



SUBMITTAL AND DATA SHEET FOR DRINKING WATER PIPING SYSTEM

Pestan North America, LLC
P.O. Box 45
Titusville, PA 16354
Fax: 888.213.4342

PROJECT INFORMATION

Job Name: _____

Location: _____

Engineer/Contractor: _____

Submitted To: _____

Reference Approval Construction

Submitted By: _____

Reference: _____

SUBMITTAL INFORMATION

Approval: _____

Date: _____

Construction: _____

Drawing #: _____

HOT AND COLD DRINKING WATER PIPE and FITTINGS

Identification and Material:

All Product are made of made of PP-RCT material (Class 5 Chlorine Resistance, CL-R)

HOT Drinking Water Pipe - SDR7.4 and SDR9 Green with 4 red stripes, with Fiber Composite Layer

COLD Drinking Water Pipe - SDR7.4 and SDR11 Green with 4 blue stripes

Socket and Saddle Outlet Fittings – solid green

Butt Fusion Fittings – solid green or green with matching pipe markers and structure

Applications: Potable hot and cold water and food processing

(this pipe can also be used for direct burial, industrial and chemical applications).

In compliance to: NSF/ANSI -61, NSF/ANSI -51, NSF/ANSI -14, NSF/ANSI -372, CSA-B137.11, ASTM F 2389, ISO 15874, DIN 8077-8078, UPC, CPC, IPC®, IRC®, NPC; ICC-ES PMG - 1106

Allowed Pressure (psi) for Service Life of 50+ years						
Wall Thickness	SDR7.4		SDR9		SDR11	
Safety Factor	1.25	1.5	1.25	1.5	1.25	1.5
50° F	487	406	387	322	308	257
68° F	423	352	335	280	266	222
73° F	400	335	324	270	252	210
86° F	364	303	289	241	230	192
104° F	312	260	248	206	197	164
122° F	265	221	211	176	167	140
140° F	223	186	177	148	141	118
160° F	187	155	147	123	117	97
180° F	100* (149)	100* (120)	100* (120)	100	100	85

*ASTMF2389 X1.1.4 requires the pressure rating at 180°F to be calculated based on an application class 5 from ISO 15874-2, but if the calculated pressure exceeds 100 psi, it has been arbitrarily lowered to 100 psi to conform with U.S. plumbing codes.

Pressure Ratings of the Fittings	
Socket and Saddle Outlet Fittings	Butt Fusion Fittings
Engineered with greater safety factor than the pipe	
Same pressure ratings as the matching pipe	

For more information, please see attached documents or visit our website at

www.PestanPipes.com.

If you have questions please call us at 814.827.8034 or email at

support@pestanpipes.com.

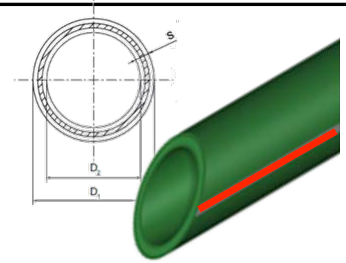


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HOT DRINKING WATER PIPE

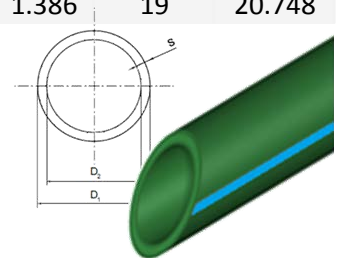
Class 5 Chlorine Resistance PP-RCT material
with composite fiber middle layer



	Part Number [CODE]	Dimension N.D. - O.D. [in -mm]	Outer Diameter, D ₁		Inner Diameter, D ₂		Wall Thickness, s		Pipe Length [ft]	Weight [lb/ft]
			[mm]	[in]	[mm]	[in]	[mm]	[in]		
SDR 7.4	18002300	½" - 20	20	0.787	14.4	0.567	2.8	0.11	13	0.107
	18002301	¾" - 25	25	0.984	18	0.709	3.5	0.138	13	0.167
	18002302	1" - 32	32	1.26	24.8	0.976	3.6	0.142	13	0.220
SDR 9	18002303	1¼" - 40	40	1.575	31	1.22	4.5	0.177	13	0.343
	18002304	1½" - 50	50	1.969	38.8	1.528	5.6	0.22	13	0.532
	18002305	2" - 63	63	2.48	48.8	1.921	7.1	0.28	13	0.847
	18002306	2½" - 75	75	2.953	58.2	2.291	8.4	0.331	19	1.190
	18002307	3" - 90	90	3.543	69.8	2.748	10.1	0.398	19	1.716
	18002308	4" - 125	125	4.921	97	3.819	14	0.551	19	3.283
	18002309	6" - 160	160	6.3	124.2	4.9	17.9	0.705	19	5.367
	18002310	8" - 200	200	7.872	155.2	6.109	22.4	0.882	19	8.392
	18002311	10" - 250	250	9.842	194.2	7.645	27.9	1.098	19	13.051
	18002312	12" - 315	315	12.401	244.6	9.63	35.2	1.386	19	20.748

COLD DRINKING WATER PIPE

Class 5 Chlorine Resistance PP-RCT material



	Part Number [CODE]	Dimension N.D. - O.D. [in -mm]	Outer Diameter, D ₁		Inner Diameter, D ₂		Wall Thickness, s		Pipe Length [ft]	Weight [lb/ft]
			[mm]	[in]	[mm]	[in]	[mm]	[in]		
SDR 7.4	18002400	½" - 20	20	0.787	14.4	0.567	2.8	0.11	13	0.099
	18002401	¾" - 25	25	0.984	18	0.709	3.5	0.138	13	0.155
SDR 11	18002402	1" - 32	32	1.26	26.2	1.031	2.9	0.114	13	0.175
	18002403	1¼" - 40	40	1.575	32.6	1.283	3.7	0.146	13	0.277
	18002404	1½" - 50	50	1.969	40.8	1.606	4.6	0.181	13	0.429
	18002405	2" - 63	63	2.48	51.4	2.024	5.8	0.228	13	0.679
	18002406	2½" - 75	75	2.953	61.4	2.417	6.8	0.268	19	0.947
	18002407	3" - 90	90	3.543	73.6	2.898	8.2	0.323	19	1.364
	18002408	4" - 125	125	4.921	102.2	4.024	11.4	0.449	19	2.627
	18002409	6" - 160	160	6.3	130.9	5.154	14.6	0.575	19	4.290
	18002410	8" - 200	200	7.872	163.6	6.431	18.2	0.716	19	6.710
	18002411	10" - 250	250	9.842	204.6	8.055	22.7	0.894	19	10.44
18002412	12" - 315	315	12.401	257.8	10.149	28.6	1.126	19	16.56	

Revised on 1/1/16. This information may have been updated. Please download the latest version at www.Pestanpipes.com.

SECTION 221114 - FACILITY POTABLE WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the water distribution piping system, including potable cold, hot and hot water piping including associated fittings, and specialties within the building.

1.2 REFERENCES

- A. ASTM F 2389 - 10 Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems.
- B. ASTM F 2023 - 13 Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene Tubing and Systems to Hot Chlorinated Water. (also for Polyethylene as referenced in ASTM F 2389).
- C. CSA B137.11 - Polypropylene (PP-R) Pipe and Fittings for Pressure Applications.
- D. NSF / ANSI 14 - Plastic Piping System Components and Related Materials.
- E. NSF / ANSI 61 - Drinking Water System Components - Health Effects.
- F. NSF / ANSI 51 - Food Equipment Materials.
- G. NSF / ANSI 372 - Drinking Water System Components - Lead Content.

1.3 DEFINITIONS

- A. Definitions: In accordance with local plumbing codes and ASTM F 2389.

1.4 SUBMITTALS

- A. Product Data: For each type of the following:
 - 1. Plastic pipe and fittings.
 - 2. Valves.
 - 3. Fire protection materials.
 - 4. UV resistant coating.
 - 5. Thermal and vapor barriers.
 - 6. Fusion welding process.
- B. Qualification Data: For Installer.
- C. Field quality-control:
 - 1. Cleaning process and reports.

2. Inspection and test reports.

1.5 QUALITY ASSURANCE

- A. Material : Certified as complying with NSF / ANSI 14, NSF / ANSI 61, NSF / ANSI 51 and ASTM F 2389 or CSA B137.11.
- B. Material : Comply with Manufacturer's specifications.
- C. Special Engineered Products: Certified as complying with NSF /ANSI 14, 61 and 51.
- D. Piping specifications and ordering information : Contact Manufacturer.
- E. Fittings specifications and ordering information : Contact Manufacturer.
- F. Valves specifications and ordering information : Contact Manufacturer.

1.6 WARRANTY

- A. Manufacturer : Warrant pipe and fittings produced by PESTAN to be free of manufacturing defects. Warranty period: 10 years.
- B. Warranty : Cover labor and material costs of repairing or replacing defective products and repairing damage caused by failure of the piping system due to manufacturing defect.
- C. Warranty : In effect only upon submission by the Contractor to the Manufacturer with a valid Pressure Test Form and documents confirming that the system was tested and passed the Manufacturer's Pressure Test.
- D. Warranty : Effective only if the pipe and fittings are installed by an installer who has been certified and trained by Manufacturer or a Manufacturer's affiliate. Certification has to be current and specific to the type of fusion performed.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. PESTAN N.A. P.O. BOX 26, Titusville, PA 16354 P: 814-827-8034 ; www.PestanPipes.com .

2.2 PLASTIC PIPE

- A. Pipe : PESTAN Drinking Water Pipe.
- B. Pipe : Manufactured from a PP-RCT or PP-R resin meeting the short-term properties and long-term strength requirements of ASTM F 2389 or CSA B137.11. Pipe material shall exhibit a Class 5 Oxidative Resistance to Hot Chlorinated Water per ASTM F 2023.

- C. Rework or recycled materials are not permitted for pipe.
- D. Pipe : Manufactured by a factory extrusion process.
- E. Hot water pipe : Manufactured in a three layer extrusion process and contain a fiber middle layer to restrict thermal expansion, with the wall thickness of SDR9 for pipe diameter 32mm (1” nominal diameter) or larger.
- F. Pipe : Comply with the rated pressure requirements of ASTM F 2389.
- G. Pipe : Certified as complying with NSF /ANSI 14, NSF / ANSI 61, NSF / ANSI 51 and ASTM F 2389 or CSA B137.11.

2.3 PLASTIC PIPE FITTINGS

- A. Fittings : PESTAN fittings.
- B. Fittings : Manufactured from a PP-RCT or PP-R resin meeting the short-term properties and long-term strength requirements of ASTM F 2389 or CSA B137.11. Fitting material shall exhibit a Class 5 or greater Oxidative Resistance to Hot Chlorinated Water per ASTM F 2023.
- C. Rework or recycled materials are not permitted for fittings.
- D. Fittings :
 1. Certified as complying with NSF / ANSI 14, NSF / ANSI 61, NSF / ANSI 51, NSF / ANSI 372 and ASTM F 2389 or CSA B137.11.
 2. For sizes 20 mm (1/2 inch nominal) to 125 mm (4 inches nominal) : Socket fusion type.
 3. For size 125 mm (4 inches nominal) pipe to pipe and pipe to flange adapter connections: Butt fusion type or Socket Fusion type using coupling.
 4. For sizes 160 mm (6 inches nominal) and above: Butt fusion type.
 5. Outlets for all sizes: Saddle Fusion.

2.4 VALVES

- A. Valves : PESTAN valves.
- B. Valves : Manufactured in accordance with the manufacturer’s specifications and complying with the performance requirements of NSF / ANSI 14, NSF / ANSI 61, NSF / ANSI 51, NSF / ANSI 372, ASTM F 2389 or CSA B137.11.

2.5 SMOKE AND FIRE RATINGS

- A. Protect piping with CAN/ULC-S102.2-03 or ASTM E 84 insulation; where indicated on drawings or where a Plenum-rated Piping System is required.

2.6 UV PROTECTION

- A. Protect pipe with UV resistant coating or with alternative UV protection recommended by Manufacturer, that will be exposed to direct UV light for more than 30 days.

2.7 THERMAL AND VAPOR BARRIER

- A. Provide piping with thermal (radiant, conductive, convective) and vapor barrier insulation ; where indicated on drawings that standard pipe insulation is required. Refer to pipe manufacturers recommendation on thickness of insulating materials.
- B. Pipe insulation: UV resistant, CFC-free, non-fibrous, and resistant to mold growth.

PART 3 - EXECUTION

3.1 VALVE APPLICATIONS

- A. Install gate valves close to the main on each branch and riser serving 2 or more equipment connections and where indicated.
- B. Install gate or ball valves on the inlet to each equipment item and where indicated.
- C. Install drain valve at the base of each riser, at low points of horizontal runs, and where required to drain hydronic piping system.
- D. Install swing check valve on the discharge side of each pump and where as indicated.
- E. Install ball valves in each hot water line at the discharge side of each pump.

3.1 PIPING APPLICATIONS

- A. Install listed pipe materials and joining methods below in the following applications:
 - 1. Above ground : Polypropylene piping in SDR 7.4, 9, 11, or 17.6 based on the required minimum pressure rating and use temperature, in accordance with manufacturer's instructions and ASTM F2389
 - 2. Underground : Polypropylene piping in SDR 7.4, 9, 11, or 17.6 per manufacturer's instructions and ASTM D2774

3.2 PIPING INSTALLATIONS

- A. Comply with requirements for seismic-restraint devices in 22 05 48 "Vibration and Seismic Controls for Plumbing Piping and Equipment"; if in an active seismic area.
- B. Install hangers and supports at intervals specified in the applicable Plumbing or Mechanical Code and as recommended by Pipe Manufacturer.
 - 1. Vertical Piping: use MSS Type 8 or 42, clamps.

2. Individual Straight Horizontal Piping Runs.
 - a. Adjustable, steel clevis hangers.
 - b. Clamps on strut trapeze.
 - c. Clamps on strut attached to structure.
 - d. Clamps attached directly to structure
 3. Base of Vertical Piping: MSS Type 52, spring hangers.
 4. Do not over tighten riser clamps on the pipe.
 5. Clamps and Supports should be rubber, vinyl or felt lined for hot water piping.
 6. Cold water piping clamps and supports may be unlined and are required to have raised ridges for the pipe to rest on and with no sharp edges that may gouge the pipe.
- C. Support vertical piping at each floor penetration and as specified in the applicable Plumbing or Mechanical Code. Mid-story guides are to be installed for 63 mm (2inches) Piping.
- D. Fire stopping : Compatible with the PESTAN Piping and meet the requirements of ASTM E 814 or ULC S115 , “Fire Tests of Through-Penetration Firestops.”
- E. Remove pipe insulations or fire resistive coating where the pipe passes through a fire stop and, if required by the firestop manufacturer, for 3 inches beyond the firestop outside of the fire barrier.
- F. Protect piping from excessive heat generated from pumps operating at shut-off conditions.
- G. Provide a suitable protection method, such as temperature relief valve , or other comparable level of protection, set to a maximum temperature of 85 degree C (185 degree F) ; where the possibility exists that the pump will work with no flow.
- H. Provide heat tracing or freeze protection where specified for the piping. Provide a type that is suitable for use with plastic piping and be self regulating type to ensure the surface temperature of the pipe and fittings will not exceed 70 degree C (158 degree F).

3.3 EXPANSION AND CONTRACTION

- A. Provide expansion and contraction controls, guides and anchors to take into account the thermal expansion and contraction of the pipe. Provide expansion loops or offsets as recommended by the manufacturer.
1. Pestan’s Fiber Composite pipe can absorb most of it’s own expansion stresses, this can cause the pipe to bend or bow.
 2. Install anchor points at a minimum of every 120 feet.
 3. Install expansion loops or offsets between each anchor point. Expansion device must be able to absorb all the stresses between the two anchor points. Refer to manufacturer’s instructions, formulas and calculations at www.pestanpipes.com.
 4. Anchor vertical Risers made from Pestan Pipe with Fiber Composite Core at each floor.
 - a. Provide anchor points at branch take-off on vertical risers made from Pestan Pipe with Fiber Composite Core.

3.4 PIPE JOINT CONSTRUCTION

- A. Fittings: Joined using in accordance with ASTM D 2657 and Manufacturer's specifications and the following:
 - 1. For sizes 20 mm (1/2 inch nominal) to 125mm (4 inches nominal) : Use socket fusion.
 - 2. For size 125mm (4 inches nominal) pipe to pipe and pipe to flange adapter connections: Use butt fusion or socket fusion in conjunction with coupling..
 - 3. For sizes 160 mm (6 inches nominal) and above: Use butt fusion.
 - 4. Outlets for all sizes: Saddle Fusion.
- B. Fusion machines, equipment and tools: Specified by the Pipe and Fittings Manufacturer.
- C. Joint preparation, setting, alignment, fusion process, cooling times and working pressures: In accordance with the Pipe and Fitting Manufacturer's specifications.

3.5 FIELD QUALITY CONTROL

- A. Cleaning :
 - 1. Flush pipes and fittings with cold water after finishing the installation.
- B. Field Testing and Inspection:
 - 1. Inspect and test piping systems in accordance with the recommendations and requirements of authorities having jurisdiction and as specified by the Pipe and Fittings Manufacturer.
 - 2. Test the piping in accordance with the requirements of the authority having local jurisdiction in addition to Pipe Manufacturer's testing requirement ; upon completion of the piping installation.
 - 3. Manufacturer's test pressure : 150 percent of the system operating pressure or 1034 kPa (150 psi), whichever is greater.
 - 4. Isolate components from the pressure test ; when pressure testing systems components rated lower than 150 psi.
 - 5. Use water, air, or a mixture of both to complete the required Manufacturer's test . Use extreme caution ; when pressure testing with air.
 - 6. Perform pressure testing while the system is fully accessible and allowing access to the segments of the system in need of the attention.
 - 7. Repair installation and repeat testing ; if leaks are detected.
 - 8. Perform, document and submit tests to Pipe Manufacturer ; before the system becomes operational.
 - 9. Contact Manufacturer at website ; www.PestanPipes.com for more information.

END OF SECTION 221114