fittings shall conform to AWWA C907 "Polyvinyl Chloride (PVC) Pressure Fittings for Water (4" through 8")" and be certified to CSA B137.2 "PVC Injection Molded Gasketed Fittings for Pressure Applications." They shall also be UL Listed, FM approved, and use a 4,000 PSI (2.76 MPa) Hydrostatic Design Basis PVC compound.

## Fabricated Fittings

Fabricated fittings shall be made from segments of AWWA C900 Class 235 PVC pipe bonded together and over-wrapped with fibreglass-reinforced polyester. The pressure class of the fittings must match the pipe. The fittings must meet the requirements of CSA B137.3.

## Lubricant

Pipe must be assembled with IPEX non-toxic, water soluble lubricant listed by the National Sanitation Foundation.

## Colour Coding

Water pipe shall be colour coded blue.





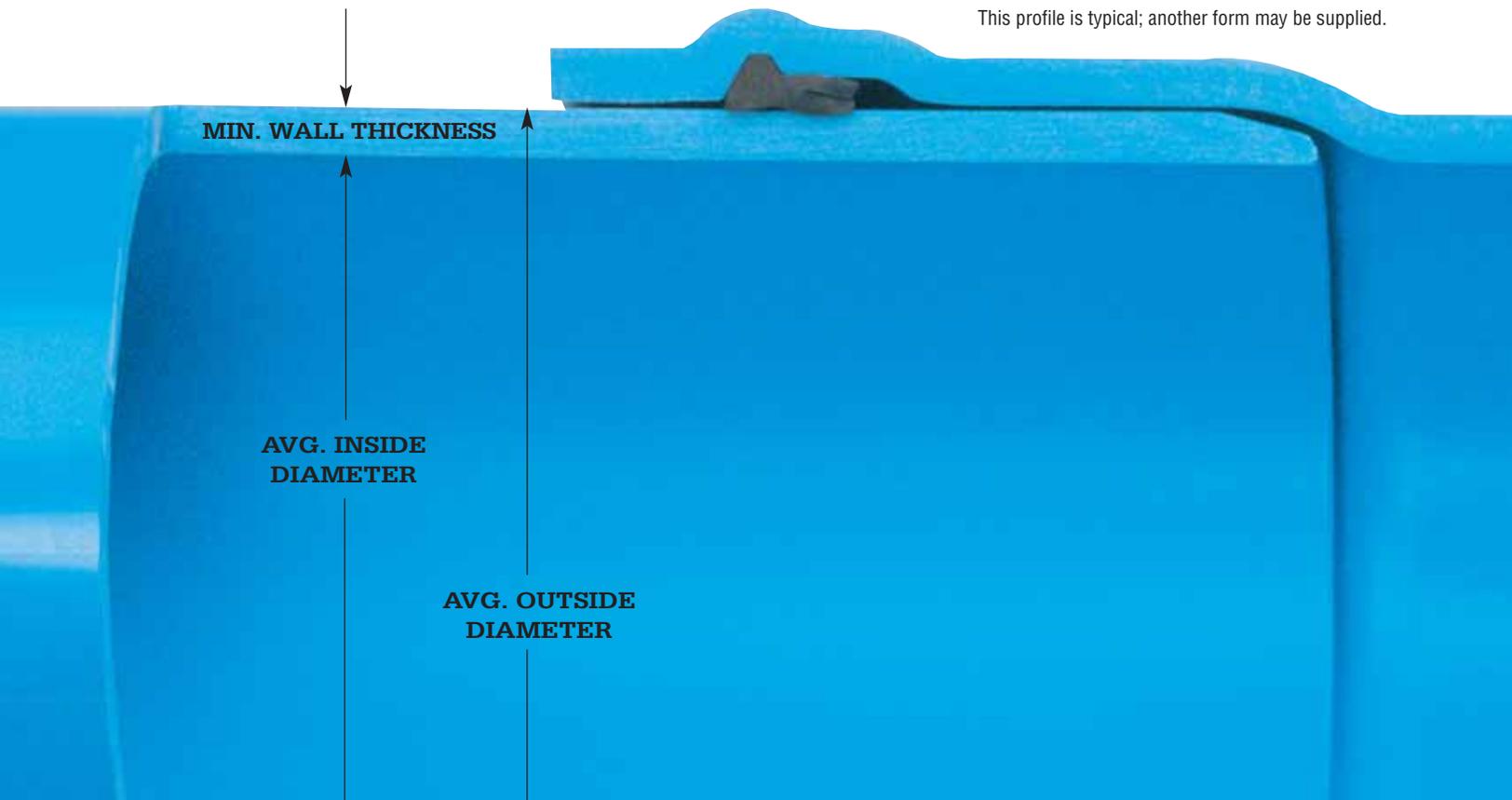
**Dimensions in Millimetres**

Nominal Size	Avg. Inside Diameter	Min. Wall Thickness	Avg. Outside Diameter
<b>Class 165 (DR25)</b>			
100	112	5	122
150	161	7	175
200	212	9	230
250	260	11	282
300	309	13	335
<b>Class 235 (DR18)</b>			
100	108	7	122
150	155	10	175
200	204	13	230
250	250	16	282
300	297	19	335
<b>Class 305 (DR14)</b>			
100	104	9	122
150	149	13	175
200	198	16	230
250	242	20	282
300	287	24	335

**Dimensions in Inches**

Nominal Size	Avg. Inside Diameter	Min. Wall Thickness	Avg. Outside Diameter
<b>Class 165 (DR25)</b>			
4	4.42	.192	4.80
6	6.35	.276	6.90
8	8.33	.362	9.05
10	10.21	.444	11.10
12	12.15	.527	13.20
<b>Class 235 (DR18)</b>			
4	4.27	.267	4.80
6	6.13	.383	6.90
8	8.05	.502	9.05
10	9.87	.616	11.10
12	11.73	.733	13.20
<b>Class 305 (DR14)</b>			
4	4.11	.343	4.80
6	5.91	.493	6.90
8	7.76	.646	9.05
10	9.51	.793	11.10
12	11.31	.943	13.20

Dimension Ratio (DR) is the outside diameter of the pipe divided by the minimum wall thickness.



## SALES AND CUSTOMER SERVICE

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U.S. Customers call IPEX USA LLC

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**[www.ipexamerica.com](http://www.ipexamerica.com)**

### About IPEX

IPEX is a leading supplier of thermoplastic piping systems. We provide our customers with one of the largest and most comprehensive product lines. All IPEX products are backed by over 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers, the IPEX name is synonymous with quality and performance.

Our products and systems have been designed for a broad range of customers and markets. Contact us for information on:

- Acid waste systems
- PVC, CPVC, PP, FR-PVDF, ABS, PEX and PE pipe and fittings (1/4" to 48")
- Industrial process piping systems
- Double containment systems
- High purity systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- Electrical systems
- Telecommunications and utility piping systems
- Irrigation systems
- PE Electrofusion systems for gas and water

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IPEX maintains a policy of ongoing product improvement. This may result in modifications of features and/or specifications without notice.

