

Plumbing Board Request for Action

PRINT IN INK or TYPE

NAME OF SUBMITTER Rich Olson	PURPOSE OF REQUEST (check all that apply): <input type="checkbox"/> New Code <input checked="" type="checkbox"/> Code Amendment <input type="checkbox"/> Repeal of an existing Rule
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The Minnesota Plumbing Code (MN Rules, Chapter 4714) is available at <http://www.dli.mn.gov/CCLD/PlumbingCode.asp>.

Specify the purpose of the proposal: (If recommendation for code change for fixture, appurtenance, material, or method, check all that apply)

☒ Appurtenance (e.g., water conditioning equipment) ☒ Test Method

☐ Other (describe) _____

Does your submission contain a Trade Secret? ☐ Yes ☒ No

If Yes, mark “**TRADE SECRET**” prominently on each page of your submission that you believe contains trade secret information. Minnesota Statutes, section 13.37, subdivision 1(b), defines “trade secret” as follows:

“Trade secret information” means government data, including a formula, pattern, compilation, program, device, method, technique or process (1) that was supplied by the affected individual or organization, (2) that is the subject of efforts by the individual or organization that are reasonable under the circumstances to maintain its secrecy, and (3) that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.

Note that, although “trade secret” information is generally not public, the Board and its committees may disclose “trade secret” information at a public meeting of the Board or committee if reasonably necessary for the Board or committee to conduct the business or agenda item before it (such as your request.) The record of the meeting will be public.

Describe the proposed change. The Minnesota Plumbing Code (Minnesota Rules Chapter 4714) is available via the World Wide Web at <http://www.revisor.leg.state.mn.us/arule/4714/>

NOTE:

- Please review the Minnesota Plumbing Code and include all parts of the Code that require revision to accomplish your purpose.
- The proposed change, including suggested rule language, should be *specific*. If modifying existing rule language, underline new words and ~~strike through deleted words~~. Please list all areas of the Minnesota Plumbing Code that would be affected.

1.) Add NSF SE 17304 to the REFERENCED STANDARD(S) FITTINGS column for CPVC fittings in Table 604.1 of the 2015 edition of the Minnesota Plumbing Code.

2.) Add NSF International Special Engineered Specification NSF SE 17304 (CPVC Fittings for Use with Gasketed Grooved Couplings) to Chapter 14 (REFERENCED STANDARDS) of the 2015 edition of the Minnesota Plumbing Code as follows:

STANDARD NUMBER: NSF SE 17304

STANDARD TITLE: CPVC Fittings for Use with Gasketed Grooved Couplings

APPLICATION: Fittings

REFERENCED SECTIONS: Table 604.1

Office Use Only

RFA File No. PB0118	Date Received by DLI 2.7.2019	Dated Received by Committee	Date Forwarded to Board
Title of RFA	By:		

Committee Recommendation to the Board: ☐ Accept ☐ Reject ☐ Abstain

Board approved as submitted: ☐ Yes ☐ No

Board approved as modified: ☐ Yes ☐ No

This material can be made available in different forms, such as large print, Braille or audio. To request, call 1-800-342-5354.

Need and Reasons For the Change. Thoroughly explain the need and why you believe it is reasonable to make this change. During a rulemaking process, the need and reasonableness of all proposed rule changes must be justified; therefore, a detailed explanation is necessary to ensure the Board thoroughly considers all aspects of the proposal.

The additional of NSF SE 17304 (CPVC Fittings for Use with Gasketed Grooved Couplings) will allow the new Minnesota Plumbing Code to recognize a new approval standard for connecting CPVC fittings with grooved mechanical joints.

The section 605.2.1 of the 2018 edition of the Uniform Plumbing Code does recognize grooved mechanical joints as an acceptable joining method for CPVC plastic pipe and fittings.

There are now new products on the market that will connect CPVC fittings and pipe with grooved mechanical joints. NSF SE 17304 (CPVC Fittings for Use with Gasketed Grooved Couplings) is a new approval document created by NSF International that provides listing criteria for CPVC fittings with gasketed grooved couplings.

NSF SE 17304 (CPVC Fittings for Use with Gasketed Grooved Couplings) is consistent with other referenced standards for CPVC fittings. Both the NSF SE 17304 and the 2015 Minnesota Plumbing Code currently reference similar documents (i.e. ASTM D2846 (Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water distribution Systems), ASTM F438 (Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40), and ASTM F439 (Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80)).

If your product/method standard(s) is not currently listed in both national codes, your Request For Action will not be considered by the Board or its committees, however, you are welcome to present at any Board meeting during the Open Forum section of the Agenda.

The proposal must be accompanied by copies of any published standards, the results of testing, and copies of any product listings, as documentation of the health, sanitation and safety performance of any materials, methods, fixtures, and/or appurtenances. If none are available, please explain:

Attachments:

- 1.) Victaulic submittal 33.03 (CPVC Fittings)
- 2.) NSF SE 17304 (CPVC Fittings for Use with Gasketed Grooved Couplings)
- 3.) Listed testing results for CPVC fittings

Please attach electronic scanned copies of any literature, standards and product approvals or listings. Printed or copyrighted materials, ***along with written permission from the publisher to distribute the materials at meetings***, should be sent to the Plumbing Board, c/o Department of Labor and Industry, 443 Lafayette Road No., St. Paul, MN 55155-4344.

Primary reason for change: (check only one)

- ☐ Protect public, health, safety, welfare, or security
☐ Lower construction costs
☒ Encourage new methods and materials
☐ Change made at national level
☐ Other (describe) _____

- ☐ Mandated by legislature
☐ Provide uniform application
☐ Clarify provisions
☐ Situation unique to Minnesota

Anticipated benefits: (check all that apply)

- ☐ Save lives/reduce injuries
☐ Improve uniform application
☐ Improve health of indoor environment
☒ Provide more construction alternatives
☐ Reduce regulation ☐ Other (describe) _____

- ☐ Provide more affordable construction
☐ Provide building property
☐ Drinking water quality protection
☐ Decrease cost of enforcement

Economic impact: (explain all answers marked "yes")

1. Does the proposed change increase or decrease the cost of enforcement? ☐ Yes ☒ No If yes, explain

2. Does the proposed change increase or decrease the cost of compliance? ☐ Yes ☒ No If yes, explain
Include the estimated cost increase or decrease, and who will bear the cost increase or experience the cost decrease:

3. Are there less costly or intrusive methods to achieve the proposed change? ☐ Yes ☒ No If yes, explain

4. Were alternative methods considered? ☐ Yes ☒ No If no, why not? If yes, explain what alternative methods were considered and why they were rejected.
This is an alternative method for joining CPVC pipe.

5. If there is a fiscal impact, try to explain any benefit that will offset the cost of the change. If there is no impact, mark "N/A." N/A

6. Provide a description of the classes of persons affected by a proposed change, who will bear the cost, and who will benefit. Building owners will benefit from a more economical method of joining CPVC pipe. Installing contractors will benefit by have a joining method which can be used immediately (no need for curing time).

7. Does the proposed rule affect farming operations? (Agricultural buildings are exempt from the Minnesota Building Code under Minnesota Statutes, Section 326B.121.) ☒ Yes ☐ No If yes, explain
This could affect farming operations if they use CPVC piping in their operations.

Are there any existing Federal Standards? ☐ Yes ☒ No If yes, list:

Are there any differences between the proposed change and existing federal regulations?

☐ Yes ☐ No ☒ Not applicable ☐ Unknown

If yes, describe each difference & explain why each difference is needed & reasonable.

Minnesota Statutes, section 14.127, requires the Board to determine if the cost of complying with proposed rule changes in the first year after the changes take effect will exceed \$25,000 for any small business or small city. A small business is defined as a business (either for profit or nonprofit) with less than 50 full-time employees and a small city is defined as a city with less than ten full-time employees.

During the first year after the proposed changes go into effect, will it cost more than \$25,000 for any small business or small city of comply with the change? ☐ Yes ☒ No If yes, identify by name the small business(es or small city(ies).

Will this proposed plumbing code amendment require any local government to adopt or amend an ordinance or other regulation in order to comply with the proposed plumbing code amendment? ☐ Yes ☒ No, If yes, identify by name the government(s) and ordinances(s) that will need to be amended in order to comply with the proposed plumbing code amendment.

Additional supporting documentation may also be attached to this form. Are there any additional comments you feel the Committee/Board may need to consider? If so, please state them here:

Information regarding submitting this form:

- Submissions are received and heard by the Committee on an "as received" basis. **Any missing documentation will delay the process, and your proposal will be listed as the date it was received "Complete."**
- **Submit any supporting documentation to be considered**, such as manufacturer's literature, approvals by other states, and engineering data electronically to DLI.CCLDBOARDS@state.mn.us. Once your Request For Action form has been received, it will be assigned a file number. Please reference this file number on any correspondence and supplemental submissions.
- **For copyrighted materials that must be purchased from publishers, such as published standards, product approvals or testing data, listings by agencies (IAPMO, ASSE, ASTM, etc.,) you may send just 2 copies, *along with written permission from the publisher to distribute the materials at meetings*, via U.S. Mail to: Plumbing Board, c/o Department of Labor and Industry, 443 Lafayette Road No., St. Paul, MN 55155-4344.**
- **For materials that must be submitted by U.S. Mail, please include a copy of your "Request For Action" form originally submitted and reference your assigned RFA file number.**

Information for presentation to the Committee and/or Board:

- Limit presentations to 5 minutes or less.
- Be prepared to answer questions regarding the proposal and any documentation.

Information regarding Committee and/or Board function:

- The Plumbing Board or designated committee.

I understand that any committee action is a recommendation to the Plumbing Board and is not to be considered final action.

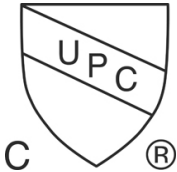
SUBMITTED BY NAME Richard Olson		FIRM NAME MAJOR mech	SUBMITTER'S E-MAIL ADDRESS ROISON539@gmail.com	
NAME, PHONE NUMBER & E-MAIL ADDRESS OF PRESENTER TO THE COMMITTEE (if different): 1005 329th AVE NW Mike Radke 612-751-5894 michael.radke@victaulic.com				
ADDRESS 1005 329th AVE NW		CITY Cambridge	STATE MN	ZIP CODE 55008
PHONE 763-286-6039	SIGNATURE (original or electronic) Richard Olson		DATE 2-6-2019	

For Assistance or questions on completing this form, contact Cathy Tran, Department of Labor and Industry at 651-284-5898.

For Office/Committee Use Only		Proposal received completed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date Proposer notified of gaps:	Mode of notification (e.g., e-mail)	Date returned to Proposer:	Date materials re-received:

IAPMO RESEARCH AND TESTING, INC.

5001 E. Philadelphia Street, Ontario, CA 91761-2816 • (909) 472-4100 • Fax (909) 472-4244 • www.iapmort.org



CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

The most updated information on this Certificate of Listing is available online at pld.iapmo.org

Product: Grooved Mechanical Pipe Couplings & Grooved End Fittings File No. 0305

Issued To: VICTAULIC COMPANY
4901 KESSLERSVILLE ROAD
EASTON, PA 18040

Identification: Manufacturer's name or trademark on the housing exterior, size and model number cast or stamped into the product. Gaskets shall be permanently marked with the manufacturer's name or trademark. The gaskets for models listed with Canadian recognition shall also be permanently marked with the size, style, type of material or service, and year of manufacture in places not critical to gasket sealing. Products shall also bear the cUPC® certification mark.

Characteristics: A line of pressure rated couplings and fittings of ductile or malleable iron. Available with either a galvanized or enamel coating. Intended for use with cast iron, copper tubing, plastic, stainless steel, or steel pipe in potable water systems for above and below ground installations. Ferrous piping shall have a protective coating of an approved type, machine applied and conforming to recognized standards. To be installed in accordance with the manufacturer's installation instructions and the latest edition of the Uniform Plumbing Code and/or the National Plumbing Code of Canada.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Products are in compliance with the following code(s):

Uniform Plumbing Code (UPC®)
National Plumbing Code of Canada
International Plumbing Code (IPC®)

Products are in compliance with the following standard(s):

IAPMO PS 53-2016a and CSA B242-2005 (R2016)

MODELS:

Note: Models preceded by a "c" shall bear the cUPC® certification mark. All other models shall bear the UPC® certification mark.

<u>Model</u>	<u>Description</u>	<u>Size</u>
07	Couplings	1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8", 10", 12"
HP-70	Couplings	2", 2-1/2", 3", 4", 6", 8", 10" & 12"
72	Outlet Couplings	1-1/2"x, 2"x, 2-1/2"x
	Threaded	3"x, 4"x & 6"x

<u>Model</u>	<u>Description</u>	<u>Size</u>
75	Couplings	1-1/2", 2", 2-1/2", 3", 4", 4-1/2", 5", 6" & 8"
77	Couplings	3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 3-1/2", 4", 5", 6", 8", 10", 12", 14", 15", 16", 18", 20", 22", 24"
89	Rigid Coupling	2", 2-1/2", 3", 4", 5", 6", 8", 10", & 12"
90	Couplings	1", 1-1/2", 2", 2-1/2", 3", 4" & 6"
107N	Quick Vic Rigid Coupling	2", 2-1/2", 3", 4", 5", 6", 8", 10" & 12"
177N	Quick Vic Flexible Coupling	2", 2-1/2", 3", 4" 5", 6", 8"
356	Victaulic Style Rigid Transition coupling	2-1/2", 3", 4", 6", 8" & 10"
357	Rigid Coupling	2", 2-1/2", 3", 4", 6", 8" & 10"
358	Victaulic Style Rigid Reducing coupling	2 1/2" x 2", 3" x 2", 3" x 2 1/2", 4" x 2", 4" x 2 1/2", 4" x 3", 6" x 4", 8" x 6" & 10" x 8"
606	Couplings	2-1/2", 3", 4", 5" & 6"
c607	Quick Vic Copper Rigid Coupling	2", 2-1/2", 3", 4", 5", 6", & 8"
610	Copper Fittings (90 Elbow)	2-1/2", 3", 4", 5" & 6"
611	Copper Fittings (45 Elbow)	2-1/2", 3", 4", 5" & 6"
620	Copper Fittings (Tee)	2-1/2", 3", 4", 5" & 6"
c622	Copper Mechanical-T Bolted	2-1/2", 3", 4", w/ 3/4", 1", 1-1/2"
644	Rigid Transition Coupling	2", 2-1/2", 3", 4" & 6"
	<u>Branch Outlets</u>	<u>Female Thread Outlets</u>
625	Copper Fittings (Reducing Tee)	2"x, 2-1/2"x, 3"x, 4"x, Grvd. x Grvd. x Grvd 5"x & 6"x
626	Copper Fittings (Reducing Tee)	2"x, 2-1/2"x, 3"x, 4"x, Grvd. x Grvd. x Grvd 5"x & 6"x
641	Flange Adapter	2-1/2", 3", 4", 5" & 6"
670	90 deg. Elbows	2", 2-1/2" & 3"
671	45 deg. Elbows	2", 2-1/2" & 3"
672	Tee	2", 2-1/2" and 3"
673	Concentric Reducer	2-1/2" x 2-1/2" x 2" , 3" x 3" x 2" & 3" x 3" x 2-1/2"
675	Reducing Tee	2-1/2" x 2-1/2" x 2" , 3" x 3" x 2" & 3" x 3" x 2-1/2"
741	Flange Adapter	2", 2-1/2", 3", 4", 5", 6", 8", 10" & 12"
920/920N	Mechanical Tees (Couplings)	2"x, 2-1/2"x, 3"x, 4"x, 5"x, 6"x & 8"x

This information was valid on 1/17/2019.



NSF Canada

280B Industrial Parkway South, Aurora, Ontario L4G 3T9, Canada
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TEST REPORT

Live Safer™

Send To: 4M620

Mr. Michael Erle
Victaulic Co.
4901 Kesslersville Road
Easton, PA 18040
U.S.A

Facility: C0332696

Colonial Engineering, Inc.
6400 Corporate Avenue
Portage, MI 49002
U.S.A

Result: PASS

Report Date: 3-AUG-2017

Customer Name: Victaulic Co.
Tested To: NSF SE 17304
Description: 6" SCH 80 CPVC Pipe Assemblies
Test Type: HDS Testing
Trade Designation: No. 350 90° Elbow
Job Number: J-00257296
Project Number: 17-5020 / W0399539
Account Manager: Liza Nero

Thank you for having your product tested by NSF International.

Please contact your Account Manager if you have any questions or concerns pertaining to this report.

Report Authorization:

Ali Ladhani, B. Eng.
Engineering Specialist

Authority:

Michael Conrad, Ph.D., P.Eng.
Laboratory Manager



1.0 Purpose of Test

The purpose of Project 17-5020 / J-00257296 was to conduct hydrostatic burst and sustained testing on 6" SCH 80 CPVC pipe assemblies per NSF SE 17304¹, Section 5.3.

2.0 Test Item Identification and Description

The following sample, as shown in **Table 1**, was provided by the Client. No further details of the sample were provided.

Table 1: Sample Description

Sample ID	Description	Printline
17-125	6" SCH 80 CPVC pipe assembly. Consists of a capped 6" 90° elbow joined to a second 6" 90° elbow via couplings and an 8" long CVPC pipe. A third uncapped 90° elbow is joined to another 24" long CVPC pipe.	N/A

3.0 Test Methods

Hydrostatic burst testing at 180°F (82°C) to reach a minimum burst requirement was conducted per NSF SE 17304, Section 5.3, Table 1 using the method described in ASTM D1599-14e1².

Hydrostatic sustained testing at 180°F (82°C) for 1 hour and 1,000 hours was conducted per NSF SE 17304, Section 5.3, Table 1 using the method described in ASTM D1598-15a³.

Testing to ASTM D1598 and D1599 is within NSF Canada's ISO 17025 scope of accreditation (I.A.S. TL-256).

4.0 Test Results

Tables 2 and 3 summarize the test results. Detailed test results are provided in **Appendices A and B**.

¹ NSF SE 17304 *CPVC Fittings for Use with Gasketed Grooved Couplings*

² ASTM D1599-14e1 *Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings*

³ ASTM D1598-15a *Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure*

**Table 2: Summary of Burst Test Results**

Test	NSF SE 17304 Requirement	Specimen ID	Burst Pressure Reached (psig)	Test Time (s)	Status
Burst Testing	224 psig Minimum Burst Pressure Requirement / 180°F	17-125-01	225	67	Complies

Table 3: Summary of Sustained Test Results

Test	NSF SE 17304 Requirement	Specimen ID	Results	Status
Sustained Testing	≥ 1 h at 175 psi / 180°F	17-125-02	≥ 1 h at 175 psi / 180°F	Complies
	≥ 1,000 h at 147 psi / 180°F	17-125-03	≥ 1,000 h at 147 psi / 180°F	Complies

5.0 Conclusions

Based on the samples provided and the testing performed in this project, the following conclusions are made:

- Sample 17-125 (6" CPVC pipe assembly) complies with the following requirements:
 - NSF SE 17304, Section 5.3 *Minimum Burst Pressure Requirement*
 - NSF SE 17304, Section 5.3 *Sustained testing for 1 h*
 - NSF SE 17304, Section 5.3 *Sustained testing for 1,000 h*



Appendix A

Burst Test Details

ASTM D1599 – Procedure B

Data Set No. 01: Burst Test at 180°F

1. Sample ID: 17-125
2. Nominal Size: 6"
3. Temperature of Test: 180 ± 3.6 °F (82 ± 2 °C)
4. Conditioning time at the test temperature: A minimum of 16 hours
5. Type of end caps: Free end
6. Sample length between end caps: N/A
7. The test environment inside/outside the specimen: Water/Air
8. Test Supervisor: Ali Ladhani
9. Test Date: 17-06-20
10. Test Results:

Specimen ID	Minimum Burst Pressure Requirement (psig)	Burst Pressure Reached (psig)	Test Time (s)	Status of Specimen
17-125-01	224	225	67	Non-Failure



Appendix B

Hydrostatic Test Details

ASTM D1598

Data Set No. 02: 1 h Sustained Test at 180°F

1. Sample ID: 17-125
2. Nominal Size: 6"
3. Temperature of Test: 180 ± 3.6 °F (82 ± 2 °C)
4. Conditioning time at the test temperature: 1 hour at 50% of test pressure
5. Type of end caps: Free end
6. Sample length between end caps: N/A
7. The test environment inside/outside the specimen: Water/Air
8. Additional Information:
 - Number of Lots: 1
 - Number of Extrusions: 1
 - Creep is not the controlling factor
9. Test Supervisor: Ali Ladhani
10. Time-to-Failure/Stress Data:

Specimen ID	Test Pressure (psig)	Start YY.MM.DD	End YY.MM.DD	Total Hours	Status of Specimen
17-125-02	175	17-06-20	17-06-20	1.13	Non-Failure



Data Set No. 03: 1,000 h Sustained Test at 180°F

1. Sample ID: 17-125
2. Nominal Size: 6"
3. Temperature of Test: 180 ± 3.6 °F (82 ± 2 °C)
4. Conditioning time at the test temperature: 1 hour at 50% of test pressure
5. Type of end caps: Free end
6. Sample length between end caps: N/A
7. The test environment inside/outside the specimen: Water/Air
8. Additional Information:
 - Number of Lots: 1
 - Number of Extrusions: 1
 - Creep is not the controlling factor
9. Test Supervisor: Ali Ladhani
10. Time-to-Failure/Stress Data:

Specimen ID	Test Pressure (psig)	Start YY.MM.DD	End YY.MM.DD*	Total Hours	Status of Specimen
17-125-03	147	17-06-20	17-08-02	1,024.32	Non-Failure



NSF International

Special Engineered Specification
NSF SE 17304

CPVC Fittings for Use with
Gasketed Grooved Couplings

The Public
Health and Safety
Company.™



NSF SE 17304

SPECIFICATIONS FOR A SPECIAL ENGINEERED (SE) PRODUCT

CPVC Fittings for Use with Gasketed Grooved Couplings

1. Scope of Specification:

This specification defines the product specific requirements for testing, marking, and in-plant quality control (QC) for Chlorinated Poly (Vinyl Chloride) (CPVC) Fittings for Use with Gasketed Grooved Couplings to be used in CPVC piping applications.

2. Application:

Chlorinated Poly (Vinyl Chloride) (CPVC) Fittings meeting this specification are intended for use in cold and hot water potable water applications, to be used with CPVC piping that complies with the recommendation of the fitting manufacturer.

3. Reference Documents:

- ASTM D1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
- ASTM D1599 Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings
- ASTM D1784 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- ASTM D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- ASTM D2846 Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot-and-Cold Water Distribution Systems
- ASTM F438 Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVCP) Plastic Pipe Fittings, Schedule 40
- ASTM F439 Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVCP) Plastic Pipe Fittings, Schedule 80
- NSF/ANSI Standard 61 – Drinking Water Systems Components – Health Effects

4. Materials:

4.1 – Fitting Body – Shall be made from CPVC material that meets a minimum cell classification of 23447 as defined in ASTM D1784.

4.2 – Rework Material – The use of clean, rework material of the same formulation from the same manufacturer is acceptable provided that the finished product meet the requirements of this specification.

5.0 Requirements:

5.1 – Workmanship

5.1.1 – Fittings complying with this specification shall not, upon a visual inspection, contain imperfections that would adversely affect the performance of the fitting.



5.1.2 – The surfaces of all thermoplastic shall be free from defects which will adversely affect the performance and service of the fitting.

5.2 – Dimensions

5.2.1 – Measure dimensions in accordance with ASTM D2122.

5.2.1.2 – Grooved Connections – Shall be in accordance with the manufacturer's specifications.

5.2.1.3 – Socket Connections:

5.1.3.1 – Socket connections for solvent-weld to IPS pipe shall comply with the socket dimensions given in ASTM F439 for Sch 80 CPVC or ASTM F438 for Sch 40 CPVC.

5.1.3.2 – Socket connections for solvent-weld to CTS pipe shall comply with the socket dimensions given in ASTM D2846/D2846M.

5.3 – Resistance to Hydrostatic Pressure

5.3.1 – Fittings shall meet the minimum requirements for resistance to hydrostatic pressure when tested in accordance with 5.3.2.

5.3.2 – Test specimens shall consist of assemblies of CPVC fittings and grooved couplings. The assemblies used for each test shall contain the same fittings in the same configuration. Each individual assembly shall contain at least two of each fitting being tested.

5.3.2.1 – The test temperature, with a tolerance of $\pm 3.6^{\circ}\text{F}$ (2°C), shall be 180°F , for which the piping system component's recommended maximum operating pressure is being verified.

5.3.2.2 – Conduct hydrostatic pressure testing in accordance with the method and at the times and pressures given in Table 1. Specimens which include an elastomeric seal shall be conditioned for one hour at 50% of the test pressure immediately prior to conducting the 1-h and 1000-h tests.

Table 1 Hydrostatic Testing

Test Pressure, psi	Time	Test Method
$3.2 \times (P^A)$ minimum burst pressure	60 s	ASTM D1599 ^B
$2.5 \times (P^A) \pm 10$ psi	1 h	ASTM D1598
$2.1 \times (P^A) \pm 10$ psi	1000 h	ASTM D1598

(A) P is the manufacturer's recommended pressure at 180°F as indicated in their published literature. It is the responsibility of the manufacturer to establish a recommended maximum operating pressure.

(B) Testing may be stopped upon reaching the minimum required pressure, rather than taking the sample to failure.

5.5 – Potable Water Applications – For Potable Water applications, fittings shall comply with the requirements of NSF/ANSI Standard 61.

6. Product Marking:

6.1 – Marking on fittings shall consist of the following:

- Manufacturer's name (or trademark)
- Material designation
- Nominal size
- The certification mark of the agency making the evaluation

6.2 – The manufacturer's literature shall include assembly instructions which provide adequate information to achieve a connection which will meet the manufacturer's published recommended maximum operating pressure.



7. In-plant Q.C. Requirements:

The following tests are to be performed at start-up and designated frequencies thereafter and performed in accordance with Section 5 of this document

Test	Frequency
Dimensions	
Grooved connection dimensions (per manufacturer spec)	24 h
Body wall thickness	Weekly
Socket bottom average diameter and out of roundness	24 h
Socket entrance average diameter and out of roundness	24 h
Socket depth	24 h
All other dimensions	Weekly
Burst pressure	Weekly



PGS™-300

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 12"/DN50 – DN300

Operating Temperature

- +32°F to +200°F/0°C to +93°C

Maximum Working Pressure

- See section 5.0 for pressure ratings and temperature reduction factors.

Function

- Connects pipe sections, provides change in direction, and adapts sizes or components.
- All fittings are supplied with grooved ends in accordance with Victaulic PGS-300 Cut Grooving Specifications for direct use on chlorinated polyvinyl chloride (CPVC) pipe joined with Victaulic couplings (see section 7.0 for Reference Materials).

NOTES

- Contact Victaulic for additional fitting configurations.
- Contact Victaulic for use on Schedule 40 CPVC pipe or Schedules 40 and 80 PVC pipe.

2.0 CERTIFICATION/LISTINGS



NSF pw

NOTES

- Fittings are constructed from NSF-certified materials.
- Certified to ANSI/NSF 61 at a commercial hot rating of 180°F/82°C. See [publication 02.06](#): Victaulic Potable Water Approvals ANSI/NSF for potable water approvals, if applicable.

3.0 SPECIFICATIONS - MATERIAL

Fittings & Nipples: Chlorinated polyvinyl chloride (CPVC) conforming to a minimum cell class of 23447 according to ASTM D1784.

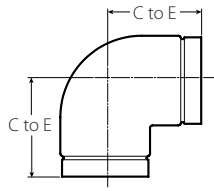
ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

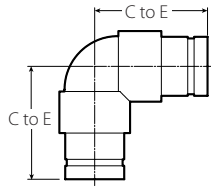
Spec Section		Paragraph	
Approved		Date	

4.0 DIMENSIONS

No. 350 90° Elbow



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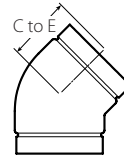


Fabricated

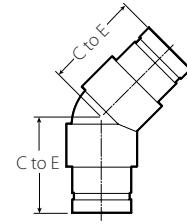
Size		Dimensions	Weight
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approximate (Each) lb kg
2	2.375	5.00 (f)	1.3
DN50	60.3	127	0.6
2½	2.875	3.75	0.8
	73.0	95	0.4
3	3.500	4.25	1.4
DN80	88.9	108	0.6
4	4.500	5.00	2.1
DN100	114.3	127	1.0
6	6.625	6.50	6.0
DN150	168.3	165	2.7
8	8.625	7.75	10.8
DN200	219.1	197	4.9
10	10.750	13.50 (f)	46.1
DN250	273.0	343	20.9
12	12.750	15.50 (f)	75.8
DN300	323.9	394	34.4

(f) = Fabricated fitting

No. 351 45° Elbow



Molded



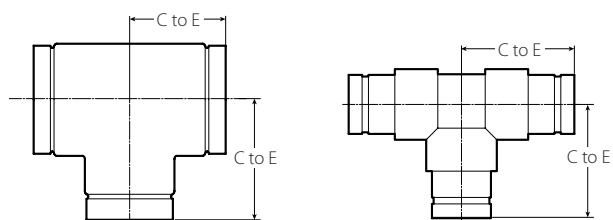
Fabricated

Size		Dimensions	Weight
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approximate (Each) lb kg
2	2.375	4.50 (f)	1.2
DN50	60.3	114	0.5
2½	2.875	2.25	0.6
	73.0	57	0.3
3	3.500	2.50	0.8
DN80	88.9	64	0.4
4	4.500	3.00	1.3
DN100	114.3	76	0.6
6	6.625	3.50	3.4
DN150	168.3	89	1.5
8	8.625	4.25	6.2
DN200	219.1	108	2.8
10	10.750	10.20 (f)	39.6
DN250	273.0	259	18.0
12	12.750	11.62 (f)	50.7
DN300	323.9	295	23.0

(f) = Fabricated fitting

4.0 DIMENSIONS (Continued)

No. 352 Tee



Molded

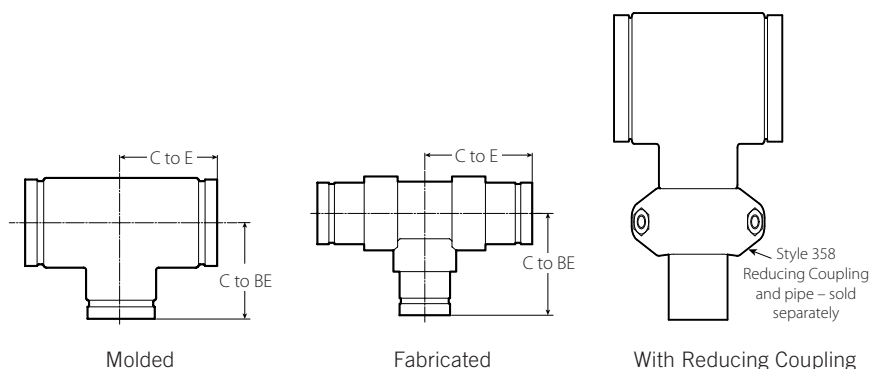
Fabricated

Size		Dimensions	Weight
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approximate (Each) lb kg
2 DN50	2.375 60.3	5.00 (f) 127	1.9 0.9
2½	2.875 73.0	3.75 95	1.3 0.6
3 DN80	3.500 88.9	4.25 108	1.9 0.9
4 DN100	4.500 114.3	5.00 127	2.8 1.3
6 DN150	6.625 168.3	6.50 165	7.8 3.5
8 DN200	8.625 219.1	7.75 197	13.8 6.3
10 DN250	10.750 273.0	13.50 (f) 343	68.0 30.8
12 DN300	12.750 323.9	15.50 (f) 394	89.4 40.6

(f) = Fabricated fitting

4.0 DIMENSIONS (Continued)

No. 353 Reducing Tee (Groove x Groove x Groove)



Size			Dimensions		Weight
Nominal inches DN	Actual Outside Diameter inches mm		C to E inches mm	C to BE (Branch) inches mm	Approximate (Each) lb kg
2 1/2 x 2 1/2 x 2 DN50	2.875 x 2.875 x 2.375 73.0 x 73.0 x 60.3		Use 2 1/2" Style 352 Tee with 2 1/2" x 2" Style 358 Reducing Coupling		
3 x 3 x 2 DN80 DN80 DN50	3.500 x 3.500 x 2.375 88.9 x 88.9 x 60.3	2.375	Use 3" Style 352 Tee with 3" x 2" Style 358 Reducing Coupling		
		2.875 73.0	Use 3" Style 352 Tee with 3" x 2 1/2" Style 358 Reducing Coupling		
4 x 4 x 2 DN100 DN100 DN50	4.500 x 4.500 x 2.375 114.3 x 114.3 x 60.3	2.375	Use 4" Style 352 Tee with 4" x 2" Style 358 Reducing Coupling		
		2.875 73.0	Use 4" Style 352 Tee with 4" x 2 1/2" Style 358 Reducing Coupling		
		3.500	Use 4" Style 352 Tee with 4" x 3" Style 358 Reducing Coupling		
		88.9			
6 x 6 x 2 DN150 DN150 DN50	6.625 x 6.625 x 2.375 168.3 x 168.3 x 60.3	2.375	Use 6" x 3" Style 353 Reducing Tee with 3" x 2" Style 358 Reducing Coupling		
		2.875 73.0	Use 6" x 3" Style 353 Reducing Tee with 3" x 2 1/2" Style 358 Reducing Coupling		
		3.500	6.50	6.50	7.1
		88.9	165	165	3.2
		4.500	Use 6" Style 352 Tee with 6" x 4" Style 358 Reducing Coupling		
8 x 8 x 4 DN200 DN200 DN100	8.625 x 8.625 x 4.500 219.1 x 219.1 x 114.3	4.500	7.75	7.75	12.6
		114.3	197	197	5.7
		6.625	Use 8" Style 352 Tee with 8" x 6" Style 358 Reducing Coupling		
10 x 10 x 4 DN250 DN250 DN100	10.750 x 10.750 x 4.500 273.0 x 273.0 x 114.3	4.500	Use 10" x 6" Style 353 Reducing Tee with 6" x 4" Style 358 Reducing Coupling		
		6.625	14.75 (f)	15.00	54.5
		168.3	375	381	24.7
		8.625	Use 10" Style 352 Tee with 10" x 8" Style 358 Reducing Coupling		
12 x 12 x 6 DN300 DN300 DN150	12.750 x 12.750 x 6.625 323.9 x 323.9 x 168.3	6.625	Use 12" x 8" Style 353 Reducing Tee with 8" x 6" Style 358 Reducing Coupling		
		168.3	16.76 (f)	17.25	72.4
		219.1	429	438	32.8
		10.750	17.76 (f)	18.56	104.5
DN250	273.0	454	473	473	47.4

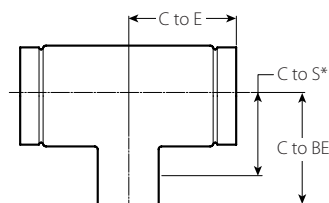
(f) = Fabricated fitting

NOTES

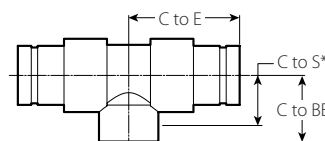
- Style 358 Reducing Couplings can be used to create additional fitting configurations not shown here. Consideration should be given when conducting system designs. Contact Victaulic for more information.
- Contact Victaulic for additional sizes.

4.0 DIMENSIONS (Continued)

No. 354 Reducing Tee (Groove x Groove x Socket)



Molded



Fabricated

Size							Dimensions				Weight					
Nominal inches DN			Actual Outside Diameter inches mm			C to E inches mm	C to S* (Socket) inches mm	C to BE (Branch) inches mm	Approximate (Each) lb kg							
2 DN50	x	2 DN50	x	1 DN25	2.375 60.3	x	2.375 60.3	x	1.315 33.7	4.80 (f) 122	1.26 32	2.44 62	1.7 0.8			
									1 ¼ DN32	1.660 42.4	4.80 (f) 122	1.71 43	2.99 76	1.9 0.9		
									1 ½ DN40	1.900 48.3	4.80 (f) 122	1.29 35	2.69 68	1.7 0.8		
									2 DN50	2.375 60.3	4.80 (f) 122	1.32 34	2.82 72	1.5 0.7		
2 ½	x	2 ½	x	1 DN25	2.875 73.0	x	2.875 73.0	x	1.315 33.7	3.75 95	2.91 (b) 74	4.06 103	1.7 0.8			
									1 ¼ DN32	1.660 42.4	3.75 95	2.81 (b) 71	4.07 103	1.6 0.7		
									1 ½ DN40	1.900 48.3	3.75 95	2.65 (b) 67	4.05 103	1.6 0.7		
									2 DN50	2.375 60.3	3.75 95	2.25 57	3.75 95	1.4 0.6		
3 DN80	x	3 DN80	x	1 DN25	3.500 88.9	x	3.500 88.9	x	1.315 33.7	4.25 108	3.41 (b) 87	4.56 116	2.3 1.0			
									1 ¼ DN32	1.660 42.4	4.25 108	3.31 (b) 84	4.57 116	2.2 1.0		
									1 ½ DN40	1.900 48.3	4.25 108	3.15 (b) 80	4.55 116	2.2 1.0		
									2 DN50	2.375 60.3	4.25 108	2.75 70	4.25 108	2.0 0.9		
4 DN100	x	4 DN100	x	1 DN25	4.500 114.3	x	4.500 114.3	x	1.315 33.7	5.00 127	4.16 (b) 106	5.31 135	3.5 1.6			
									1 ¼ DN32	1.660 42.4	5.00 127	4.06 (b) 103	5.32 135	3.5 1.6		
									1 ½ DN40	1.900 48.3	5.00 127	3.90 (b) 99	5.30 135	3.5 1.6		
									2 DN50	2.375 60.3	5.00 127	3.50 89	5.00 127	3.3 1.5		
6 DN150	x	6 DN150	x	1 DN25	6.625 168.3	x	6.625 168.3	x	1.315 33.7	6.50 165	5.66 (b) 144	6.81 173	8.1 3.7			
									1 ¼ DN32	1.660 42.4	6.50 165	5.56 (b) 141	6.82 173	8.0 3.6		
									1 ½ DN40	1.900 48.3	6.50 165	5.40 (b) 137	6.80 173	8.0 3.6		
									2 DN50	2.375 60.3	6.50 165	5.00 127	6.50 165	7.8 3.5		

(f) = Fabricated fitting

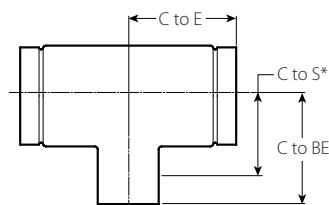
(b) = Bushing

NOTES

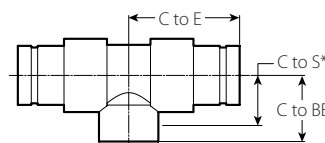
- *C to S (Socket) is the distance from the center to the branch end minus the socket depth.
- All socket sizes shown are supplied to IPS dimensions
- Style 358 Reducing Couplings can be used to create additional fitting configurations not shown here. Consideration should be given when conducting system designs. Contact Victaulic for more information.
- Contact Victaulic for additional sizes.

4.0 DIMENSIONS (Continued)

No. 354 Reducing Tee (Groove x Groove x Socket)



Molded



Fabricated

Size			Dimensions			Weight
Nominal inches DN		Actual Outside Diameter inches mm	C to E inches mm	C to S* (Socket) inches mm	C to BE (Branch) inches mm	Approximate (Each) lb kg
8 x 8 x 1		8.625 x 8.625 x 1.315	7.75	6.91 (b)	8.06	14.0
DN200 x DN200 x DN25		219.1 x 219.1 x 33.7	197	176	205	6.4
	1 1/4		7.75	6.81 (b)	8.07	13.9
	DN32		42.4	173	205	6.3
	1 1/2		7.75	6.65 (b)	8.05	13.9
	DN40		48.3	169	204	6.3
	2		7.75	6.25	7.75	13.7
	DN50		60.3	159	197	6.2
10 x 10 x 2		10.750 x 10.750 x 2.375	27.12 (f)	9.50	11.50	41.2
DN250 x DN250 x DN50		273.0 x 273.0 x 60.3	689	241	292	18.7
12 x 12 x 2		12.750 x 12.750 x 2.375	29.26 (f)	10.75	12.75	55.0
DN300 x DN300 x DN50		323.9 x 323.9 x 60.3	743	273	324	25.0

(f) = Fabricated fitting

(b) = Bushing

NOTES

- *C to S (Socket) is the distance from the center to the branch end minus the socket depth.
- All socket sizes shown are supplied to IPS dimensions
- Style 358 Reducing Couplings can be used to create additional fitting configurations not shown here. Consideration should be given when conducting system designs. Contact Victaulic for more information.
- Contact Victaulic for additional sizes.

4.0 DIMENSIONS (Continued)

No. 359F Flange Adapter (Groove x Flange)

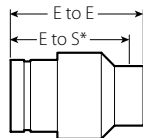


Size		Dimensions						Weight
Nominal inches DN	Actual Outside Diameter inches mm	End to End inches mm	Flange Thickness inches mm	Bolt Circle Diameter inches mm	Flange Diameter inches mm	Number of Holes	Bolt Diameter inches mm	Approximate (Each) lb kg
2 DN50	2.375 60.3	4.00 102	0.88 22	4.75 121	6.00 152	4	$\frac{5}{8}$ M16	1.0 0.5
2½	2.875 73.0	4.25 108	1.00 25	5.50 140	7.00 178	4	$\frac{5}{8}$ M16	1.5 0.7
3 DN80	3.500 88.9	4.50 114	1.13 29	6.00 152	7.50 191	4	$\frac{5}{8}$ M16	1.8 0.8
4 DN100	4.500 114.3	5.13 130	1.13 29	7.50 191	9.00 229	8	$\frac{5}{8}$ M16	3.0 1.4
6 DN150	6.625 168.3	6.00 152	1.38 35	9.50 241	11.00 279	8	$\frac{3}{4}$ M20	4.8 2.2
8 DN200	8.625 219.1	7.00 178	1.75 44	11.75 298	13.50 343	8	$\frac{3}{4}$ M20	7.0 3.2
10 DN250	10.750 273.0	8.38 213	1.75 44	14.25 362	16.00 406	12	$\frac{7}{8}$ M22	12.0 5.4
12 DN300	12.750 323.9	9.25 235	1.75 44	17.00 432	19.00 483	12	$\frac{7}{8}$ M22	18.5 8.4

NOTE

- The maximum working pressure for the No. 359F Flange Adapter at +73°F/+23°C is 150 psi/1034 kPa.

No. 361 Reducing Adapter (Groove x Socket)



Fabricated

Size		Dimensions		Weight
Nominal (Groove x Socket) inches DN	Actual Outside Diameter inches mm	E to E inches mm	E to S* (End to Socket) inches mm	Approximate (Each) lb kg
2½ x 2 DN50	2.875 x 2.375 73.0 x 60.3	6.37 (f) 162	4.87 124	0.7 0.3
3 x 2 DN80	3.500 x 2.375 88.9 x 60.3	5.87 (f) 149	4.40 112	1.0 0.5

(f) = Fabricated fitting

NOTES

- *E to S (Socket) is the distance from end to end minus the socket depth.
- All socket sizes shown are supplied to IPS dimensions
- Contact Victaulic for additional sizes.

5.0 PERFORMANCE

Maximum Working Pressure For Victaulic Schedule 80 CPVC Fittings At +73°F/+23°C

Size		Maximum Working Pressure
Nominal inches DN	Actual Outside Diameter inches mm	
2 DN50	2.375 60.3	300 2068
2½	2.875 73.0	300 2068
3 DN80	3.500 88.9	300 2068
4 DN100	4.500 114.3	300 2068
6 DN150	6.625 168.3	280 1931
8 DN200	8.625 219.1	250 1724
10 DN250	10.750 273.0	175 1207
12 DN300	12.750 323.9	175 1207

NOTES

- The pressure rating of reducing fittings is based on the lowest diameter rating.
- The maximum working pressure for the No. 359F Flange Adapter at +73°F/+23°C is 150 psi/1034 kPa.

Maximum Working Pressure For Victaulic Schedule 80 CPVC Fittings At Elevated Temperature

For the maximum working pressure rating of the joint at elevated temperature, multiply the working pressure rating of the coupling at +73°F/+23°C by the appropriate derating factor in the chart below.

Pressure capacity derating factors for operating temperatures above 73°F/23°C		
At 80°F/27°C	Multiply By	1.00
At 90°F/32°C	Multiply By	0.91
At 100°F/37°C	Multiply By	0.82
At 110°F/43°C	Multiply By	0.72
At 120°F/49°C	Multiply By	0.65
At 130°F/54°C	Multiply By	0.57
At 140°F/60°C	Multiply By	0.50
At 150°F/66°C	Multiply By	0.42
At 160°F/71°C	Multiply By	0.40
At 170°F/77°C	Multiply By	0.29
At 180°F/82°C	Multiply By	0.25
At 200°F/93°C	Multiply By	0.20

NOTE

- Derating factors are typical per the pipe manufacturers recommendation in accordance with ASTM D-2837 and PPI TR-3.

6.0 NOTIFICATIONS

WARNING

Handling of Victaulic CPVC Fittings

- **DO NOT** impact or drop Victaulic CPVC fittings. Avoid damage, such as abrasions, scratches, gouging, and cracks, particularly across the fitting's gasket sealing surfaces.
- Prior to installation, it is the installer's responsibility to inspect Victaulic CPVC fittings for any abrasions, scratches, gouging, and cracks.
- **DO NOT** attempt to install Victaulic CPVC fittings that show signs of damage. Damaged fittings shall be discarded immediately.

Storage of Victaulic CPVC Fittings

- To prevent distortion of Victaulic CPVC fittings, **DO NOT** store next to heaters, boilers, steam lines, engines, etc.
- **DO NOT** subject Victaulic CPVC fittings to temperatures above the maximum operating temperature of 200°F/93°C.
- When storing Victaulic CPVC fittings outdoors, protect from direct sunlight exposure by covering with a non-transparent material.

Exposed Installations

- Victaulic CPVC fittings that are installed in an area exposed to direct sunlight may be painted with a light-colored acrylic or latex paint that is chemically-compatible with CPVC material. Always confirm material compatibility by contacting the paint manufacturer.
- **DO NOT** use oil-based paints on Victaulic CPVC fittings.

Failure to follow these instructions could cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

[24.09: Victaulic Cut Grooving Tool for CPVC/PVC Pipe: Model CG1100](#)

[25.18: Victaulic PGS-300 Cut Groove Specifications](#)

[33.06: Victaulic Transition Coupling for CPVC Style 356](#)

[33.07: Victaulic Rigid Coupling for CPVC Style 357](#)

[33.08: Victaulic Reducing Coupling for CPVC Style 358](#)

[I-350: Victaulic Field Installation Handbook: CPVC Piping Products](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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