

RECOMMENDED SPECIFICATION FOR FLOSAFE, INC. FLOGUARD II PP in PP DOUBLE CONTAINMENT PIPING SYSTEMS FOR NON-PRESSURE DRAINAGE APPLICATIONS

PART ONE – GENERAL

1.0 Furnish a complete pre-engineered, fully anchored double containment piping and leak detection system, excluding all pumps, filters, instrumentation, valves, external supporting means, installation, testing, and burial. The system is to include all inner and outer piping, fitting, internal support and anchor materials, floor drains, leak detection apparatus (other than leak detection cable, and exclusive of conduit, and installation of the apparatus) and all associated joining equipment.

1.1 The system shall be a fully anchored FloSafe FloGuard II PP inside of PP Double Containment Piping System, with carrier piping intended for non-pressure drainage, as manufactured by FloSafe, Inc., of Kansas City, KS, in the USA.

1.2 The design of the system, and the suitability of the product for the specified project design conditions shall be the responsibility of the owner's appointed designer of record, and shall be in accordance with the ANSI/ASME B31.3 Process Piping Code, and all other applicable plumbing, building codes, local, state and federal legislative requirements, and the recommendations of FloSafe, Inc. of Kansas City, KS.

PART TWO – PRODUCTS

2.0 Materials

Primary (Carrier) and secondary containment pipe shall be manufactured from a Copolymer polypropylene resin (Type II resin according to ASTM D 4101).

2.1 Primary (Carrier) Pipe

Primary (carrier) pipe shall be Sch 40 wall thickness according to ASTM F1412. *Other wall thickness options are available for connecting to metric systems (choose one)*
SDR 11 SDR 17.6 SDR 33 dimensions according to DIN 8077.

2.2 Primary Fittings

Primary (carrier) fittings shall be injection-molded and/or seamless drainage pattern fittings with layout dimensions according to ASTM D3311 through nominal 6" diameter. *Other wall thickness options are available for connecting to metric systems (choose one)*
SDR 11 SDR 17.6 SDR 33 dimensions according to DIN 8077.

2.3 Secondary Containment Pipe

Secondary containment pipe shall be (choose one) SDR 11 SDR 17.6 SDR 33 dimensions according to DIN 8077. Each length of pipe shall be fully anchored by means of FloTrue™ Internal anchors back-welded to both the carrier and containment piping.

2.4 Secondary Containment Fittings

Secondary containment fittings shall be modified from injection-molded and/or seamless drainage pattern fittings with layout dimensions according to ASTM D3311 through nominal 6" diameter, and shall be fabricated from pipe in sizes above nominal 6" diameters. All secondary containment fittings shall be prefabricated to house the corresponding primary (carrier) fittings as a subassembly by FloSafe, Inc., and all factory joints pre-tested prior to shipment. All secondary containment fittings shall be fully anchored to the corresponding primary fittings using FloTrue Internal Anchors.

2.5 Internal Supports

All mid-line internal supports shall be FloSafe Trivane molded supports for sizes 3x6 and smaller. All mid-line internal supports above 3x6 sizes shall be FloSafe molded collar-style FloTrue™ internal anchors, machined to fit within the inside diameter of the corresponding secondary containment piping (according to manufacturing tolerances determined by FloSafe, Inc.), and shall be attached to the carrier pipe using PP welding rod.

2.6 Pipe End Plate Internal Anchor Supports

All piping end plates used to internally anchor each end of standard factory lengths of piping shall be FloSafe FloTrue™ Internal anchors, and shall be attached to the carrier pipe using PP welding rod.

2.7 Closure Fittings

All closure fittings, where required, shall be FloSafe Powerclosure Couplings.

PART THREE – EXECUTION

3.0 Joining Method

The system shall be joined by the following methods:

3.1 Primary System Joining Method (choose one):

- Primary system shall be joined by butt fusion (ASTM D 2657, Proc. 2)
- Primary system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2) – note: if this option is selected, it must also be selected for the joining method used on the containment system*

3.2 Containment System Joining Method

- The containment system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2) – note: if this option is selected, it must also be selected for the joining method used on the carrier system*

3.3 Installation and Testing

Installation and testing shall be in accordance with contract drawings, the manufacturer's recommendations, and the local plumbing codes. The test pressure for the primary (carrier) piping system, shall be according to the authority having local jurisdiction, but in no case should exceed 10 feet of head added to the highest elevational change, for the specified test period. The test pressure for the containment piping system shall also be according to the authority having local jurisdiction, but in no case shall exceed 5 psi, if a pneumatic test is conducted.

PART FOUR – LEAK DETECTION SYSTEM

4.0 Leak detection system shall be a continuously monitoring automatic conductivity sensing probe system as supplied by FloSafe, Inc. The location of probes, and the type and location of provisions to incorporate the probes at desired locations shall be as shown on the contract drawing details. The alarm panel, system map, and operating manual and instructions shall be provided by FloSafe, Inc. All wiring and conduit needed for installation of the leak detection system shall be provided by the contractor.

4.0 (alternate) Leak detection system shall be a continuously monitoring leak detection cable system provided by others. The design and installation details of the leak detection system shall be provided by the manufacturer of the leak detection system, or its agents, and in any case shall be limited to mains where the carrier size is 4" nominal (110 mm) or larger, and shall be limited to straight sections of the system between consecutive fittings. Straight sections of cable shall be connected to one another by jumper cable, as recommended by the cable manufacturer, or shall be separately wired back to the alarm panel. The system mapping, start-up, training and commissioning of the system shall be the responsibility of the leak detection cable manufacture.

RECOMMENDED SPECIFICATION FOR FLOSAFE, INC. FLOGUARD II PVDF in PP DOUBLE CONTAINMENT PIPING SYSTEMS FOR NON-PRESSURE DRAINAGE APPLICATIONS

PART ONE – GENERAL

1.0 Furnish a complete pre-engineered, fully anchored double containment piping and leak detection system, excluding all pumps, filters, instrumentation, valves, external supporting means, installation, testing, and burial. The system is to include all inner and outer piping, fitting, internal support and anchor materials, floor drains, leak detection apparatus (other than leak detection cable, and exclusive of conduit, and installation of the apparatus) and all associated joining equipment.

1.1 The system shall be a fully anchored FloSafe FloGuard II PVDF inside of Polypropylene double containment piping system, with carrier piping intended for non-pressure drainage, as manufactured by FloSafe, Inc., of Kansas City, KS, in the USA.

1.2 The design of the system, and the suitability of the product for the specified project design conditions shall be the responsibility of the owner's appointed designer of record, and shall be in accordance with the ANSI/ASME B31.3 Process Piping Code, and all other applicable piping or plumbing codes, building codes, local, state and federal legislative requirements, and the recommendations of FloSafe, Inc. of Kansas City, KS.

PART TWO – PRODUCTS

2.0 Materials

Primary (Carrier) pipe and fittings shall be manufactured from an emulsion grade homopolymer PVDF resin (Type I resin according to ASTM D 3222). Secondary containment pipe shall be manufactured from a homopolymer polypropylene resin (Type I resin according to ASTM D 4101).

2.1 Primary (Carrier) Pipe

Primary (carrier) pipe shall be (choose one) SDR 21 (Pressure Class 230 psi) SDR 33 (Pressure Class 150 psi) dimensions according to ISO 10931.

2.2 Primary Fittings

Primary (carrier) fittings shall be injection-molded and/or seamless drainage pattern fittings where such fittings are available, with layout dimensions according to ASTM D 3311 through nominal 6" diameter.

2.3 Secondary Containment Pipe

Secondary containment pipe shall be (choose one) SDR 11 SDR 17.6 SDR 33 dimensions according to DIN 8077. Each length of pipe shall be fully anchored by means of FloTrue™ Internal anchors back-welded to the carrier piping system.

2.4 Secondary Containment Fittings

Secondary containment fittings shall be modified from injection-molded and/or seamless pressure pattern fittings according to DIN 16962 through nominal 6" diameter, and shall be fabricated from pipe in sizes above nominal 6" diameters. All secondary containment fittings shall be prefabricated to house the corresponding primary (carrier) fittings as a subassembly by FloSafe, Inc., and all factory joints pre-tested prior to shipment. All secondary containment fittings shall be fully anchored to the corresponding primary fittings using FloTrue Internal Anchors.

2.5 Internal Supports

All mid-line internal supports shall be FloSafe molded collar-style FloTrue™ internal anchors, machined to fit within the inside diameter of the corresponding secondary containment piping (according to manufacturing tolerances determined by FloSafe, Inc.), and shall be back-welded to the carrier piping.

2.5 Pipe End Plate Internal Anchor Supports

All piping end plates used to internally anchor each end of standard factory lengths of piping shall be FloSafe FloTrue™ Internal anchors, and shall be back-welded to the carrier piping systems.

2.7 Closure Fittings

All closure fittings, where required shall be FloSafe Powerclosure Couplings.

PART THREE – EXECUTION

3.0 Joining Method

The system shall be joined by the following methods:

3.1 Primary System Joining Method (choose one):

- The containment system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2)
- Primary system shall be joined by Butt fusion (ASTM D 2657, Proc. 2)

3.2 Containment System Joining Method

- The containment system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2)

3.3 Installation and Testing

Installation and testing shall be in accordance with contract drawings, the manufacturer's recommendations, and the local plumbing codes. The test pressure for the primary (carrier) piping system, shall be according to the authority having local jurisdiction, but in no case should exceed ten feet of head added to the highest elevational change, for the specified test period. The test pressure for the containment piping system shall also be according to the authority having local jurisdiction, but in no case shall exceed 5 psi, if a pneumatic test is conducted. Visual inspection of carrier pipe joints during testing shall be in accordance with the ANSI/ASME B31.3 Process Piping Code, para. A345, and any applicable plumbing code, or other requirements of the authority having local jurisdiction.

PART FOUR – LEAK DETECTION SYSTEM

4.0 Leak detection system shall be a continuously monitoring automatic conductivity sensing probe system as supplied by FloSafe, Inc. The location of probes, and the type and location of provisions to incorporate the probes at desired locations shall be as shown on the contract drawing details. The alarm panel, system map, and operating manual and instructions shall be provided by FloSafe, Inc. All wiring and conduit needed for installation of the leak detection system shall be provided by the contractor.

4.0 (alternate) Leak detection system shall be a continuously monitoring leak detection cable system provided by others. The design and installation details of the leak detection system shall be provided by the manufacturer of the leak detection system, or its agents, and in any case shall be limited to mains where the carrier size is 4" nominal (110 mm) or larger, and shall be limited to straight sections of the system between consecutive fittings. Straight sections of cable shall be connected to one another by jumper cable, as recommended by the cable manufacturer, or shall be separately wired back to the alarm panel. The system mapping, start-up, training and commissioning of the system shall be the responsibility of the leak detection cable manufacture.

RECOMMENDED SPECIFICATION FOR FLOSAFE, INC. FLOGUARD II PVDF in PVDF DOUBLE CONTAINMENT PIPING SYSTEMS FOR NON-PRESSURE DRAINAGE APPLICATIONS

PART ONE – GENERAL

1.0 Furnish a complete pre-engineered, fully anchored double containment piping and leak detection system, excluding all pumps, filters, instrumentation, valves, external supporting means, installation, testing, and burial. The system is to include all inner and outer piping, fitting, internal support and anchor materials, floor drains, leak detection apparatus (other than leak detection cable, and exclusive of conduit, and installation of the apparatus) and all associated joining equipment.

1.1 The system shall be a fully anchored FloSafe FloGuard II PVDF inside of PVDF double containment piping system, with carrier piping intended for non-pressure drainage, as manufactured by FloSafe, Inc., of Kansas City, KS, in the USA.

1.2 The design of the system, and the suitability of the product for the specified project design conditions shall be the responsibility of the owner's appointed designer of record, and shall be in accordance with the ANSI/ASME B31.3 Process Piping Code, and all other applicable piping or plumbing codes, building codes, local, state and federal legislative requirements, and the recommendations of FloSafe, Inc. of Kansas City, KS.

PART TWO – PRODUCTS

2.0 Materials

Primary (Carrier) and secondary containment pipe and fittings shall be manufactured from an emulsion grade homopolymer PVDF resin (Type I resin according to ASTM D 3222).

2.1 Primary (Carrier) Pipe

Primary (carrier) pipe shall be (choose one) SDR 21 (Pressure Class 230 psi) SDR 33 (Pressure Class 150 psi) dimensions according to ISO 10931.

2.2 Primary Fittings

Primary (carrier) fittings shall be injection-molded and/or seamless drainage pattern fittings with layout dimensions according to ASTM D3311 through nominal 6" diameter.

2.3 Secondary Containment Pipe

Secondary containment pipe shall be (choose one) SDR 21 (Pressure Class 230 psi) SDR 33 (Pressure Class 150 psi) dimensions according to ISO 10931. Each length of pipe shall be fully anchored by means of FloTrue™ Internal anchors back-welded to the carrier piping system.

2.4 Secondary Containment Fittings

Secondary containment fittings shall be manufactured from an emulsion grade homopolymer PVDF resin (Type 1 according to ASTM D 3222), and shall be modified from injection-molded and/or seamless drainage pattern fittings with layout dimensions according to ASTM D3311 through nominal 6" diameter, and shall be fabricated from pipe in sizes above nominal 6" diameters. All secondary containment fittings shall be prefabricated to house the corresponding primary (carrier) fittings as a subassembly by FloSafe, Inc., and pretested prior to shipment. All secondary containment fittings shall be fully anchored to the corresponding primary fittings using FloTrue Internal Anchors.

2.5 Internal Supports

All mid-line internal supports shall be FloSafe molded collar-style FloTrue™ internal anchors, machined to fit within the inside diameter of the corresponding secondary containment piping (according to manufacturing tolerances determined by FloSafe, Inc.), and shall be back-welded to the carrier piping.

2.6 Pipe End Plate Internal Anchor Supports

All piping end plates used to internally anchor each end of standard factory lengths of piping shall be FloSafe FloTrue™ Internal anchors, and shall be back-welded to the carrier piping system.

2.7 Closure Fittings

All closure fittings, where required shall be FloSafe Powerclosure Couplings.

PART THREE – EXECUTION

3.0 Joining Method

The system shall be joined by the following methods:

3.1 Primary System Joining Method (choose one):

- Primary system shall be joined by butt fusion (ASTM D 2657, Proc. 2)
- Primary system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2) – note: if this option is selected, it must also be selected for the joining method used on the containment system

3.2 Containment System Joining Method

- The containment system shall be joined by simultaneous butt fusion (modified from ASTM D 2657, Proc. 2)

3.3 Installation and Testing

Installation and testing shall be in accordance with contract drawings, the manufacturer's recommendations, and the local plumbing codes. The test pressure for the primary (carrier) piping system, shall be according to the authority having local jurisdiction, but in no case should exceed ten feet of head added to the highest elevational change for the specified test period. The test pressure for the containment piping system shall also be according to the authority having local jurisdiction, but in no case shall exceed 5 psi, if a pneumatic test is conducted. Visual inspection of carrier pipe joints during testing shall be in accordance with the ANSI/ASME B31.3 Process Piping Code, para. A345, and any applicable plumbing code, or other requirements of the authority having local jurisdiction.

PART FOUR – LEAK DETECTION SYSTEM

4.0 Leak detection system shall be a continuously monitoring automatic conductivity sensing probe system as supplied by FloSafe, Inc. The location of probes, and the type and location of provisions to incorporate the probes at desired locations shall be as shown on the contract drawing details. The alarm panel, system map, and operating manual and instructions shall be provided by FloSafe, Inc. All wiring and conduit needed for installation of the leak detection system shall be provided by the contractor.

4.0 (alternate) Leak detection system shall be a continuously monitoring leak detection cable system provided by others. The design and installation details of the leak detection system shall be provided by the manufacturer of the leak detection system, or its agents, and in any case shall be limited to mains where the carrier size is 4" nominal (110 mm) or larger, and shall be limited to straight sections of the system between consecutive fittings. Straight sections of cable shall be connected to one another by jumper cable, as recommended by the cable manufacturer, or shall be separately wired back to the alarm panel. The system mapping, start-up, training and commissioning of the system shall be the responsibility of the leak detection cable manufacture.