



# **PIP & IPS Irrigation Fittings**



## **ENGINEERING GUIDE**

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### Understanding PIP and IPS Pipe Sizing

Both are industry standards. IPS (Iron Pipe Size) is a standard that matches Schedule 40 (plumbing) iron pipe or stronger Schedule 80 iron pipe and is larger than PIP (Plastic Irrigation Pipe), a standard that is most commonly used today in agriculture. In contrast, IPS plastic pipe is typically used in industrial applications and turf irrigation such as homes, parks and golf courses. IPS and PIP pipe have different outside diameters and are not interchangeable without use of special IPS x PIP adapters offered by Spears®. Within each of these standards, many variations exist.

IPS (Iron Pipe Size) PVC plastic pipe is most commonly produced in either different "Schedules" (i.e. IPS Schedule 40, 80, 120, etc.) that have different pressure ratings for each size or in different SDR for "Standard Dimension Ratio" that has the same pressure rating for all sizes within a given SDR value. SDR is simply the ratio of the nominal O.D./ the minimum wall thickness (i.e. IPS SDR 41, 32.5, 26, 13.5, etc.). IPS SDR pipe can also be categorized as to "Pressure Class" that represents its pressure rating in psi (i.e. Class 100, 125, 160, 200, 315, etc.). PIP PVC pipe can also be categorized by its pressure rating in psi (i.e. 80#, 100#, 125# PIP, etc). IPS Schedule pipe size range is typically 1/8" through 24" nominal diameter and IPS SDR pipe in 1/8" through 36" nominal diameter. While IPS PVC pipe is most commonly joined by solvent cement welding, it can be joined using Gasket end connections.

PIP (Plastic Irrigation Pipe) is also produced in Standard Dimensional Ratios (SDR), but has different outside diameters than IPS Schedule or SDR pipe. PIP pipe also has the same pressure rating for all sizes in any given SDR value (i.e. PIP SDR 64, 51, 41, 32.5, etc). PIP PVC pipe can also be categorized by its pressure rating in psi (i.e. 63#, 80#, 100#, 125# PIP, etc). PIP size range is typically 6" through 27" nominal diameters. While PIP PVC pipe can be joined by solvent cement welding, it is most commonly joined using Gasket end connections. Spears® offers a wide variety of both types. Please note that PIP fittings with a 4" nominal size connection are 4" IPS size.

### Example of PIP and IPS O.D. Size Differences

Nominal Size (in.)	Average PIP Diameter (in.)	Average IPS Diameter (in.)
4	none	4.500
6	6.140	6.625
8	8.160	8.625
10	10.200	10.750
12	12.240	12.750
14	none	14.000
15	15.300	none
16	none	16.000
18	18.701	18.000
20	none	20.000
21	22.047	none
24	24.803	24.000
27	27.593	none
30	none	30.000



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