



Effective Date: September 2024

This listing is subject to re-examination in one year.

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CSI: DIVISION: 22 00 00—PLUMBING  
Section: 22 66 00—Chemical Waste Systems for Laboratory and Healthcare

### Product certification system:

The ICC-ES product certification system includes testing samples taken from the market or supplier's stock, or a combination of both, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the supplier's quality system.

Product: GSR or +GF+ Fuseal® PPR and Fuseal® PVDF Drain Corrosive Waste Piping System

Listee: Georg Fischer  
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[www.gfps.com](http://www.gfps.com)

### Compliance with the following codes:

2024, 2021, 2018, 2015, 2012, 2009, and 2006 *International Plumbing Code*® (IPC)  
2024, 2021, 2018, 2015, 2012, 2009, and 2006 *International Residential Code*® (IRC)  
2024, 2021, 2018, 2015, 2012 and 2009 *Uniform Plumbing Code*® (UPC)\*  
2022, 2019 and 2016 *California Plumbing Code* (CPC)\*  
2023, 2020 and 2017 *City of Los Angeles Plumbing Code*  
2023, 2020 and 2017 *Florida Building Code – Plumbing*  
2023, 2021 and 2017 *Code of Massachusetts Regulations 248 CMR 10.00: Uniform State Plumbing Code*  
2020, 2015, 2010 and 2005 *National Plumbing Code of Canada*® (NPC)\*\*

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### Compliance with the following standards:

ASTM F1412-2022, Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems  
ASTM F1673-2010(2021)e1, Standard Specification for Poly-Vinylidene Fluoride (PVDF) Corrosive Waste Drainage Systems  
CSA B181.3-2024, Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems  
NSF/ANSI 14-2022, Plastic Piping Systems Components and Related Materials

Identification:

**Piping:** The piping shall be marked every 5 feet (1.5 m) with the following:

- a) Manufacturer’s name or trademark;
- b) Raw material designation code and type;
- c) Schedule or SDR size, as applicable;
- d) Nominal pipe size;
- e) Standard designation
- f) The wording “LAB DRAINAGE” or “CSA B181.3”; and
- g) ICC-ES PMG mark of conformity (optional).

**Fittings and Accessories:** The fittings and accessories shall be marked with the following:

- a) Nominal size;
- b) Manufacturer’s name or trademark;
- c) Raw material designation code and type; and
- d) Standard designation

Installation:

The manufacturer’s published installation instructions shall be strictly adhered to and copies available at all times on the jobsite during installation. Installation shall comply with Chapter 7 of the IPC, Chapter 8 of the UPC and Chapter 30 of IRC.

Materials exposed in plenums must demonstrate a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested in accordance with ASTM E84.

These pipes and fittings are used for the installation of corrosion resistant drainage systems and are to be used in commercial, industrial, and institutional acid waste systems. The systems may be used throughout a building.

Pipe and fittings are to be joined by either a mechanical joint or electrofusion in accordance with the manufacturer’s installation instructions.

Models:

**GSR or +GF+ Fuseal® PPFR Pipe and Fitting System:** Pipe and fittings are manufactured from polypropylene (PP) material to schedule 40 or 80 pipe dimensions in accordance with ASTM F1412 and CSA B181.3. The system handles corrosive drainage fluids up to 212°F (100°C) intermittently or continuous service up to 180°F (82°C) and can be used for pressurized drainage applications up to 50 psi..

**Fuseal® PP Pipe**

Schedule 40 pipe sizes: 1-1/2” – 18”

Schedule 80 pipe sizes: 1-1/2 – 12”

**Fuseal® or FASTLOCK or Seadrain Fittings**

Type	Size
Cleanout Tee with Plug (S x S)	1-1/2", 2", 3", 4"
Sanitary Tee	1 1/2", 2", 3", 4", 2"x2"x1-1/2", 3"x3"x2", 3"x3"x1-1/2" 4"x4"x2", 4"x4"x3", 6"x6"x4"
Double Reducing Tee	3"x3"x2"x 2", 2"x2"x1-1/2"x1-1/2"
Double Sanitary Tee	1-1/2", 2", 3", 4"
1/4" Bend – Vent	1-1/2", 2", 3"
1/4" Bend – Short Sweep	1-1/2", 2", 3", 4", 6"

1/4" Bend – Long Sweep	1-1/2", 2", 3", 4", 6"
1/4" Bend – Spigot Short Sweep	1-1/2", 2", 3", 4"
1/6" Bend	1-1/2", 2", 3", 4"
1/8" Bend – Spg x S	1-1/2", 2", 3", 4", 6"
1/8" Bend – S x S	1-1/2", 2", 3", 4"
1/16" Bend	1-1/2", 2", 3", 4"
3-Way Ell	1-1/2", 2"
45° Wye	1-1/2", 2", 3", 4", 6"
45° Wye – Reducing	2"x2"x1-1/2", 3"x3"x2", 4"x4"x2", 4"x4"x3", 6"x6"x2", 6"x6"x3", 6"x6"x4"
45° Wye – Double Reducing	2"x2"x1/2"x 1/2", 3"x3"x2"x2", 3"x3"x1-1/2"x1-1/2", 4"x4"x2"x2", 4"x4"x3"x3", 6"x6"x4"x4"
Long Turn Tee	1-1/2", 2", 3", 4", 2"x2"x1-1/2", 3"x3"x1-1/2", 3"x3"x2", 4"x4"x2", 4"x4"x3"
Cleanout Adapter	1-1/2", 2", 3", 4", 6"
Cleanout Tee with Plug (S x S)	1-1/2", 2", 3", 4"
Male Adapter (MPT x S)	1-1/2", 2", 3", 4"
Female Adapter (FPT x S)	1-1/2", 2", 3", 4", 6"
Unions	1-1/2", 2", 3", 4"
Union Nut Adapter – Spg	1-1/2"
Male Union Adapter – S	1-1/2"
Male Union Adapter – Spg	2"
Male Union Adapter – FPT	2"
Male Union Adapter – MPT	2"
Coupling	1-1/2", 2", 3", 4", 6"
Pipe Increaser	1-1/2"x2", 2"x3", 2"x4", 3"x4"
Reducer Bushing (Spg x S)	2"x1-1/2", 3"x1-1/2", 3"x2", 4"x2", 4"x3", 6"x4"
Plug	1-1/2", 2", 3", 4"
P-Trap – With Cleanout	1-1/2", 2", 3", 4"
P-Trap – Without Cleanout	1-1/2", 2", 3", 4"
P-Trap – Union	1-1/2", 2"
P-Trap – Slip Joint Inlet	1-1/2"
Strainer Adapter	1-1/2"
Swivel Strainer Adapter	1 1/2", 1-1/2"x12L
Cap	1-1/2", 2", 3", 4", 6"
Flange	1-1/2", 2", 3", 4", 6"

**GSR or +GF+ Fuseal® PVDF Pipe and Fitting System:** Pipe and fittings are manufactured from polyvinylidene Fluoride (PVDF) material to schedule 40 pipe dimensions in accordance with ASTM F1412 and CSA B181.3. The system handles corrosive drainage fluids up to 212°F (100°C) intermittently or continuous service up to 180°F (82°C) and can be used for pressurized drainage applications up to 50 psi. The PVDF materials has demonstrated a flame-spread index of less than 25 and a smoke-developed index of less than 50 when tested in accordance with ASTM E84.

### Fuseal® PVDF Pipe

Schedule 40 pipe sizes: 1-1/2" – 6"

### Fuseal® Fittings

Type	Size
Female Adapter (SxFPT)	3", 4", 6"
Glass Adapter (SxBead Glass Pipe)	1-1/2", 2", 3", 4", 6"
Iron Pipe Adapter (SxIron Pipe Bead)	1-1/2", 2", 3", 4"
Flange (S)	1-1/2", 2", 3", 4", 6"
Union (PVDFxPVDF)/PVDF Nut EPDM (SxS)	1-1/2", 2", 3", 4"
Union (PVDFxPVDF)/PVDF Nut FPM (SxS)	1-1/2", 2", 3", 4"
Union (PPFRxPVDF)/PPFR Nut EPDM (SxS)	1-1/2", 2", 3", 4"
Union (PPFRxPVDF)/PPFR Nut FPM (SxS)	1-1/2", 2", 3", 4"
Union (PVDFxPPFR)/PVDF Nut EPDM (SxS)	1-1/2", 2", 3", 4"
Clean-Out Adapter w/Plug (SpgxFT)	1-1/2", 2", 3", 4", 6"
Countersink Plug for Cleanout	3", 4"
P-Trap Cleanout (SxS)	1-1/2", 2", 3", 4"
P-Trap (SxS)	1-1/2", 2", 3", 4", 6"
P-Trap Union Connection (SxS)	1-1/2"
Double 45° Wye (SxSxSxS)	3", 4"
Double 45° Wye - Reducing (SxSxSxS) – BUSH	2"x2"x1-1/2"x1-1/2", 3"x3"x1-1/2"x1-1/2", 3"x3"x2"x2", 4"x4"x2"x2", 4"x4"x3"x3"
Long Turn Tee Wye (SxSxS)	1-1/2", 2", 3", 4"
Combo Wye (SxSxS) – FAB	6"
Long Turn Tee Wye - Reducing (SxSxS) – BUSH	2"x2"x1-1/2", 3"x3"x1-1/2", 3"x3"x2", 4"x4"x2", 4"x4"x3"
Combo Wye - Reducing (SxSxS) – FAB	6"x6"x3", 6"x6"x4"
Double Combo Wye (SxSxSxS)	1-1/2", 2", 3", 4"
Double Combo Wye - Reducing (SxSxSxS) – BUSH	2"x2"x1-1/2"x1-1/2", 3"x3"x1-1/2"x1-1/2", 3"x3"x2"x2", 4"x4"x2"x2", 4"x4"x3"x3"
Sanitary Tee (SxSxS)	1-1/2", 2", 3", 4"
Sanitary Tee - Reducing (SxSxS) – BUSH	2"x2"x1-1/2", 3"x3"x1-1/2", 3"x3"x2", 4"x4"x2", 4"x4"x3"
Double Sanitary Tee (SxSxSxS)	2"
P-Trap Union Connection (SxS)	2"
Swivel Sink Strainer Adapter (SpgxFT)	1-1/2"
Swivel Sink Strainer Replacement Gasket	1-1/2"
FPT Trap Primer (SpgxSPG) – FAB	1-1/2"x1/2", 2"x1/2", 3"x1/2", 4"x1/2", 6"x3/4"
Female Adapter (SxFPT)	2"
Double Sanitary Tee (SxSxSxS)	3"
Double Sanitary Tee - Reducing (SxSxSxS) – BUSH	2"x2"x1-1/2"x1-1/2", 3"x3"x1-1/2"x1-1/2", 3"x3"x2"x2"
Pipe Increaser (SpgxSpg)	2"x1-1/2", 3"x1-1/2", 3"x2", 4"x2", 4"x3"
Reducer Bushing (SpgxS)	2"x1-1/2", 3"x1-1/2", 3"x2", 4"x2", 4"x3", 6"x4"
Cap (S)	1-1/2", 2", 3", 4", 6"
Male Adapter (SxMPT)	1-1/2", 2", 3", 4", 6"
Female Adapter (SxFPT)	1-1/2"
Coupling (SxS)	1-1/2", 2", 3", 4", 6"

1/4" Bend - Long Sweep (SxS)	1-1/2", 2", 3", 4"
1/4" Bend - Short Sweep (SxS)	1-1/2", 2", 3", 4"
1/8" Bend (SxS)	1-1/2", 2", 3", 4"
45° Wye (SxSxS)	1-1/2", 2", 3", 4", 6"
45° Wye - Reducing (SxSxS) – BUSH	2"x2"x1-1/2", 3"x3"x1-1/2", 3"x3"x2", 4"x4"x2", 4"x4"x3"
Double 45° Wye (SxSxSxS)	1-1/2", 2"
Union (PVDFxPPFR)/PVDF Nut FPM (SxS)	1-1/2", 2", 3", 4"
1-1/2" Clean-Out Tee w/Plug (SxSxFT)	1-1/2", 2", 3", 4", 6"-FAB

Conditions of Listing:

1. This report and the installation instructions, when required by the building official, shall be submitted at the time of permit application.
2. The methods of treatment, neutralization or dilution of the chemical waste transported by the drainage pipe and fittings, when discharged to a sanitary drainage system in accordance with IPC Section 803.2, are outside the scope of this listing.
3. Pipe compound or other pipe dopes or sealers shall not be used in mechanical joint systems. Connections between dissimilar materials shall be made with GSR or +GF+ adapters according to manufacturer's recommendations.
4. Support spacing for pipe shall be based on design temperature and in accordance with the manufacturer's recommendations.
5. All piping system components shall be aligned properly without strain. Grade of horizontal drainage and vent piping shall be as specified in the applicable plumbing code.
6. Use of the pipe and fittings in plenums or in fire-resistance rated assemblies is outside the scope of this listing. Materials exposed in plenums must demonstrate a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested in accordance with ASTM E84.
7. The pipe and fittings are under a quality control program with surveillance inspections by ICC-ES.