

# GG337-14

## Appendix E (New), Chapter 12

THIS CODE CHANGE PROPOSAL IS ON THE AGENDA OF THE IgCC ENERGY/WATER CODE DEVELOPMENT COMMITTEE. SEE THE HEARING ORDER FOR THE IgCC ENERGY/WATER CODE DEVELOPMENT COMMITTEE.

**Proponent:** Michael Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservices.com)

Add new appendix as follows:

### APPENDIX E PIPING STANDARDS FOR VARIOUS APPLICATIONS

#### E101 PLASTIC PIPING.

**E101.1 Plastic piping standards.** Table E101.1 provides a list of plastic piping product standards for various applications.

**TABLE E101.1**  
**PLASTIC PIPING STANDARDS FOR VARIOUS APPLICATIONS<sup>a,b</sup>**

APPLICATION	LOCATION	TYPE OF PLASTIC PIPING									
		ABS	CPVC	PE	PE-AL-PE	PE-RT	PEX	PEX-AL-PEX	PP	PVC	
<u>CENTRAL VACUUM</u>	<u>SYSTEM PIPING</u>	-	-	-	-	-	-	-	-	-	<u>ASTM F2158</u>
<u>FOUNDATION DRAINAGE</u>	<u>SYSTEM PIPING</u>	<u>ASTM F628</u>	-	<u>ASTM F405</u>	-	-	-	-	-	-	<u>ASTM D2665</u> <u>ASTM D2729</u> <u>ASTM D3034</u>
<u>GEOHERMAL GROUNDLOOP</u>	<u>SYSTEM PIPING</u>	-	<u>ASTM F441</u> <u>ASTM F442</u> <u>ASTM F2855</u> <u>ASTM D2846</u> <u>CSA B137.6</u>	<u>ASTM D2239</u> <u>ASTM D2737</u> <u>ASTM D3035</u>	<u>ASTM F1282</u>	<u>ASTM F2623</u> <u>ASTM F2769</u>	<u>ASTM F876</u> <u>CSA B137.5</u>	<u>ASTM F1281</u>	<u>ASTM F2389</u> <u>CSA B137.11</u>	-	<u>ASTM D1785</u> <u>ASTM D2241</u> <u>CSA B137.3</u>

NOTE: This version of the code change proposal has been updated to include all reported errata.

APPLICATION	LOCATION	TYPE OF PLASTIC PIPING								
		ABS	CPVC	PE	PE-AL-PE	PE-RT	PEX	PEX-AL-PEX	PP	PVC
	LOOP PIPING	:	:	ASTM D2239  ASTM D2737  ASTM D3035  NSF358 -1	ASTM F1282	ASTM F2623  ASTM F2769	ASTM F876  CSA B137.5	:	ASTM F2389  CSA B137.11	:
GRAY WATER	NON-PRESSURE DISTRIBUTION / COLLECTION	ASTM F628	:	ASTM D2239  ASTM D2737  ASTM D3035  ASTM F2306	:	:	:	:	ASTM F2389  CSA B137.11	ASTM F891  ASTM D2949  ASTM D1785  ASTM D2729  ASTM D3034  ASTM F1760  CSA B137.3
	PRESSURE / DISTRIBUTION	:	ASTM F441  ASTM F442  ASTM F2855  ASTM D2846  CSA B137.6	ASTM D2239  ASTM D2737  ASTM D3035	ASTM F1282	ASTM F2623  ASTM F2769	ASTM F876  CSA B137.5	ASTM F1281	ASTM F2389  CSA B137.11	ASTM D1785  ASTM D2241  CSA B137.3
RADIANT COOLING	LOOP PIPING	:	ASTM F441  ASTM F442 ASTM F2855  ASTM D2846	ASTM D2239  ASTM D2737  ASTM D3035	ASTM F1282	ASTM F2623  ASTM F2769	ASTM F876  CSA B137.5	ASTM F1281	ASTM F2389  CSA B137.11	:

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APPLICATION	LOCATION	TYPE OF PLASTIC PIPING								
		ABS	CPVC	PE	PE-AL-PE	PE-RT	PEX	PEX-AL-PEX	PP	PVC
RADIANT HEATING	LOOP PIPING	:	ASTM F441 ASTM F442 ASTM F2855 ASTM D2846	:	ASTM F1282	ASTM F2623 ASTM F2769	ASTM F876 CSA B137.5	ASTM F1281	ASTM F2389 CSA B137.11	:
RAINWATER HARVESTING	NON-PRESSURE / COLLECTION	ASTM F628	:	ASTM F1901	:	:	:	:	ASTM F2389 CSA B137.11	ASTM F891 ASTM D2949 ASTM D1785 ASTM D2729 ASTM F1760 CSA B137.3
	PRESSURE / DISTRIBUTION	:	ASTM F441 ASTM F442 ASTM F2855 ASTM D2846 CSA B137.6	ASTM D2239 ASTM D2737 ASTM D3035	ASTM F1282	ASTM F2623 ASTM F2769	ASTM F876 CSA B137.5	ASTM F1281	ASTM F2389 CSA B137.11	ASTM D1785 ASTM D2241 CSA B137.3
RADON VENTING	SYSTEM PIPING	ASTM F628	:	:	:	:	:	:	:	ASTM F891 ASTM D1785 ASTM F1760

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APPLICATION	LOCATION	TYPE OF PLASTIC PIPING								
		ABS	CPVC	PE	PE-AL-PE	PE-RT	PEX	PEX-AL-PEX	PP	PVC
RECLAIMED WATER	MAIN TO BUILDING SERVICE	-	ASTM F441 ASTM F442 ASTM F2855 ASTM D2846 CSA B137.6	ASTM D3035 AWWA C901 CSA B137.1	ASTM F1282	ASTM F2623 ASTM F2769	ASTM F876 AWWA C904 CSA B137.5	-	ASTM F2389 CSA B137.11	ASTM D1785 ASTM D2241 AWWA C905 CSA B137.3
	PRESSURE / DISTRIBUTION / IRRIGATION	-	ASTM F441 ASTM F442 ASTM F2855 ASTM D2846 CSA B137.6	ASTM D2239 ASTM D2737 ASTM D3035	ASTM F1282	ASTM F2623 ASTM F2769	ASTM F876 CSA B137.5	ASTM F1281	ASTM F2389 CSA B137.11 AWWA C900	ASTM D1785 ASTM D2241 AWWA C900
RESIDENTIAL FIRE SPRINKLERS <sup>c</sup>	SPRINKLER PIPING	-	ASTM F441 ASTM F442 CSA B137.6 UL 1821	-	-	ASTM F2769	ASTM F876 CSA B137.5 UL 1821	-	ASTM F2389 CSA B137.11	-
SOLAR HEATING	PRESSURE / DISTRIBUTION	-	ASTM F441 ASTM F442 ASTM F2855 ASTM D2846	-	-	ASTM F2623 ASTM F2769	ASTM F876 CSA B137.5	ASTM F1281	ASTM F2389 CSA B137.11	-

- a. This table indicates manufacturing standards for plastic piping materials that are suitable for use in the applications indicated. Such applications support green and sustainable building practices. The system designer or the installer of piping shall verify that the piping chosen for an application complies with local codes and the recommendations of the manufacturer of the piping.
- b. Fittings applicable for the piping shall be as recommended by the manufacturer of the piping.
- c. Piping systems for fire sprinkler applications shall be listed for the application.

Add new standards to Appendix E only as follows:

ASTM

D 1785—06	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and and 120
D 2239—03	Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
D 2241—05	Specification for Poly (Vinyl Chloride) (PVC) Pressure-rated Pipe (SDR-Series)
D 2665—09	Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
D 2729—03	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
D 2737—03	Specification for Polyethylene (PE) Plastic Tubing
D 2846/D 2846M—09	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot and Cold Water Distribution Systems
D 2949—01a(2008)	Specification for 3.25-in Outside Diameter Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
D 3034—08	Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
D 3035—08	Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
F 405—05	Specification for Corrugated Polyethylene (PE) Pipe and Fittings
F 441/F 441M— 02 (2008)	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80
F 442/F 442M— 99(2005) e1	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)
F 628—08	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core
F 876—08b	Specification for Cross-linked Polyethylene (PEX) Tubing
F 891—07	Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core
F 1281—07	Specification for Cross-linked Polyethylene/Aluminum/ Cross-linked Polyethylene (PEX-AL-PEX) Pressure Pipe
F 1282—06	Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe
F1760-01(2011)	Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Non- Pressure Plastic Pipe Having Reprocessed-Recycled Content
F1901-10	Standard Specification for Polyethylene (PE) Pipe and Fittings for Roof Drain Systems
F2158-08	Standard Specification for Residential Central-Vacuum Tube and Fittings
F2306-08	12 inch to 60 inch Annular Corrugated Profile-wall Polyethylene (PE) Pipe and Fittings for Gravity Flow Storm Sewer and Subsurface Drainage Applications
F2623-08	Standard Specification for Polyethylene of Raised Temperature (PE-RT) SDR 9 Tubing
F 2389—07e1	Specification for Pressure-rated Polypropylene (PP) Piping Systems
F 2769—09	Polyethylene or Raised Temperature (PE-RT) Plastic Hot and Cold Water Tubing and Distribution Systems
F2855-12	Standard Specification for Chlorinated Poly(Vinyl Chloride)/Aluminum/ Chlorinated Poly(Vinyl Chloride) (CPVC-AL-CPVC) Composite Pressure Tubing

#### AWWA

900-07	<u>Polyvinyl chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch through 12 inch (100 mm through 300mm), for Water transmission and Distribution</u>
C901—08	<u>Polyethylene (PE) Pressure Pipe and Tubing 1/2 inch (13 mm) Through 3 inch (76 mm) for Water Service</u>
C904—08	<u>Cross-linked Polyethylene (PEX) Pressure Pipe 1/2 inch (13 mm) Through 3 inch (76 mm) for Water Service</u>
905-10	<u>Polyvinyl chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 inch through 48 inch (350mm through 1200mm), for Water transmission and Distribution</u>

#### CSA

B137.1—05	<u>Polyethylene (PE) Pipe, Tubing and Fittings for Cold Water Pressure Services</u>
B137.3—05	<u>Rigid Poly (Vinyl Chloride) (PVC) Pipe for Pressure Applications</u>
B137.5—05	<u>Cross-linked Polyethylene (PEX) Tubing Systems for Pressure Applications</u>
B137.6—05	<u>CPVC Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems</u>
B137.11—05	<u>Polypropylene (PP-R) Pipe and Fittings for Pressure Applications</u>

#### NSF

358-1-2012	<u>Polyethylene Pipe and Fittings for Water-Based Ground-Source "Geothermal" Heat Pump Systems</u>
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#### UL

1821-2011	<u>Standard for Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service</u>
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**Reason:** PPFA is recommending that this table to be added as an appendix. The table will assist builders and code officials to properly select and inspect plastic piping used in green and sustainable piping systems that may be encouraged or required due to other codes, standards or rating systems. These systems are often not covered in the model codes, and some guidance would improve the code until all the applications are covered in the code body.

**Cost Impact:** Will not increase the cost of construction.

**Analysis:** A review of the standards proposed for inclusion in the code, ASTM F1760-01(2011), ASTM F1901-10, F2158-08, F2855-12, AWWA C900-07, C905-10, NSF358--2012 and UL 1821-11 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28), will be posted on the ICC website on or before April 1, 2014. All other standards proposed for inclusion into the code are already referenced in the 2012 I-code family or will be referenced in the 2015 I-code family.