

SINGLE-WALL DRAINAGE PIPE (SWP) TECHNICAL DATA

Standards

Springfield Plastics, Inc. single-wall drainage pipe (SWP) is manufactured to the highest quality control standards using only the highest quality high density polyethylene. SPI single-wall pipe and fittings meets or exceeds all specifications when run to the following standards: ASTM F 405-13, ASTM F 667-12, AASHTO M 252, AASHTO M 294 and NRCS Conservation Practice Standard Code 606.

Materials

Raw materials used in the manufacturing of single-wall pipe shall be high-density polyethylene conforming with all requirements of ASTM 3350. All SWP meets or exceeds the following cell classes for each standard:

Standard	Cell Class
ASTM F405-13	323410C
ASTM F667-12	323410C
AASHTO M252	424420C
AASHTO M294	424420C

As required by the above specifications, Springfield Plastics, Inc. uses only 100% virgin high-density polyethylene resin in the manufacturing of its drainage pipe and fittings. Only its own clean pipe or fitting rework material is used in SPI products; no regrind/recycled material enters SPI from outside its facility.

NTPEP Approval

All SPI single-wall pipe manufactured to AASHTO M252 and M294 has been approved by the Federal Highway Administration's National Transportation Product Evaluation Program (NTPEP). This program requires rigid adherence to quality control standards and procedures. Springfield Plastics is subjected to annual NTPEP reviews. Product approval certifications can be found at www.ntpep.org.

Workmanship

SPI single-wall pipe shall be homogenous throughout and free of foreign inclusions or visible defects. All SWP shall be uniform in color and free of internal obstructions, defective seams or mold parting lines. The pipe walls shall be free of cracks, holes, blisters, voids, foreign inclusions or any other visible defects.

Inside Diameter

SPI single-wall pipe has a tolerance of +/- 1.5% of the specified inside diameter when measured in accordance with ASTM D2122.

Pipe Stiffness

SPI single-wall pipe will have a minimum pipe stiffness of 35 PSI (241 kPa) at 5% deflection when tested in accordance with ASTM D2412.

Pipe Flattening

SPI single-wall pipe will withstand 20% deflection with no evidence of buckling, cracking or splitting.

Resistance to Extreme Conditions

SPI single-wall pipe is tested for environmental stress cracking, high temperature strength and low temperature flexibility with no evidence of failure.

Elongation (Stretch)

SPI single-wall pipe shall have a maximum elongation percentage of 5% when tested in accordance with applicable standards.

Springfield Plastics offers the following single-wall products:

Nominal Size	Solid	Regular Slotted	Ultra-Narrow Slotted	Leachfield/GLS	Muck	Filter Wrap
3"	X	X	X			X
4"	X	X	X	X	X	X
5"	X	X	X		X	X
6"	X	X	X		X	X
8"	X	X	X	X		X
10"	X	X	X	X		X
12"	X	X	X			X
15"	X	X	X			X

* Special Order production is available upon request/approval.

* 4" SWP available in white; 5", 6", & 8" available in white upon special request.

Length

SPI single-wall pipe may be sold in any length agreeable to the end user. SWP length shall not be less than 99% of the stated quantity.

Springfield Plastics single-wall pipe is available in the following lengths and sizes:

Nominal Size	Small Roll Lengths	Maxi Lengths	Stick Lengths
3"	100'	5400'	--
4"	100', 250'	3400'	10'
5"	150'	2250'	--
6"	100'	820', 1750'	--
8"	--	320', 500', 725', 975'	20'
10"	--	185', 350', 550'	10', 20'
12"	--	330'	20'
15"	--	160'	20'

Maxi Coils - Lengths per Wrap (ft.)

		3"	4"	5"	6"	8"	10"	12"	15"
WRAPS	1	146	150	90	85	70	64	60	50
	2	328	305	220	200	175	187	170	160
	3	546	485	390	370	328	350	330	
	4	799	710	590	570	508	550		
	5	1089	970	815	810	725			
	6	1416	1280	1105	1085	975			
	7	1780	1620	1445	1405				
	8	2182	2015	1810	1750				
	9	2624	2455	2250					
	10	3098	2920						
	11	3614	3400						
	12	4169							
	13	4764							
	14	5400							

Perforations

Springfield Plastics pipe has cleanly cut and uniformly spaced rows of slots located along the pipe in the valleys between the corrugations.

Special perforations and configurations shall be permitted where required to meet the needs of the purchaser.

Nominal Size	Rows of Perforations	Perforations/ Row/Foot	Perforations/ Corrugation	Perforations/ Foot
3"	4	9	2	36
4"	8	9	4	72
5"	8	9	4	72
6"	8	9	4	72
8"	4	12	4	48
10"	4	9	4	36
12"	8	6	8	48
15"	8	4.5	8	36

** Specifications only apply to Regular Slotted & Ultra-Narrow Slotted Perforations.*

Regular Slotted Perforations:

Nominal Size	Target Perforation Length	Target Perforation Width	Target Opening/ Foot
3"	0.725"	0.0475"	1.24 in ²
4"	0.725"	0.0475"	2.48 in ²
5"	0.725"	0.0475"	2.48 in ²
6"	0.725"	0.0475"	2.48 in ²
8"	0.750"	0.0525"	1.90 in ²
10"	0.800"	0.0600"	1.73 in ²
12"	0.800"	0.0600"	2.30 in ²
15"	0.800"	0.0600"	1.73 in ²

Ultra-Narrow Slotted Perforations:

Nominal Size	Target Perforation Length	Target Perforation Width	Target Opening/ Foot
3"	0.550"	0.012"	0.238 in ²
4"	0.550"	0.012"	0.475 in ²
5"	0.550"	0.012"	0.475 in ²
6"	0.550"	0.012"	0.475 in ²
8"	0.550"	0.012"	0.317 in ²
10"	0.550"	0.020"	0.238 in ²
12"	0.550"	0.020"	0.317 in ²
15"	0.550"	0.020"	0.238 in ²

* Ultra-Narrow pipe does not meet the ASTM F667 minimum inlet area of 1 in²/ft.

Leachfield

4" Leach bed pipe has two rows of 0.31" x 0.70" holes with each row located 30 degrees off the bottom centerline of the pipe. Holes will be 2.70" on center. This hole pattern yields eight holes per foot of pipe. Holes shall be staggered so there is at least one hole in every other corrugation. The top of all leachfield pipe is clearly marked with a yellow locating stripe.

Gravel-less Leachfield

8" and 10" Gravel-less Leachfield (GLS) pipe has two rows of holes 3/8" in diameter located 120 degrees apart along the bottom half of the pipe. Each row of holes is 60 degrees up from the bottom center line of the pipe. Holes shall be staggered so there is at least one hole in each corrugation. GLS is encased in polyester filter fabric. The top of GLS pipe is clearly marked with a yellow locating stripe.

Nominal Size	Perforations/ Foot	Target Perforation Diameter	Target Opening/ Foot
4"	9	0.625"	2.77 in ²
8"	12	0.375"	1.33 in ²
10"	9	0.375"	1.00 in ²

Muck

Muck pipe has four rows of openings evenly spaced around the circumference of the pipe. The hole pattern per linear foot is 4 holes in 2 rows and 5 holes in 2 rows, totaling 18 holes per foot of pipe. Following are specifications for each available size.

Nominal Size	Target Perforation Length	Target Perforation Width	Target Opening/ Foot
4"	0.700"	0.310"	3.90 in ²
5"	0.700"	0.310"	3.90 in ²
6"	0.700"	0.310"	3.90 in ²

Fittings

Fittings shall conform to the requirements of ASTM F405-13, ASTM F667-12, AASHTO M252, and AASHTO M294.

Installation

Springfield Plastics single-wall pipe shall be installed in accordance with ASTM F449 - Subsurface Installation of Corrugated Thermoplastic Tubing for Agricultural Drainage, Springfield Plastics installation guidelines and any applicable engineering specifications.

Leachfield pipe shall be installed in accordance with ASTM F481 - Standard Practice for Installation of Thermoplastic Pipe and Corrugated Pipe in Septic Tank Leach Fields.

Referenced Standards

- **ASTM D1248** - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- **ASTM D2122** - Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- **ASTM D2412** - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- **ASTM D3350** - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- **ASTM F405** - Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings
- **ASTM F449** - Standard Practice for Subsurface Installation of Corrugated Polyethylene Pipe for Agricultural Drainage or Water Table Control
- **ASTM F481** - Standard Practice for Installation of Thermoplastic Pipe and Corrugated Pipe in Septic Tank Leach Fields
- **ASTM F667** - Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
- **AASHTO M252** - Standard Specification for Corrugated Polyethylene Drainage Pipe (3"-10")
- **AASHTO M294** - Standard Specification for Corrugated Polyethylene Drainage Pipe (12"-60")