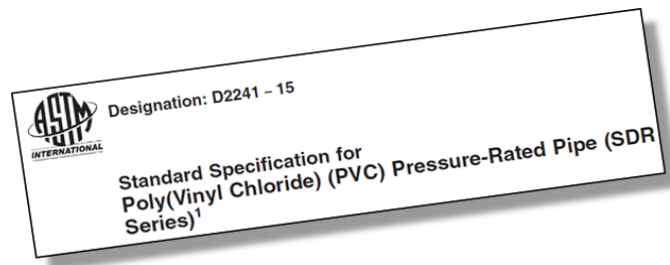


# PVC PIPE ASSOCIATION TECHNICAL BRIEF

## ASTM D2241: FIFTY FIVE YEARS OF SUCCESS, 1964 - 2019

This year marks the 55th anniversary of ASTM D2241 “Standard Specification for Polyvinyl Chloride (PVC) Pressure-Rated Pipe.” While not the oldest ASTM PVC pipe standard, it’s the most widely used for buried PVC pipe. Most D2241 pipe employs gasketed joints, providing a wide range of pressure applications.



The body of the standard includes IPS (Iron Pipe Size) ODs, while an annex includes Plastic Irrigation Pipe (PIP) and Copper Tube Size (CTS) ODs. Currently there is a project under way at ASTM to add Cast Iron Pipe Size (CIPS) to the annex.

Four PVC material strengths are included, with a safety factor of 2.0 used for all. The vast majority of pipe is produced from material with cell class 12454, so this bulletin’s discussion will be limited to only that material.

## PVC: THE PIPE MATERIAL FOR RURAL AMERICA

There are more than one million miles of installed PVC water pipe in rural America. “Many rural utilities may have over 3,000 miles of pipe - the equivalent of many of our largest municipalities. The National Rural Water Association members confirm that rural utilities use PVC for 95 percent of their extensive pipe networks!” At an average of \$20 per installed foot, that’s more than \$100 billion in pipe value! The reasons are simple: PVC pipe’s durability, dependability, and cost-effectiveness.

## IPS PIPE: RURAL WATER AND SEWER FORCEMAIN APPLICATIONS

Iron Pipe Size (IPS) ODs are included through 36 inches. Pressure ratings range from 63 psi (SDR 64) to 315 psi (SDR 13.5). IPS OD PVC pipe has been used extensively in rural water systems and often for sewer forcemain applications.

## PIP PIPE: IRRIGATION APPLICATIONS

Plastic Irrigation Pipe (PIP) is available in 6- through 27-inch sizes, primarily with gasketed joints. Pressure ratings range from 50 psi (SDR 81) to 200 psi (SDR 21). As the name implies, PIP PVC pipe is used primarily for irrigation applications, including turf, golf, and agricultural projects.

## A WIDE RANGE OF PRESSURE RATINGS

D2241’s wide range of pressure ratings allows designers to fine-tune pipe selection for maximum economy as pressure zones change. Two examples: seven PRs for the 6-inch IPS size; seven PRs for 15-inch PIP size.

## ALSO USED EXTENSIVELY FOR MUNICIPAL PRESSURE APPLICATIONS

ASTM D2241 has played a significant role in the growth of rural water systems by providing the requirements for materials, dimensions, and product testing that has ensured users a high-quality pipe product. In addition, D2241 pipe has been used extensively in municipal water and forcemain systems. Prior to the introduction of AWWA C900 in 1975, D2241 pipe was the product of choice for PVC pressure systems.

References: ASTM D2241; <sup>1</sup>*Procurement Process Improvements Yield Cost-Effective Public Benefits*, U.S. Conference of Mayors, 2013