



# Submission for Alternate Domestic Water Piping System

**aquatherm** Inc  
1041 S. Orem Blvd  
Orem, UT 84058  
801-805-6657

**aquatherm** CA, Inc  
Box 2624  
Cardston, AB T0K 0K0  
403-653-4440

Project Name: \_\_\_\_\_

Date: \_\_\_\_\_

Project Location: \_\_\_\_\_

\_\_\_\_\_

To whom it may concern,

We are proposing to upgrade the piping systems on the above project to the Greenpipe® polypropylene piping systems manufactured by Aquatherm. The advantages to the owner of this project are as follows:

- Clean piping system that will not alter the chemistry of the water and resists corrosion and scaling.
- Tough, impact resistant.
- A leak free one-piece fused piping system.
- An environmentally friendly system – The only piping system recognized by GreenPeace as “Future Friendly”
- 10 year warranty that covers not only the piping system and labor, but also incidental property damage.

Specifically we are proposing to upgrade from copper DHW and DCH pipe as follows:

Nominal Copper Size	DCW Greenpipe® SDR 11	DHW Greenpipe® Faser SDR 7.4
½"	½" (20 mm)	½" (20 mm)
¾"	¾" (25 mm)	¾" (25 mm)
1"	1" (32 mm)	1" (32 mm)
1-1/4"	1-1/4" (40 mm)	1-1/4" (40 mm)
1-1/2"	1-1/2" (50 mm)	1-1/2" (50 mm)
2"	2" (63 mm)	2" (63 mm)
2-1/2"	2-1/2" (75 mm)	2-1/2" (75 mm)
3"	3" (90 mm)	3" (90 mm)
4"	4" (125 mm)	4" (125 mm)

For more information, please see attached specification sheets and catalogue sheets or our website at [www.aquathermpipe.com](http://www.aquathermpipe.com). If you have questions please call us at 801-805-6657 (US) or 403-653-4440 (Canada) or email at [technical@aquathermpipe.com](mailto:technical@aquathermpipe.com).

If this upgrade is approved by you please sign below and fax back to 403-770-8326.

Reviewed and Approved by: \_\_\_\_\_

Company

Date:



# Pipes

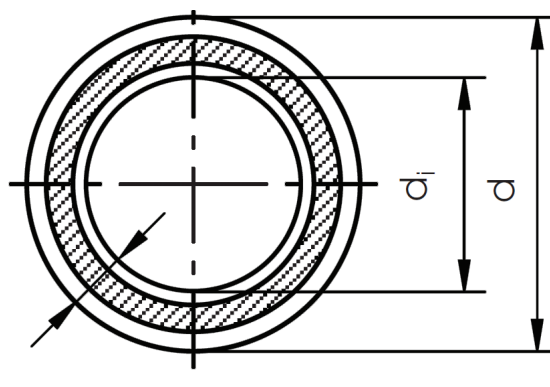
**aquatherm greenpipe®**

**faser-composite pipe SDR 7.4**

**Material: fuviolon® PP-R (80)  
faser-composite**

**In accordance with:**

- NSF-14
- NSF-51
- NSF-61
- CSA-B137.11
- ICC AC 122
- ICC ESR 1613
- ASTM F 2389
- CFIA #A508



## NSF System Certification:

Including fittings, connection pieces, and connection techniques.

## Fields of Application:

For high temperature, moderate pressure systems, particularly domestic hot water systems.

Pipe *			Diameter **	Wall thickness	Internal diameter	Water content	Weight ***
Art.-No.	Dimension Nom. I.D. -- O.D.	Packing unit	d (mm)	s (mm)	d <sub>i</sub> (mm)	gal/ft	lb/ft
0670708	1/2" -- 20 X 2.8 mm	25	20	2.8	14.4	0.0131	0.106
0670710	3/4" -- 25 X 3.5 mm	25	25	3.5	18	0.024	0.165
0670712	1" -- 32 X 4.4 mm	10	32	4.4	23.2	0.0340	0.265
0670714	1.25" -- 40 X 5.5 mm	10	40	5.5	29	0.0531	0.412
0670716	1.5" -- 50 X 6.9 mm	5	50	6.9	36.2	0.0828	0.642
0670718	2" -- 63 X 8.6 mm	5	63	8.6	45.8	0.1325	1.008
0670720	2.5" -- 75 X 10.3 mm	5	75	10.3	54.4	0.1870	1.435
0670722	3" -- 90 X 12.3 mm	3	90	12.3	65.4	0.2703	2.055
0670724	3.5" -- 110 X 15.1 mm	2	110	15.1	79.8	0.4023	3.075
0670726	4" -- 125 X 17.1 mm	1	125	17.1	90.8	0.521	3.959
0670730	6" -- 160 X 21.9 mm	1	160	21.9	116.2	0.854	6.409
0670734	8" -- 200 X 27.4 mm	1	200	27.4	145.2	1.333	10.114
0670738	10" -- 250 x 34.2 mm	1	250	34.2	181.6	2.084	15.777

\* Pipes come in standard 13 ft lengths (4 m).

\*\* To calculate exact dimensions of the pipe in imperial inches, divide measurement by 25.4.

\*\*\* To calculate the weight of the pipe in kg/m, multiply the measurement by 1.5.

# Pipes

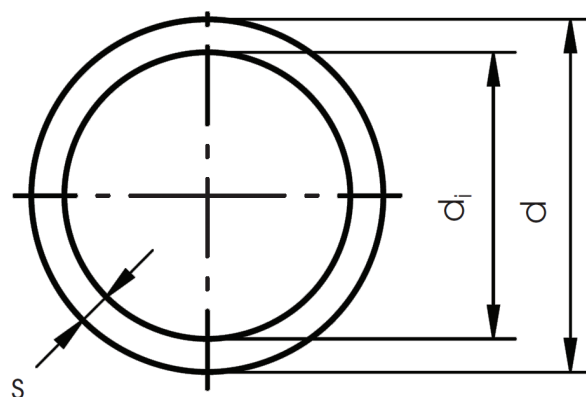
**aquatherm greenpipe® pipe SDR 11**

**Material: fuviole® PP-R (80)**

**Pipe series: SDR 11 / S 5**

**In accordance with:**

- NSF-14
- NSF-51
- NSF-61
- CSA-B137.11
- ICC AC 122
- ICC ESR 1613
- ASTM F 2389
- CFIA #A508



## NSF System Certification:

Including fittings, connection pieces, and connection techniques.

## Fields of Application:

Potable water, preferably domestic cold. Low pressure installations, such as rainwater, well-casings, food processing, etc.

Pipe *			Diameter **	Wall thickness	Internal diameter	Water content	Weight ***
Art.-No.	Dimension Nom. I.D. -- O.D.	Packing unit	d (mm)	s (mm)	d <sub>i</sub> (mm)	gal/ft	lb/ft
0610208	1/2" -- 20 X 1.9 mm	25	20	1.9	16.2	0.017	0.073
0610210	3/4" -- 25 X 2.3 mm	25	25	2.3	20.4	0.026	0.111
0610212	1" -- 32 X 2.9 mm	10	32	2.9	26.2	0.043	0.178
0610214	1.25" -- 40 X 3.7 mm	10	40	3.7	32.6	0.067	0.279
0610216	1.5" -- 50 X 4.6 mm	5	50	4.6	40.8	0.105	0.433
0610218	2" -- 63 X 5.8 mm	5	63	5.8	51.4	0.167	0.682
0610220	2.5" -- 75 X 6.8 mm	5	75	6.8	61.4	0.237	0.951
0610222	3" -- 90 X 8.2 mm	3	90	8.2	73.6	0.343	1.374
0610224	3.5" -- 110 X 10 mm	2	110	10.0	90.0	0.512	2.107
0610226	4" -- 125 X 11.4 mm	1	125	11.4	102.2	0.661	2.639
0610230	6" -- 160 X 14.6 mm	1	160	14.6	130.8	1.082	4.311
0610234	8" -- 200 X 18.2 mm	1	200	18.2	163.6	1.692	6.713
0610238	10" -- 250 X 22.7 mm	1	250	22.7	204.6	2.646	10.442
The following items are supplied in coils:							
0610308	1/2" -- 20 X 1.9 mm	25	20	1.9	16.2	0.017	0.726
0610310	3/4" -- 25 X 2.3 mm	25	25	2.3	20.4	0.026	0.106
0610312	1" -- 32 X 3.9 mm	12.5	32	2.9	26.2	0.043	0.173

\* Pipes come in standard 13 ft lengths (4 m).

\*\* To calculate exact dimensions of the pipe in imperial inches, divide measurement by 25.4.

\*\*\* To calculate the weight of the pipe in kg/m, multiply the measurement by 1.5.

1 22 10 00 PLUMBING PIPING AND PUMPS

2  
3 22 11 17 FACILITY POTABLE WATER DISTRIBUTION PIPING

4  
5 PART 1 – GENERAL

6  
7 1.01 SUMMARY

- 8 A. This Section specifies the water distribution piping system, including  
9 potable cold, hot and re-circulated hot water piping including associated  
10 fittings, and specialties within the building.

11  
12 1.02 RELATED SECTIONS

- 13 A. Drawings and general provisions of the Contract, including General and  
14 Supplementary Conditions, Section XXXXXX and Division 1  
15 Specification sections apply to work of this section.

16  
17 1.03 REFERENCE DOCUMENTS

- 18 A. ASTM F 2389-06 - Standard Specification for Pressure-rated  
19 Polypropylene (PP) Piping Systems  
20 B. CSA B137.11 - Polypropylene (PP-R) Pipe and Fittings for Pressure  
21 Applications  
22 C. NSF/ANSI 14 – Plastic Piping System Components and Related  
23 Materials  
24 D. NSF/ANSI 61 – Drinking Water Systems Components – Health Effects

25  
26 1.04 DEFINITIONS

- 27 A. Definitions shall be in accordance with local plumbing codes and ASTM  
28 F 2389.

29  
30 1.05 SUBMITTALS

- 31 A. Material list naming each product to be used identified by manufacturer  
32 and product number, in accordance with Section 01 30 00.

33  
34 1.06 QUALITY ASSURANCE

- 35 A. Material shall be certified by NSF International as complying with NSF  
36 14, NSF 61, and ASTM F 2389 or CSA B137.11.  
37 B. Material shall comply with manufacturers specifications.  
38 C. Special Engineered products shall be certified by NSF International as  
39 complying with NSF 14.

40  
41 PART 2 – PRODUCTS

42  
43 2.01 PIPE AND PIPING PRODUCTS

- 44 A. Pipe shall be manufactured from a PP-R resin meeting the short-term  
45 properties and long-term strength requirements of ASTM F 2389. The  
46 pipe shall contain no rework or recycled materials except that generated

1 in the manufacturer's own plant from resin of the same specification from  
2 the same raw material. All pipe shall be made in a three layer extrusion  
3 process. Domestic hot water shall contain a fiber layer (faser) to restrict  
4 thermal expansion. All pipe shall comply with the rated pressure  
5 requirements of ASTM F 2389. All pipe shall be certified by NSF  
6 International as complying with NSF 14, NSF 61, and ASTM F 2389 or  
7 CSA B137.11.

- 8 B. Pipe shall be Aquatherm® Greenpipe®, or Greenpipe® Faser®,  
9 available from Aquatherm, Inc.. Piping specifications and ordering  
10 information are available at [www.aquathermpipe.com](http://www.aquathermpipe.com).

## 11 12 2.02 FITTINGS

- 13 A. Fittings shall be manufactured from a PP-R resin meeting the short-term  
14 properties and long-term strength requirements of ASTM F 2389. The  
15 fittings shall contain no rework or recycled materials except that  
16 generated in the manufacturer's own plant from resin of the same  
17 specification from the same raw material. All fittings shall be certified by  
18 NSF International as complying with NSF 14, NSF 61, and ASTM F 2389  
19 or CSA B137.11.
- 20 B. Fittings shall be aquatherm® Greenpipe® available from Aquatherm,  
21 Inc.. Fittings specifications and ordering information are available at  
22 [www.aquathermpipe.com](http://www.aquathermpipe.com).

## 23 24 2.03 WARRANTY

- 25 A. Manufacturer shall warrant pipe and fittings for 10 years to be free of  
26 defects in materials or workmanship.
- 27 B. Warranty shall cover labor and material costs of repairing and/or  
28 replacing defective materials and repairing any incidental damage  
29 caused by failure of the piping system do to defects in materials or  
30 workmanship.

## 31 32 2.04 VALVES

- 33 A. Valves shall be manufactured in accordance with the manufacturers  
34 specifications and shall comply with the performance requirements of  
35 ASTM F 2389 or CSA B137.11. The valves shall contain no rework or  
36 recycled thermoplastic materials except that generated in the  
37 manufacturer's own plant from resin of the same specification from the  
38 same raw material.
- 39 B. Valves shall be Aquatherm® Greenpipe® available from Aquatherm,  
40 Inc.. Valve specifications and ordering information are available at  
41 [www.aquathermpipe.com](http://www.aquathermpipe.com).

## 42 43 44 45 2.05 SMOKE AND FIRE RATINGS

1 A. Where indicated on the drawings that a Plenum-rated Piping System is  
2 needed, then the pipe shall be pre-insulated or field insulated, and when  
3 tested with standard un-insulated fittings per CAN/ULC-S102.2-03 or  
4 ASTM E84, the system consisting of wrapped or coated pipe and bare  
5 fittings shall have a Flame Spread Classification of less than 25 and  
6 Smoke Development rating of less than 50.

7  
8 B. Pipe shall be Aquatherm® Advanced (wrapped and insulated) available  
9 from Aquatherm, Inc. Piping specifications and ordering information are  
10 available at [www.aquathermpipe.com](http://www.aquathermpipe.com)

## 11 12 2.06 UV PROTECTION

13 A. Where indicated on the drawings that the pipe will be exposed to direct  
14 UV light for more than 30 days, it shall be provided with a Factory  
15 applied, UV-resistant coating or alternative UV protection.

## 16 17 2.07 INTEGRAL THERMAL AND VAPOR BARRIER

18 A. Where up to 1 inch of standard insulation is indicated on the drawings or  
19 in these specifications, a factory installed, thermal (radiant, conductive,  
20 and convective) and vapor barrier insulation shall be provided. Where  
21 more than 1 inch of standard insulation is indicated on the drawings or in  
22 these specifications, additional overlap of factory installed, thermal  
23 (radiant, conductive, and convective) and vapor barrier insulation shall  
24 be provided to ensure equivalent thermal resistance. The thick wall, self  
25 insulating fittings do not require an additional vapor barrier for the piping  
26 system to meet this performance level. The thermal barrier is UV  
27 resistant, CFC-free, non-porous, non-fibrous, and resist mold growth.  
28 The pipe with the integral thermal barrier with standard unprotected  
29 fittings shall meet the ASTM E84 and the CAN/ULC S102.2  
30 requirements for a Flame Spread Rating of 25 and Smoke Development  
31 rating of 50.

## 32 33 PART 3 - EXECUTION

### 34 35 3.1 PIPING APPLICATIONS

36  
37 A. Install listed pipe materials and joining methods below in the following  
38 applications:

- 39  
40 1. Underground, Service Entrance Piping: Polypropylene (PP-R)  
41 piping in SDR 7.4 or heavier.
- 42 2. Aboveground: Polypropylene (PP-R) piping in SDR 6, 7.4 or 11  
43 based on the required minimum pressure rating and use  
44 temperature.

### 45 46 3.2 FUSION WELDING OF JOINTS

- 1 A. Install fittings and joints using socket-fusion, electrofusion, or butt-fusion  
2 as applicable for the fitting type. All fusion-weld joints shall be made in  
3 accordance with the pipe and fitting manufacturer's specifications and  
4 product standards.  
5  
6 B. Fusion-weld tooling, welding machines, and electrofusion devices shall  
7 be as specified by the pipe and fittings manufacturer.  
8  
9 C. Prior to joining, the pipe and fittings shall be prepared in accordance  
10 with F 2389 and the manufacturer's specifications.  
11  
12 D. Joint preparation, setting and alignment, fusion process, cooling times  
13 and working pressure shall be in accordance with the pipe and fitting  
14 manufacturer's specifications.  
15

### 16 3.3 VALVE APPLICATIONS 17

- 18 A. Install gate valves close to main on each branch and riser serving 2 or  
19 more plumbing fixtures or equipment connections and where indicated.  
20  
21 B. Install gate or ball valves on inlet to each plumbing equipment item, on  
22 each supply to each plumbing fixture not having stops on supplies, and  
23 elsewhere as indicated.  
24  
25 C. Install drain valve at base of each riser, at low points of horizontal runs,  
26 and where required to drain water distribution piping system.  
27  
28 D. Install swing check valve on discharge side of each pump and  
29 elsewhere as indicated.  
30  
31 E. Install ball valves in each hot-water circulating loop and discharge side  
32 of each pump.  
33  
34

### 35 3.4 PIPING INSTALLATIONS 36

- 37 A. Install hangers and supports at intervals specified in the applicable  
38 Plumbing Code and as recommended by pipe manufacturer.  
39  
40 B. Support vertical piping at each floor and as specified in the applicable  
41 Plumbing Code.  
42  
43 C. Fire stopping shall be provided to both be compatible with the  
44 Aquatherm Piping and meet the requirements of ASTM E 814 or ULC  
45 S115 , "Fire Tests of Through-Penetration Firestops". Pipe insulations  
46 or fire resistive coating shall be removed where the pipe passes through

1 a fire stop and, if required by the firestop manufacturer, for 3 inches  
2 beyond the firestop outside of the fire barrier.

3  
4 D. When installed in systems with pumps in excess of 7.5 HP, piping shall  
5 be protected from excessive heat generated by operating the pump at  
6 shut-off conditions. Where the possibility exists that the pump will  
7 operate with no flow, the protection method shall be a temperature relief  
8 valve or comparable level of protection, set to a maximum temperature  
9 of 185°F.

10  
11 E. If heat tracing is specified for the piping, it should be installed on the  
12 pipe interior or exterior, and it must be suitable for use with plastic piping  
13 and self-regulating to ensure the surface temperature of the pipe and  
14 fittings will not exceed 70°C (158°F).

15  
16 3.5 INSPECTING AND CLEANING

17 .  
18 A. The pipes should be flushed with cold water after finishing the  
19 installation. Inspect and test piping systems following procedures of  
20 authorities having jurisdiction and as specified by the piping system  
21 manufacturer.

22  
23 B. Clean and disinfect water distribution piping following procedures of the  
24 authority having jurisdiction.

25  
26 END OF SECTION 22 11 17